APPENDIX A
UNIFORM ENVIRONMENTAL REPORT

LONDONDERRY TOWNSHIP
ACT 537 OFFICIAL SEWAGE FACILITIES PLAN UPDATE
Dauphin County, Pennsylvania

ENVIRONMENTAL REPORT

1.0 PROJECT DESCRIPTION AND NEED

1.1 Purpose of and Need for Project

Enacted by Pennsylvania Legislature in 1966, The Pennsylvania Sewage Facilities Act (Act 537) requires every municipality within the Commonwealth develop and maintain an up-to-date sewage facilities plan. Several sewage facility planning efforts for Londonderry Township (Township) have occurred since the Dauphin County Plan was adopted by the Township in 1971. The Township completed a Township-wide Sewage Feasibility Study in 1974. In 1987, the Township completed the development of an Official Sewage Facilities Plan, establishing three (3) Sewer Districts and two (2) On-Lot Management Districts. The Township's 1999 Plan Update identified a need for wastewater disposal facilities within a "Base Service Area" of Sewer District No. 2. To date, no wastewater facilities have been constructed in Sewer District No. 2.

The Londonderry Township Board of Supervisors, Dauphin County, authorized the preparation of this report to serve as the Official Sewage Facilities Plan Update (Plan Update) for the Township. The Planning Area for this Plan Update includes Sewer District No. 2 and Sewer District No. 3 in their entirety as well as a small portion of On-lot Management District B referred to as Londonderry Estates. The purpose of this Plan Update is to address the wastewater disposal needs of Londonderry Township based on anticipated growth resulting from the two (2) planned traditional neighborhood developments (TNDs) and the operation of existing sewage disposal facilities within the Planning Area.

The observation of few confirmed malfunctions and contaminated water samples in Sewer District No. 2 is most likely the result of the property owners' diligent maintenance and periodic pumping of the OLDS. In addition, five (5) of the confirmed malfunctions in Sewer District No. 2 was based on the presence of holding tanks as observed during the surveys. However, due to previous planning efforts, anticipated future growth and development, soil suitability, a number of requests from residents for public sewer service, and documented issues at the Crestview Village Mobile Home Park (MHP) packaged wastewater treatment plant (WWTP), alternatives for providing public sewer service to Sewer District No. 2 are evaluated in this Plan Update.

The number of confirmed malfunctions in Sewer District No. 3 and On-lot Management District B suggests that there are more malfunctioning OLDS than indicated in the sanitary sewer survey. A majority of the parcels surveyed in both of these districts have OLDS that preceded current legislation, are located less than 100 feet from their private wells, soil suitability, and subsequently would not be permitted by today's standards. It is recommended that public sanitary sewers be considered to provide adequate sewage disposal in Sewer District No. 3 and On-lot Management District B which includes abandonment of two (2) MHP packaged WWTPs. Alternatives for providing public sewer service to these areas are evaluated in this Plan Update.

In relation to community facilities and services, the 2005 Lower Dauphin Area Regional Comprehensive Plan indicates that one of the Township's physical goals is to implement appropriate sewage disposal solutions in areas with high concentrations of malfunctioning OLDS. The Comprehensive Plan recommends providing public, central sewer services in the most cost-effective manner, with regular investments to provide reliable service. In addition, the future land use plan represents the Township's desire to allow for appropriate, well-planned development activities while maintaining the Township's historic and agricultural character.

The majority of residences within the Planning Area are currently served by OLDS for treatment and disposal. The known on-lot disposal methods used in the Planning Area include seepage beds, trench systems, elevated sand mounds, peat mounds, holding tanks, cesspools, and individual residential spray irrigation systems (IRSIS). There are ten (10) known holding tanks currently being used as repairs to failing systems in the Township. The type of system implemented varies, but is classified as one of the following:

- **In-Ground –** Systems consisting of absorption areas, trenches and other disposal systems that rely solely on the surrounding soil for treatment.

- **Elevated Sand Mound** – Systems utilizing a bed or trenches of sand, elevated above the existing surface, to enhance the treatment provided by the underlying soil.

- **Individual Residential Spray Irrigation System (IRSIS)**

- **Peat Mound**

- **Holding Tanks** – Holding tanks and privies that require periodic pumping for removal of waste and residual solids.

There are three (3) MHPs within the planning area, each with privately-owned wastewater collection and treatment facilities. The Crestview Village MHP is located in Sewer District No. 2 and the Pine Manor MHP and Cedar Manor MHP are located in Sewer District No. 3.

The Crestview Village MHP WWTP operates under National Pollution Discharge Elimination System (NPDES) Permit No. PA0033057 and discharges into Iron Run. According to 2010 records, the 69 occupied lots and six (6) unoccupied lots (75 lots total) are connected to the WWTP. The NPDES Permit allows for the treatment of an average daily flow (ADF) of 14,500 gallons per day (gpd). 2011 Discharge Monitoring Report (DMR) records show monthly ADFs between 20,000 and 25,000 gpd. Ongoing complaints of odors from the WWTP were documented by DEP in 1998, 2002, and 2004.

The Cedar Manor MHP WWTP operates under NPDES Permit No. PA0080721 and discharges into an unnamed tributary (UNT) of Conewago Creek. The permit, originally issued March 24, 1982, allows for a design ADF of 72,000 gpd. Flow records at the WWTP for 2011 show an average flow of approximately 100,000 gpd with a maximum daily flow of 884,000 gpd. The WWTP flow records show that the collection system is significantly impacted by inflow and infiltration (I/I). According to a 2006 I/I Study completed by Act One Consultants, Inc., the Cedar Manor MHP collection system consists of vitrified clay pipe and polyvinyl chloride (PVC) sewer mains and

serves 316 connections. Due to numerous DEP inspections and NPDES permit violations, the WWTP owner has been issued two consent order and agreements (COA).

The Pine Manor MHP WWTP operates under NPDES Permit No. PA0033391 and discharges into an UNT of Lynch Run. The permit allows for a design ADF of 22,000 gpd and serves approximately 110 connections. EPA and DEP records did not show a history of violations at the Pine Manor MHP WWTP.

As a component of this Plan Update, the Township is evaluating various scenarios for conveyance of flows from the potential sewer service areas within the Township identified in this Plan to the Derry Township Municipal Authority (DTMA) sanitary sewer system and/or the Middletown Borough Authority (MBA) sanitary sewer system. All flows would be conveyed to the DTMA SW WWTP and/or the MBA Wastewater Treatment Plant (WWTP) for treatment.

The DTMA SW WWTP is located along Swatara Creek Road in the northwest corner of Sewer District No. 2 in Londonderry Township. The DTMA SW WWTP is permitted to discharge into the Swatara Creek under National Pollutant Discharge Elimination System (NPDES) Permit No. PA0082392. The current permitted annual discharge flow is 0.600 million gallons per day (MGD). The existing WWTP process units consist of oxidation ditches, grit removal, activated sludge, final clarifier, and disinfection prior to discharge into the Swatara Creek.

The DTMA SW WWTP was not constructed to meet current nutrient removal requirements of the Chesapeake Bay Tributary Strategy (CBTS). The DTMA has performed engineering studies to evaluate a plant upgrade to facilitate removal of additional total nitrogen (TN) and total phosphorus (TP); however, DTMA SW WWTP continues to offset nutrient loadings through nutrient trading of credits available from the DTMA Clearwater Road WWTP, as needed.

The MBA WWTP is located at the south end of Lawrence Street in the Borough of Middletown. The MBA WWTP is permitted to discharge into the Susquehanna River under National Pollutant Discharge Elimination System (NPDES) Permit No. PA0020664. The current permitted annual discharge flow is 2.2 MGD and the average organic loading capacity is 3,740 pounds of BOD_5 per day. The existing WWTP process units consist of two (2) fine screens, influent pump station, grit and grease removal system, biological nutrient removal through three (3) selector tanks, two (2) phased oxidation ditches, two (2) secondary clarifiers, and chlorine addition for disinfection prior to discharge into the Susquehanna River. The MBA WWTP also consists of a biosolids treatment facility which consists of activated sludge holding tanks, storage reactors, and an autothermal thermophylic aerobic digestion (ATAD) process.

This Environmental Report has been prepared in accordance with the *Guidelines for the Uniform Environmental Review Process in Pennsylvania* published by DEP. Section 1.0 of the Report summarizes activities and analyses completed during preparation of the Londonderry Township Act 537 Sewage Facilities Plan Update. A summary of alternatives considered by this Plan is included as Section 2.0. Environmental consequences of the alternatives selected for implementation by the Plan is included in Section 3.0.

1.1.1 Sanitary Survey in OLDS Study Areas

As part of the planning work for this Plan Update, sanitary surveys were completed throughout the Planning Area; Sewer District No. 2 and No. 3 in their entirety and the Londonderry Estates area in On-lot Management District A. The Act 537 Sewage Disposal Needs Identification Guidance (SDNIG) document published by the DEP (latest edition) was utilized as the basis for performing the sanitary surveys. Herbert, Rowland & Grubic, Inc. (HRG) performed Tier Two "door-to-door" sanitary surveys in the Planning Area from March 26, 2012 through April 9, 2012.

There are approximately 796 homes in the Planning Area that are served by OLDS (excluding the residences in the MHPs). Mail sewer surveys requesting general information on the OLDS were sent to the 796 homes; 341 were returned. Follow-up field surveys ("door-to-door surveys") were performed during March and April 2012 for a percentage of the residences. Based on guidelines set forth in the SDNIG document the recommended minimum number of properties with OLDS within each planning area should be surveyed in order to conduct a "representative", or "valid" door-to-door sanitary sewage survey. The minimum percentage of the residences that should be surveyed for a Tier Two survey are published in the SDNIG and presented in Table 1-1.

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

OLDS in the Planning Area	Minimum Percentage of OLDS to Survey
Up to 50	50%
51 to 100	35%
101 to 500	25%
501 to 1,000	20%
Greater than 1,000	15%

The DEP has designated "public health needs" as a general needs category relating to sewage disposal that must be considered. The definitions and requirements stated in this section are taken from the DEP's SDNIG document. Public health needs are considered to be those health hazards and water pollution problems that involve discharging untreated or inadequately treated sewage to the surface of the ground or waters of the Commonwealth, including groundwater. Most commonly, these needs are found to be malfunctioning OLDS and malfunctioning community on-lot disposal systems (COLDS). OLDS malfunctions are classified into three categories: confirmed, suspected, and potential. When determining the public health needs of an area using OLDS/COLDS, all systems inventoried, mapped, and analyzed must be placed into one of four categories:

1. ***Confirmed Malfunctions***: Those malfunctions documented by dye testing, laboratory test results, observation by a Sewage Enforcement Officer (SEO) or a professional with experience in OLDS, "Best Technical Guidance" repair permits, and seasonally wet absorption areas. Also included are piped discharges from a single structure with direct

evidence of sewage (i.e. direct observation of soap suds, food residue, solids, odors, etc.), reported system backups, malfunctions with photographic documentation, or other similar evidence.

2. ***Suspected Malfunctions***: Systems exhibiting some malfunction characteristics, such as abnormally green grass in the vicinity of the absorption area, piped discharges from a structure without direct evidence of sewage, absorption areas located within known unsuitable soils (observed wetland or rock outcroppings), cesspools, and pit privies.

3. ***Potential Malfunctions***: Systems that appear to be operating satisfactorily but were constructed prior to system permitting requirements, systems located in areas extremely unlikely to receive permitting by current standards, systems constructed in areas having soils mapped as unsuitable or with severe limitations for OLDS and systems located on exceptionally steep slopes greater than 25 percent. Included as potential malfunctions are permits issued for OLDS repairs that meet Chapter 73 standards. While this needs category does not represent "stand alone" existing needs, the information may be utilized in a needs analysis to locate areas affected by poorly defined adverse circumstances. For example, clusters of legitimate repairs will often indicate areas requiring closer scrutiny.

4. ***No Malfunctions***: Systems that appear to be operating satisfactorily, were constructed since the implementation of system permitting requirements, and appear to have been constructed in accordance with the permitting requirements in effect at the time of construction. For the purpose of needs identification, OLDS permitting under Act 537 became effective on May 15, 1972.

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

5. ***Wildcat Sewers*** are collection systems (community sewers) serving more than one equivalent dwelling unit (EDU) and discharging untreated or partially treated sewage to the surface of the ground, storm sewers, or other waters of the Commonwealth.

6. ***Borehole Disposal*** is an individual or community system that discharges to a borehole, abandoned water well, dry well, ventilation shaft, or other subterranean structure.

7. ***Holding Tanks*** are watertight receptacles designed to retain sewage for disposal at another location. All holding tanks installed as repairs are counted as "needs." Specifically excluded are holding tanks installed to serve new land development or low flow commercial facilities. While not actually discharging sewage into the environment, properly maintained holding tanks, when used in OLDS repair situations, are included in the confirmed malfunction category.

8. ***Public Complaints*** are legitimate complaints received by the PA DEP or the municipality concerning improper sewage disposal. The number, nature, and location of public complaints concerning improper sewage disposal are important, yet often overlooked

indicators of sewage disposal problem areas.

9. ***Sanitation Related Illness*** is any reported illness, either resulting from or suspected to be resulting from improper sewage disposal. Records and incidents in which polluted water supplies have been suspected or confirmed as the cause of disease is documentation establishing a community's wastewater treatment needs. Confirmed or suspected vectorborne disease that may be attributed to surface ponding of sewage should also be considered.

In accordance with the SDNID, a survey was conducted for the Planning Area that met both Tier One and Tier Two percentage requirements. The door-to-door sanitary surveys completed by HRG included general observations of the OLDS septic tanks and absorption area and included closer investigations of sites that demonstrated evidence of malfunctions. Environmental conditions documented included abnormally green grass, piped discharges and swampy or wet areas in the vicinity of the OLDS were also noted. Well water samples were also taken as part of the sanitary survey.

Mail-in surveys were received from 341 of the 796 residences. Of these 341 residences that returned the mail-in surveys, 171 (21% survey rate) door-to-door surveys were performed to meet the requirements of a Tier Two sanitary survey (20%). The DEP permitted HRG to total the 796 residences in the Planning Area, rather than meet Tier Two survey requirements for each individual sewer district. The number and percentage of the properties in the Planning Area categorized as confirmed, suspected, potential, and no malfunctions are summarized in Table 1-2.

Table 1-2 Summary of Tier Two Survey Malfunction Categories

Area	OLDS Surveyed	Malfunction (% of Total Surveys)							
		Confirmed		Suspected		Potential		None	
		No.	Percent	No.	Percent	No.	Percent	No.	Percent
Sewer District No. 2	206	19	9%	30	15%	23	11%	134	65%
Sewer District No. 3	106	23	22%	17	16%	20	19%	46	43%
On-Lot District B	29	8	28%	2	7%	2	7%	17	58%
Total	***341***	***50***	***15%***	***49***	***14%***	***45***	***13%***	***197***	***58%***

1.1.2 Well Water Survey in OLDS Study Areas

Township residents in the Planning Area are served by private wells. During HRG's door-to-door sanitary surveys, water samples were collected from the private wells throughout the Planning Area.

According to the guidelines for well water surveys published in the SDNIG document, well water surveys were completed in conjunction with the field verification part of the sanitary survey. Well water samples may be completed in two tiers (or steps). In Tier One, a minimum of 15 percent of the wells in the study area must be sampled. For Tier Two, representative sampling must be completed for the same percentages as for the door-to-door survey (see Table 1-1). Each well water sample was analyzed for total coliform bacteria, fecal coliform bacteria (E. Coli), and nitrate-nitrogen (NO_3-N) concentration.

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

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

A number of homeowners participating in the well water surveys indicated that a water treatment system was installed on the well. Well water samples were collected prior to the treatment system whenever possible.

A total of 173 water samples were collected as part of the Tier Two well water surveys. The samples were analyzed by Analytical Laboratory Services, Inc. a DEP-certified lab. The results of the Tier Two water sampling is displayed in Table 1-3. Complete well water surveys results can be found in Appendix D. A letter containing the results for each sample collected by HRG and general information interpreting the results was sent to each homeowner where a well water sample was collected.

Table 1-3 Tier Two Well Water Survey Results - Bacteria and Nitrate Contamination

Area	Wells Sampled	Total Coliform Present (% of Surveyed)		Fecal Coliform Present (% of Total Coliform)		Nitrate <5 mg/L (% of Surveyed)		Nitrate >5 but <10 mg/L (% of Surveyed)		Nitrate >10 mg/L (% of Surveyed)	
		No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Sewer District No. 2	96	35	36%	2	6%	53	55%	38	40%	5	5%
Sewer District No. 3	56	25	45%	0	0%	40	71%	16	29%	0	0%
On-lot District B	21	2	10%	0	0%	3	14%	9	43%	9	14%
Total	***173***	***62***	***35%***	***2***	***3%***	***96***	***55%***	***63***	***36%***	***14***	***8%***

1.1.3 Sanitary and Well Water Survey Summary

Table 1-2 presents the results of the sanitary surveys completed for the Planning Area as part of this Plan Update. Map 12 in Appendix H displays the locations where the sanitary surveys were completed and the corresponding malfunction category. The Tier 2 survey indicated a 9%, 22%, and 28% confirmed malfunction rate for Sewer District No. 2, Sewer District No. 3, and On-lot Management District B, respectfully, based on mail-in surveys and field observations.

Table 1-3 presents the results of the water samples collected. The Tier 2 water sampling revealed a positive total coliform result of 36%, 45%, and 10% for Sewer District No. 2, Sewer District No. 3, and On-lot Management District B, respectfully. Fecal coliforms were present in 6% (or two of the wells tested) of samples collected in Sewer District No. 2 that contained total coliforms. None of the water samples which tested positive for total coliform in Sewer District No. 3 and On-lot Management District B revealed a presence of fecal coliforms. The percentage of water samples collected in the Planning Area which contained fecal coliforms tend to be only a fraction (3%) of the total samples identified as containing total coliforms.

Nitrate / nitrogen concentrations greater than 5 mg/L but less than 10 mg/L was present in 40%, 29%, and 43% of the water samples in Sewer District No. 2, Sewer District No. 3, and On-lot Management District B, respectively. The following number of samples collected in the Planning Area contained a nitrate / nitrogen concentration in excess of 10 mg/L:

- Sewer District No. 2: Five (5) wells, or 5 percent of wells sampled
- Sewer District No. 3: Zero of the wells
- On-lot Management District B: Nine (9) wells, or 14 percent of wells sampled

The elevated nitrate / nitrogen concentration in Sewer District No. 2 and On-lot Management District B can be an indicator of malfunctioning OLDS. It is important to note that a majority of the wells sampled in the Planning Area is surrounded by farmland; therefore, the elevated nitrate / nitrogen concentrations may be contributed by the local agricultural practices and not caused by malfunctioning OLDS.

The observation of few confirmed malfunctions and contaminated water samples in Sewer District No. 2 is most likely the result of the property owners' diligent maintenance and periodic pumping of the OLDS. In addition, five (5) of the confirmed malfunctions in Sewer District No. 2 was based on the presence of holding tanks as observed during the surveys. However, due to previous planning efforts, anticipated future growth and development, soil suitability, a number of requests from residents for public sewer service, and documented issues at the Crestview Village MHP, alternatives for providing public sewer service to Sewer District No. 2 is evaluated in Section 2.0. Based on the results of the surveys, potential Sewer Service Areas 1 and 2 in Sewer District No. 2 was delineated as shown on Map 11 in Appendix H.

The number of confirmed malfunctions in Sewer District No. 3 and On-lot Management District B suggests that there are more malfunctioning OLDS than indicated in the sanitary sewer survey. A majority of the parcels surveyed in both of these districts have OLDS that preceded current legislation, are located less than 100 feet from their private wells, soil suitability, and subsequently would not be permitted by today's standards. It is recommended that public sanitary sewers be considered to provide adequate sewage disposal in Sewer District No. 3 and On-lot

Management District B. Based on the results of the surveys, potential Sewer Service Areas 3, 4, 5, and 6 in Sewer District No. 3 and Sewer Service Area 7 in On-lot Management District B were delineated for providing public sewer service as shown on Map 14 in Appendix H. Alternatives for providing public sewer service to these areas is evaluated in Section 2.0.

1.2 Project Descriptions

The Planning Area for this Plan Update includes Sewer District No. 2 and Sewer District No. 3 in their entirety as well as a developed portion of On-Lot Management District B referred to as Londonderry Estates. Londonderry Township encompasses approximately 22.8 square miles and is bordered by Derry Township to the north, Conewago Township to the east, West Donegal Township to the southeast, Conoy Township to the south and Newberry Township, Lower Swatara Township, and the Boroughs of Royalton and Middletown to the west.

Initially, many alternatives were considered; however, several were eliminated immediately from further consideration due to being financially or technically infeasible. Seventeen (17) focused collection system alternatives and six (6) conveyance and treatment alternatives to provide public sewer service to the seven (7) potential sewer service areas in the Planning Area is presented and evaluated in the following sections to determine whether they are cost-effective, environmentally sound, and structurally feasible.

1.2.1 Collection System Alternatives

Sewer Service Area 1

1-A Serve Newberry Road in Sewer District No. 2 with a combination of gravity sewer and low pressure sewer collection system. Conveyance and treatment to be provided by Alternative 8.

1-B Serve Newberry Road in Sewer District No. 2 with a combination of gravity sewer collection system and a pump station and force main. Conveyance and treatment to be provided by Alternative 8.

1-C Serve Newberry Road in Sewer District No. 2 with a combination of gravity sewer and low pressure sewer collection system. Treatment to be provided by a decentralized packaged WWTP.

Sewer Service Area 2

2-A Serve E. Harrisburg Pike corridor in Sewer District No. 2 and Lytle Farms TND with a combination of gravity sewer collection system and a pump station and force main. Serve Crestview Village MHP with gravity sewer collection system. Conveyance and treatment to be provided by Alternative 8.

2-B Serve E. Harrisburg Pike corridor in Sewer District No. 2 and Lytle Farms TND with a combination of gravity sewer collection system and a pump station and force main. Serve Crestview Village MHP with a combination of gravity sewer collection system and a pump station and force main. Conveyance and treatment to be provided by Alternative 8.

2-C Serve E. Harrisburg Pike corridor in Sewer District No. 2 and Lytle Farms TND with a combination of gravity sewer collection system and a pump station and force main. Serve Crestview Village MHP with a low pressure sewer collection system. Conveyance and treatment to be provided by Alternative 8.

Sewer Service Area 3

3-A Serve Braeburn Road in Sewer District No. 3 with a combination of gravity sewer and low pressure sewer collection system and a pump station and force main to convey to Alternative 4.

3-B Serve Breaburn Road in Sewer District No. 3 with a low pressure sewer collection system to convey to Alternative 4.

3-C Serve Breaburn Road in Sewer District No. 3 with a low pressure sewer collection system. Treatment to be provided by a decentralized packaged WWTP.

Sewer Service Area 4

4-A Serve N. Deodate Road, Pine Manor MHP, and SHV TND in Sewer District No. 3 with a combination of gravity sewer and low pressure sewer collection system. Conveyance and treatment to be provided by Alternative 8.

4-B Serve N. Deodate Road and Pine Manor MHP in Sewer District No. 3 with a combination of gravity sewer and low pressure sewer collection system. Treatment to be provided by a decentralized packaged WWTP.

Sewer Service Area 5

5-A Serve Cedar Manor MHP in Sewer District No. 3 with gravity sewer and an existing pump station collection system. Conveyance and treatment to be provided by Alternative 8.

5-B Serve Cedar Manor MHP in Sewer District No. 3 with a combination of gravity sewer and low pressure sewer collection system. Conveyance and treatment to be provided by Alternative 8.

Sewer Service Area 6

6-A Serve S. Deodate Road in Sewer District No. 3 with a combination of gravity sewer and low pressure sewer collection system and a pump station and force main. Conveyance and treatment to be provided by Alternative 8.

6-B Serve S. Deodate Road in Sewer District No. 3 with a combination of gravity sewer and a low pressure sewer collection system. Treatment to be provided by a decentralized packaged WWTP.

Sewer Service Area 7

7-A Serve Londonderry Estates in On-lot Management District B with a combination of gravity sewer and low pressure sewer collection system and a pump station and force main to convey to existing Hills of Waterford collection system in Conewago Township, served by DTMA. Treatment to be provided at the DTMA Clearwater Road WWTP.

7-B Serve Londonderry Estates in On-lot Management District B with a low pressure sewer collection system to convey to existing Hills of Waterford collection system in Conewago Township, served by DTMA. Treatment to be provided at the DTMA Clearwater Road WWTP.

1.2.2 Conveyance and Treatment Alternatives

The Township is evaluating six (6) scenarios for conveyance of flows from the potential sewer service areas in the Planning Area to the DTMA sanitary sewer system, MBA sanitary sewer system, new regionalized WWTP in Sewer District No. 2, and/or decentralized packaged WWTPs. The following alternatives were considered:

8-A Conveyance of all flow collected in Sewer District No. 2 and Sewer District No. 3 to the DTMA SW WWTP for treatment (Flow Scenario A).

8-B Conveyance of all flow collected in Sewer District No. 2 and Sewer District No. 3 to the MBA WWTP for treatment (Flow Scenario B).

8-C Conveyance of all flow collected in Sewer District No. 2 to the MBA WWTP for treatment. Conveyance of all flow collected in Sewer District No. 3 to the DTMA SW WWTP for treatment (Flow Scenario C).

8-D Conveyance of all flow collected in Sewer District No. 2 and Sewer District No. 3 to a new regionalized WWTP to be located in Sewer District No. 2 (Flow Scenario D).

8-E Split of all wastewater flow collected from Sewer District No. 2 and Sewer District No. 3 and conveyed to MBA WWTP or decentralized packaged WWTPs for treatment (Flow Scenario E).

8-F Conveyance of all flow collected in Londonderry Estates (Sewer Service Area 7) in On-lot Management District B to the DTMA Clearwater Road WWTP for treatment (Flow Scenario F).

There is sufficient documentation available to justify the provision of public sewer service to the Planning Area. As detailed in Chapter 5 of this Plan Update, the most cost-effective and environmentally sound collection, conveyance, and treatment system structural alternative for Sewer District No. 2 and Sewer District No. 3 is conveyance and treatment system Alternative 8B and collection system Alternatives 1A, 2C, 3B, 4A, and 5A (Project B). This alternative provides public sewers to portions of Sewer District No. 2 and Sewer District No. 3 with conveyance of all wastewater to the MBA sanitary sewer system and ultimately conveyed to the MBA WWTP for treatment. This alternative is environmentally sound, resulting in the abandonment of malfunctioning OLDS, abandonment of three (3) MHP packaged WWTPs identified by DEP as needs areas, is consistent with all local, regional, and state planning objectives.

The implementation of the structural alternatives serving Sewer District No. 2 and Sewer District No. 3 shall be completed in accordance with the projected implementation schedule, assuming adequate funding is secured, and will require an administrative organization that has the legal authority to incur indebtedness on behalf of the project, can guide the project to completion, and provide the necessary operation and maintenance to the project. If the Township deems it beneficial, an authority could be formed to administer, finance, and operate the municipal sewage facilities. As shown in the funding analysis prepared in Chapter 6 of this Plan Update, the provision of public sewer service to Sewer District No. 2 and Sewer District No. 3 is not economically feasible as a stand-alone project (Project B); however, it becomes more feasible with developer contributions including approximately additional 450 EDUs to be served, and with favorable funding. Without an intermunicipal agreement between the Township and MBA, development agreements, and favorable funding, Alternative 8B will not be implemented.

The implementation of the structural alternative (Alternative 7B) serving the Londonderry Estates development in On-lot Management District B shall be completed in accordance with the projected implementation schedule assuming that a favorable intermunicipal agreement between the Township and DTMA can be negotiated and funding is secured. Without a favorable inter-municipal agreement and favorable funding this alternative is not feasible and will not be implemented.

The sanitary sewage surveys conducted as part of this Plan Update indicated the existence of malfunctioning OLDS throughout the Planning Area; however, the greatest areas of concern is Londonderry Estates (28% confirmed OLDS malfunctions) and Sewer District No. 3 (22% confirmed OLDS malfunctions) due to not only malfunctioning OLDS, but also by small lot sizes located in dense residential areas. Structural alternatives for the provision of public sewer service to the Planning Area were presented in Chapter 5 of this Plan Update.

As discussed in Chapter 5 of this Plan Update, prior to implementation of the structural alternatives to provide improved sewage facilities to Sewer District No. 2 and Sewer District No. 3, it is recommended that the Township complete and analyze the results of the initial pumping and inspection cycle for these sewer districts as set forth in Section 115 of the On-lot Management Ordinance. Based upon the results, the Township will re-evaluate the need for improved sewage facilities in these areas and implement structural alternatives as necessary.

The Township shall continue to enforce its existing On-lot Management Ordinance as a method to prevent malfunction of OLDS and degradation of drinking water supplies in the remaining unsewered portions of the Township

The estimated project cost of the recommended structural alternative for Londonderry Estates (Alternative 7B) is approximately $1,510,704. The estimated project cost of the recommended collection, conveyance, and treatment system structural alternative to serve Sewer District No. 2 and Sewer District No. 3 (Alternative 8B) is $24,951,096. To implement these structural alternatives while maintaining a reasonable user rate, a financing plan consisting of the payment of tapping fees from new connections, grant money, and a low interest (PENNVEST, R.U.S., etc.) loan or any combination is necessary. Prior to preliminary design a detailed financial and funding analysis should be undertaken that examines all funding and financing options available. Funding

scenarios studied should include (1) the use of grant monies to offset the capital costs of the project; (2) the use of developer capital contributions to offset the capital costs of the project; (3) the ability to combine debt service and operation and maintenance costs into a reasonable rate structure, and (4) combinations of funding options.

2.0 SUMMARY OF REASONABLE ALTERNATIVES CONSIDERED

Structural alternatives for providing public sewer service to the Planning Area are presented below and are evaluated on the basis of cost-effectiveness, environmental soundness, and structural feasibility. Cost estimates are presented for comparative purposes when applicable and are detailed in the tables attached to this report. Present worth, annual debt service, annual O&M and total annual cost per EDU for each alternative are also presented in the tables attached to this report. Annual debt service is estimated based on a 30-year, 1.0% term as provided by PENNVEST for Dauphin County, a 40-year, 4.0% term as provided by USDA, and a 25-year, 5.0% term as provided by tax exempt financing. Actual debt service will depend on the financing scheme chosen and the actual finances of the project when completed. Present worth is estimated based on a 20-year, 3.50% term. Maps of each of the structural alternatives which identified proposed facilities are presented in Appendix G of this Plan update.

2.1 No Action Alternative

The No Action structural alternative for the Planning Area represents the status quo. It proposes the continued repair and construction of on-lot facilities in compliance with Chapter 72 Standards and under the guidance and permitting of the Township's SEO. In some cases these systems will not be feasible based on the site limitations, including soil, slope, and space restrictions. In these instances Best Technical Guidance (BTG) permits will be the only option and should be installed under close scrutiny by the SEO. These BTG repairs do not assure the proper function of an on-lot system, they represent the best solution available for a limited site. As such, systems with BTG repairs are still considered to be "confirmed malfunctions" in the sanitary survey procedure. Costs for repair and replacement of systems will vary greatly from property to property; therefore, a realistic cost estimate for comparison purposes could not be prepared for this alternative.

The impacts of no action to address existing, short-term, and long-term sewage facilities include several considerations. Most of the discussion within this Plan Update has focused on the environmental and public health and safety concerns associated with the functioning of existing on-lot sewage systems in the Township. The obvious impacts of no action to improve any adverse conditions encountered include degradation of public water supplies, disease, loss of recreational use of waterways, environmental hazards, such as fish kills, and other tragedies. Economically, the no action alternative could restrict or prohibit growth to the Township's sewer districts. Without facilities to accommodate potential growth, developers will be left to build their own facilities or locate elsewhere. Due to the potential negative impacts of the no action alternative, alternatives to provide improved sewage facilities to Sewer District No. 2, Sewer District No. 3, and On-lot Management District B have been identified and are presented below.

2.2 Collection System Structural Alternatives for Planning Area

Alternatives to provide public sewer service to the Planning Area is provided in the sections below. Seventeen (17) focused collection system alternatives to provide public sewer service to the seven (7) potential sewer service areas in the Planning Area defined above are presented below and are evaluated on the basis of cost-effectiveness, environmental soundness, and structural feasibility. The seven (7) potential sewer service areas are shown on Map 14 in Appendix H. Maps of each of the structural alternatives which identified proposed facilities are presented in Appendix G. A complete breakdown of the collection system alternatives cost estimates is presented in Appendix L.

Chapter 6 of this Plan Update provides an analysis of the funding methods available to finance the recommend alternatives evaluated in this section. It is important to note that the preparation of detailed funding scenarios, analyses of financial service charges, cash flow analyses based on anticipated revenues, a user service charge system, administrative costs, and personnel costs would require additional information beyond the scope of this Plan Update. Please refer to Chapter 6 of this Plan Update for the funding analysis.

2.2.1 Collection System Alternatives - Sewer District No. 2

As detailed throughout this Plan Update, alternatives for the Sewer District No. 2 have been evaluated due to previous planning efforts, anticipated future growth and development, soil suitability, a number of requests from residents for public sewer service, as well as documented issues at the Crestview Village MHP. Therefore, alternatives for providing public sewer service were evaluated.

Sewer Service Area 1

Alternative 1A includes the collection of wastewater flows from Sewer Service Area 1 via a combination of a gravity sewer and a low pressure sewer system collection system with connection to the proposed conveyance system (Refer to Alternatives 8A – 8E).

Alternative 1B modifies Alternative 1A by replacing a portion of the low pressure sewers with a pump station and associated force main.

Alternative 1C includes the collection of wastewater flows from Sewer Service Area 1 via a combination of a gravity sewer and a low pressure sewer collection system to a proposed decentralized packaged WWTP to serve Sewer Service Area 1.

The decentralized biological nutrient reduction (BNR) packaged WWTP is a pre-engineered type system capable of meeting stringent discharge requirements, including suspended solids, biochemical oxygen demand (BOD), nitrate-nitrogen, and total nitrogen and total phosphorus limits. The system generally includes one (1) flow equalization tank with a bar screen, one (1) anoxic tank, four (4) aeration tanks, aeration equipment, one (1) clarifier tank, one (1) sludge holding tank, a tertiary filter, and instrumentation and controls. The raw wastewater influent enters the treatment facility by passing through the bar screen to the equalization tank. Nutrient removal occurs in the aeration and anoxic tanks by recirculating the nitrate-rich contents in the

aeration tank to the anoxic tank for denitrification. Additionally, a phosphorus precipitation chemical is fed into the system to enhance phosphorus removal, as necessary. After aeration, the wastewater flows to the clarifier tank to allow solids to settle. Solids are either pumped to the head of the plant or wasted to the sludge holding tank. Treated wastewater is then sent through the tertiary filter prior to discharging to the receiving stream.

Sewer Service Area 2
Alternative 2A includes the collection of wastewater flows from Sewer Service Area 2 via a gravity sewer collection system and a pump station and associated force main with connection to the proposed conveyance system (Refer to Alternatives 8A – 8E).

Alternative 2B modifies 2A by replacing a portion of the gravity sewer in the Crestview Village MHP with an additional pump station and associated force main.

Alternative 2C modifies 2A by replacing the gravity sewers in the Crestview Village MHP with a low pressure sewer to serve the Crestview Village MHP.

2.2.2 Collection System Alternatives - Sewer District No. 3

As detailed throughout this Plan Update, alternatives for the Sewer District No. 3 have been evaluated due to previous planning efforts, number of confirmed OLDS malfunctions, soil suitability, anticipated future growth and development, as well as documented issues at the Cedar Manor MHP. Therefore, alternatives for providing public sewer service were evaluated.

Sewer Service Area 3
Alternative 3A includes the collection of wastewater flows from the Sewer Service Area 3 via a combination of a gravity sewer and low pressure sewer collection system, and a pump station and associated force main with connection to the proposed conveyance system (Refer to Alternatives 8A – 8E).

Alternative 3B modifies 3A by replacing the combination of a gravity sewer and low pressure sewer collection system, and a pump station and associated force main with a low pressure sewer collection system.

Alternative 3C includes the collection of wastewater flows from Sewer Service Area 3 via a low pressure sewer collection system to a proposed decentralized packaged WWTP to serve Sewer Service Area 3.

Sewer Service Area 4
Alternative 4A includes the collection of wastewater flows from the Sewer Service Area 4 and Sewer Service Area 3 via a combination of a gravity sewer and low pressure sewer collection system with connection to the proposed conveyance system (Refer to Alternatives 8A – 8E).

Alternative 4B includes the collection of wastewater flows from Sewer Service Area 4 and Sewer Service Area 3 via a low pressure sewer collection system to a proposed decentralized packaged WWTP to serve Sewer Service Area 4. This alternative does not serve the SHV TND.

Sewer Service Area 5
Alternative 5A includes the collection of wastewater flows from the Sewer Service Area 5 via a gravity sewer collection system and an existing pump station and associated force main with connection to the proposed conveyance system (Refer to Alternatives 8A – 8D).

Alternative 5B modifies 5A by replacing a portion of the gravity sewers and the existing pump station and associated force main with a low pressure sewer collection system.

Sewer Service Area 6
Alternative 6A includes the collection of wastewater flows from the Sewer Service Area 6 via a combination of a gravity sewer and low pressure sewer collection system, and a pump station and associated force main with connection to the proposed conveyance system (Refer to Alternatives 8A – 8E).

Alternative 6B includes the collection of wastewater flows from Sewer Service Area 6 via a combination of gravity sewer and a low pressure sewer collection system to a proposed decentralized packaged WWTP to serve Sewer Service Area 6.

Based upon the results of the sanitary sewage surveys and well water sampling conducted as part of this Plan Update in Sewer Service Area 6, combined with the soil suitability and larger lot sizes in the area, Sewer Service Area 6 does not require immediate sewage facilities upgrades. Four (4) of the thirty (30) sanitary sewer surveys, or 13 percent, conducted in this area have confirmed OLDS malfunctions. It is recommended that the Township's SEO continue to direct the repair of malfunctioning OLDS in accordance with DEP rules and regulations and the Township continue to implement the On-lot Management Ordinance to reduce the number of OLDS malfunctions observed in this area. Therefore, the alternatives evaluated in this Plan Update for this area are to be considered as needed for correcting malfunctioning OLDS. The Township should re-evaluate the condition of the OLDS in Sewer Service Area 6 in five (5) to ten (10) years from Plan Approval to determine if public sewer alternatives should be implemented.

2.2.3 Collection System Alternatives - On-lot Management District B
As detailed throughout this Plan Update, alternatives for Londonderry Estates in the On-lot Management District B have been evaluated due to highest number of confirmed OLDS malfunctions in Planning Area, soil suitability, as well as a number of requests from residents for public sewer service. Therefore, alternatives for providing public sewer service were evaluated.

Sewer Service Area 7
Alternative 7A includes the collection of wastewater flows from the Sewer Service Area 7 via a combination of a gravity sewer and low pressure sewer collection system, and a pump station and associated force main with connection to the existing Hills of Waterford collection system in Conewago Township served by DTMA.

Alternative 7B modifies 7A by replacing the combination of a gravity sewer, low pressure sewer, and a pump station and associated force main system with a low pressure sewer collection system.

2.2.4 Comparative Costs - Collection System Structural Alternatives

Using the assumptions outlined above, several cost opinions were prepared to use as a basis to compare the cost effectiveness of each collection system structural alternative. Where applicable, a direct cost comparison of alternatives has been provided. For the purposes of this comparison, estimated Present Worth per EDU are based on total construction costs (with 15% contingency) and annual O&M costs for each collection system alternative. It should be noted that the cost estimates prepared in this Plan Update are conceptual level cost estimates appropriate for planning level detail and should not be considered as final costs for financing purposes.

Table 2-1 presents the summary of the comparative costs for each of the collection system structural alternatives. A detailed cost breakdown for each structural alternative is provided in Appendix L.

The following assumptions were used to develop the cost estimates presented in this Plan Update:

1. Depth of sewer is 10 - 12-feet.
2. Depth of manholes are 11-feet.
3. Manhole is required every 250-feet.
4. Force main cleanout required every 2,000-feet.
5. LPS cleanout required every 500-feet.
6. Service lateral connection includes 20-feet of 6" PVC pipe, wye, and cleanout per connection.
7. Paving restoration based on 1.5" (9.5mm) wearing course and 3" base course (25mm).
8. Length of low pressure sewer lateral connections is 25' per connection.
9. Pump and motor size evaluated for planning purposes only.
10. Pump station estimates include control building, acquisition of land, or emergency generator.

It is important to note that Alternatives 1C, 3C, 4B, and 6B are associated with connection to the respective decentralized WWTP alternative (Alternative 8E) as described in the next section.

As previously noted, the selected Alternative 6A evaluated as part of this Plan Update to provide public sewer service to S. Deodate Road (potential Sewer Service Area 6) shall be considered as needed for correcting malfunctioning OLDS. Therefore, the collection system costs associated with Alternative 6A are only considered in the full buildout of the Planning Area. The continued implementation of the Township's On-lot Management Ordinance is expected to reduce the number of OLDS malfunctions observed in this area. The Township should re-evaluate the condition of the OLDS in Sewer Service Area 6 in five (5) to ten (10) years from Plan Approval to determine if public sewer alternatives should be implemented.

The existing collection and conveyance systems located in Crestview Village MHP, Cedar Manor MHP, and Pine Manor MHP are assumed to be in need of full replacement and therefore the cost estimates prepared as part of this Plan Update include new sewer facilities for these MHPs.

It is recommended that the existing collection and conveyance systems of the three (3) MHPs be evaluated during design to determine if these facilities are in need of repair or replacement.

Table 2-1 Collection System Alternatives – Estimated Present Worth per EDU

Potential Sewer Service Area	Alternative	Estimated Construction Cost (w/15% Contingency)	Estimated Annual O&M Cost	Present Worth of Annual O&M	Total Present Worth	Number of EDUs	Estimated Present Worth Per EDU
1	Alternative 1A	$1,308,800	$6,100	$86,696	$1,395,496	41	$34,036
	Alternative 1B	$1,708,900	$8,100	$115,120	$1,824,020	41	$44,488
	Alternative 1C	$1,111,800	$5,700	$81,011	$1,192,811	41	$29,093
2	Alternative 2A	$6,657,500	$37,500	$532,965	$7,190,465	209	$34,404
	Alternative 2B	$6,779,500	$36,800	$523,016	$7,302,516	209	$34,940
	Alternative 2C	$6,474,000	$42,600	$605,448	$7,079,448	209	$33,873
3	Alternative 3A	$2,377,400	$12,600	$179,076	$2,556,476	49	$52,173
	Alternative 3B	$1,484,900	$9,700	$137,860	$1,622,760	49	$33,118
	Alternative 3C	$1,387,800	$8,900	$126,490	$1,514,290	49	$30,904
4	Alternative 4A	$2,920,800	$11,500	$163,443	$3,084,243	139	$22,189
	Alternative 4B	$2,904,300	$11,300	$160,600	$3,064,900	139	$22,050
5	Alternative 5A	$3,768,900	$22,700	$322,622	$4,091,522	316	$12,948
	Alternative 5B	$4,221,900	$16,100	$228,820	$4,450,720	316	$14,085
6	Alternative 6A	$3,354,900	$13,800	$196,131	$3,551,031	72	$49,320
	Alternative 6B	$2,062,300	$8,300	$117,963	$2,180,263	72	$30,281
7	Alternative 7A	$1,760,400	$11,500	$163,443	$1,923,843	46	$41,823
	Alternative 7B	$1,236,900	$7,600	$108,014	$1,344,914	46	$29,237

Notes:
1. Present Worth Calculations Assume 3.50% for 20 Years
2. Annual O&M Estimated based on typical common usage
3. Alternatives 1C, 3C, 4B, and 6B are associated with connection to the respective Decentralized WWTP Treatment Alternative (Scenario E)

2.3 Conveyance and Treatment System Structural Alternatives for Planning Area

As identified in Chapter 4 of this Plan Update, the Township is evaluating six (6) scenarios for conveyance of flows from the seven (7) potential sewer service areas in the Planning Area. The flow scenarios include intermunicipal wastewater treatment alternatives for conveyance to the DTMA SW WWTP and the MBA WWTP, a new Township regionalized WWTP located in Sewer District No. 2, and/or decentralized packaged WWTPs located in Sewer District No. 2 and Sewer District No. 3.

The alternatives are evaluated utilizing present worth analysis which includes a comparison of the respective WWTP capacity and tapping fees, nutrient credit purchasing/offset, estimated O&M costs and user fees for each alternative considered. It should be noted that the assumptions and cost estimates used to prepare the present worth analyses are preliminary in

nature as intermunicipal agreements between the Township, DTMA, and MBA providing for the conveyance of Township flows to either facility have not been resolved to date.

Maps of each of the conveyance and treatment alternatives are presented in Appendix G.

A. *Alternative 8A – All Flow to DTMA SW WWTP*

Alternative 8A consists of conveyance of all flow collected in Sewer District No. 2 and Sewer District No. 3 to the DTMA SW WWTP for treatment (Flow Scenario A). In this alternative, wastewater flows collected from the respective sewer service areas are unable to be conveyed to DTMA SW WWTP utilizing gravity flow. Four (4) pump stations and associated force mains will need to be constructed to convey wastewater flows from the Planning Area to DTMA SW WWTP. In addition, the main gravity sewer influent to the DTMA SW WWTP will need to be upsized to accommodate the future build-out flows.

As discussed in Chapter 4 of this Plan Update, the DTMA SW WWTP has available capacity to accommodate the initial flows from existing development for Alternative 8A. However, an expansion of the DTMA SW WWTP will be required to handle future buildout flows. An evaluation of the estimated costs to hydraulically upgrade the plant with nutrient credit purchasing compared to the estimated costs for a biological nutrient reduction (BNR) upgrade to the DTMA SW WWTP is attached to this report. Refer to Appendix M for a complete summary of the hydraulic upgrade versus BNR upgrade for the DTMA SW WWTP analyses.

The low cost option for Alternative 8A for expansion of the existing DTMA SW WWTP to accommodate the buildout flows in the Planning Area is a BNR upgrade to the plant. Therefore, these costs were utilized in the evaluation of the most cost effective conveyance and treatment alternative in the next section.

B. *Alternative 8B – All Flow to MBA WWTP*

Alternative 8B consists of conveyance of all flow collected in Sewer District No. 2 and Sewer District No. 3 to the MBA WWTP for treatment (Flow Scenario B). In this alternative, wastewater flows collected from the respective sewer service areas are unable to be conveyed to MBA WWTP utilizing gravity flow. Four (4) pump stations and associated force mains will need to be constructed to convey wastewater flows from the Planning Area to MBA WWTP which includes a crossing of the Swatara Creek.

As discussed in Chapter 4 of this Plan Update, the MBA WWTP has available capacity to accommodate the initial flows from existing development for Alternative 8B. However, an expansion of the MBA WWTP is anticipated at future buildout flows. An evaluation of the estimated costs to hydraulically upgrade the plant with nutrient credit purchasing compared to the estimated costs for a biological nutrient reduction (BNR) upgrade to the MBA WWTP is attached to this report. Refer to Appendix M for a complete summary of the hydraulic upgrade versus BNR upgrade for the MBA WWTP analyses.

The low cost option for Alternative 8B for expansion of the existing MBA WWTP to accommodate the buildout flows in the Planning Area is a hydraulic capacity upgrade to the plant with the purchasing of nutrient credits. Therefore, these costs were utilized in the evaluation of the most cost effective conveyance and treatment alternative in the next section.

C. *Alternative 8C – Split of Flow to DTMA SW WWTP and MBA WWTP*

Alternative 8C consists of conveyance of all flow collected in Sewer District No. 2 to the MBA WWTP for treatment and conveyance of all flow collected in Sewer District No. 3 to the DTMA SW WWTP for treatment (Flow Scenario C). In this alternative, wastewater flows collected from the respective sewer service areas are unable to be conveyed to MBA WWTP or the DTMA SW WWTP utilizing gravity flow. Four (4) pump stations and associated force mains will need to be constructed to convey wastewater flows from the Planning Area to the MBA WWTP and the DTMA SW WWTP.

As discussed in Chapter 4 of this Plan Update, the MBA WWTP and the DTMA SW WWTP has available capacity to accommodate the initial flows from existing development for Alternative 8C. However, an expansion of both the MBA WWTP and the DTMA SW WWTP is required to handle future buildout flows. An evaluation of the estimated costs to hydraulically upgrade the plant with nutrient credit purchasing compared to the estimated costs for a biological nutrient reduction (BNR) upgrade for both DTMA SW WWTP and MBA WWTP is attached to this report. Refer to Appendix M for a complete summary of the hydraulic upgrade versus BNR upgrade for the DTMA SW WWTP and the MBA WWTP analyses.

It remains the low cost option for Alternative 8C to include a BNR upgrade for DTMA SW WWTP and a hydraulic capacity upgrade with the purchase of nutrient credits for the MBA WWTP, respectfully. Therefore, these costs were utilized in the evaluation of the most cost effective conveyance and treatment alternative in the next section.

D. *Alternative 8D – All Flow to Township Regionalized WWTP*

Alternative 8D consists of conveyance of all flow collected in Sewer District No. 2 and Sewer District No. 3 to the proposed Township regionalized WWTP (Flow Scenario D). In this alternative, wastewater flows collected from the respective sewer service areas are unable to be conveyed to the Township regionalized WWTP utilizing gravity flow. Three (3) pump stations and associated force mains will need to be constructed to convey wastewater flows from the Planning Area to the proposed Township regionalized WWTP which is proposed to be located in the Lytle Farms TND in Sewer District No. 2, which is the lowest lying area in Sewer Service Are 2 in Sewer District No. 2.

As discussed in Chapter 4 of this Plan Update, the proposed Township regionalized WWTP will have available capacity to serve the initial flows from the existing developments and a portion of the proposed development (build-out). The Township regionalized WWTP would require an upgrade to accommodate the full future build-out of Sewer District No. 2 and Sewer District No. 3. For the build-out of Alternative 8D, the estimated costs to hydraulically upgrade the Township regionalized WWTP and offset nutrient loads through nutrient credit purchasing is attached to this report.

E. *Alternative 8E – Split of Flow to MBA WWTP and Decentralized WWTPs*

Alternative 8E consists of conveyance of all flow collected in Sewer Service Area 2, including Lytle Farms TND and Crestview Village MHP, in Sewer District No. 2 to the MBA WWTP for treatment. Conveyance of all flow collected in potential Sewer Service Areas 1, 3, 4, and 6 to their respective decentralized WWTP's (Flow Scenario E). In this alternative, wastewater flows collected from potential Sewer Service Area 2 and Lytle Farm TND will convey by gravity to a pump station located in Lytle Farms TND. This pump station and associated force will need to be

constructed to convey wastewater flows to MBA WWTP which includes a crossing of the Swatara Creek.

As presented in Chapter 4 of this Plan Update, four (4) decentralized WWTPs will be constructed to accommodate the flows contributed from each of the respective sewer service areas. Based on Preliminary Effluent Limitations (PELs) received from DEP in correspondence dated May 14, 2014 (provided in Appendix E), the required nutrient credit purchasing to offset nutrient loading from each of the decentralized WWTPs was evaluated and the costs is attached to this report. Refer to Appendix M for a complete summary of the nutrient credit purchasing analyses completed as part of this Plan Update.

The MBA WWTP has available capacity to accommodate the initial flows from the existing developments and a portion of the future build-out of flows contributed from Lytle Farms TND. MBA WWTP would require an upgrade to accommodate the full future build-out of flows contributed from the Lytle Farms TND. Refer to Appendix M for a complete summary of the hydraulic upgrade versus BNR upgrade analyses for the MBA WWTP.

For the build-out of Scenario 8E, an evaluation on the estimated costs to hydraulically upgrade the plant and offset nutrient loads through nutrient credit purchasing is compared to the estimated costs for a biological nutrient reduction (BNR) upgrade to the MBA WWTP, is attached to this report. The low cost option for Alternative 8E for expansion of the existing MBA WWTP to accommodate the buildout flows in the Planning Area is a hydraulic capacity upgrade and offset nutrient loads through nutrient credit purchasing to the plant. Therefore, these costs were utilized in the evaluation of the most cost effective conveyance and treatment alternative in the next section.

F. *Alternative 8F – All Flow From Londonderry Estates to DTMA*

Alternative 8F consists of the conveyance of all flow collected Londonderry Estates in On-lot Management District B to the DTMA sewer facilities adjacent to Hills of Waterford development in Conewago Township. According to DTMA, the existing sewer facilities adjacent to Hills of Waterford have ample capacity to serve Londonderry Estates.

2.3.1 Comparative Costs – Collection, Conveyance, and Treatment System Structural Alternatives

Using the assumptions outlined above, an estimated present worth per EDU analysis was prepared to use as a basis to compare the cost effectiveness of each collection, conveyance, and treatment system structural alternative. Where applicable, a direct cost comparison of alternatives has been provided. For the purposes of this comparison, the estimated project costs and annual O&M costs is evaluated for each alternative. It should be noted that the cost estimates prepared in this Plan Update are conceptual level cost estimates appropriate for planning level detail and should not be considered as final costs for financing purposes.

Tables 5-4 and 5-5 attached to this report present the summary of the comparative costs for each of the collection, conveyance, and treatment system structural alternatives for initial flows and buildout flows, respectfully, in the Planning Area. The lowest cost collection system structural alternatives utilized for Flow Scenarios A through D is Alternatives 1A, 2C, 3B, 4A, 5A, and 6A. The

lowest cost collection system structural alternatives utilized for Flow Scenario E is Alternatives 1C, 3C, 4B, and 6B. The lowest cost collection system structural alternative utilized for Flow Scenario F is Alternative 7B.

Based on the present worth per EDU analysis of the collection, conveyance, and treatment alternatives presented in Tables 5-4 and 5-5, conveyance and treatment Alternative 8B combined with the collection alternatives identified above is the lowest present worth structural alternative for serving the Sewer District No. 2 and Sewer District No. 3. Additionally, Alternative 7B provides the lowest present worth structural alternative for serving On-lot Management District B. Therefore, funding methods to finance conveyance and treatment Alternative 8B, collection system Alternatives 1A, 2C, 3B, 4A, 5A, 6A, and 7B is further evaluated in Chapter 6 of this Plan Update.

2.4 Funding Analysis for the Planning Area

DEP guidelines for the preparation of Act 537 Plans specify that an analysis of funding methods available to finance the proposed alternatives must be undertaken for those facilities needed within five (5) years from the date of Plan approval. The public sewer facilities serving Sewer District No. 2, Sewer District No. 3, and Londonderry Estates in On-lot Management District B are proposed within the next five (5) years.

Initial design, WWTP capacity purchase, and construction costs represent the most significant investment the Township will be required to make in providing public sewer service to the Planning Area. The annual operation and maintenance costs of the facilities that are proposed to be constructed to serve these areas must also be considered when evaluating the economic feasibility of the proposed alternatives. The largest portion of the annual operating budget will be debt service from the initial design, WWTP capacity purchase, and construction.

The most significant challenge for a viable public sewer project is identification of a financing plan that is affordable to residents and businesses affected by the project. The revenue needed to plan and construct a public sewerage project can be separated into two (2) general categories. The first category, referred to as up-front revenues, is the total revenue that can be reasonably collected in the initial stages of the project. Up-front revenues typically consist of reserved local funds, government grants, developer contributions and capital charges fees. Up-front revenues are used to offset the costs of planning, designing, and constructing the project. In most cases, these revenues are insufficient to cover the total costs of the project and additional revenue is needed. The second category of revenue is financing, which consists of the additional revenue needed to pay for the remainder of the project. Several options are available for financing, including government grants or loans, private loans, or bond issues.

2.4.1 Sources of Up-Front Revenue

It is critical for the Township to obtain as much up-front revenue as possible to construct the recommended structural alternatives serving the Sewer District No. 2 and Sewer District No. 3 (Alternative 8B) and Londonderry Estates (Alternative 7B) in order to reduce the total amount of the project that must be financed. In the past, there were several federal programs that provided grants for these types of projects. Over the years, these programs have been

gradually eliminated as the federal government has transferred most of the financial responsibility for these programs to the state and local level. Consequently, competition for these funds is keen and the majority of grant money is generally funneled to the most economically distressed communities. As a result, most up-front revenue is now generated locally through connection and tapping fees as well as contributions by land developers. A summary of the various sources of up-front revenue the Township should consider in the construction of public sewers serving Sewer District No. 2, Sewer District No. 3, and Londonderry Estates in On-lot Management District B is provided as follows:

A. *Developer Contributions*

Contributions by land developers are becoming a relatively common source for up-front revenue. The funds provided by the developer are directly related to the benefits that the development will derive from the use of the public facilities. In some cases, the developer may actually construct the necessary improvements at his expense and then transfer ownership of the improvements to the local municipality. In other cases, in lieu of actually constructing the improvements, the developer may make a cash payment to the municipality to offset a portion of the costs for the improvements. It is anticipated that the total funds contributed by developers, as identified in this Plan Update, is approximately $2.2 million for public sewer facilities serving Sewer District No. 2 and Sewer District No. 3. Developer contributions are not expected to be likely sources of up-front revenue for public sewer facilities serving Londonderry Estates in On-lot Management District B.

B. *Capital Charges Fees*

Capital charges fees or tapping fees are an equitable means by which a system can assess a portion of the capital costs of constructing the new facilities to all users of the proposed system. The imposition of these fees is based upon the concept that all users of the system derive a benefit from this use, and that the costs of this benefit should be allocated among all users without prejudice or penalty. Tapping fees are usually based on a measure of the total flow contributed by the service connection or lateral. For the purposes of this Plan Update, all funding options assume a tapping fee of $4,000 per EDU.

C. *Grants*

In addition to the up-front revenues identified above, the Township will further evaluate eligibility and consider submitting applications to the following grant programs:

- PA Department of Community and Economic Development (CDBG) State Competitive Grant
- Dauphin County CDBG Grant
- Infrastructure Development Program/Pennsylvania First
- Economic Development Administration (EDA) - Public Works and Economic Development Program
- Pennsylvania Economic Development Financing Authority

2.4.2 Alternatives Considered for Financing

Based upon the Present Worth per EDU analysis conducted in Chapter 5, it is more economical to serve the planning Area through implementation of Alternatives 7B and 8B; however, it is assumed that end user economics will be greatly influenced by project financing, especially grant dollars which are further discussed in this section of the Plan Update. For the purpose of

the Funding Analysis, the recommended alternatives have been divided into the following three (3) projects:

Project A – Implementation of Alternative 7B which includes the installation of collection and conveyance facilities to convey flow from Londonderry Estates to DTMA Clearwater Road WWTP for treatment. Estimated total project cost is $1,510,704, with a total estimated O&M cost of $49,676 to serve 46 existing EDUs.

Project B – Implementation of conveyance and treatment system Alternative 8B and collection system Alternatives 1A, 2C, 3B, 4A, and 5A which includes the installation of collection and conveyance facilities to convey flow from Sewer District No. 2 and Sewer District No. 3 to MBA WWTP for treatment. Estimated total project cost is $24,951,096, with an estimated O&M cost of $581,452 to serve 814 existing EDUs.

Project C – This project will only occur if Project B will not be implemented and provides sewer service to Braeburn Subdivision, Pine Manor MHP, and N. Deodate Road with treatment at their respective decentralized WWTP (component of Alternative 8E), since these areas are considered an immediate needs area in Sewer District No. 3. The estimated total project cost for Project C is $6,814,420, with an estimated O&M cost of $96,643 to serve 188 existing EDUs.

Financing for each scenario was independently reviewed based upon the financing alternative outlined below.

2.4.3 Available Financing Alternatives

As identified by the capital cost and present worth analysis, sewage facility projects of this magnitude discussed in this Plan Update can be very costly. In an effort to help offset the costs of such facilities, the following funding options have been considered for financing the recommended alternatives:

A. *Pennsylvania Infrastructure Investment Authority (PENNVEST)*

(Shown in Tables 6-1 through 6-4 as Financing Option A)

PENNVEST is a popular funding agency for water and wastewater projects in the Commonwealth due to the low interest loans and potential grant/loan packages awarded by the agency. Applications are received quarterly and scored by PENNVEST, DEP and DCED based upon specific criteria including environmental benefits and economic development potential. The project's overall priority score determines the order in which a project is funded, compared to other applications received. PENNVEST aims to fund projects down to their affordable level which is determined through a calculation combining the median household income and the DCED Early Warning score. Advantages of applying for PENNVEST funds include:

a) The availability of low interest rate loans (Dauphin County CAP interest rates are currently 1.439% for Years 1-5 and 2.067% for Years 6-20).

b) The potential to receive grant funds. PENNVEST may reduce interest rates as low as 1% and extend the term of the loan to 30 years to lower user rates towards the affordable level. If available, grant funds may be applied.

Over the past year, PENNVEST has funded all eligible applications received, however due to the high need many applicants have for grant funds, as compared to the grant funds PENNVEST has available, the agency generally needs to prorate grant contributions meaning that applicants may not receive enough grant funds to stay within their "affordable" level. Recently, PENNVEST has recommended for financing strategies to assume grant contributions of $2 million or less.

PENNVEST will award up to $11 million of funding per application for a project serving a single municipality and up to $20 million for projects serving multiple municipalities. Projects serving a single municipality which need more than $11 million in financing may be able to submit applications to PENNVEST in back-to-back cycles to receive additional PENNVEST funds.

Over the next few months, PENNVEST plans to commence use of its Letter of Credit Program. This program will provide eligible applicants with a Letter of Credit from PENNVEST which can be used by applicants to sell municipal bonds under PENNVESTs AAA credit rating. It is anticipated that PENNVEST will offer this option to municipalities and authorities which 1) can take on addition debt at market rates without exceeding their affordable limit, or 2) need more funding than can be awarded by PENNVEST through a single application cycle. For the case of this Londonderry Township Act 537 Plan, the PENNVEST option assumes that for project costs greater than $11 million, the Township would submit and receive two (2) PENNVEST awards.

B. ***USDA Rural Development - Rural Utilities Service (RUS)***
(Shown in Tables 6-1 through 6-4 as Financing Option B)
USDA provides loan and grant funds for infrastructure projects to municipalities and municipal authorities with a population of 10,000 or less. Loans consist of a 40 year term and varying interest rates dependent upon income and unemployment levels. Current interest rates are Market - 4.000% (for communities with median household incomes (MHI) greater than $53,608), Median – 3.250% and up to 45% grant (for communities with MHI's between $42,886 and $53,608), and Poverty – 2.375% and up to 75% grant (for communities with MHI's less than $42,886.) The Londonderry Township, Dauphin County, 2010 US Census data is used to determine population and 2006-2010 ACS data is used to determine median household income. Based on this census data, it appears that the population of the Township is 5,235 and the median household income is $61,528. Based upon income levels, the Township would receive Market Rate financing consisting of a 4.000% interest rate and 40 year term. The Township is not eligible for any grant funding through USDA.

C. ***Municipal Bond Financing*** *(Shown in Tables 6-1 through 6-4 as Financing Option C)*
Municipal bonds can be issued by municipalities and authorities to raise funds for capital improvement projects. Assuming the Township receives a market rating of "A", it is possible for bonds to be issued at rates of approximately 5.0% for term of 25 years (based on current market conditions). Interest rates associated with bond financing are fixed for the entire term of the bond, however upfront costs are generally greater than those incurred through closing on other types of loans. The Township could choose to solely fund the project through a bond issue or consider joint PENNVEST/Bond financing. Bond proceeds are fully drawn at the time of closing and based upon general structuring, principal and interest payments begin three to six months following closing. (In the case of Londonderry Township, options may exist to capitalize interest and delay principal payments for one to two years (to provide the opportunity for users to connect. Bond holders would require the Township to meet requirements of a Trust Indenture. This could include rules for establishing user rates to generate revenues of up to 110% to 125% of annual expenditures, along with rules for taking on additional debt, annual reporting, and the like. The Township would have the option of structuring bonds for an amortization of 20, 25 or 30 years. Once rated by S&P or Moody's, the Township may be able to complete bond sale and closing within a 90 day period, which may serve to expedite the commencement of

construction. Design is not reviewed by a third party, and all project related expenditures are generally eligible, including ROW costs.

As discussed above, an option exists for obtaining a Letter Credit from PENNVEST in order to sell bonds under PENNVEST's AAA rating.

D. ***Joint PENNVEST/ Bond Financing*** *(Shown in Tables 6-1 through 6-4 as Financing Option D)*
Joint financing through PENNVEST and revenue bonds was considered for projects exceeding the $11 million single application limit. It was assumed under this scenario that PENNVEST provides both a loan/grant package in addition to a Letter of Credit associated with the bond sale.

E. ***Joint PENNVEST/ USDA Financing*** *(Shown in Tables 6-1 through 6-4 as Financing Option E)*
Joint financing through PENNVEST and USDA was considered for project costs greater than $11 million. Under this scenario, it was assumed that PENNVEST would provide $11 million of loan/grant assistance with the remainder of the project cost funded through a USDA loan at 4.00% for 40 years. Since USDA rates are likely to be slightly less than those received through a bond issue, PENNVEST will not need to provide as much grant funds. However, due to the 40-year term of the USDA borrowing, the Township would pay more in interest costs over the term of the borrowing then it would likely pay through joint PENNVEST/Bond Financing.

2.4.4 Recommended Financing Alternatives

Funding analyses for Projects A, B and C are shown in Tables 6-1 through 6-4. Each table considered the financing options outlined above for one of the three (3) projects and calculates the anticipated monthly cost per EDU based upon debt service and O&M costs. All tables assume a tapping fee of $4,000 per EDU.

Project A Financing Alternatives
Table 6-1 presents the various financing options considered for Project A. Since the total project cost of roughly $1,510,000 is less than PENNVEST's maximum $11M limit, the joint PENNVEST/Bond issue and PENNVEST/USDA options were not considered. As shown in Table 6.1, since PENNVEST offers the lowest interest rates and is the only agency which may provide grant funds, PENNVEST yields the most affordable user rates. Due to the total project cost, only one PENNVEST application is anticipated. If the maximum potential grant contribution of $1,510,000 is realized, the resulting user rate is projected to be $95/month/EDU. If PENNVEST does not have this level of grant funds available and only 50 % of the necessary grant funds are received, user rates would rise to approximately $143/month/EDU as shown in Table 6-1. Since this is not an ideal user rate, its assumed the Township would attempt to lower debt service costs by pursing other avenues for grant funding with the intent to get user rates as close to $95/month/EDU as possible. The Township may also chose to lower user rates by blending rates for users in Project A with customers served through Project B or C (below.)

Project B Financing Alternatives
Table 6-2 presents the various financing options considered for Project B. Financing Option A, which includes submission of two (2) back to back PENNVEST applications to secure roughly $19.9M in project financing, appears to be the lowest cost option; yielding user rates between $78 to $129 per month dependent upon the level of grant funds received. User rates of $78/month assume the Township receives roughly $8.2M in grant funds for each application ($16.4M in total), which is the maximum amount PENNVEST may award based upon Londonderry Township's affordable limit. Taking into consideration PENNVEST's typical grant award of roughly

$2MM per application, or roughly 40% of the max eligible amount, Londonderry Township is more likely to arrive at user rates between $112 to $129 per month.

User rates in excess of $100 per month will likely cause a financial burden on many property owners in the project area. In order to lower the cost per user, the Township would need additional fill-in growth to occur along the main corridor of the project area from any of the three (3) proposed developments identified as part of this Plan Update.

With that being said, an evaluation on the number of additional EDUs needed from the proposed developments to offset the financial burden on existing development is presented in Table 6-3. Table 6-3 includes the same project costs and financing alternatives as shown in Table 6-2, but assumes within five (5) years of the commencement of design, developer EDUs will be realized to yield an additional 450 EDUs in the Planning Area. This provides a total number of EDUs served up to 1,264. Under this scenario, Financing Option A (the submission of two PENNVEST applications), still yields the lowest user rates. Assuming the Township receives a PENNVEST grant between $4M and $8.2M per application cycle, users can anticipate rates between $50 to $72 per month. While still expensive, this rate is considered more financially viable than the $112 to $129 per month associated with only serving 814 EDUs.

If the full 1,264 EDUs is not present by completion of construction and system start-up, the Township can consider utilizing interim financing to assist in paying debt service and O&M costs until the additional EDUs are connected. It is anticipated that tapping fees from the additional connections will be used to pay off the interim funding loan.

Project C Financing Alternatives

Project C is considered for the purposes of this Plan Update as a second option in the event the three (3) proposed developments are not realized and/or provide the additional 450 EDUs necessary to implement Project B.

As suggested above, Project C (in conjunction with Project A) will address several of the needs areas identified in this Plan Update. However, this alternative does not address the sanitary sewage needs in the Cedar Manor MHP in Sewer District No. 3 or the sewage disposal needs in Sewer District No. 2. Furthermore, Project C assumes that Sewer Service Areas 1 and 2 in Sewer District No. 2 will continue to utilize OLDS in accordance with DEP rules and regulations for the immediate future. The continued implementation of the Township's On-lot Management Ordinance is expected to reduce the number of OLDS malfunctions observed in these areas.

Table 6-3 presents various financing options considered for Project C. The financing options are similar to Project A, since the total project cost is less than $11M the joint PENNVEST/Bond issue and PENNVEST/USDA options were not considered. Similar to Projects A and B, PENNVEST yields the most affordable user rates since it is the only financing scenario which includes the likelihood of grant contributions and also offers the lowest income rates. Due to the total project cost, only one PENNVEST application is anticipated. If the maximum potential grant contribution of $5,300,000 is realized, the resulting user rate is projected to be $78/month/EDU. However, taking into consideration PENNVEST's average grant award of $2M results in user rates closer to $118/EDU/month. Since this is not the ideal user rate, it's assumed the Township would attempt to lower debt service costs by pursing other avenues for grant funding with the intent to get user rates as close to PENNVEST's affordable rate of $78/month/EDU as possible.

3.0 ENVIRONMENTAL CONSEQUENCES OF THE PROJECTS

Reasonable Alternative

The structural alternatives to provide public sewer service to the Planning Area described above represent technically feasible solutions for wastewater management in these areas. Of the identified alternatives for Sewer District No.2 and Sewer District No. 3, it is recommended that the Township pursue Alternative 8B. This alternative should be implemented, assuming that a favorable intermunicipal agreement between the Township and MBA can be negotiated and adequate funding is secured, and will require an administrative organization that has the legal authority to incur indebtedness on behalf of the project, can guide the project to completion, and provide the necessary operation and maintenance to the project. If the Township deems it beneficial, an authority could be formed to administer, finance, and operate the municipal sewage facilities. This alternative is environmentally sound, resulting in the abandonment of malfunctioning OLDS, abandonment of three (3) MHP packaged WWTPs identified by DEP as needs areas, is consistent with all local, regional, and state planning objectives.

Of the identified alternatives for Londonderry Estates developing in On-lot Management District B, it is recommended that the Township pursue Alternative 7B. This alternative should be implemented assuming that a favorable intermunicipal agreement between the Township and DTMA can be negotiated and funding is secured. Without a favorable inter-municipal agreement and favorable funding this alternative is not feasible and will not be implemented. This alternative is environmentally sound, resulting in the abandonment of malfunctioning OLDS in this study area.

Description of the Affected Area

The Township will be required to obtain any necessary rights-of-way, easements, or properties to implement the recommended structural alternative. Any land requirements, in the form of rights-of-way, easements, or additional properties will be acquired through negotiation procedures between the Township and the property owner. In circumstances where a suitable compensation cannot be negotiated, condemnation procedures may be utilized to acquire properties for use in construction of public facilities. The necessity for acquisition of property would be further evaluated during the final design phase of the collection and conveyance facilities.

Environmental Consequences of the Reasonable Alternatives

Environmental consequences of the reasonable alternatives include direct and indirect effects. Direct effects are consequences directly related to project activity. These typically include vegetation clearing, earth disturbance, and stream crossings.

An Erosion and Sedimentation (E&S) Plan will be established and submitted to the Dauphin County Conservation District to ensure the preservation of surrounding natural environments. In order to minimize the potential for soil erosion and resulting sediment pollution from leaving the construction site, a construction sequence will be outlined in the E&S Plan. The contractor shall

minimize the area of disturbed soil at any one time by following the construction sequence, and shall prevent sediment pollution by installing pollution control measures as detailed in the E&S Plan.

3.1 Land Use/Important Farmland/Formally Classified Lands

3.1.1 Land Use

The Lower Dauphin Area Regional Comprehensive Plan (Comprehensive Plan) includes the Townships of Conewago, East Hanover, Londonderry, South Hanover, and the Borough of Hummelstown. The Comprehensive Plan was adopted by the Londonderry Township Board of Supervisors on October 3, 2005. This was an update from the 1992 Londonderry Township Comprehensive Plan. The Comprehensive Plan contains objectives and recommendations for future land use, housing, transportation, and community facilities and utilities.

The future land use plan represents the Township's desire to allow for appropriate, well-planned development activities while maintaining the Township's historic and agricultural character. The future land use plan identifies the importance to avoid stressing existing infrastructure, including transportation facilities, schools, sanitary sewage facilities, and other utilities.

Objectives and recommendations developed include the following:

- "Keep existing agricultural areas in farming."
- "Locate new development near concentrations of existing development."
- "Use the concepts of Traditional Neighborhood Development (TND) to expand existing village centers rather than develop new activity centers."
- "Extend public water and sewer systems to serve existing and planned growth rather than to encourage growth in areas which are not identified in the plan."

One of the Community Facilities and Service goals include "Implement appropriate sewage disposal solutions in areas with high concentrations of failing septic systems."

Sewer recommendations developed include the following:

- "Provide public, central sewer services in the most cost-efficient manner, with regular investments to provide reliable service."
- "Ensure that on-lot septic systems work properly."

These recommendations may be realized by providing public, central sewer service for areas to be developed, identifying malfunctioning on-lot disposal systems (OLDS) as a health hazard, and promoting public education for the required maintenance of OLDS; stressing the importance of regularly pumping septic tanks.

3.1.2 Important Farmland

Prime farmland, as defined by the United States Department of Agriculture's Soil Conservation Service (USDA-SCS), is the land that is best suited for producing food, feed, forage, fiber, and oilseed crops. It has the soil quality, growing season, and water supply needed to economically produce a sustained high yield of crops when it is treated and managed using acceptable farming methods. According to the SCS, prime farmlands generally include class I and II soils, which produce the highest yields with minimal inputs of energy and economic resources. Qualities that characterize prime agricultural soils include high permeability to water and air, few or no rocks, optimum levels of acidity and alkalinity, 0 to 8 percent slopes, and the absence of flooding during the growing season. These soils may currently be utilized for crops, pasture, woodland, or land covers other than urban land or water areas.

The following soils are considered to be prime agricultural soils in the Township:

- Albright silt loams (Aba and AbB2)
- Althol silt loam (AsB2)
- Basher silt loam (Bc)
- Brecknock channery silt loam (BrB2)
- Chavies fine sandy loams (CnA and CnB2)
- Duncannon very fine sandy loam (DvA)
- Lehigh silt loam (LhB2)
- Lewisberry gravelly sandy loam (LrB2)
- Lindside silt loams (Lt and Lw)
- Neshaminy gravelly silt loam (NeC2)
- Penn shaly silt loam (PeB2)
- Philo silt loam (Ph)
- Tioga fine sandy loams (Ta and Tg)

3.1.3 Formally Classified Lands

The proposed projects will have no impact within one mile of any national or state parks, forests, or trails. Furthermore, the proposed structural alternatives will have no impact within one mile of any registered and/or eligible national monuments and landmarks.

3.2 Floodplains

In accordance with the policies and procedures of the National Flood Insurance Program, the Federal Emergency Management Agency (FEMA) has prepared mapping of the 100-year floodplains for the Swatara Creek in Londonderry Township.

The majority of the properties in Londonderry Township within the Planning Area are located outside of the 100-year floodplains of the Swatara Creek. The 100-year floodplain is an area based on past experience and high statistical probability that a destructive flood event will occur.

3.3 Wetlands

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

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

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

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

The National Wetlands Inventory (NWI) mapping, as compiled by the U.S. Fish and Wildlife Service, is useful as a background source of information regarding wetland locations. The maps are prepared through the use of color infrared aerial photographs, and the quality of the maps varies dependent upon the time of year that the photos were taken and other factors. Field investigation, conducted by a trained scientist or engineer, is necessary to determine the actual presence or absence of wetland areas. Known wetlands within Londonderry Township, based on NWI information.

The following wetland types (as designated by NWI mapping codes) are found in Londonderry Township:

- PEM1A* - Palustrine, Emergent, Persistent, Temporarily Flooded
- PEM1C* - Palustrine, Emergent, Persistent, Seasonally Flooded

- PEM1Cx - Palustrine, Emergent, Persistent, Seasonally Flooded, Excavated
- PEM1E* - Palustrine, Emergent, Persistent, Seasonally Flooded/Saturated
- PEM1Eh* - Palustrine, Emergent, Persistent, Seasonally Flooded/Saturated, Diked/Impounded
- PFO1A* - Palustrine, Forested, Broad-Leaved Deciduous, Temporarily Flooded
- PFO1C - Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded
- PFO1E - Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded/Saturated
- PSS1C - Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded
- PUBFx - Palustrine, Unconsolidated Bottom, Semi-permanently Flooded, Excavated
- PUBHh* - Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded
- PUBHx* - Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated

Note: An asterisk (*) indicates the wetland is found in the Planning Area.

3.4 Historic Resources

A Cultural Resource Notice request and supporting documentation was sent to the Bureau of Historic Preservation for a list of known historical sites and identification of potential impacts on known archaeological and historic sites in the Planning Area within Londonderry Township by implementation of the recommended alternative. Copies of the request and PHMC correspondence are enclosed.

3.5 Sensitive Biological Resources

A Pennsylvania Natural Diversity Inventory (PNDI) Project Environmental Review was conducted for the Planning Area within Londonderry Township. A Copy of this request and the appropriate responses are enclosed.

3.6 Water Quality Issues

The wastewater management alternatives presented was selected based on their ability to provide adequate collection, conveyance and treatment of wastewater generated in Londonderry Township.

Implementation of the public sewer extension serving the Sewer District No. 2 and Sewer District No. 3 will not require new public wastewater treatment facilities as wastewater from this area is proposed to be conveyed to the existing MBA WWTP. As presented in Chapter 4 of this Plan Update, the initial flows from the existing developments in Sewer District No. 2 and Sewer District No. 3 is estimated at 0.230 MGD. Based on information provided by MBA and presented in Chapter 3, the MBA WWTP has an available capacity of 0.408 MGD to serve the initial flows from the existing developments and a portion of the proposed development (build-out). The MBA WWTP would require an upgrade to accommodate the full future build-out of Sewer District No. 2 and Sewer District No. 3.

Implementation of the public sewer extension serving the Londonderry Estates development in On-lot Management District B will not require new public wastewater treatment facilities as wastewater from this area is proposed to be conveyed to the DTMA collection and conveyance system with treatment at the DTMA Clearwater Road WWTP. According to DTMA, the existing sewer facilities adjacent to Hills of Waterford development have amply capacity to serve Londonderry Estates development.

3.7 Coastal Resources

There are no coastal areas within Londonderry Township.

3.8 Socio-Economic Issues

The availability of public sewer service in the Planning Area is anticipated to improve community viability, protection of public health, and secondarily to protect property investments.

3.9 Recreation and Open Space

The alternatives recommended by this Plan will not itself create any new recreational or open space opportunities since the majority of the proposed sewer facilities are within existing road right-of-way or proposed land development.

3.10 Air Quality

With the exception of the minimal dust and exhaust during the construction of any sanitary sewer facilities the proposed projects will not create any significant impacts on air quality.

3.11 Transportation

There will be no permanent impact on transportation. There will be minimal disruption of traffic patterns during construction of recommended structural alternative for Sewer District No. 2 and Sewer District No. 3 along Harrisburg Pike (Rt 230) and other state and local roads. All traffic control and construction methods will be permitted as required by the Pennsylvania Department of Transportation and Londonderry Township.

3.12 Noise Abatement and Control

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

3.13 Wild and Scenic Rivers

There is no Pennsylvania or Federally designated Scenic Rivers in Londonderry Township according to the Pennsylvania Scenic Rivers Program.

3.14 Miscellaneous Environmental Considerations

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

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

4.0 SUMMARY OF MITIGATION

Due to the temporary nature of all environmental disturbances associated with the construction of the alternatives proposed by this Plan Update, mitigation is not necessary.

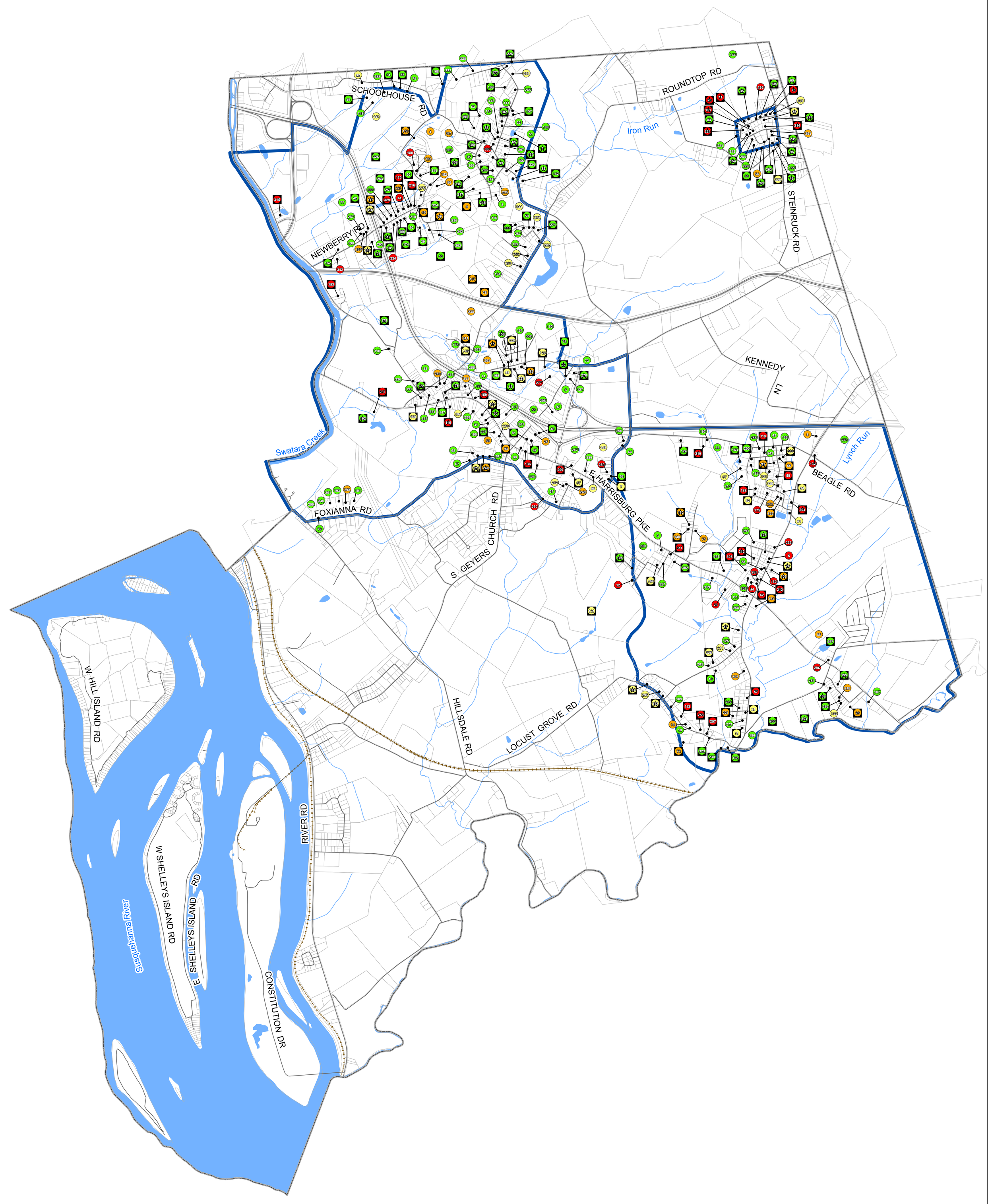
5.0 PUBLIC PARTICIPATION

As part of the Act 537 Planning process, a 30-day public comment period will be advertised and held. During this time, the public can review and submit written comments in regard to the Act 537 Plan. Additionally, public meetings are planned to allow the public to participate in the planning process.

6.0 EXHIBITS

Exhibits to this Environmental Report are included in the following pages.

All consistency evaluation determinations and correspondence received from regulatory agencies as referred to in this Environmental Report are included in the following pages.



1,500 0 1,500 Feet

Mapping derived from data provided by Dauphin County and USGS.

8/28/2012	PM:JKB	GIS:BLS	R001068.0430

HRG
Herbert, Rowland & Grubic, Inc.
Engineering & Related Services
1846 Charter Lane
P.O. Box 10337
Lancaster, PA 17605
717.291.1783
Fax 717.291.2093
www.hrg-inc.com
Offices Statewide

Tier 1 On-Lot Malfunction Status

- Roads
- Railroads
- Streams
- Parcels
- Municipal Boundary
- Planning Area
- Ok
- Potential
- Suspected
- Confirmed
- Greater Than 5 mg/L of Nitrate
- Water Sample Taken at Residence

Note: Well water samples for survey nos. 136 and 299 tested positive for E. Coli.

[BUILDING RELATIONSHIPS. DESIGNING SOLUTIONS.]

Map 12 - On-Lot Malfunction Status

Londonderry Township
Dauphin County, Pennsylvania

W:\13\1068\0430\Projects\Map12-OnLotMalfunctionStatus.mxd

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 2 - AREA 1
ALTERNATIVE 1A: COMBINATION OF GRAVITY SEWER AND LOW PRESSURE SEWER COLLECTION SYSTEM

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$51,000.00	$51,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$51,000.00	$51,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$25,000.00	$25,000.00
LOW PRESSURE SEWER					
4	LOW PRESSURE SEWER MAIN - AGGREGATE FILL	1,850	L.F.	$50.00	$92,500.00
5	LOW PRESSURE SEWER MAIN - SUITABLE FILL	820	L.F.	$42.00	$34,440.00
6	LOW PRESSURE SEWER LATERAL	575	L.F.	$40.00	$23,000.00
7	LOW PRESSURE SEWER LATERAL CONNECTION	23	EA.	$600.00	$13,800.00
8	AIR/VACUUM RELEASE VALVES & APPURTENANCES	1	EA.	$6,000.00	$6,000.00
9	INLINE CLEANOUT	5	EA.	$2,400.00	$12,000.00
10	TERMINAL CLEANOUT	2	EA.	$1,750.00	$3,500.00
11	SIMPLEX GRINDER PUMP	23	EA.	$7,500.00	$172,500.00
GRAVITY SEWER					
12	8" PVC MAIN - AGGREGATE FILL	2,453	L.F.	$110.00	$269,830.00
13	8" X 6" WYE	18	EA.	$95.00	$1,710.00
14	6" SERVICE LATERAL - AGGREGATE FILL	450	L.F.	$100.00	$45,000.00
15	6" SERVICE LATERAL CLEANOUT - SUITABLE FILL	18	EA.	$450.00	$8,100.00
16	CLAY DIKE	7	EA.	$250.00	$1,750.00
MANHOLES					
17	MANHOLE - 4 FT DIAMETER	8	EA.	$3,500.00	$28,000.00
18	MANHOLE FRAME AND COVER	8	EA.	$500.00	$4,000.00
19	MANHOLE PROTECTIVE LINING	3	EA.	$3,600.00	$10,800.00
CROSSING					
20	FORCE MAIN HIGHWAY CROSSING	275	L.F.	$300.00	$82,500.00
SURFACING					
21	TEMPORARY PAVING	1,332	L.F.	$5.00	$6,660.00
22	MUNICIPAL PAVING RESTORATION	5,328	L.F.	$35.00	$186,480.00
23	VEGETATIVE RESTORATION	850	L.F.	$10.00	$8,500.00

ESTIMATED CONSTRUCTION COSTS	$1,138,100.00
CONSTRUCTION CONTINGENCY @ 15%	$170,700.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$327,200.00
TOTAL ESTIMATED PROJECT COSTS	$1,636,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	41
ESTIMATED CAPITAL COST PER EDU	$39,900.00

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. 4" force main highway crossing is assumed to be bore & jack w/casing pipe.
5. Temporary paving is assumed to be 2" of 19.5mm HMA
6. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 2 - AREA 1
ALTERNATIVE 1B: COMBINATION OF GRAVITY SEWER, LOW PRESSURE SEWER, AND PUMP STATION AND ASSOCIATED FORCE MAIN COLLECTION SYSTEM

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$66,000.00	$66,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$66,000.00	$66,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$33,000.00	$33,000.00
LOW PRESSURE SEWER					
4	LOW PRESSURE SEWER MAIN - AGGREGATE FILL	230	L.F.	$50.00	$11,500.00
5	LOW PRESSURE SEWER LATERAL	50	L.F.	$40.00	$2,000.00
6	LOW PRESSURE SEWER LATERAL CONNECTION	2	EA.	$600.00	$1,200.00
7	TERMINAL CLEANOUT	1	EA.	$1,750.00	$1,750.00
8	SIMPLEX GRINDER PUMP	2	EA.	$7,500.00	$15,000.00
GRAVITY SEWER					
9	8" PVC MAIN - AGGREGATE FILL	4,200	L.F.	$110.00	$462,000.00
10	8" X 6" WYE	39	EA.	$95.00	$3,705.00
11	6" SERVICE LATERAL - AGGREGATE FILL	975	L.F.	$100.00	$97,500.00
12	6" SERVICE LATERAL CLEANOUT - SUITABLE FILL	39	EA.	$450.00	$17,550.00
13	CLAY DIKE	15	EA.	$250.00	$3,750.00
MANHOLES					
14	MANHOLE - 4 FT DIAMETER	16	EA.	$3,500.00	$56,000.00
15	MANHOLE FRAME AND COVER	16	EA.	$500.00	$8,000.00
16	PROTECTIVE MANHOLE LINING	3	EA.	$3,600.00	$10,800.00
CROSSING					
17	4" FORCE MAIN HIGHWAY CROSSING	275	L.F.	$300.00	$82,500.00
PUMP STATION					
18	PUMP STATION	1	L.S.	$300,000.00	$300,000.00
FORCE MAIN					
19	4" FORCE MAIN - SUITABLE FILL	955	L.F.	$40.00	$38,200.00
SURFACING					
20	TEMPORARY PAVING	1,364	L.F.	$10.00	$13,637.50
21	MUNICIPAL PAVING RESTORATION	5,455	L.F.	$35.00	$190,925.00
22	VEGETATIVE RESTORATION	1,005	L.F.	$5.00	$5,025.00

ESTIMATED CONSTRUCTION COSTS	$1,486,000.00
CONSTRUCTION CONTINGENCY @ 15%	$222,900.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$427,200.00
TOTAL ESTIMATED PROJECT COSTS	$2,136,100.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	41
ESTIMATED CAPITAL COST PER EDU	$52,100.00

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. 4" force main highway crossing is assumed to be bore & jack w/casing pipe.
5. Temporary paving is assumed to be 2" of 19.5mm HMA
6. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 2 - AREA 1
ALTERNATIVE 1C: COMBINATION OF GRAVITY SEWER AND LOW PRESSURE SEWER COLLECTION SYSTEM
WITH DECENTRALIZED PACKAGED WASTEWATER TREATMENT PLANT

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$43,000.00	$43,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$43,000.00	$43,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$21,000.00	$21,000.00
LOW PRESSURE SEWER					
4	LOW PRESSURE SEWER MAIN - AGGREGATE FILL	3,103	L.F.	$50.00	$155,150.00
5	LOW PRESSURE SEWER MAIN - SUITABLE FILL	820	L.F.	$42.00	$34,440.00
6	LOW PRESSURE SEWER LATERAL	525	L.F.	$40.00	$21,000.00
7	LOW PRESSURE SEWER LATERAL CONNECTION	21	EA.	$600.00	$12,600.00
8	TERMINAL CLEANOUT	2	EA.	$1,750.00	$3,500.00
9	SIMPLEX GRINDER PUMP	21	EA.	$7,500.00	$157,500.00
GRAVITY SEWER					
10	8" PVC MAIN - AGGREGATE FILL	1,200	L.F.	$110.00	$132,000.00
11	8" X 6" WYE	20	EA.	$95.00	$1,900.00
12	6" SERVICE LATERAL - AGGREGATE FILL	500	L.F.	$100.00	$50,000.00
13	6" SERVICE LATERAL CLEANOUT - SUITABLE FILL	20	EA.	$450.00	$9,000.00
14	CLAY DIKE	3	EA.	$250.00	$750.00
MANHOLES					
15	MANHOLE - 4 FT DIAMETER	6	EA.	$3,500.00	$20,300.00
16	MANHOLE FRAME AND COVER	6	EA.	$500.00	$2,900.00
17	PROTECTIVE MANHOLE LINING	3	EA.	$3,600.00	$10,800.00
CROSSING					
18	4" FORCE MAIN HIGHWAY CROSSING	275	L.F.	$300.00	$82,500.00
SURFACING					
19	TEMPORARY PAVING	1,076	L.F.	$10.00	$10,757.50
20	MUNICIPAL PAVING RESTORATION	4,303	L.F.	$35.00	$150,605.00
21	VEGETATIVE RESTORATION	820	L.F.	$5.00	$4,100.00

ESTIMATED CONSTRUCTION COSTS	$966,800.00
CONSTRUCTION CONTINGENCY @ 15%	$145,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$278,000.00
TOTAL ESTIMATED PROJECT COSTS	$1,389,800.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	41
ESTIMATED CAPITAL COST PER EDU	$33,900.00

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. 4" force main highway crossing is assumed to be bore & jack w/casing pipe.
5. Temporary paving is assumed to be 2" of 19.5mm HMA
6. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 2 - AREA 2
ALTERNATIVE 2A: COMBINATION OF GRAVITY SEWER AND PUMP STATION AND ASSOCIATED FORCE MAIN COLLECTION SYSTEM

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$257,000.00	$257,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$257,000.00	$257,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$129,000.00	$129,000.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE FILL	12,400	L.F.	$110.00	$1,364,000.00
5	8" PVC MAIN - SUITABLE FILL	4,200	L.F.	$105.00	$441,000.00
6	15" PVC MAIN - AGGREGATE FILL	6,300	L.F.	$135.00	$850,500.00
7	8" X 6" WYE	209	EA.	$95.00	$19,855.00
8	6" SERVICE LATERAL - AGGREGATE FILL	5,225	L.F.	$100.00	$522,500.00
9	6" SERVICE LATERAL CLEANOUT - SUITABLE FILL	209	EA.	$450.00	$94,050.00
10	CLAY DIKE	85	EA.	$250.00	$21,250.00
MANHOLES					
11	MANHOLE - 4 FT DIAMETER	86	EA.	$3,500.00	$301,000.00
12	MANHOLE FRAME AND COVER	86	EA.	$500.00	$43,000.00
13	PROTECTIVE MANHOLE LINING	3	EA.	$3,600.00	$10,800.00
PUMP STATION					
14	PUMP STATION	1	L.S.	$300,000.00	$300,000.00
FORCE MAIN					
15	4" FORCE MAIN - AGGREGATE FILL	2,050	L.F.	$45.00	$92,250.00
16	4" FORCE MAIN - SUITABLE FILL	450	L.F.	$40.00	$18,000.00
CROSSING					
17	4" FORCE MAIN STREAM CROSSING	100	L.F.	$125.00	$12,500.00
18	8" GRAVITY SEWER STREAM CROSSING	75	L.F.	$250.00	$18,750.00
SURFACING					
19	TEMPORARY PAVING	5,214	L.F.	$10.00	$52,137.50
20	MUNICIPAL PAVING RESTORATION	17,744	L.F.	$35.00	$621,040.00
21	PENNDOT PAVING RESTORATION	3,111	L.F.	$60.00	$186,660.00
22	VEGETATIVE RESTORATION	4,650	L.F.	$5.00	$23,250.00
23	PRIVATE ROAD RESTORATION	5,120	L.F.	$30.00	$153,600.00

ESTIMATED CONSTRUCTION COSTS	$5,789,100.00
CONSTRUCTION CONTINGENCY @ 15%	$868,400.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$1,664,400.00
TOTAL ESTIMATED PROJECT COSTS	$8,321,900.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	209
ESTIMATED CAPITAL COST PER EDU	$39,800.00

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. 4" force main crossing is assumed to be directional drilled.
5. Temporary paving is assumed to be 2" of 19.5mm HMA
6. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.
7. PennDOT paving restoration is assumed to be 5" 37.5mm base and 2" 12.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 2 - AREA 2
ALTERNATIVE 2B: COMBINATION OF GRAVITY SEWER AND MULTIPLE PUMP STATIONS AND ASSOCIATED FORCE MAINS COLLECTION SYSTEM

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$262,000.00	$262,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$262,000.00	$262,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$131,000.00	$131,000.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE FILL	12,750	L.F.	$110.00	$1,402,500.00
5	8" PVC MAIN - SUITABLE FILL	1,935	L.F.	$105.00	$203,175.00
6	15" PVC MAIN - AGGREGATE FILL	6,300	L.F.	$135.00	$850,500.00
7	8" X 6" WYE	209	EA.	$95.00	$19,855.00
8	6" SERVICE LATERAL - AGGREGATE FILL	5,225	L.F.	$100.00	$522,500.00
9	6" SERVICE LATERAL CLEANOUT - SUITABLE FILL	209	EA.	$450.00	$94,050.00
10	CLAY DIKE	79	EA.	$250.00	$19,750.00
MANHOLES					
11	MANHOLE - 4 FT DIAMETER	80	EA.	$3,500.00	$280,000.00
12	MANHOLE FRAME AND COVER	80	EA.	$500.00	$40,000.00
13	PROTECTIVE MANHOLE LINING	6	EA.	$3,600.00	$21,600.00
PUMP STATION					
14	PUMP STATION A - ROUNDTOP ROAD	1	L.S.	$300,000.00	$300,000.00
15	PUMP STATION B - CRESTVIEW MHP	1	L.S.	$250,000.00	$250,000.00
FORCE MAIN					
16	4" FORCE MAIN - AGGREGATE FILL (PUMP STATION A)	2,050	L.F.	$45.00	$92,250.00
17	4" FORCE MAIN - SUITABLE FILL (PUMP STATION A)	450	L.F.	$40.00	$18,000.00
18	4" FORCE MAIN - SUITABLE FILL (PUMP STATION B)	1,250	L.F.	$40.00	$50,000.00
SURFACING					
19	4" FORCE MAIN STREAM CROSSING	100	L.F.	$125.00	$12,500.00
20	8" GRAVITY SEWER STREAM CROSSING	75	L.F.	$250.00	$18,750.00
SURFACING					
21	TEMPORARY PAVING	5,301	L.F.	$10.00	$53,012.50
22	MUNICIPAL PAVING RESTORATION	18,094	L.F.	$35.00	$633,290.00
23	PENNDOT PAVING RESTORATION	3,111	L.F.	$60.00	$186,660.00
24	VEGETATIVE RESTORATION	3,635	L.F.	$5.00	$18,175.00
25	PRIVATE ROAD RESTORATION	5,120	L.F.	$30.00	$153,600.00

ESTIMATED CONSTRUCTION COSTS	$5,895,200.00
CONSTRUCTION CONTINGENCY @ 15%	$884,300.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$1,694,900.00
TOTAL ESTIMATED PROJECT COSTS	$8,474,400.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	209
ESTIMATED CAPITAL COST PER EDU	$40,500.00

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. 4" force main crossing is assumed to be directional drilled.
5. Temporary paving is assumed to be 2" of 19.5mm HMA
6. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.
7. PennDOT paving restoration is assumed to be 5" 37.5mm base and 2" 12.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 2 - AREA 2
ALTERNATIVE 2C: COMBINATION OF GRAVITY SEWER, LOW PRESSURE SEWER, AND PUMP STATION AND ASSOCIATED FORCE MAIN COLLECTION SYSTEM

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$250,000.00	$250,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$250,000.00	$250,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$125,000.00	$125,000.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE FILL	7,780	L.F.	$110.00	$855,800.00
5	8" PVC MAIN - SUITABLE FILL	2,385	L.F.	$105.00	$250,425.00
6	15" PVC MAIN - AGGREGATE FILL	6,300	L.F.	$135.00	$850,500.00
7	8" X 6" WYE	127	EA.	$95.00	$12,065.00
8	6" SERVICE LATERAL - AGGREGATE FILL	3,175	L.F.	$100.00	$317,500.00
9	6" SERVICE LATERAL CLEANOUT - SUITABLE FILL	127	EA.	$450.00	$57,150.00
10	CLAY DIKE	61	EA.	$250.00	$15,250.00
LOW PRESSURE SEWER					
11	LOW PRESSURE SEWER MAIN - AGGREGATE FILL	5,025	L.F.	$50.00	$251,250.00
12	LOW PRESSURE SEWER LATERAL	2,050	L.F.	$40.00	$82,000.00
13	LOW PRESSURE SEWER LATERAL CONNECTION	82	EA.	$600.00	$49,200.00
14	INLINE CLEANOUT	6	EA.	$2,400.00	$14,400.00
15	TERMINAL CLEANOUT	7	EA.	$1,750.00	$12,250.00
16	AIR RELEASE VALVE CHAMBER	2	EA.	$6,000.00	$12,000.00
17	SIMPLEX GRINDER PUMP	82	EA.	$7,500.00	$615,000.00
MANHOLES					
18	MANHOLE - 4 FT DIAMETER	62	EA.	$3,500.00	$217,000.00
19	MANHOLE FRAME AND COVER	62	EA.	$500.00	$31,000.00
20	PROTECTIVE MANHOLE LINING	3	EA.	$3,600.00	$10,800.00
SURFACING					
21	PUMP STATION	1	L.S.	$250,000.00	$250,000.00
FORCE MAIN					
22	4" FORCE MAIN - SUITABLE FILL	2,050	L.F.	$45.00	$92,250.00
23	4" FORCE MAIN - AGGREGATE FILL	450	L.F.	$40.00	$18,000.00
SURFACING					
24	TEMPORARY PAVING	4,915	L.F.	$10.00	$49,150.00
25	MUNICIPAL PAVING RESTORATION	16,549	L.F.	$35.00	$579,215.00
26	PENNDOT PAVING RESTORATION	3,111	L.F.	$60.00	$186,660.00
27	VEGETATIVE RESTORATION	4,435	L.F.	$5.00	$22,175.00
28	PRIVATE ROAD RESTORATION	5,120	L.F.	$30.00	$153,600.00

ESTIMATED CONSTRUCTION COSTS	$5,629,600.00
CONSTRUCTION CONTINGENCY @ 15%	$844,400.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$1,618,500.00
TOTAL ESTIMATED PROJECT COSTS	$8,092,500.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	209
ESTIMATED CAPITAL COST PER EDU	$38,700.00

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. 4" force main crossing is assumed to be bore & jack w/casing pipe.
5. Temporary paving is assumed to be 2" of 19.5mm HMA
6. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.
7. PennDOT paving restoration is assumed to be 5" 37.5mm base and 2" 12.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 3 - AREA 3
ALTERNATIVE 3A: COMBINATION OF GRAVITY SEWER, LOW PRESSURE SEWER, AND PUMP STATION AND ASSOCIATED FORCE MAIN COLLECTION SYSTEM

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$92,000.00	$92,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$92,000.00	$92,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$46,000.00	$46,000.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE FILL	5,000	L.F.	$110.00	$550,000.00
5	8" PVC MAIN - SUITABLE FILL	2,065	L.F.	$105.00	$216,825.00
6	8" X 6" WYE	43	EA.	$95.00	$4,085.00
7	6" SERVICE LATERAL - AGGREGATE FILL	2,150	L.F.	$100.00	$215,000.00
8	6" SERVICE LATERAL CLEANOUT - SUITABLE FILL	43	EA.	$450.00	$19,350.00
9	CLAY DIKE	21	EA.	$250.00	$5,250.00
LOW PRESSURE SEWER					
10	LOW PRESSURE SEWER MAIN - AGGREGATE FILL	1,059	L.F.	$50.00	$52,950.00
11	LOW PRESSURE SEWER LATERAL	150	L.F.	$40.00	$6,000.00
12	LOW PRESSURE LATERAL CONNECTION	6	EA.	$600.00	$3,600.00
13	TERMINAL CLEANOUT	2	EA.	$1,750.00	$3,500.00
14	SIMPLEX GRINDER PUMP	6	EA.	$7,500.00	$45,000.00
MANHOLES					
14	MANHOLE - 4 FT DIAMETER	22	EA.	$3,500.00	$77,000.00
15	MANHOLE FRAME AND COVER	22	EA.	$500.00	$11,000.00
PUMP STATION					
16	PUMP STATION	1	L.S.	$250,000.00	$250,000.00
FORCE MAIN					
17	4" FORCE MAIN - SUITABLE FILL	1,200	L.F.	$40.00	$48,000.00
SURFACING					
18	TEMPORARY PAVING	2,090	L.F	$10.00	$20,897.50
19	MUNICIPAL PAVING RESTORATION	8,359	L.F.	$35.00	$292,565.00
20	VEGETATIVE RESTORATION	3,265	L.F.	$5.00	$16,325.00

ESTIMATED CONSTRUCTION COSTS	$2,067,300.00
CONSTRUCTION CONTINGENCY @ 15%	$310,100.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$594,400.00
TOTAL ESTIMATED PROJECT COSTS	$2,971,800.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	49
ESTIMATED CAPITAL COST PER EDU	$60,600.00

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. Temporary paving is assumed to be 2" of 19.5mm HMA
5. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 3 - AREA 3
ALTERNATIVE 3B: LOW PRESSURE SEWER COLLECTION SYSTEM

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$57,000.00	$57,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$57,000.00	$57,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$29,000.00	$29,000.00
LOW PRESSURE SEWER					
4	LOW PRESSURE SEWER MAIN - AGGREGATE FILL	6,170	L.F.	$50.00	$308,500.00
5	LOW PRESSURE SEWER MAIN - SUITABLE FILL	1,600	L.F.	$42.00	$67,200.00
6	LOW PRESSURE SEWER LATERAL	1,225	L.F.	$40.00	$49,000.00
7	LOW PRESSURE LATERAL CONNECTION	49	EA.	$600.00	$29,400.00
8	TERMINAL CLEANOUT	3	EA.	$1,750.00	$5,250.00
9	INLINE CLEANOUT	10	EA.	$2,400.00	$24,000.00
10	SIMPLEX GRINDER PUMP	49	EA.	$7,500.00	$367,500.00
11	AIR/VACUUM RELEASE VALVES & APPURTENANCES	2	EA.	$6,000.00	$12,000.00
SURFACING					
12	TEMPORARY PAVING	1,849	L.F.	$10.00	$18,487.50
13	MUNICIPAL PAVING RESTORATION	7,395	L.F.	$35.00	$258,825.00
14	VEGETATIVE RESTORATION	1,600	L.F.	$5.00	$8,000.00
			ESTIMATED CONSTRUCTION COSTS		$1,291,200.00
			CONSTRUCTION CONTINGENCY @ 15%		$193,700.00
			ENGINEERING, ADMIN, & LEGAL FEES @ 25%		$371,200.00
			TOTAL ESTIMATED PROJECT COSTS		$1,856,100.00
			ESTIMATED NUMBER OF EDUs TO BE SERVED		49
			ESTIMATED CAPITAL COST PER EDU		$37,900.00

Cost Estimate Assumptions
SURFACING
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. Temporary paving is assumed to be 2" of 19.5mm HMA
5. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 3 - AREA 3
ALTERNATIVE 3C: LOW PRESSURE SEWER COLLECTION SYSTEM WITH DECENTRALIZED PACKAGED WASTEWATER TREATMENT PLANT

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$54,000.00	$54,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$54,000.00	$54,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$27,000.00	$27,000.00
LOW PRESSURE SEWER					
4	LOW PRESSURE SEWER MAIN - AGGREGATE FILL	5,620	L.F.	$50.00	$281,000.00
5	LOW PRESSURE SEWER MAIN - SUITABLE FILL	1,000	L.F.	$42.00	$42,000.00
6	LOW PRESSURE SEWER LATERAL	1,225	L.F.	$40.00	$49,000.00
7	LOW PRESSURE LATERAL CONNECTION	49	EA.	$600.00	$29,400.00
8	TERMINAL CLEANOUT	3	EA.	$1,750.00	$5,250.00
9	INLINE CLEANOUT	10	EA.	$2,400.00	$24,000.00
10	SIMPLEX GRINDER PUMP	49	EA.	$7,500.00	$367,500.00
11	AIR/VACUUM RELEASE VALVES & APPURTENANCES	2	EA.	$6,000.00	$12,000.00
SURFACING					
12	TEMPORARY PAVING	1,711	L.F.	$10.00	$17,112.50
13	MUNICIPAL PAVING RESTORATION	6,845	L.F.	$35.00	$239,575.00
14	VEGETATIVE RESTORATION	1,000	L.F.	$5.00	$5,000.00
			ESTIMATED CONSTRUCTION COSTS		$1,206,800.00
			CONSTRUCTION CONTINGENCY @ 15%		$181,000.00
			ENGINEERING, ADMIN, & LEGAL FEES @ 25%		$347,000.00
			TOTAL ESTIMATED PROJECT COSTS		$1,734,800.00
			ESTIMATED NUMBER OF EDUs TO BE SERVED		49
			ESTIMATED CAPITAL COST PER EDU		$35,400.00

Cost Estimate Assumptions
SURFACING
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. Temporary paving is assumed to be 2" of 19.5mm HMA
5. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 3 - AREA 4
ALTERNATIVE 4A: COMBINATION OF GRAVITY SEWER AND LOW PRESSURE SEWER COLLECTION SYSTEM

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$113,000.00	$113,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$113,000.00	$113,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$56,000.00	$56,000.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE FILL	6,000	L.F.	$110.00	$660,000.00
5	8" PVC MAIN - SUITABLE FILL	200	L.F.	$105.00	$22,000.00
6	10" PVC MAIN - SUITABLE FILL	1,750	L.F.	$120.00	$210,000.00
7	12" PVC MAIN - AGGREGATE FILL	720	L.F.	$115.00	$82,800.00
8	12" PVC MAIN - SUITABLE FILL	680	L.F.	$125.00	$85,000.00
9	8" X 6" WYE	124	EA.	$95.00	$11,780.00
10	6" SERVICE LATERAL - AGGREGATE FILL	3,100	L.F.	$100.00	$310,000.00
11	6" SERVICE LATERAL CLEANOUT - SUITABLE FILL	124	EA.	$450.00	$55,800.00
12	CLAY DIKE	29	EA.	$250.00	$7,250.00
LOW PRESSURE SEWER					
13	LOW PRESSURE SEWER MAIN - AGGREGATE FILL	1,775	L.F.	$50.00	$88,750.00
14	LOW PRESSURE SEWER LATERAL - SUITABLE FILL	750	L.F.	$42.00	$31,500.00
15	LOW PRESSURE SEWER LATERAL CONNECTION	15	EA.	$600.00	$9,000.00
16	INLINE CLEANOUT	3	EA.	$2,400.00	$7,200.00
17	TERMINAL CLEANOUT	1	EA.	$1,750.00	$1,750.00
18	SIMPLEX GRINDER PUMP	15	EA.	$7,500.00	$112,500.00
MANHOLES					
19	MANHOLE - 4 FT DIAMETER	30	EA.	$3,500.00	$105,000.00
20	MANHOLE FRAME AND COVER	30	EA.	$500.00	$15,000.00
21	PROTECTIVE MANHOLE LINING	3	EA.	$3,600.00	$10,800.00
SURFACING					
22	TEMPORARY PAVING	1,469	L.F.	$10.00	$14,687.50
23	MUNICIPAL PAVING RESTORATION	4,960	L.F.	$35.00	$173,600.00
24	PENNDOT PAVING RESTORATION	915	L.F.	$60.00	$54,900.00
25	VEGETATIVE RESTORATION	3,380	L.F.	$5.00	$16,900.00
26	PRIVATE ROAD RESTORATION	5,720	L.F.	$30.00	$171,600.00

ESTIMATED CONSTRUCTION COSTS	$2,539,800.00
CONSTRUCTION CONTINGENCY @ 15%	$381,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$730,200.00
TOTAL ESTIMATED PROJECT COSTS	$3,651,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	139
ESTIMATED CAPITAL COST PER EDU	$26,300.00

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. Temporary paving is assumed to be 2" of 19.5mm HMA
5. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.
6. PennDOT paving restoration is assumed to be 5" 37.5mm base and 2" 12.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 3 - AREA 4
ALTERNATIVE 4B: COMBINATION OF GRAVITY SEWER AND LOW PRESSURE SEWER COLLECTION SYSTEM WITH DECENTRALIZED PACKAGED WASTEWATER TREATMENT PLANT

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$112,000.00	$112,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$112,000.00	$112,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$56,000.00	$56,000.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE FILL	7,220	L.F.	$110.00	$794,200.00
5	8" PVC MAIN - SUITABLE FILL	1,880	L.F.	$105.00	$206,800.00
9	8" X 6" WYE	124	EA.	$95.00	$11,780.00
10	6" SERVICE LATERAL - AGGREGATE FILL	3,100	L.F.	$100.00	$310,000.00
11	6" SERVICE LATERAL CLEANOUT - SUITABLE FILL	124	EA.	$450.00	$55,800.00
12	CLAY DIKE	36	EA.	$250.00	$9,100.00
LOW PRESSURE SEWER					
13	LOW PRESSURE SEWER MAIN - AGGREGATE FILL	1,775	L.F.	$50.00	$88,750.00
14	LOW PRESSURE SEWER LATERAL - SUITABLE FILL	750	L.F.	$42.00	$31,500.00
15	LOW PRESSURE SEWER LATERAL CONNECTION	15	EA.	$600.00	$9,000.00
16	INLINE CLEANOUT	3	EA.	$2,400.00	$7,200.00
17	TERMINAL CLEANOUT	1	EA.	$1,750.00	$1,750.00
18	SIMPLEX GRINDER PUMP	15	EA.	$7,500.00	$112,500.00
MANHOLES					
19	MANHOLE - 4 FT DIAMETER	37	EA.	$3,500.00	$130,900.00
20	MANHOLE FRAME AND COVER	37	EA.	$500.00	$18,700.00
21	PROTECTIVE MANHOLE LINING	3	EA.	$3,600.00	$10,800.00
SURFACING					
22	TEMPORARY PAVING	1,594	L.F.	$10.00	$15,937.50
23	MUNICIPAL PAVING RESTORATION	5,460	L.F.	$35.00	$191,100.00
SURFACING	PENNDOT PAVING RESTORATION	915	L.F.	$60.00	$54,900.00
25	VEGETATIVE RESTORATION	2,630	L.F.	$5.00	$13,150.00
26	PRIVATE ROAD RESTORATION	5,720	L.F.	$30.00	$171,600.00

ESTIMATED CONSTRUCTION COSTS	$2,525,500.00
CONSTRUCTION CONTINGENCY @ 15%	$378,800.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$726,100.00
TOTAL ESTIMATED PROJECT COSTS	$3,630,400.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	139
ESTIMATED CAPITAL COST PER EDU	$26,100.00

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. Temporary paving is assumed to be 2" of 19.5mm HMA
5. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.
6. PennDOT paving restoration is assumed to be 5" 37.5mm base and 2" 12.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 3 - AREA 5
ALTERNATIVE 5A: COMBINATION OF GRAVITY SEWER AND EXISTING PUMP STATION AND FORCE MAIN COLLECTION SYSTEM

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$146,000.00	$146,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$146,000.00	$146,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$73,000.00	$73,000.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE FILL	9,800	L.F.	$110.00	$1,078,000.00
5	8" PVC MAIN - SUITABLE FILL	980	L.F.	$105.00	$102,900.00
6	8" X 6" WYE	316	EA.	$95.00	$30,020.00
7	6" SERVICE LATERAL - AGGREGATE FILL	7,900	L.F.	$100.00	$790,000.00
8	6" SERVICE LATERAL CLEANOUT - SUITABLE FILL	316	EA.	$450.00	$142,200.00
9	CLAY DIKE	41	EA.	$250.00	$10,250.00
MANHOLES					
10	MANHOLE - 4 FT DIAMETER	42	EA.	$3,500.00	$147,000.00
11	MANHOLE FRAME AND COVER	42	EA.	$500.00	$21,000.00
12	PROTECTIVE MANHOLE LINING	3	EA.	$3,600.00	$10,800.00
SURFACING					
13	TEMPORARY PAVING	4,425	L.F.	$10.00	$44,250.00
14	VEGETATIVE RESTORATION	980	L.F.	$5.00	$4,900.00
15	PRIVATE ROAD RESTORATION	17,700	L.F.	$30.00	$531,000.00

ESTIMATED CONSTRUCTION COSTS	$3,277,300.00
CONSTRUCTION CONTINGENCY @ 15%	$491,600.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$942,200.00
TOTAL ESTIMATED PROJECT COSTS	$4,711,100.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	316
ESTIMATED CAPITAL COST PER EDU	$14,900.00

SURFACING

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diamter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. Tempoerary paving is assumed to be 2" of 19.5mm HMA
5. Municipal paving restoration is assumed to be 5" 37.5mm base and 1.5" 9.5mm wearing.
6. PennDOT paving restoration is assumed to be 8" 37.5mm base and 2" 12.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 3 - AREA 5
ALTERNATIVE 5B: COMBINATION OF GRAVITY SEWER AND LOW PRESSURE SEWER COLLECTION SYSTEM

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$163,000.00	$163,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$163,000.00	$163,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$82,000.00	$82,000.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE FILL	7,350	L.F.	$110.00	$808,500.00
5	8" PVC MAIN - SUITABLE FILL	330	L.F.	$105.00	$34,650.00
6	8" X 6" WYE	239	EA.	$95.00	$22,705.00
7	6" SERVICE LATERAL - AGGREGATE FILL	5,975	L.F.	$100.00	$597,500.00
8	6" SERVICE LATERAL CLEANOUT - SUITABLE FILL	239	EA.	$450.00	$107,550.00
9	CLAY DIKE	29	EA.	$250.00	$7,250.00
LOW PRESSURE SEWER					
10	LOW PRESSURE SEWER MAIN - AGGREGATE FILL	3,270	L.F.	$50.00	$163,500.00
11	LOW PRESSURE SEWER LATERAL	1,925	L.F.	$40.00	$77,000.00
12	LOW PRESSURE SEWER LATERAL CONNECTION	77	EA.	$600.00	$46,200.00
13	INLINE CLEANOUT	5	EA.	$2,400.00	$12,000.00
14	TERMINAL CLEANOUT	4	EA.	$1,750.00	$7,000.00
15	AIR/VACUUM RELEASE VALVES & APPURTENANCES	2	EA.	$6,000.00	$12,000.00
16	SIMPLEX GRINDER PUMP	77	EA.	$7,500.00	$577,500.00
MANHOLES					
17	MANHOLE - 4 FT DIAMETER	30	EA.	$3,500.00	$105,000.00
18	MANHOLE FRAME AND COVER	30	EA.	$500.00	$15,000.00
19	PROTECTIVE MANHOLE LINING	3	EA.	$3,600.00	$10,800.00
SURFACING					
20	TEMPORARY PAVING	4,630	L.F.	$10.00	$46,300.00
21	VEGETATIVE RESTORATION	330	L.F.	$5.00	$1,650.00
22	PRIVATE ROAD RESTORATION	18,520	L.F.	$30.00	$555,600.00
MISCELLANEOUS					
23	ABANDON EXISTING PUMPING STATION	1	L.S.	$50,000.00	$50,000.00
24	ABANDON EXISTING FORCEMAIN	1	L.S.	$5,500.00	$5,500.00

ESTIMATED CONSTRUCTION COSTS	$3,671,200.00
CONSTRUCTION CONTINGENCY @ 15%	$550,700.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$1,055,500.00
TOTAL ESTIMATED PROJECT COSTS	$5,277,400.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	316
ESTIMATED CAPITAL COST PER EDU	$16,700.00

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. Temporary paving is assumed to be 2" of 19.5mm HMA
5. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.
6. PennDOT paving restoration is assumed to be 5" 37.5mm base and 2" 12.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 3 - AREA 6
ALTERNATIVE 6A: COMBINATION OF GRAVITY SEWER, LOW PRESSURE SEWER, AND PUMP STATION AND ASSOCIATED FORCE MAIN COLLECTION SYSTEM

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$130,000.00	$130,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$130,000.00	$130,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$65,000.00	$65,000.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE FILL	6,700	L.F.	$110.00	$737,000.00
5	8" X 6" WYE	54	EA.	$95.00	$5,130.00
6	6" SERVICE LATERAL - AGGREGATE FILL	1,350	L.F.	$100.00	$135,000.00
7	6" SERVICE LATERAL CLEANOUT - SUITABLE FILL	54	EA.	$450.00	$24,300.00
8	CLAY DIKE	22	EA.	$250.00	$5,500.00
LOW PRESSURE SEWER					
9	LOW PRESSURE SEWER MAIN - AGGREGATE FILL	970	L.F.	$50.00	$48,500.00
10	LOW PRESSURE SEWER LATERAL	450	L.F.	$40.00	$18,000.00
11	LOW PRESSURE SEWER LATERAL CONNECTION	18	EA.	$600.00	$10,800.00
12	TERMINAL CLEANOUT	1	EA.	$1,750.00	$1,750.00
13	INLINE CLEANOUT	1	EA.	$2,400.00	$2,400.00
14	AIR/VACUUM RELEASE VALVES & APPURTENANCES	2	EA.	$6,000.00	$12,000.00
15	SIMPLEX GRINDER PUMP	18	EA.	$7,500.00	$135,000.00
MANHOLES					
16	MANHOLE - 4 FT DIAMETER	23	EA.	$3,500.00	$80,500.00
17	MANHOLE FRAME AND COVER	23	EA.	$500.00	$11,500.00
18	PROTECTIVE MANHOLE LINING	3	EA.	$3,600.00	$10,800.00
PUMP STATION					
19	PUMP STATION	1	L.S.	$250,000.00	$250,000.00
FORCE MAIN					
20	4" FORCE MAIN - AGGREGATE FILL	6,800	L.F.	$45.00	$306,000.00
21	FORCE MAIN AIR RELEASE CHAMBER	3	EA.	$6,000.00	$18,000.00
SURFACING					
22	TEMPORARY PAVING	4,068	L.F.	$10.00	$40,675.00
23	MUNICIPAL PAVING RESTORATION	9,470	L.F.	$35.00	$331,450.00
24	PENNDOT PAVING RESTORATION	6,800	L.F.	$60.00	$408,000.00

ESTIMATED CONSTRUCTION COSTS	$2,917,300.00
CONSTRUCTION CONTINGENCY @ 15%	$437,600.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$838,700.00
TOTAL ESTIMATED PROJECT COSTS	$4,193,600.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	72
ESTIMATED CAPITAL COST PER EDU	$58,200.00

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. Temporary paving is assumed to be 2" of 19.5mm HMA
5. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.
6. PennDOT paving restoration is assumed to be 5" 37.5mm base and 2" 12.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 3 - AREA 6
ALTERNATIVE 6B: COMBINATION OF GRAVITY SEWER AND LOW PRESSURE SEWER COLLECTION SYSTEM WITH DECENTRALIZED PACKAGED WASTEWATER TREATMENT PLANT

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$80,000.00	$80,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$80,000.00	$80,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$40,000.00	$40,000.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE FILL	6,700	L.F.	$110.00	$737,000.00
5	8" X 6" WYE	54	EA.	$95.00	$5,130.00
6	6" SERVICE LATERAL - AGGREGATE FILL	1,350	L.F.	$100.00	$135,000.00
7	6" SERVICE LATERAL CLEANOUT - SUITABLE FILL	54	EA.	$450.00	$24,300.00
8	CLAY DIKE	22	EA.	$250.00	$5,500.00
LOW PRESSURE SEWER					
9	LOW PRESSURE SEWER MAIN - AGGREGATE FILL	970	L.F.	$50.00	$48,500.00
10	LOW PRESSURE SEWER LATERAL	450	L.F.	$40.00	$18,000.00
11	LOW PRESSURE SEWER LATERAL CONNECTION	18	EA.	$600.00	$10,800.00
12	TERMINAL CLEANOUT	1	EA.	$1,750.00	$1,750.00
13	INLINE CLEANOUT	1	EA.	$2,400.00	$2,400.00
14	AIR/VACUUM RELEASE VALVES & APPURTENANCES	2	EA.	$6,000.00	$12,000.00
15	SIMPLEX GRINDER PUMP	18	EA.	$7,500.00	$135,000.00
MANHOLES					
16	MANHOLE - 4 FT DIAMETER	23	EA.	$3,500.00	$80,500.00
17	MANHOLE FRAME AND COVER	23	EA.	$500.00	$11,500.00
18	PROTECTIVE MANHOLE LINING	3	EA.	$3,600.00	$10,800.00
SURFACING					
19	TEMPORARY PAVING	2,368	L.F.	$10.00	$23,675.00
20	MUNICIPAL PAVING RESTORATION	9,470	L.F.	$35.00	$331,450.00

ESTIMATED CONSTRUCTION COSTS	$1,793,300.00
CONSTRUCTION CONTINGENCY @ 15%	$269,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$515,600.00
TOTAL ESTIMATED PROJECT COSTS	$2,577,900.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	72
ESTIMATED CAPITAL COST PER EDU	$35,800.00

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. Temporary paving is assumed to be 2" of 19.5mm HMA
5. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.
6. PennDOT paving restoration is assumed to be 5" 37.5mm base and 2" 12.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 3 - AREA 7
ALTERNATIVE 7A: COMBINATION OF GRAVITY SEWER, LOW PRESSURE SEWER, AND PUMP STATION AND ASSOCIATED FORCE MAIN COLLECTION SYSTEM

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$68,000.00	$68,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$68,000.00	$68,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$34,000.00	$34,000.00
LOW PRESSURE SEWER					
4	LOW PRESSURE SEWER MAIN - AGGREGATE FILL	800	L.F.	$50.00	$40,000.00
5	LOW PRESSURE SEWER LATERAL	200	L.F.	$40.00	$8,000.00
6	LOW PRESSURE SEWER LATERAL CONNECTION	8	EA.	$600.00	$4,800.00
7	INLINE CLEANOUT	1	EA.	$2,400.00	$2,400.00
8	TERMINAL CLEANOUT	1	EA.	$1,750.00	$1,750.00
9	AIR/VACUUM RELEASE VALVES & APPURTENANCES	2	EA.	$6,000.00	$12,000.00
10	SIMPLEX GRINDER PUMP	8	EA.	$7,500.00	$60,000.00
GRAVITY SEWER					
11	8" PVC MAIN - AGGREGATE FILL	3,300	L.F.	$110.00	$363,000.00
12	8" X 6" WYE	38	EA.	$95.00	$3,610.00
13	6" SERVICE LATERAL - AGGREGATE FILL	950	L.F.	$100.00	$95,000.00
14	6" SERVICE LATERAL CLEANOUT - SUITABLE FILL	38	EA.	$450.00	$17,100.00
15	CLAY DIKE	11	EA.	$250.00	$2,750.00
MANHOLES					
16	MANHOLE - 4 FT DIAMETER	12	EA.	$3,500.00	$42,000.00
17	MANHOLE FRAME AND COVER	12	EA.	$500.00	$6,000.00
18	PROTECTIVE MANHOLE LINING	6	EA.	$3,600.00	$21,600.00
19	CONNECTION TO EXISTING MANHOLE	1	EA.	$1,000.00	$1,000.00
FORCE MAIN					
20	4" FORCE MAIN - AGGREGATE FILL	2,750	L.F.	$45.00	$123,750.00
21	FORCE MAIN AIR RELEASE CHAMBER	1	EA.	$6,000.00	$6,000.00
PUMP STATION					
22	PUMP STATION	1	L.S.	$250,000.00	$250,000.00
SURFACING					
23	TEMPORARY PAVING	2,000	L.F.	$10.00	$20,000.00
24	MUNICIPAL PAVING RESTORATION	8,000	L.F.	$35.00	$280,000.00

ESTIMATED CONSTRUCTION COSTS	$1,530,800.00
CONSTRUCTION CONTINGENCY @ 15%	$229,600.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$440,100.00
TOTAL ESTIMATED PROJECT COSTS	$2,200,500.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	46
ESTIMATED CAPITAL COST PER EDU	$47,800.00

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. Temporary paving is assumed to be 2" of 19.5mm HMA
5. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 3 - AREA 7
ALTERNATIVE 7B: LOW PRESSURE SEWER COLLECTION SYSTEM

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$48,000.00	$48,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$48,000.00	$48,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5 %	1	L.S.	$24,000.00	$24,000.00
LOW PRESSURE SEWER					
4	LOW PRESSURE SEWER MAIN - AGGREGATE FILL	5,113	L.F.	$50.00	$255,650.00
5	LOW PRESSURE SEWER LATERAL	1,150	L.F.	$40.00	$46,000.00
6	LOW PRESSURE SEWER LATERAL CONNECTION	46	EA.	$600.00	$27,600.00
7	INLINE CLEANOUT	8	EA.	$2,400.00	$19,200.00
8	TERMINAL CLEANOUT	2	EA.	$1,750.00	$3,500.00
9	AIR/VACUUM RELEASE VALVES & APPURTENANCES	2	EA.	$6,000.00	$12,000.00
10	SIMPLEX GRINDER PUMP	46	EA.	$7,500.00	$345,000.00
MANHOLES					
11	PROTECTIVE MANHOLE LINING	3	EA.	$3,600.00	$10,800.00
12	CONNECTION TO EXISTING MANHOLE	1	EA.	$1,000.00	$1,000.00
SURFACING					
13	TEMPORARY PAVING	1,566	L.F.	$10.00	$15,657.50
14	MUNICIPAL PAVING RESTORATION	6,263	L.F.	$35.00	$219,205.00
			ESTIMATED CONSTRUCTION COSTS		$1,075,600.00
			CONSTRUCTION CONTINGENCY @ 15%		$161,300.00
			ENGINEERING, ADMIN, & LEGAL FEES @ 25%		$309,200.00
			TOTAL ESTIMATED PROJECT COSTS		$1,546,100.00
			ESTIMATED NUMBER OF EDUs TO BE SERVED		46
			ESTIMATED CAPITAL COST PER EDU		$33,600.00

SURFACING

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. Temporary paving is assumed to be 2" of 19.5mm HMA
5. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
ALTERNATIVE 8A: FLOW TO DTMA - CONVEYANCE & TREATMENT

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$254,000.00	$254,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$254,000.00	$254,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$127,000.00	$127,000.00
DTMA GRAVITY SEWER TO WWTP					
4	24" PVC MAIN - AGGREGATE FILL	600	L.F.	$135.00	$81,000.00
PUMP STATION - NEWBERRY ROAD					
5	PUMP STATION	1	L.S.	$250,000.00	$250,000.00
6	4" FORCE MAIN - AGGREGATE FILL	600	L.F.	$45.00	$27,000.00
PUMP STATION - LYTLE FARMS					
7	PUMP STATION	1	L.S.	$450,000.00	$450,000.00
8	10" FORCE MAIN - AGGREGATE FILL	12,350	L.F.	$100.00	$1,235,000.00
9	FORCE MAIN AIR RELEASE CHAMBER	6	EA.	$10,000.00	$61,750.00
PUMP STATION - PINE MANOR					
10	PUMP STATION	1	L.S.	$380,000.00	$380,000.00
11	8" FORCE MAIN AGGREGATE FILL	7,900	L.F.	$80.00	$632,000.00
12	FORCE MAIN AIR RELEASE CHAMBER	4	EA.	$9,000.00	$35,550.00
PUMP STATION - CEDAR MANOR					
13	PUMP STATION	1	L.S.	$300,000.00	$300,000.00
14	6" FORCE MAIN - AGGREGATE FILL	6,600	L.F.	$60.00	$396,000.00
15	FORCE MAIN AIR RELEASE CHAMBER	3	EA.	$8,000.00	$26,400.00
CROSSING					
16	6" FORCE MAIN STREAM CROSSING	75	L.F.	$150.00	$11,250.00
17	8" FORCE MAIN STREAM CROSSING	25	L.F.	$175.00	$4,375.00
18	10" FORCE MAIN STREAM CROSSING	50	L.F.	$200.00	$10,000.00
SURFACING					
19	TEMPORARY PAVING	6,000	L.F.	$10.00	$60,000.00
20	MUNICIPAL PAVING RESTORATION	14,650	L.F.	$35.00	$512,750.00
21	VEGETATIVE RESTORATION	3,400	L.F.	$5.00	$17,000.00
22	PENNDOT PAVING RESTORATION	9,400	L.F.	$60.00	$564,000.00
22	PRIVATE ROAD RESTORATION	600	L.F.	$30.00	$18,000.00

ESTIMATED CONSTRUCTION COSTS	$5,707,100.00
CONSTRUCTION CONTINGENCY @ 15%	$856,100.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$1,640,800.00
TOTAL ESTIMATED PROJECT COSTS	$8,204,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	814
ESTIMATED CAPITAL COST PER EDU	$10,100.00

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. Force main crossing is assumed to be bore & jack w/casing pipe.
5. Temporary paving is assumed to be 2" of 19.5mm HMA
6. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.
7. PennDOT paving restoration is assumed to be 5" 37.5mm base and 2" 12.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
ALTERNATIVE 8B: FLOW TO MBA - CONVEYANCE & TREATMENT

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$204,000.00	$204,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$204,000.00	$204,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$102,000.00	$102,000.00
PUMP STATION - NEWBERRY ROAD					
5	PUMP STATION	1	L.S.	$250,000.00	$250,000.00
6	4" FORCE MAIN - AGGREGATE FILL	4,800	L.F.	$45.00	$216,000.00
7	FORCE MAIN AIR RELEASE CHAMBER	2	EA.	$7,500.00	$15,000.00
PUMP STATION - LYTLE FARMS					
8	PUMP STATION	1	L.S.	$450,000.00	$450,000.00
9	10" FORCE MAIN - AGGREGATE FILL	3,100	L.F.	$100.00	$310,000.00
10	FORCE MAIN AIR RELEASE CHAMBER	1	EA.	$10,000.00	$10,000.00
PUMP STATION - PINE MANOR					
11	PUMP STATION	1	L.S.	$380,000.00	$380,000.00
12	8" FORCE MAIN - AGGREGATE FILL	7,900	L.F.	$80.00	$632,000.00
13	FORCE MAIN AIR RELEASE CHAMBER	4	EA.	$9,000.00	$36,000.00
PUMP STATION - CEDAR MANOR					
14	PUMP STATION	1	L.S.	$300,000.00	$300,000.00
15	6" FORCE MAIN - AGGREGATE FILL	6,600	L.F.	$60.00	$396,000.00
16	FORCE MAIN AIR RELEASE CHAMBER	3	EA.	$8,000.00	$24,000.00
CROSSING					
17	4" FORCE MAIN STREAM CROSSING	75	L.F.	$125.00	$9,375.00
18	6" FORCE MAIN STREAM CROSSING	75	L.F.	$150.00	$11,250.00
19	8" FORCE MAIN STREAM CROSSING	25	L.F.	$175.00	$4,375.00
20	10" FORCE MAIN STREAM CROSSING	50	L.F.	$200.00	$10,000.00
21	10" FORCE MAIN CREEK CROSSING	300	L.F.	$200.00	$60,000.00
SURFACING					
22	TEMPORARY PAVING	4,750	L.F.	$10.00	$47,500.00
23	VEGETATIVE RESTORATION	3,400	L.F.	$5.00	$17,000.00
24	MUNICIPAL PAVING RESTORATION	9,600	L.F.	$35.00	$336,000.00
25	PENNDOT PAVING RESTORATION	9,400	L.F.	$60.00	$564,000.00

ESTIMATED CONSTRUCTION COSTS	$4,588,500.00
CONSTRUCTION CONTINGENCY @ 15%	$688,300.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$1,319,200.00
TOTAL ESTIMATED PROJECT COSTS	$6,596,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	814
ESTIMATED CAPITAL COST PER EDU	$8,100.00

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. Force main crossing is assumed to be bore & jack w/casing pipe.
5. Temporary paving is assumed to be 2" of 19.5mm HMA
6. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.
7. PennDOT paving restoration is assumed to be 5" 37.5mm base and 2" 12.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
ALTERNATIVE 8C: FLOW SPLIT TO DTMA/MBA - CONVEYANCE & TREATMENT

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$315,000.00	$315,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$315,000.00	$315,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$157,000.00	$157,000.00
DTMA GRAVITY SEWER TO WWTP					
4	18" PVC MAIN - AGGREGATE FILL	600	L.F.	$120.00	$72,000.00
PUMP STATION - NEWBERRY ROAD					
5	PUMP STATION	1	L.S.	$250,000.00	$250,000.00
6	4" FORCE MAIN - AGGREGATE FILL	600	L.F.	$45.00	$27,000.00
PUMP STATION - LYTLE FARMS					
7	PUMP STATION	1	L.S.	$450,000.00	$450,000.00
8	10" FORCE MAIN - AGGREGATE FILL	2,900	L.F.	$100.00	$290,000.00
9	FORCE MAIN AIR RELEASE CHAMBER	2	EA.	$10,000.00	$20,000.00
PUMP STATION - PINE MANOR					
10	PUMP STATION	1	L.S.	$380,000.00	$380,000.00
11	8" FORCE MAIN - AGGREGATE FILL	26,800	L.F.	$80.00	$2,144,000.00
12	FORCE MAIN AIR RELEASE CHAMBER	10	EA.	$9,000.00	$90,000.00
PUMP STATION - CEDAR MANOR					
13	PUMP STATION	1	L.S.	$300,000.00	$300,000.00
14	6" FORCE MAIN - AGGREGATE FILL	6,600	L.F.	$60.00	$396,000.00
15	FORCE MAIN AIR RELEASE CHAMBER	3	EA.	$8,000.00	$24,000.00
CROSSING					
16	6" FORCE MAIN STREAM CROSSING	75	L.F.	$150.00	$11,250.00
17	8" FORCE MAIN STREAM CROSSING	25	L.F.	$175.00	$4,375.00
18	10" FORCE MAIN STREAM CROSSING	50	L.F.	$200.00	$10,000.00
19	10" FORCE MAIN CREEK CROSSING	300	L.F.	$200.00	$60,000.00
SURFACING					
20	TEMPORARY PAVING	8,375	L.F.	$10.00	$83,750.00
21	VEGETATIVE RESTORATION	3,400	L.F.	$5.00	$17,000.00
22	MUNICIPAL PAVEMENT RESTORATION	14,650	L.F.	$35.00	$512,750.00
23	PENNDOT PAVING RESTORATION	18,850	L.F.	$60.00	$1,131,000.00
24	PRIVATE ROAD RESTORATION	600	L.F.	$30.00	$18,000.00

ESTIMATED CONSTRUCTION COSTS	$7,078,100.00
CONSTRUCTION CONTINGENCY @ 15%	$1,061,700.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$2,035,000.00
TOTAL ESTIMATED PROJECT COSTS	$10,174,800.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	814
ESTIMATED CAPITAL COST PER EDU	$12,500.00

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. Force main crossing is assumed to be bore & jack w/casing pipe.
5. Temporary paving is assumed to be 2" of 19.5mm HMA
6. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.
7. PennDOT paving restoration is assumed to be 5" 37.5mm base and 2" 12.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
ALTERNATIVE 8D - FLOW TO REGIONALIZED WWTP - CONVEYANCE & TREATMENT

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$315,000.00	$315,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	$315,000.00	$315,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$158,000.00	$158,000.00
WWTP					
4	WWTP (0.325 MGD CAPACITY)	1	L.S.	$3,000,000.00	$3,000,000.00
PUMP STATION - NEWBERRY ROAD					
5	PUMP STATION	1	L.S.	$250,000.00	$250,000.00
6	4" FORCE MAIN - AGGREGATE FILL	6,100	L.F.	$45.00	$274,500.00
7	FORCE MAIN AIR RELEASE CHAMBER	3	EA.	$7,500.00	$22,500.00
PUMP STATION - PINE MANOR					
8	PUMP STATION	1	L.S.	$380,000.00	$380,000.00
9	8" FORCE MAIN - AGGREGATE FILL	7,900	L.F.	$80.00	$632,000.00
10	FORCE MAIN AIR RELEASE CHAMBER	4	EA.	$9,000.00	$36,000.00
PUMP STATION - CEDAR MANOR					
11	PUMP STATION	1	L.S.	$300,000.00	$300,000.00
12	6" FORCE MAIN - AGGREGATE FILL	6,600	L.F.	$60.00	$396,000.00
13	FORCE MAIN AIR RELEASE CHAMBER	3	EA.	$8,000.00	$24,000.00
CROSSING					
14	4" FORCE MAIN STREAM CROSSING	75	L.F.	$125.00	$9,375.00
15	6" FORCE MAIN STREAM CROSSING	75	L.F.	$150.00	$11,250.00
16	8" FORCE MAIN STREAM CROSSING	25	L.F.	$175.00	$4,375.00
17	10" FORCE MAIN STREAM CROSSING	50	L.F.	$200.00	$10,000.00
18	10" FORCE MAIN CREEK CROSSING	300	L.F.	$200.00	$60,000.00
SURFACING					
19	TEMPORARY PAVING	4,300	L.F.	$10.00	$43,000.00
20	VEGETATIVE RESTORATION	3,400	L.F.	$5.00	$17,000.00
21	MUNICIPAL PAVEMENT RESTORATION	7,800	L.F.	$35.00	$273,000.00
22	PENNDOT PAVING RESTORATION	9,400	L.F.	$60.00	$564,000.00

ESTIMATED CONSTRUCTION COSTS	$6,258,000.00
CONSTRUCTION CONTINGENCY @ 15%	$938,700.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%	$1,799,200.00
TOTAL ESTIMATED PROJECT COSTS	$8,995,900.00
ESTIMATED NUMBER OF EDUs TO BE SERVED	814
ESTIMATED CAPITAL COST PER EDU	$11,100.00

Cost Estimate Assumptions

1. Small diameter low pressure main is assumed to be 2" diameter HDPE
2. Gravity sewer main is asssumed to be 11' depth
3. 4' diameter manholes are assumed to be 11' depth
4. Force main crossing is assumed to be bore & jack w/casing pipe.
5. Temporary paving is assumed to be 2" of 19.5mm HMA
6. Municipal paving restoration is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.
7. PennDOT paving restoration is assumed to be 5" 37.5mm base and 2" 12.5mm wearing.

OPINION OF PROBABLE PROJECT COST
FOR
LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE
SEWER DISTRICT NO. 1 AND 2
ALTERNATIVE 8E: DECENTRALIZED PACKAGED WASTEWATER TREATMENT PLANT

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 5%	1	L.S.	$120,000.00	$120,000.00
2	EROSION AND SEDIMENTATION CONTROL @ 2.5%	1	L.S.	$60,000.00	$60,000.00
WWTP					
3	SERVICE AREA 1 WWTP (0.011 MGD CAPACITY)	1	L.S.	$510,000.00	$510,000.00
4	SERVICE AREA 3 WWTP (0.015 MGD CAPACITY)	1	L.S.	$530,000.00	$530,000.00
5	SERVICE AREA 4 WWTP (0.030 MGD CAPACITY)	1	L.S.	$750,000.00	$750,000.00
6	SERVICE AREA 6 WWTP (0.019 MGD CAPACITY)	1	L.S.	$610,000.00	$610,000.00
			ESTIMATED CONSTRUCTION COSTS		$2,580,000.00
			CONSTRUCTION CONTINGENCY @ 15%		$387,000.00
			ENGINEERING, ADMIN, & LEGAL FEES @ 25%		$741,800.00
			TOTAL ESTIMATED PROJECT COSTS		$3,710,000.00
			ESTIMATED NUMBER OF EDUs TO BE SERVED		301
			ESTIMATED CAPITAL COST PER EDU		$12,300.00

Table 5-2 Summary of Wastewater Treatment Alternatives Considering BNR Upgrades – Buildout Flow Projections

Wastewater Treatment Alternative	New WWTP Construction or Upgrade Construction Costs	WWTP Capacity/Tapping Fees	Nutrient Credit Purchase Annual Costs from New Londonderry Connections	WWTP Annual User Fees	Estimated Total Annual O&M Cost (Nutrient Credit Purchase + User Fees)	Present Worth of Annual O&M Costs	Total Present Worth	Total EDUs	Present Worth per EDU
Scenario A									
8A - All Flow to DTMA WWTP	$7,536,500	$6,108,300	$0	$1,873,218	$1,873,218	$26,622,929	$40,267,729	3,702	**$10,877**
Scenario B									
8B - All Flow to MBA WWTP	$5,856,500	$4,349,850	$0	$1,450,729	$1,450,729	$20,618,346	$30,824,696	3,702	**$8,326**
Scenario C									
8C - Split Flow DTMA WWTP Component	*$2,287,900*	*$2,864,400*	*$0*	*$878,419*	*$878,419*	*$12,484,442*	*$17,636,742*	*1,736*	*$10,159*
8C - Split Flow MBA WWTP Component	*$1,168,600*	*$2,310,050*	*$0*	*$827,599*	*$827,599*	*$11,762,174*	*$15,240,824*	*1,966*	*$7,752*
8C - Split Flow Total	$3,456,500	$5,174,450	$0	$1,706,018	$1,706,018	$24,246,616	$32,877,566	3,702	**$8,881**
Scenario D									
8D - New Regionalized WWTP	$12,650,000	$0	$3,502	$1,813,411	$1,816,913	$25,822,706	$38,472,706	3,702	**$10,392**
Scenario E									
8E - Flow to Decentralized WWTP Component	*$3,800,000*	*$0*	*$690*	*$145,434*	*$146,124*	*$2,076,774*	*$5,876,774*	*334*	*$17,595*
8E - Flow to MBA WWTP Component	*$1,168,600*	*$2,310,050*	*$0*	*$827,599*	*$827,599*	*$11,762,174*	*$15,240,824*	*1,966*	*$7,752*
8E - Total	$4,968,600	$2,310,050	$690	$973,033	$973,723	$13,838,948	$21,117,598	2,300	**$9,182**

Notes:

1. *WWTP Capacity/Tapping Fees and Annual User Fees are based on correspondence received from DTMA and MBA (Appendix E)*
2. *BNR Upgrade is based on an assumed $8.00 per Gallon capacity needed to serve future Londonderry Township connections.*
3. *Assumed Nutrient Credit Purchase is based on $3.50 per lb TN and per lb TP.*
4. *Present Worth calculation assumes 3.50% for 20 years.*

Table 5-3 Summary of Wastewater Treatment Alternatives Considering Hydraulic Capacity Upgrades Only and Nutrient Credit Purchasing – Buildout Flow Projections

Wastewater Treatment Alternative	New WWTP Construction or Upgrade Construction Costs	WWTP Capacity/Tapping Fees	Nutrient Credit Purchase Annual Costs from New Londonderry Connections	WWTP Annual User Fees	Estimated Total Annual O&M Cost (Nutrient Credit Purchase + User Fees)	Present Worth of Annual O&M Costs	Total Present Worth	Total EDUs	Present Worth per EDU
Scenario A									
8A - All Flow to DTMA WWTP	$4,710,313	$6,108,300	$289,289	$1,873,218	$2,162,507	$30,734,418	$41,553,031	3,702	**$11,224**
Scenario B									
8B - All Flow to MBA WWTP	$3,660,313	$4,349,850	$0	$1,450,729	$1,450,729	$20,618,346	$28,628,508	3,702	**$7,733**
Scenario C									
8C - Split Flow DTMA WWTP Component	*$1,429,938*	*$2,864,400*	*$171,887*	*$878,419*	*$1,050,306*	*$14,927,372*	*$19,221,710*	*1,736*	*$11,072*
8C - Split Flow MBA WWTP Component	*$730,375*	*$2,310,050*	*$0*	*$827,599*	*$827,599*	*$11,762,174*	*$14,802,599*	*1,966*	*$7,529*
8C - Split Flow Total	$2,160,313	$5,174,450	$171,887	$1,706,018	$1,877,905	$26,689,547	$34,024,309	3,702	**$9,191**
Scenario D									
8D - New Regionalized WWTP	$12,650,000	$0	$3,502	$1,813,411	$1,816,913	$25,822,706	$38,472,706	3,702	**$10,392**
Scenario E									
8E - Flow to Decentralized WWTP Component	*$3,800,000*	*$0*	*$690*	*$145,434*	*$146,124*	*$2,076,774*	*$5,876,774*	*334*	*$17,595*
8E - Flow to MBA WWTP Component	*$730,375*	*$2,310,050*	*$0*	*$827,599*	*$827,599*	*$11,762,174*	*$14,802,599*	*1,966*	*$7,529*
8E - Total	$4,530,375	$2,310,050	$690	$973,033	$973,723	$13,838,948	$20,679,373	2,300	**$8,991**

Notes:

1. *WWTP Capacity/Tapping Fees and Annual User Fees are based on correspondence received from DTMA and MBA (Appendix E)*
2. *Hydraulic Capacity Upgrade is based on an assumed $5.00 per Gallon capacity needed to serve future Londonderry Township connections.*
3. *Assumed Nutrient Credit Purchase is based on $3.50 per lb TN and per lb TP.*
4. *Present Worth calculation assumes 3.50% for 20 years.*

Table 5-4 Summary of Collection, Conveyance, and Wastewater Treatment Alternatives – Initial Flow Projections

Alternative	Estimated Project Costs for New Facilities & Upgrades										Total Project Costs	Estimated Annual Operations & Maintenance Costs				Present Worth		Number of EDUs	Estimated Present Worth per EDU
	Collection System Construction Costs (w/15% Contingency)	Conveyance Facilities Construction Costs (w/15% Contingency)	New WWTP Construction or Hydraulic Upgrade Construction Costs (w/15% Contingency)	Subtotal Construction Cost	Engineering Fee %	Engineering Fee	Admin & Legal Fee %	Admin & Legal Fee	Subtotal Engineering, Admin & Legal Fee	DTMA and MBA WWTP Capacity Fees		Collection System O&M	Conveyance Facilities O&M	Estimated Total Annual O&M Cost (Nutrient Credit Purchase + User Fees)	Total Annual O&M	Present Worth of Annual O&M	Total Present Worth		
Scenario A																			
8A - All Flow to DTMA WWTP	$15,957,400	$6,563,200	$0	$22,520,600	12%	$2,702,472	1.00%	$225,206	$2,927,678	$1,343,100	$26,791,378	$92,600	$157,100	$491,817	$741,517	$10,538,738	$37,330,116	814	***$45,860***
Scenario B																			
8B - All Flow to MBA WWTP	$15,957,400	$5,276,800	$0	$21,234,200	12%	$2,548,104	1.00%	$212,342	$2,760,446	$956,450	$24,951,096	$92,600	$153,300	$335,552	$581,452	$8,263,827	$33,214,923	814	***$40,805***
Scenario C																			
8C - Split Flow DTMA WWTP Component	*$9,483,400*	*$6,857,250*	*$0*	*$16,340,650*	*12%*	$1,960,878	*1.00%*	*$163,407*	*$2,124,285*	*$953,700*	*$19,418,635*	*$50,000*	*$102,580*	$384,876	*$537,456*	*$7,638,535*	*$27,057,169*	*578*	*$46,812*
8C - Split Flow MBA WWTP Component	*$6,474,000*	*$1,282,550*	*$0*	*$7,756,550*	*12%*	*$930,786*	*1.00%*	*$77,566*	*$1,008,352*	*$277,300*	*$9,042,202*	*$42,600*	*$62,320*	*$102,271*	*$207,191*	*$2,944,686*	*$11,986,887*	236	*$50,792*
8C - Split Flow Total	$15,957,400	$8,139,800	$0	$24,097,200	12%	$2,891,664	1.00%	$240,972	$3,132,636	$1,231,000	$28,460,836	$92,600	$164,900	$487,147	$744,647	$10,583,220	$39,178,928	814	***$47,966***
Scenario D																			
8D - New Regionalized WWTP (0.325 MGD)	$15,957,400	$3,315,500	$3,900,000	$23,172,900	12%	$2,780,748	1.00%	$231,729	$3,012,477	$0	$26,185,377	$92,600	$91,900	$420,739	$605,239	$8,601,894	$34,787,271	814	***$42,736***
Scenario E																			
8E - Flow to Decentralized WWTP Component	*$5,403,900*	--	*$2,214,000*	*$7,617,900*	*12%*	*$914,148*	*1.00%*	*$76,179*	*$990,327*	*$0*	*$8,608,227*	*$25,900*	--	*$111,761*	*$137,661*	*$1,956,488*	*$10,564,715*	262	*$40,323*
8E - Flow to MBA WWTP Component	*$6,474,000*	*$1,282,550*	*$0*	*$7,756,550*	*12%*	*$930,786*	*1.00%*	*$77,566*	*$1,008,352*	*$277,300*	*$9,042,202*	*$42,600*	*$62,320*	*$102,271*	*$207,191*	*$2,944,686*	*$11,986,887*	236	*$50,792*
8E - Total	$11,877,900	$1,282,550	$2,214,000	$15,374,450	12%	$1,844,934	1.00%	$153,745	$1,998,679	$277,300	$17,650,429	$68,500	$62,320	$214,032	$344,852	$4,901,173	$22,551,602	498	***$45,284***
Scenario F																			
8F – LE to DTMA	$1,236,900	--	--	$1,236,900	15%	$185,535	1.00%	$12,369	$197,904	$75,900	$1,510,704	$7,600	--	$42,076	$49,676	$706,015	$2,216,719	46	***$48,190***

Notes:

1. *WWTP Capacity/Tapping Fees and Annual User Fees are based on correspondence received from DTMA and MBA (Appendix E)*
2. *Collection System Construction Costs does not include Alternative 6A.*
3. *Assumed Nutrient Credit Purchase is based on $3.50 per lb TN and per lb TP.*
4. *Present Worth calculation assumes 3.50% for 20 years.*

Table 5-5 Summary of Collection, Conveyance, and Wastewater Treatment Alternatives – Buildout Flow Projections

Alternative	Estimated Project Costs for New Facilities & Upgrades										Total Project Costs	Estimated Annual Operations & Maintenance Costs				Present Worth		Number of EDUs	Estimated Present Worth per EDU
	Collection System Construction Costs (w/15% Contingency)	Conveyance Facilities Construction Costs (w/15% Contingency)	New WWTP Construction or Hydraulic Upgrade Construction Costs (w/15% Contingency)	Subtotal Construction Cost	Engineering Fee %	Engineering Fee	Admin & Legal Fee %	Admin & Legal Fee	Subtotal Engineering, Admin & Legal Fee	DTMA and MBA WWTP Capacity Fees		Collection System O&M	Conveyance Facilities O&M	Estimated Total Annual O&M Cost (Nutrient Credit Purchase + User Fees)	Total Annual O&M	Present Worth of Annual O&M	Total Present Worth		
Scenario A																			
8A - All Flow to DTMA WWTP	$19,312,300	$6,563,200	$4,710,313	$30,585,813	15%	$4,587,872	1.00%	$305,858	$4,893,730	$6,108,300	$41,587,843	$106,400	$157,100	$2,162,507	$2,426,007	$34,479,386	$76,067,229	3,702	***$20,548***
Scenario B																			
8B - All Flow to MBA WWTP	$19,312,300	$5,276,800	$3,660,313	$28,249,413	15%	$4,237,412	1.00%	$282,494	$4,519,906	$4,349,850	$37,119,169	$106,400	$153,300	$1,450,729	$1,710,429	$24,309,307	$61,428,475	3,702	***$16,593***
Scenario C																			
8C - Split Flow DTMA WWTP Component	*$12,838,300*	*$6,857,250*	*$1,429,938*	*$21,125,488*	*15%*	$3,168,823	*1.00%*	*$211,255*	*$3,380,078*	*$2,864,400*	$27,369,966	*$63,800*	*$102,580*	*$1,050,306*	*$1,216,686*	*$17,292,032*	*$44,661,998*	*1,736*	*$25,727*
8C - Split Flow MBA WWTP Component	*$6,474,000*	*$1,282,550*	*$730,375*	*$8,486,925*	*15%*	$1,273,039	*1.00%*	*$84,869*	*$1,357,908*	*$2,310,050*	$12,154,883	*$42,600*	*$62,320*	*$827,599*	*$932,519*	*$13,253,340*	*$25,408,223*	*1,966*	*$12,924*
8C - Split Flow Total	$19,312,300	$8,139,800	$2,160,313	$29,612,413	15%	$4,441,862	1.00%	$296,124	$4,737,986	$5,174,450	$39,524,849	$106,400	$164,900	$1,877,905	$2,149,205	$30,545,372	$70,070,220	3,702	***$18,928***
Scenario D																			
8D - New Regionalized WWTP (1.0 MGD)	$19,312,300	$3,315,500	$12,650,000	$35,277,800	15%	$5,291,670	1.00%	$352,778	$5,644,448	$0	$40,922,248	$106,400	$91,900	$1,816,913	$2,015,213	$28,641,025	$69,563,273	3,702	***$18,791***
Scenario E																			
8E - Flow to Decentralized WWTP Component	*$7,466,200*	--	*$3,000,000*	*$10,466,200*	*15%*	$1,569,930	*1.00%*	*$104,662*	*$1,674,592*	*$0*	$12,140,792	*$34,200*	--	*$146,124*	*$180,324*	*$2,562,838*	*$14,703,630*	*334*	*$44,023*
8E - Flow to MBA WWTP Component	*$6,474,000*	*$1,282,550*	*$730,375*	*$8,486,925*	*15%*	$1,273,039	*1.00%*	*$84,869*	*$1,357,908*	*$2,310,050*	$12,154,883	*$42,600*	*$62,320*	*$827,599*	*$932,519*	*$13,253,340*	*$25,408,223*	*1,966*	*$12,924*
8E - Total	$13,940,200	$1,282,550	$3,730,375	$18,953,125	15%	$2,842,969	1.00%	$189,531	$3,032,500	$2,310,050	$24,295,675	$76,800	$62,320	$973,723	$1,112,843	$15,816,178	$40,111,853	2,300	***$17,440***
Scenario F																			
8F – LE to DTMA	$1,236,900	--	--	$1,236,900	15%	$185,535	1.00%	$12,369	$197,904	$75,900	$1,510,704	$7,600	--	$42,076	$49,676	$706,015	$2,216,719	46	***$48,190***

Notes:

1. *WWTP Capacity/Tapping Fees and Annual User Fees are based on correspondence received from DTMA and MBA (Appendix E)*
2. *Collection System Construction Costs includes Alternative 6A.*
3. *Assumed Nutrient Credit Purchase is based on $3.50 per lb TN and per lb TP.*
4. *Present Worth calculation assumes 3.50% for 20 years.*

Table 6-1 **Summary of Funding Analysis for Project A (Alternative 7B)**

			Alternative 7B									
Funding Scenario	**Est. Total Project Cost**	**Amount Financed (1)**	**Assumed Grant**	**Loan Amount**	**Rate**	**Term (Years)**	**Annual DS**	**Total O&M**	**Total Annual Cost**	**No. of EDUs**	**Annual Cost Per EDU (2)**	**Monthly Cost Per EDU (2)**
Option A - PENNVEST Financing			PENNVEST									
W/ Full Eligible Grant	$ 1,510,704	$ 1,310,704	$ 1,310,704	$ -	1.00%	30	$ -	$ 49,676	$ 49,676	46	$1,137	$95
W/ 50% of Eligible Grant	$ 1,510,704	$ 1,310,704	$ 655,352	$ 655,352	1.00%	30	$25,394	$ 49,676	$ 75,070	46	$1,718	$143
W/ 25% of Eligible Grant	$ 1,510,704	$ 1,310,704	$ 327,676	$ 983,028	1.00%	30	$38,090	$ 49,676	$ 87,766	46	$2,008	$167
Option B - Single USDA Loan												
Full USDA Financing	$ 1,597,371	$ 1,397,371	$ -	$ 1,397,371	4.00%	40	$ 70,600	$ 49,676	$ 120,276	46	$2,752	$229
Option C - Single Bond Issue												
Full Bond Financing	$ 1,610,704	$ 1,410,704	$ -	$ 1,410,704	5.00%	30	$ 91,768	$ 49,676	$ 141,444	46	$3,237	$270

1) Amount Financed equals Total Project Cost less Tapping Fee Contributions of $4,000/EDU

2) Assumes 5% delinquency rate on user fees

Table 6-2 Summary of Funding Analysis for Project B (Alternative 8B)

			Lender A					Lender B										
Funding Scenario	**Est. Total Project Cost**	**Amount Financed [1]**	**Assumed Grant**	**Loan Amount**	**Rate**	**Term (Years)**	**Annual DS**	**Amount Financed via Loan/Grant**	**Assumed Grant**	**Loan Amount**	**Rate**	**Term (Years)**	**Annual DS**	**Total Annual DS**	**Total O&M**	**Total Annual Cost**	**No. of EDUs**	**Annual Cost Per EDU [2]**	**Monthly Cost Per EDU [2]**
Option A - PENNVEST Financing - Dual PV Rounds				PENNVEST						PENNVEST									
W/ Full Eligible Grant	$ 24,951,096	$ 19,951,096	$ 8,175,000	$ 1,800,548	1.00%	30	$ 69,768	$ 9,975,548	$ 8,175,000	$ 1,800,548	1.00%	30	$69,768	$139,536	$ 581,452	$ 720,987	814	$932	$78
W/ 50% of Eligible Grant	$ 24,951,096	$ 19,951,096	$ 4,087,500	$ 5,888,048	1.00%	30	$ 228,151	$ 9,975,548	$ 4,087,500	$ 5,888,048	1.00%	30	$228,151	$456,302	$ 581,452	$ 1,037,753	814	$1,342	$112
W/ 25% of Eligible Grant	$ 24,951,096	$ 19,951,096	$ 2,043,750	$ 7,931,798	1.00%	30	$ 307,342	$ 9,975,548	$ 2,043,750	$ 7,931,798	1.00%	30	$ 307,342	$614,684	$ 581,452	$ 1,196,136	814	$1,547	$129
Option B - Single USDA Loan				USDA															
Full USDA Financing	$ 26,081,096	$ 21,081,096	$ -	$21,081,096	4.00%	40	$ 1,065,091		NA	NA	NA	NA	NA	$ 1,065,091	$ 581,452	$ 1,646,542	814	$2,129	$177
Option C - Single Bond Issue				Bond															
Full Bond Financing	$ 25,251,096	$ 20,251,096	$ -	$20,251,096	5.00%	30	$ 1,317,363		NA	NA	NA	NA	NA	$ 1,317,363	$ 581,452	$1,898,815	814	$2,455	$205
Option D - PENNVEST/Bond Financing - Single PV Round				Bond						PENNVEST									
W/ Full Eligible Grant	$ 25,121,096	$ 20,121,096	$ -	$10,171,096	4.50%	30	$ 624,419	$ 9,950,000	$ 9,950,000	$ -	1.00%	30	$0	$ 624,419	$ 581,452	$ 1,205,871	814	$1,559	$130
W/ 50% of Eligible Grant	$ 25,121,096	$ 20,121,096	$ -	$10,171,096	4.50%	30	$ 624,419	$ 9,950,000	$ 4,975,000	$ 4,975,000	1.00%	30	$192,772	$ 817,191	$ 581,452	$ 1,398,643	814	$1,809	$151
W/ 25% of Eligible Grant	$ 25,121,096	$ 20,121,096	$ -	$10,171,096	4.50%	30	$ 624,419	$ 9,950,000	$ 2,487,500	$ 7,462,500	1.00%	30	$289,158	$ 913,577	$ 581,452	$ 1,495,029	814	$1,933	$161
Option E - PENNVEST/USDA Financing				USDA						PENNVEST									
W/ Full Eligible Grant	$ 25,411,096	$ 20,411,096	$ -	$ 9,411,096	4.00%	40	$ 475,481	$ 11,000,000	$11,000,000	$ -	1.00%	30	$0	$ 475,481	$ 581,452	$ 1,056,933	814	$1,367	$114
W/ 50% of Eligible Grant	$ 25,411,096	$ 20,411,096	$ -	$ 9,411,096	4.00%	40	$ 475,481	$ 11,000,000	$ 5,500,000	$ 5,500,000	1.00%	30	$213,115	$ 688,596	$ 581,452	$ 1,270,048	814	$1,642	$137
W/ 25% of Eligible Grant	$ 25,411,096	$ 20,411,096	$ -	$ 9,411,096	4.00%	40	$ 475,481	$ 11,000,000	$ 2,750,000	$ 8,250,000	1.00%	30	$319,672	$ 795,153	$ 581,452	$ 1,376,605	814	$1,780	$148

1) Amount Financed equals Total Project Cost less Tapping Fee Contributions of $4,000 and Developer Contributions of ~$2.2M

2) Assumes 5% delinquency rate on user fees

Table 6-3 Summary of Funding Analysis for Project B with 450 Additional EDUs (Alternative 8B)

Funding Scenario	Est. Total Project Cost	Amount Financed [1]	Lender A: Amount Financed via Loan/Grant	Lender A: Assumed Grant	Lender A: Loan Amount	Lender A: Rate	Lender A: Term (Years)	Lender A: Annual DS	Lender B: Amount Financed via Loan/Grant	Lender B: Assumed Grant	Lender B: Loan Amount	Lender B: Rate	Lender B: Term (Years)	Lender B: Annual DS	Total Annual DS	Total O&M	Total Annual Cost	No. of EDUs	Annual Cost Per EDU [2]	Monthly Cost Per EDU [2]
Option A - PENNVEST Financing - Dual PV Rounds			PENNVEST						PENNVEST											
W/ Full Eligible Grant	$ 24,951,096	$ 19,951,096	$ 9,975,548	$ 8,175,000	$ 1,800,548	1.00%	30	$ 69,768	$ 9,975,548	$ 8,175,000	$ 1,800,548	1.00%	30	$ 69,768	$ 139,536	$ 581,452	$ 720,987	1,264	$600	$50
W/ 50% of Eligible Grant	$ 24,951,096	$ 19,951,096	$ 9,975,548	$ 4,087,500	$ 5,888,048	1.00%	30	$ 228,151	$ 9,975,548	$ 4,087,500	$ 5,888,048	1.00%	30	$ 228,151	$ 456,302	$ 581,452	$ 1,037,753	1,264	$864	$72
W/ 25% of Eligible Grant	$ 24,951,096	$ 19,951,096	$ 9,975,548	$ 2,043,750	$ 7,931,798	1.00%	30	$ 307,342	$ 9,975,548	$ 2,043,750	$ 7,931,798	1.00%	30	$ 307,342	$ 614,684	$ 581,452	$ 1,196,136	1,264	$996	$83
Option B - Single USDA Loan			USDA																	
Full USDA Financing	$ 26,081,096	$ 21,081,096	$ 21,081,096	$ -	$21,081,096	4.00%	40	$ 1,065,091		NA	NA	NA	NA	NA	$ 1,065,091	$ 581,452	$ 1,646,542	1,264	$1,371	$114
Option C - Single Bond Issue			Bond																	
Full Bond Financing	$ 25,251,096	$ 20,251,096	$ 9,411,096	$ -	$20,251,096	5.00%	30	$ 1,317,363		NA	NA	NA	NA	NA	$ 1,317,363	$ 581,452	$1,898,815	1,264	$1,581	$132
Option D - PENNVEST/Bond Financing - Single PV Round			Bond						PENNVEST											
W/ Full Eligible Grant	$ 25,121,096	$ 20,121,096	$ 10,171,096	$ -	$10,171,096	4.50%	30	$ 624,419	$ 9,950,000	$ 9,950,000	$ -	1.00%	30	$0	$ 624,419	$ 581,452	$ 1,205,871	1,264	$1,004	$84
W/ 50% of Eligible Grant	$ 25,121,096	$ 20,121,096	$ 10,171,096	$ -	$10,171,096	4.50%	30	$ 624,419	$ 9,950,000	$ 4,975,000	$ 4,975,000	1.00%	30	$192,772	$ 817,191	$ 581,452	$ 1,398,643	1,264	$1,165	$97
W/ 25% of Eligible Grant	$ 25,121,096	$ 20,121,096	$ 10,171,096	$ -	$10,171,096	4.50%	30	$ 624,419	$ 9,950,000	$ 2,487,500	$ 7,462,500	1.00%	30	$289,158	$ 913,577	$ 581,452	$ 1,495,029	1,264	$1,245	$104
Option E - PENNVEST/USDA Financing			USDA						PENNVEST											
W/ Full Eligible Grant	$ 25,411,096	$ 20,411,096	$ 9,411,096	$ 9,411,096	$ 475,481	4.00%	40	$ 475,481	$ 11,000,000	$11,000,000	$ -	1.00%	30	$0	$ 475,481	$ 581,452	$ 1,056,933	1,264	$880	$73
W/ 50% of Eligible Grant	$ 25,411,096	$ 20,411,096	$ 9,411,096	$ 9,411,096	$ 475,481	4.00%	40	$ 475,481	$ 11,000,000	$ 5,500,000	$ 5,500,000	1.00%	30	$213,115	$ 688,596	$ 581,452	$ 1,270,048	1,264	$1,058	$88
W/ 25% of Eligible Grant	$ 25,411,096	$ 20,411,096	$ 9,411,096	$ 9,411,096	$ 475,481	4.00%	40	$ 475,481	$ 11,000,000	$ 2,750,000	$ 8,250,000	1.00%	30	$319,672	$ 795,153	$ 581,452	$ 1,376,605	1,264	$1,146	$96

1) Amount Financed equals Total Project Cost less Tapping Fee Contributions of $4,000 and Developer Contributions of ~$2.2M. Tapping Fee contributions only assumed from the initial 814 EDUs. Tapping Fees received from the remaining 450 EDUs will be used to repay the interim funding.

2) Assumes 5% delinquency rate on user fees

Table 6-4 Summary of Funding Analysis for Project C (Component of Alternative 8E)

Funding Scenario	Est. Total Project Cost	Amount Financed (1)	Project Area 8E					Total O&M	Total Annual Cost	No. of EDUs	Annual Cost Per EDU (2)	Monthly Cost Per EDU (2)
			Assumed Grant	Loan Amount	Rate	Term (Years)	Annual DS					
Option A - PENNVEST Financing			PENNVEST									
W/ Full Eligible Grant	$ 6,814,420	$ 6,214,420	$ 5,300,000	$ 2,225,124	1.00%	30	$ 70,305	$ 96,643	$ 166,948	188	$935	$78
W/ 50% of Eligible Grant	$ 6,814,420	$ 6,214,420	$ 2,200,000	$ 4,014,420	1.00%	30	$ 155,551	$ 96,643	$ 252,194	188	$1,412	$118
W/ 25% of Eligible Grant	$ 6,814,420	$ 6,214,420	$ 1,100,000	$ 5,114,420	1.00%	30	$ 198,174	$ 96,643	$ 294,817	188	$1,651	$138
Option B - Single USDA Loan			USDA									
Full USDA Financing	$ 8,455,124	$ 7,655,124	$ -	$ 6,474,420	4.00%	40	$ 316,164	$ 96,643	$ 412,807	188	$2,311	$193
Option C - Single Bond Issue			Bond									
Full Bond Financing	$ 8,625,124	$ 8,025,124	$ -	$ 6,414,420	5.00%	30	$ 417,267	$ 96,643	$ 513,910	188	$2,877	$240

1) Amount Financed equals Total Project Cost less Tapping Fee Contributions of $4,000

2) Assumes 5% delinquency rate on user fees

HRG
Herbert, Rowland & Grubic, Inc.
Engineering & Related Services

369 East Park Drive
Harrisburg, PA 17111
(717) 564-1121
FAX (717) 564-1158
www.hrg-inc.com

VIA CERTIFIED MAIL

September 25, 2014

Pennsylvania Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Service Section
400 Market Street
P.O. Box 8552
Harrisburg, Pennsylvania 17105-8552

Re: PNDI Project Environmental Review
Londonderry Township Act 537 Plan Update
Londonderry Township, Dauphin County

Dear Sir or Madam:

I am contacting you to request comment on possible impact upon natural resources within your jurisdiction. Please find enclosed one (1) copy each of the following:

- Project narrative
- USGS map
- PNDI Project Environmental Review Receipt for Service Area 2 (Project Search ID 20140922467810)
- Proposed sanitary sewer Alternatives 2A, 2B, and 2C drawings
- PNDI Project Environmental Review Receipt for Service Area 7 (Project Search ID 20140922467829)
- Proposed sanitary sewer Alternatives 7A and 7B drawings

Please contact me if you have any questions or need further information.

Very Truly Yours,

Herbert, Rowland & Grubic, Inc.

Staci Tupta

Staci A. Tupta, E.I.T.
Staff Professional I

SAT/vjm
001068.0430/06/A
P:\0010\001068_0430\Admin\Clearances\PNDI\2014.09.25 PA DCNR Cover Letter.docx

Enclosures

c: File (w/encl.)

Project Narrative
Act 537 Official Sewage Facilities Plan Update
Londonderry Township, Dauphin County

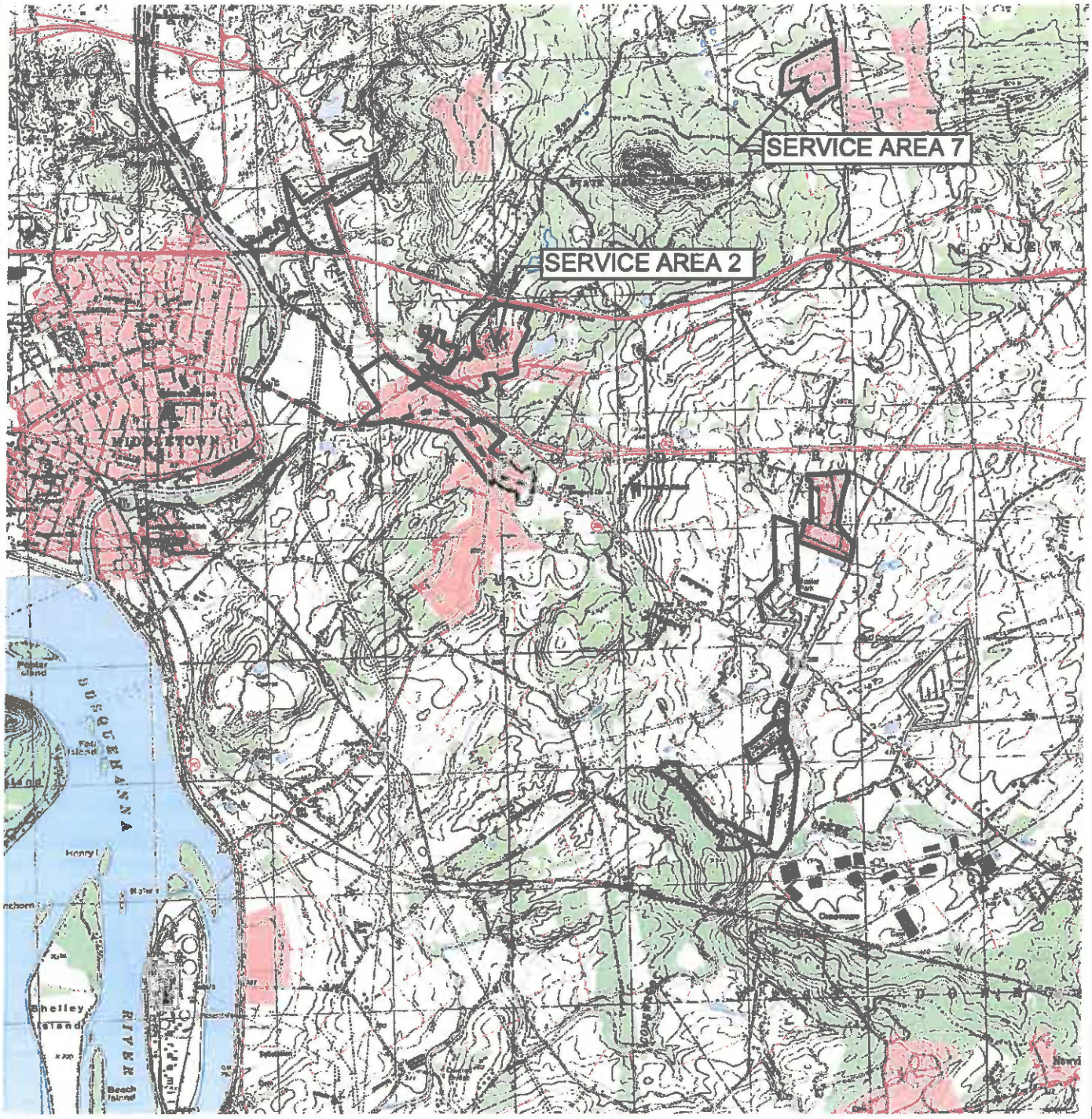
Londonderry Township is currently preparing an Act 537 Plan Update that includes Sewer District Nos. 2 and 3 in their entirety, as well as a developed portion of On-Lot Management District B known as Londonderry Estates. An evaluation of existing on-lot disposal systems indicated that there is a need for improved wastewater disposal in several areas throughout the Township. The seven (7) service areas were identified based on needs derived from previous planning, number of on-lot malfunctions, well water sample results, and unsuitable soil type.

At this time, several areas are being evaluated in order to determine if the installation of a public sanitary sewer system is feasible. Although several alternatives have been evaluated for the public treatment of wastewater generated by the installation of a new sanitary sewer system, the wastewater from this project will most likely be conveyed to the Middletown Borough Authority's Wastewater Treatment Plant (MBA WWTP) and/or Derry Township Municipal Authority's Southwest Wastewater Treatment Plant (DTMA SW WWTP). Collection and conveyance alternatives being evaluated in the service areas include any of the following or a combination of: gravity sewer mains, low-pressure sewer mains and individual grinder pump units located at each residence, and installation of pumping stations and associated force mains.

All new facilities will be constructed below grade within existing roadways, access drives, and rights-of-way where feasible.

Of the seven (7) service areas, the PNDI search indicated two (2) service areas as having potential impact upon natural resources within your jurisdiction. The two (2) service areas are indicated on the attached USGS map. Also attached are the proposed collection and conveyance alternative drawings for the two (2) service areas.

The total area studied for the Act 537 Update is approximately 605 acres. The actual disturbance from the potential sewer system is unknown at this time; however, the total disturbed area for Service Areas 2 and 7 was estimated based on the proposed alternative drawings. The estimated disturbed area for Service Area 2 is 23,800 linear feet or 2.2 acres and Service Area 7 is 6,900 linear feet of 0.63 acres.



MIDDLETOWN QUADRANGLE

GRAPHIC SCALE

4000' 2000' 0' 4000'

SCALE: 1"= 4000'

HRG
Engineering & Related Services
AN EMPLOYEE-OWNED COMPANY

869 East Park Drive
Harrisburg, PA 17111
(717) 564-1121
Fax (717) 564-1125
hrg@hrginc.com
www.hrginc.com

ACT 537 PLAN SERVICE AREAS FOR LONDONDERRY TOWNSHIP

LONDONDERRY TOWNSHIP DAUPHIN COUNTY PENNSYLVANIA

PROJ. MGR. – MDC	
DESIGN– SAT	
CADD– RSF	
CHECKED–	
SCALE– AS NOTED	
DATE– SEPT. 2014	

DRAWING NO. 1

SHEET NO. 1 OF 1

PROJECT 001050.0430

1. PROJECT INFORMATION

Project Name: **Service Area 2**
Date of review: **9/22/2014 1:57:39 PM**
Project Category: **Waste Transfer, Treatment, and Disposal,Liquid waste/Effluent,Sewage module/Act 537 plan**
Project Area: **153.5** acres
County: **Dauphin** Township/Municipality: **Londonderry**
Quadrangle Name: **MIDDLETOWN** ~ ZIP Code: **17057**
Decimal Degrees: **40.199422 N, -76.700216 W**
Degrees Minutes Seconds: **40° 11' 57.9" N, -76° 42' 0.8" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
PA Department of Conservation and Natural Resources	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jurisdictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE: Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

PGC Species: (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)
Scientific Name: Sensitive Species**
Common Name:
Current Status: Endangered

PA Department of Conservation and Natural Resources

RESPONSE: Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

DCNR Species: (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here: http://www.gis.dcnr.state.pa.us/hgis-er/PNDI_DCNR.aspx.)
Scientific Name: Rudbeckia fulgida
Common Name: Eastern Coneflower
Current Status: Special Concern Species*
Proposed Status: Threatened

PA Fish and Boat Commission

RESPONSE: No impact is anticipated to threatened and endangered species and/or special concern

species and resources.

U.S. Fish and Wildlife Service

RESPONSE: No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.* is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictinal agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, send the following information to the agency(s) seeking this information (see AGENCY CONTACT INFORMATION).

Check-list of *Minimum* Materials to be submitted:

__X__ **SIGNED** copy of this Project Environmental Review Receipt
__X__ Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
__X__ Project location information (name of USGS Quadrangle, Township/Mu?icipality, and County)
__X__ USGS 7.5-minute Quadrangle with project boundary clearly indicated, and quad name on the map

The inclusion of the following information may expedite the review process.
__X__ A basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
____ Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____ Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. For cases where a "Potential Impact" to threatened and endangered species has been identified before the application has been submitted to DEP, the application should not be submitted until the impact has been resolved. For cases where "Potential Impact" to special concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at http://www.naturalheritage.state.pa.us.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA. 17105-8552
Fax:(717) 772-0271

U.S. Fish and Wildlife Service
Endangered Species Section
315 South Allen Street, Suite 322, State College, PA. 16801-4851
NO Faxes Please.

PA Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

7. PROJECT CONTACT INFORMATION

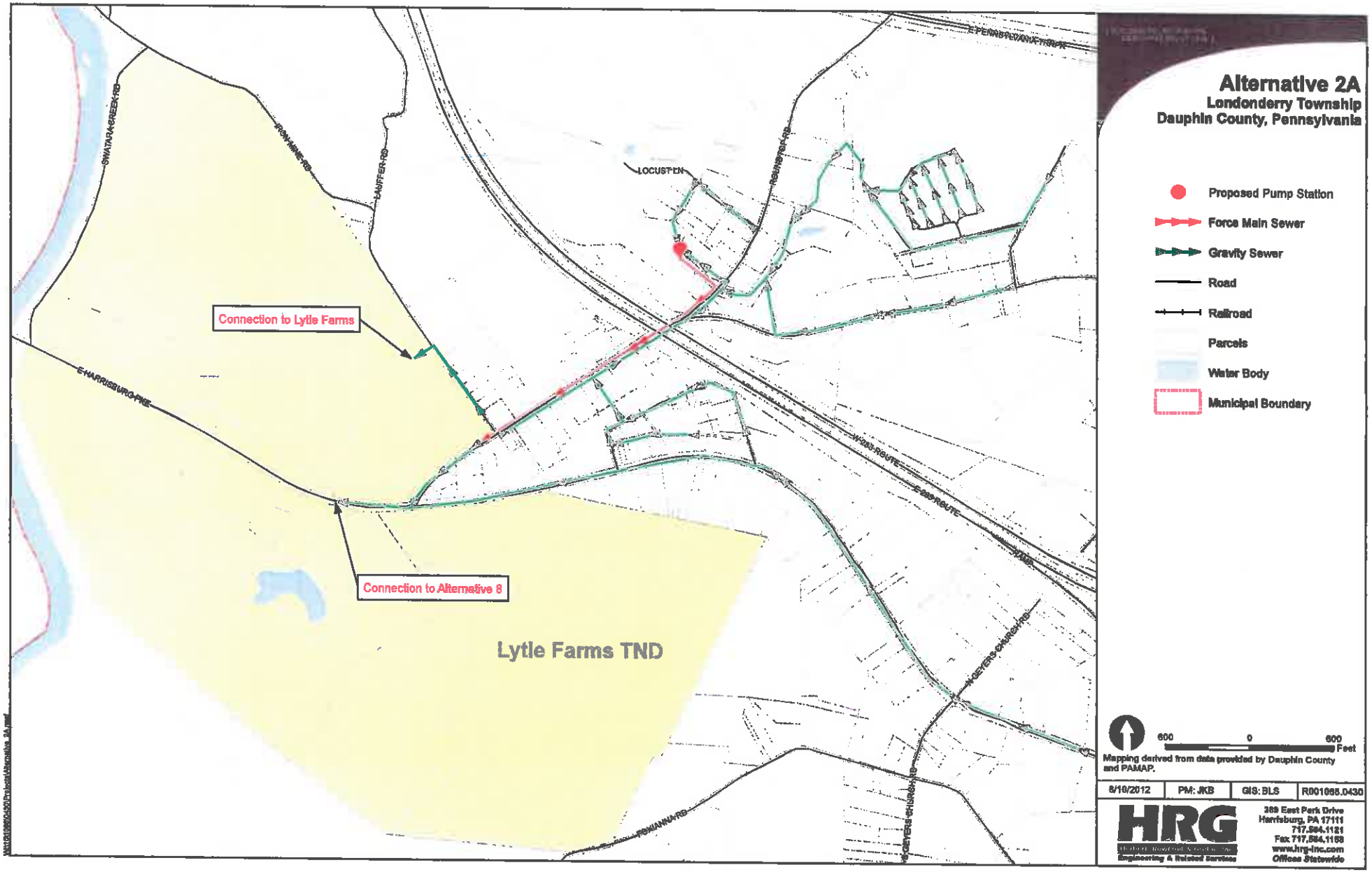
Name: STACI TUPTA
Company/Business Name: HERBERT, ROWLAND & GRUBIC, INC
Address: 369 EAST PARK DRIVE
City, State, Zip: HARRISBURG, PA 17111
Phone: (717) 564-1121 Fax: (717) 564-1158
Email: STUPTA@HRG-INC.COM

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

Staci Tupta
applicant/project proponent signature

9/23/2014
date


Alternative 2A
Londonderry Township
Dauphin County, Pennsylvania
Proposed Pump Station
Force Main Sewer
Gravity Sewer
Road
Railroad
Parcels
Water Body
Municipal Boundary
Connection to Lytle Farms
Connection to Alternative 8
Lytle Farms TND
SWATARA CREEK RD
IRONMINE RD
LAUFFER RD
LOCUST LN
ROBINSON RD
PENNSYLVANIA TRAIL
E HARRISBURG PIKE
W 230 ROUTE
E 230 ROUTE
ROGERS CHURCH RD
ROGERS CHURCH RD
ROXIANNA RD
600 0 600 Feet
Mapping derived from data provided by Dauphin County and PAMAP.
8/10/2012
PM: JKB
GIS: BLS
R001065.0430
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369 East Park Drive
Harrisburg, PA 17111
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Fax 717.564.1159
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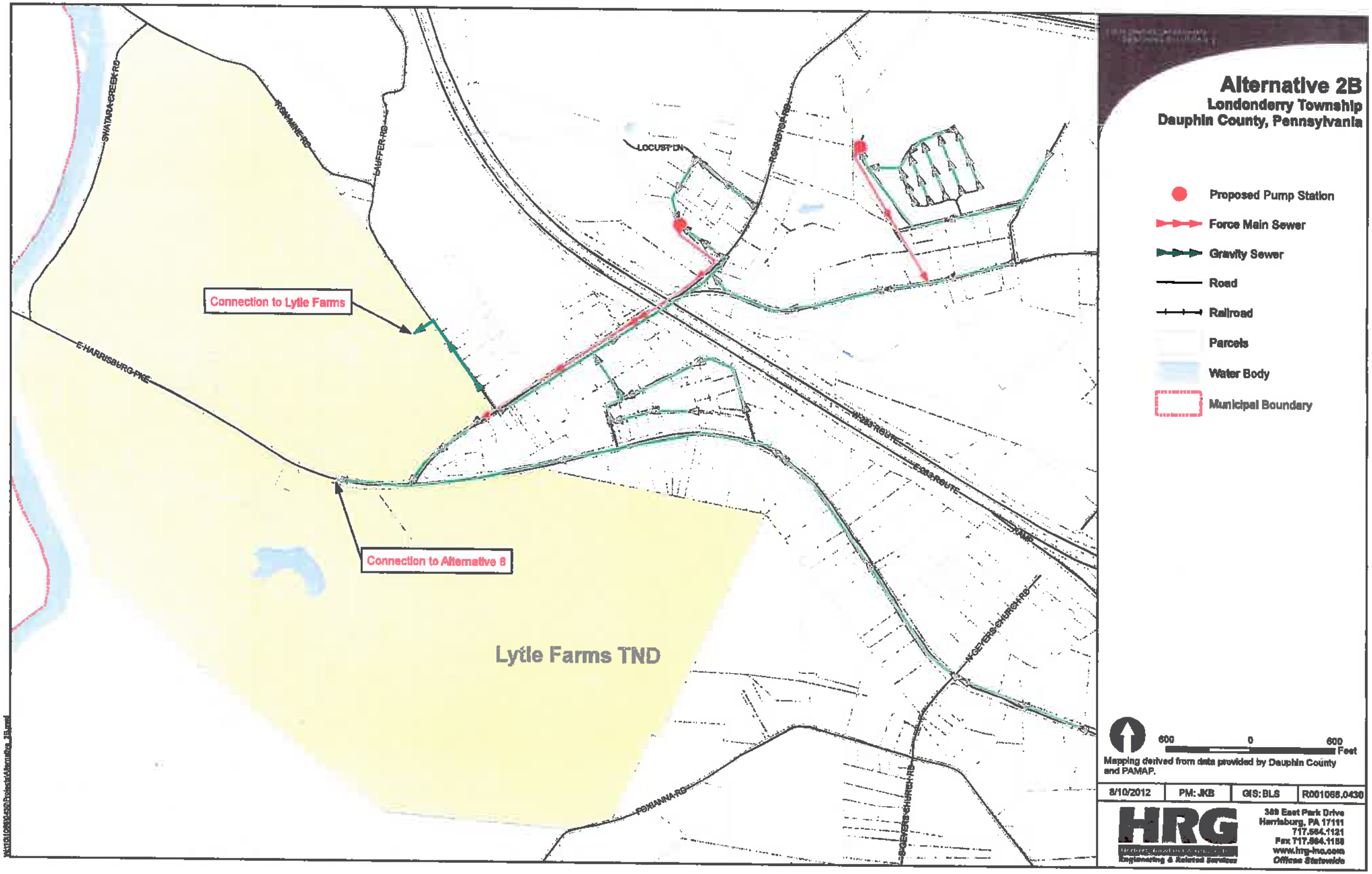
Alternative 2B
Londonderry Township
Dauphin County, Pennsylvania
Proposed Pump Station
Force Main Sewer
Gravity Sewer
Road
Railroad
Parcels
Water Body
Municipal Boundary
Connection to Lytle Farms
Connection to Alternative 8
Lytle Farms TND
SWATARA-CREEK-RD
ROMMINE-RD
LAUFFER-RD
LOCUST-LN
ROUNDTOP-RD
E-HARRISBURG-PIKE
FOXIANNA-RD
S-GEYERS-CHURCH-RD
N-GEYERS-CHURCH-RD
600 0 600 Feet
Mapping derived from data provided by Dauphin County and PAMAP.
8/10/2012
PM: JKB
GIS: BLS
R001068.0430
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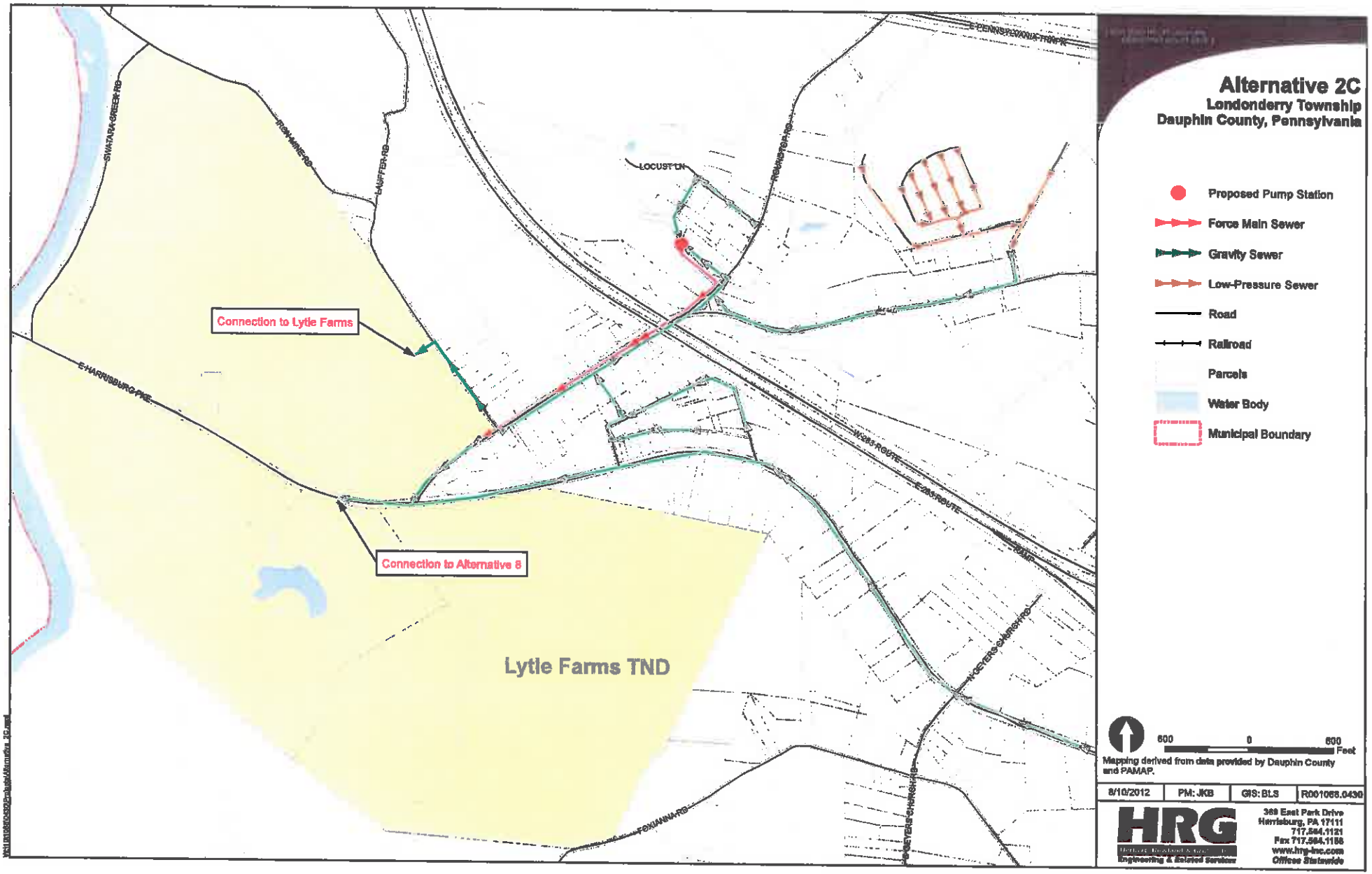
Alternative 2C
Londonderry Township
Dauphin County, Pennsylvania
Proposed Pump Station
Force Main Sewer
Gravity Sewer
Low-Pressure Sewer
Road
Railroad
Parcels
Water Body
Municipal Boundary
Connection to Lytle Farms
Connection to Alternative 8
Lytle Farms TND
E HARRISBURG PIKE
SWATARA CREEK RD
ROHRERS RD
LAUFFER RD
LOCUST LN
E PENNSYLVANIA TRNPK
W 283 ROUTE
E 283 ROUTE
FOXIANNA RD
600 0 600 Feet
Mapping derived from data provided by Dauphin County and PAMAP.
8/10/2012
PM: JKB
GIS: BLS
R001068.0430
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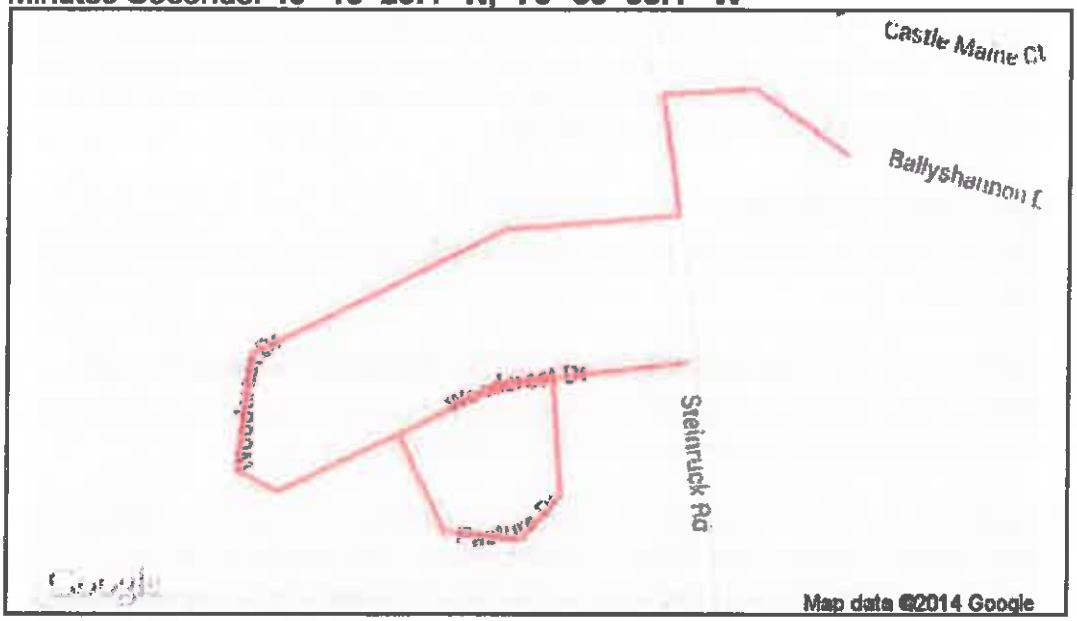
Engineering & Related Services
369 East Park Drive
Harrisburg, PA 17111
717.564.1121
Fax 717.564.1156
www.hrg-inc.com
Offices Statewide

1. PROJECT INFORMATION

Project Name: **Service Area 7**
Date of review: **9/22/2014 2:32:08 PM**
Project Category: **Waste Transfer, Treatment, and Disposal,Liquid waste/Effluent,Sewage module/Act 537 plan**
Project Length: **5667.3** feet
County: **Dauphin** Township/Municipality: **Londonderry,Conewago**
Quadrangle Name: **MIDDLETOWN** ~ ZIP Code: **17022,17057**
Decimal Degrees: **40.223709 N, -76.659203 W**
Degrees Minutes Seconds: **40° 13' 25.4" N, -76° 39' 33.1" W**



2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

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Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

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PA Game Commission

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources

RESPONSE: Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

DCNR Species: (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here: http://www.gis.dcnr.state.pa.us/hgis-er/PNDI_DCNR.aspx.)
Scientific Name: Rudbeckia fulgida
Common Name: Eastern Coneflower
Current Status: Special Concern Species*
Proposed Status: Threatened

PA Fish and Boat Commission

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

U.S. Fish and Wildlife Service

RESPONSE: No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.* is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

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Check-list of *Minimum* Materials to be submitted:

__X__ **SIGNED** copy of this Project Environmental Review Receipt
__X__ Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
__X__ Project location information (name of USGS Quadrangle, Township/Mu?icipality, and County)
__X__ USGS 7.5-minute Quadrangle with project boundary clearly indicated, and quad name on the map

The inclusion of the following information may expedite the review process.
__X__ A basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
____ Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____ Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams

4. DEP INFORMATION

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For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA. 17105-8552
Fax:(717) 772-0271

U.S. Fish and Wildlife Service
Endangered Species Section
315 South Allen Street, Suite 322, State College, PA. 16801-4851
NO Faxes Please.

PA Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue. Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

7. PROJECT CONTACT INFORMATION

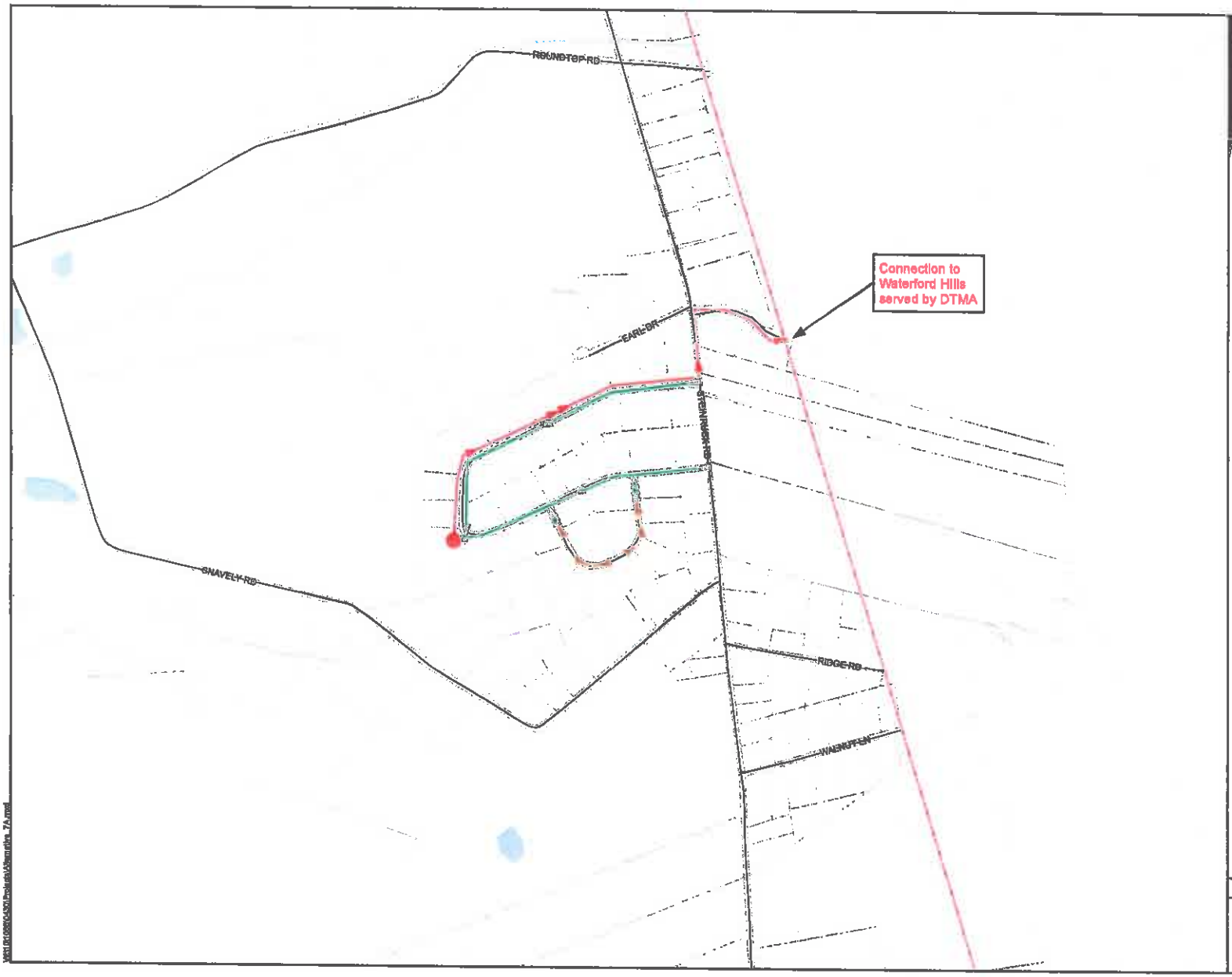
Name: Staci Tupta
Company/Business Name: Herbert, Rowland & Grubic, Inc
Address: 369 East Park Drive
City, State, Zip: Harrisburg, PA 17111
Phone: (717) 564-1210 Fax: (717) 564-1158
Email: stupta@hrg-inc.com

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

Staci Tupta
applicant/project proponent signature

9/23/2014
date



Alternative 7A

Londonderry Township
Dauphin County, Pennsylvania

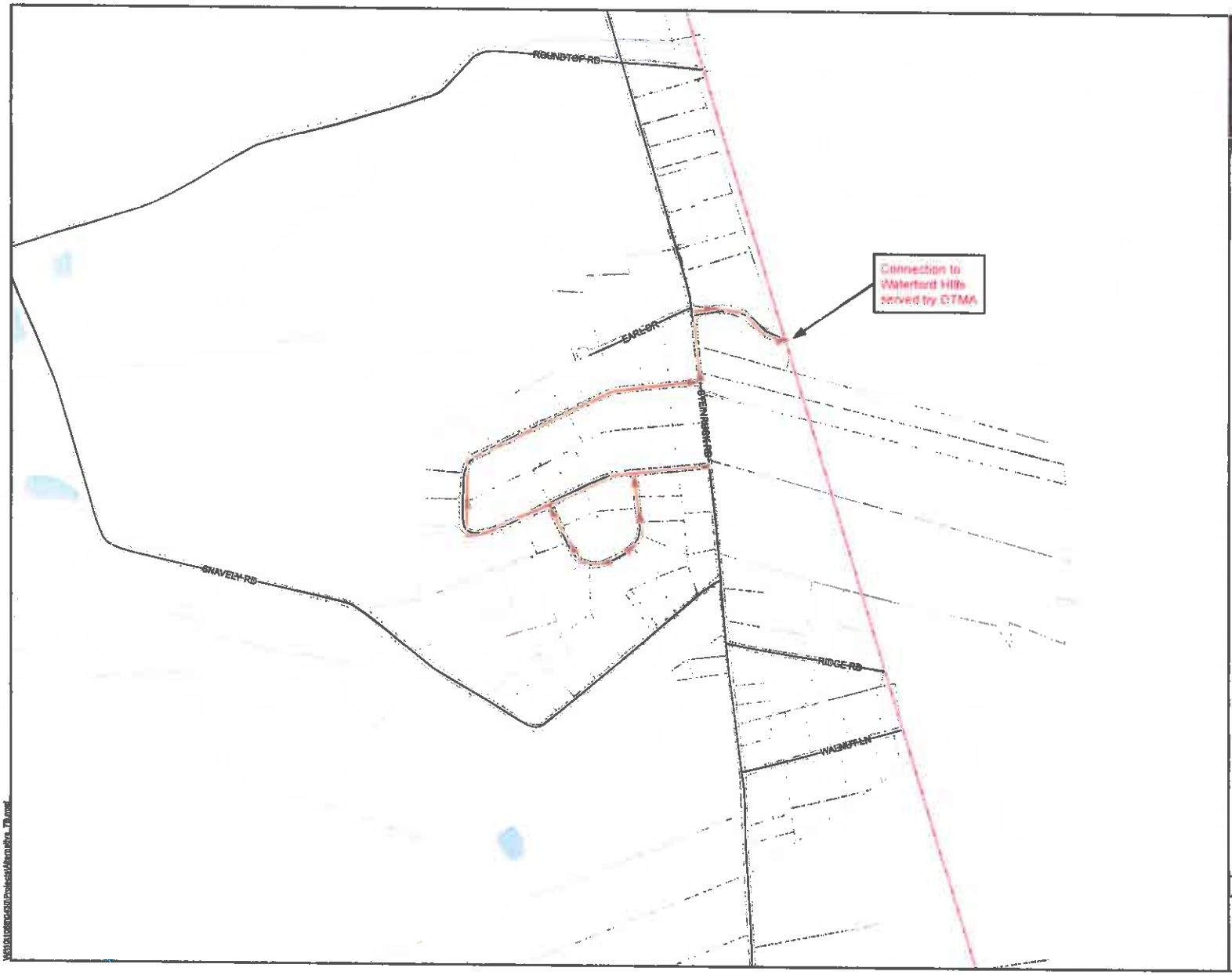
- Proposed Pump Station
- Force Main Sewer
- Gravity Sewer
- Low-Pressure Sewer
- Road
- Railroad
- Parcels
- Water Body
- Municipal Boundary

500 0 500 Feet

Mapping derived from data provided by Dauphin County and PAMAP.

7/24/2012	PM: JKB	GIS: BLS	R001088.0430

HRG
Engineering & Natural Services
309 East Park Drive
Harrisburg, PA 17111
717.564.1121
Fax 717.564.1128
www.hrg-inc.com
Offices Statewide



Alternative 7B

Londonderry Township
Dauphin County, Pennsylvania

- Low-Pressure Sewer
- Road
- Railroad
- Parcels
- Water Body
- Municipal Boundary

500 0 500 Feet

Mapping derived from data provided by Dauphin County and PAMAP.

7/24/2012	PM: JKB	GIS: BLS	R001068.0430

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Harrisburg, PA 17111
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Fax 717.564.1152
www.hrg-inc.com
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SEP 25 2014

7014 0510 0000 4050 5170

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PA Dept of Cons & Natural Resources
Bureau of Forestry, Eco Service Section
400 Market S
P.O. Box 8552
Harrisburg, PA 17105-8552

PS Form 3800, August 2006 — See Reverse for Instructions

1068.432-06-A

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

PA Dept of Cons & Natural Resources
Bureau of Forestry, Eco Service Section
400 Market S
P.O. Box 8552
Harrisburg, PA 17105-8552

COMPLETE THIS SECTION ON DELIVERY

A. Signature
x Mukund Lee Patel ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery SEP 26 2014

D. Is delivery address different from item 1? ☐ Yes
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3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7014 0510 0000 4050 5170

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

pennsylvania
DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES

BUREAU OF FORESTRY

6 October 2014 **PNDI Numbers: 20140922467810_20140922467829**

Staci A. Tupta, E.I.T.
Herbert, Rowland, & Grubic, Inc.
Email: stupta@hrg-inc.com (hard copy will not follow)

Re: Herbert, Rowland, & Grubic, Inc.; Londonderry Township Act 537 Plan Update
Londonderry Township, Dauphin County, PA

Dear Ms. Tupta,

Thank you for the submission of the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Receipt Numbers **20140922467810_20140922467829** for review. PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only.

No Impact Anticipated

PNDI records indicate species or resources under DCNR's jurisdiction are located in the vicinity of the project. However, based on the information you submitted concerning the nature of the project, the immediate location, and our detailed resource information, DCNR has determined that no impact is likely. No further coordination with our agency is needed for this project.

This response represents the most up-to-date review of the PNDI data files and is valid for two (2) years only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. For PNDI project updates, please see the PNHP website at www.naturalheritage.state.pa.us for guidance. As a reminder, this finding applies to potential impacts under DCNR's jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth's other resource agencies for environmental review.

Should you have any questions or concerns, please contact Su Ann Shupp, Ecological Information Specialist, by phone (717-783-7990) or via email (c-sushupp@pa.gov).

Sincerely,

Rebecca H. Bowen

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

HRG
Herbert, Rowland & Grubic, Inc.
Engineering & Related Services

369 East Park Drive
Harrisburg, PA 17111
(717) 564-1121
FAX (717) 564-1158
www.hrg-inc.com

VIA CERTIFIED MAIL

September 25, 2014

Pennsylvania Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane
Bellefonte, Pennsylvania 16823-7437

Re: PNDI Project Environmental Review
Londonderry Township Act 537 Plan Update
Londonderry Township, Dauphin County

Dear Sir or Madam:

I am contacting you to request comment on possible impact upon natural resources within your jurisdiction. Please find enclosed one (1) copy each of the following:

- Project narrative
- USGS map
- PNDI Project Environmental Review Receipt for Service Area 5 (Project Search ID 20140922467824)
- Proposed sanitary sewer Alternatives 5A and 5B drawings
- PNDI Project Environmental Review Receipt for Service Area 6 (Project Search ID 20140922467825)
- Proposed sanitary sewer Alternative 6 drawing
- PNDI Project Environmental Review Receipt for Conveyance System (Project Search ID 20140922467832)
- Proposed sanitary sewer Alternatives 8A, 8B, 8C and 8D drawings

Please contact me if you have any questions or need further information.

Very Truly Yours,

Herbert, Rowland & Grubic, Inc.

Staci Tupta

Staci A. Tupta, E.I.T.
Staff Professional I

SAT/vjm
001068.0430/06/A
P:\0010\001068_0430\Admin\Clearances\PNDI\2014.09.25 PA Fish and Boat Cover Letter.docx

Enclosures

c: File (w/encl.)

Project Narrative
Act 537 Official Sewage Facilities Plan Update
Londonderry Township, Dauphin County

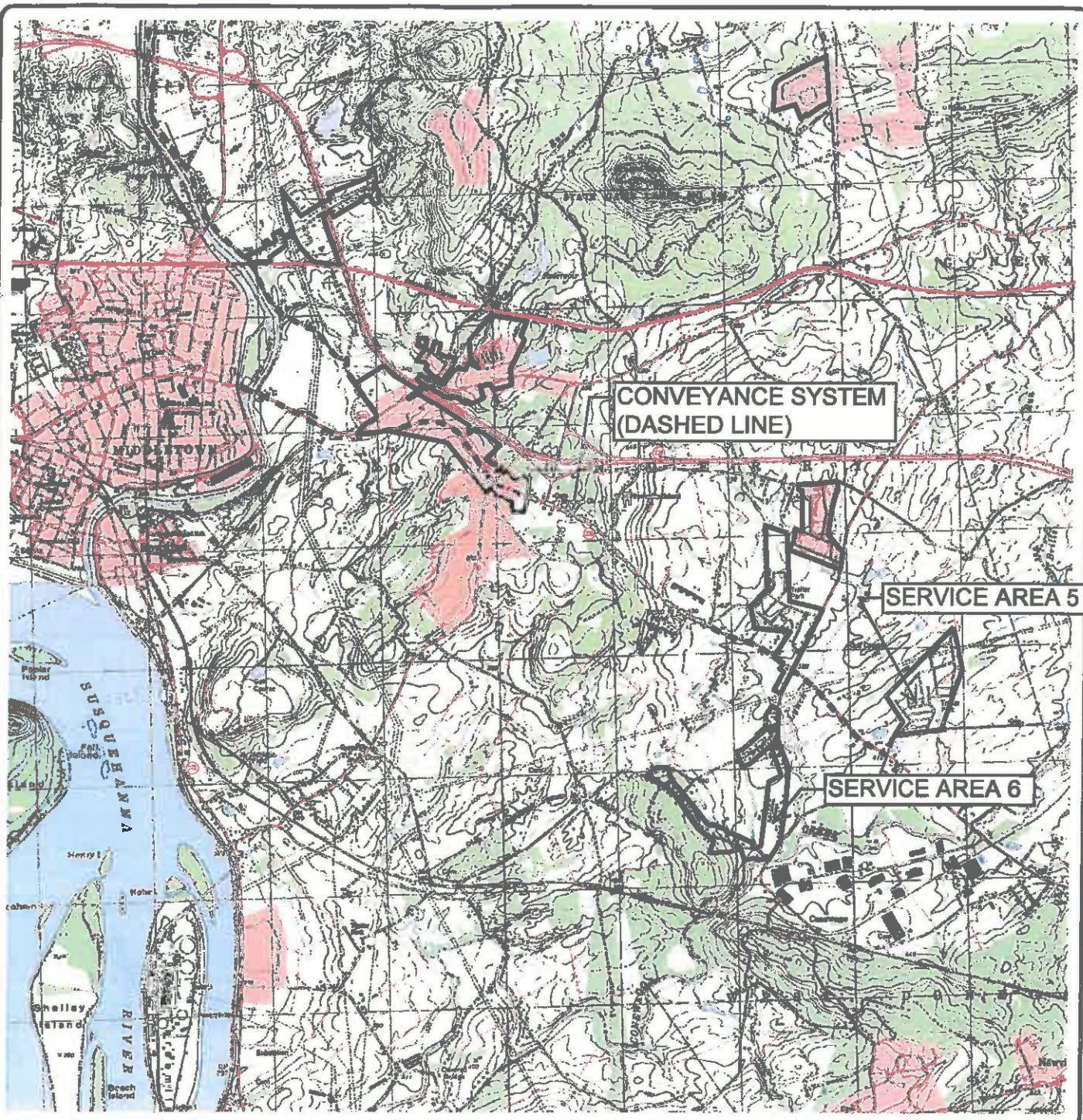
Londonderry Township is currently preparing an Act 537 Plan Update that includes Sewer District Nos. 2 and 3 in their entirety, as well as a developed portion of On-Lot Management District B known as Londonderry Estates. An evaluation of existing on-lot disposal systems indicated that there is a need for improved wastewater disposal in several areas throughout the Township. The seven (7) service areas were identified based on needs derived from previous planning, number of on-lot malfunctions, well water sample results, and unsuitable soil type.

At this time, several areas are being evaluated in order to determine if the installation of a public sanitary sewer system is feasible. Although several alternatives have been evaluated for the public treatment of wastewater generated by the installation of a new sanitary sewer system, the wastewater from this project will most likely be conveyed to the Middletown Borough Authority's Wastewater Treatment Plant (MBA WWTP) and/or Derry Township Municipal Authority's Southwest Wastewater Treatment Plant (DTMA SW WWTP). Collection and conveyance alternatives being evaluated in the service areas include any of the following or a combination of: gravity sewer mains, low-pressure sewer mains and individual grinder pump units located at each residence, and installation of pumping stations and associated force mains.

All new facilities will be constructed below grade within existing roadways, access drives, and rights-of-way where feasible.

Of the seven (7) service areas, the PNDI search indicated two (2) service areas and the conveyance system as having potential impact upon natural resources within your jurisdiction. The two (2) service areas and conveyance system are indicated on the attached USGS map. Also attached are the proposed collection and conveyance alternative drawings for the two (2) service areas and the conveyance system.

The total area studied for the Act 537 Update is approximately 605 acres. The actual disturbance from the potential sewer system is unknown at this time; however, the total disturbed area for Service Areas 5 and 6 and the conveyance system was estimated based on the proposed alternative drawings. The estimated disturbed area for Service Area 5 is 10,900 linear feet or 1 acre, Service Area 6 is 14,400 linear feet of 1.3 acres, and Conveyance System is 33,500 linear feet or 3.1 acres.



MIDDLETOWN QUADRANGLE

GRAPHIC SCALE

4000' 2000' 0' 4000'

SCALE: 1"= 4000'

HRG
Engineering & Related Services
An Employee-Owned Company

240 East Park Drive
Harrisburg, PA 17111
(717) 564-1121
Fax (717) 564-1125
hrg@hrginc.com
www.hrginc.com

ACT 537 PLAN SERVICE AREAS FOR LONDONDERRY TOWNSHIP

LONDONDERRY TOWNSHIP DAUPHIN COUNTY PENNSYLVANIA

FIELD WORK – MDC	
DESIGN– SAT	
CADD– KEF	
CHECKED–	
SCALE– AS NOTED	
DATE– SEPT. 2014	

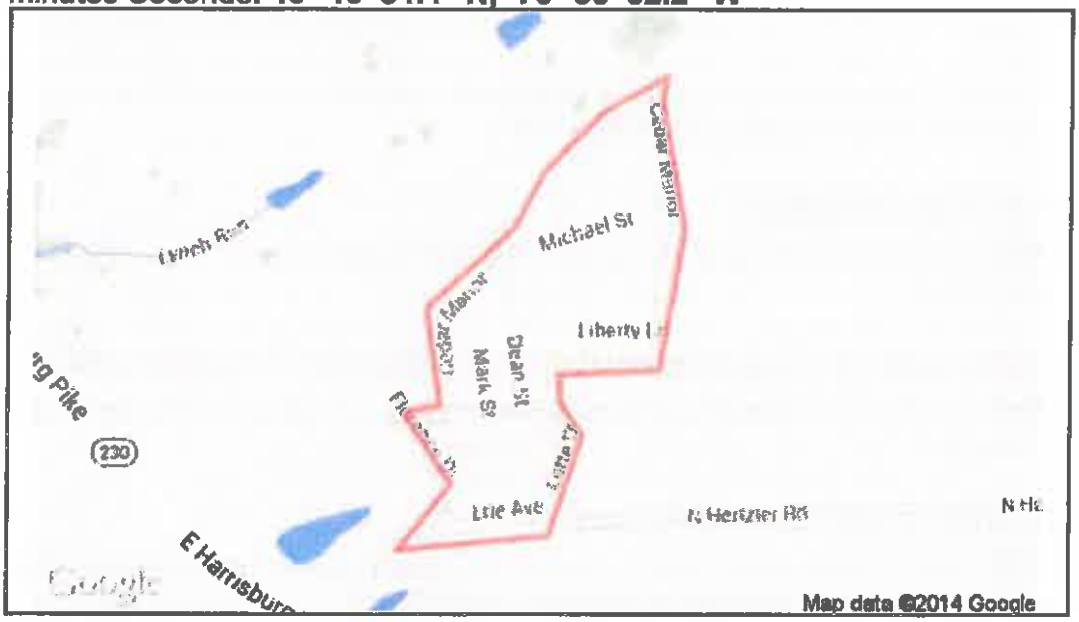
DRAWING NO. 1

SHEET NO. 1 OF 1

PROJECT NO. 108.0430

1. PROJECT INFORMATION

Project Name: **Service Area 5**
Date of review: **9/22/2014 2:24:07 PM**
Project Category: **Waste Transfer, Treatment, and Disposal,Liquid waste/Effluent,Sewage module/Act 537 plan**
Project Area: **56.7** acres
County: **Dauphin** Township/Municipality: **Londonderry**
Quadrangle Name: **MIDDLETOWN** ~ ZIP Code: **17022**
Decimal Degrees: **40.176229 N, -76.647830 W**
Degrees Minutes Seconds: **40° 10' 34.4" N, -76° 38' 52.2" W**



2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jurisdictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission

RESPONSE: Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

PFBC Species: (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)
Scientific Name: Lampsilis cariosa
Common Name: Yellow Lampmussel
Current Status: Special Concern Species*

U.S. Fish and Wildlife Service

RESPONSE: No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.* is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictinal agency as collectible, having economic value, or

being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, send the following information to the agency(s) seeking this information (see AGENCY CONTACT INFORMATION).

Check-list of *Minimum* Materials to be submitted:

__X__ **SIGNED** copy of this Project Environmental Review Receipt
__X__ Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
__X__ Project location information (name of USGS Quadrangle, Township/Mu?ic|pality, and County)
__X__ USGS 7.5-minute Quadrangle with project boundary clearly indicated, and quad name on the map

The inclusion of the following information may expedite the review process.
__X__ A basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
____ Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____ Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. For cases where a "Potential Impact" to threatened and endangered species has been identified before the application has been submitted to DEP, the application should not be submitted until the impact has been resolved. For cases where "Potential Impact" to special concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at http://www.naturalheritage.state.pa.us.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA. 17105-8552
Fax:(717) 772-0271

U.S. Fish and Wildlife Service
Endangered Species Section
315 South Allen Street, Suite 322, State College, PA. 16801-4851
NO Faxes Please.

PA Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

7. PROJECT CONTACT INFORMATION

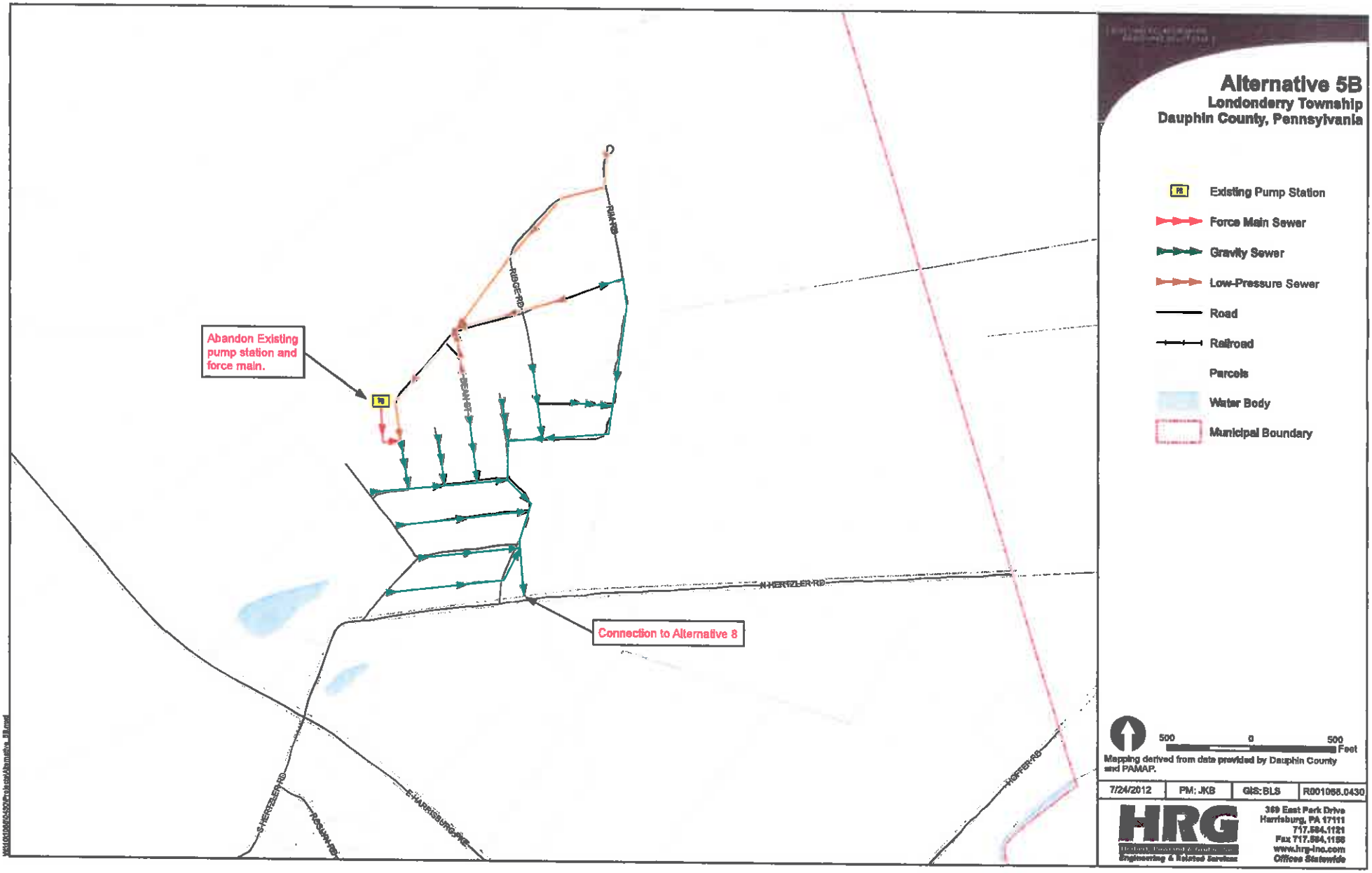
Name: Staci Tupta
Company/Business Name: Herbert, Rowland & Grubic, Inc.
Address: 369 East Park Drive
City, State, Zip: Harrisburg, PA 17111
Phone:(717) 364-1121 Fax:(717) 364-1158
Email: Stupta@hrg-inc.com

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

Staci Tupta — applicant/project proponent signature
9/23/2014 — date


Alternative 5A
Londonderry Township
Dauphin County, Pennsylvania
Existing Pump Station
Force Main Sewer
Gravity Sewer
Road
Railroad
Parcels
Water Body
Municipal Boundary
RIM RD
RIDGE RD
BEAN CT
N HERTZLER RD
Connection to Alternative 8
S HERTZLER RD
ROSEMONT RD
E HARRISBURG PIKE
HOFFER RD
500
0
500
Feet
Mapping derived from data provided by Dauphin County and PAMAP.
7/24/2012
PM: JKB
GIS: BLS
R001068.0430
HRG
Herbert, Rowland & Grubic, Inc.
Engineering & Related Services
369 East Park Drive
Harrisburg, PA 17111
717.564.1121
Fax 717.564.1188
www.hrg-inc.com
Offices Statewide


Abandon Existing pump station and force main.
Connection to Alternative 8
RIBA RD
RIBGE RD
BENNOFF
N HERTZLER RD
S HERTZLER RD
ROSANNA RD
E HARRISBURG AVE
HEFFER RD
Alternative 5B
Londonderry Township
Dauphin County, Pennsylvania
Existing Pump Station
Force Main Sewer
Gravity Sewer
Low-Pressure Sewer
Road
Railroad
Parcels
Water Body
Municipal Boundary
500
0
500
Feet
Mapping derived from data provided by Dauphin County and PAMAP.
7/24/2012
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Engineering & Related Services
369 East Park Drive
Harrisburg, PA 17111
717.564.1121
Fax 717.564.1156
www.hrg-inc.com
Offices Statewide

1. PROJECT INFORMATION

Project Name: **Service Area 6**
Date of review: **9/22/2014 2:28:10 PM**
Project Category: **Waste Transfer, Treatment, and Disposal,Liquid waste/Effluent,Sewage module/Act 537 plan**
Project Length: **13091.4** feet
County: **Dauphin** Township/Municipality: **Londonderry**
Quadrangle Name: **MIDDLETOWN** ~ ZIP Code: **17022,17057**
Decimal Degrees: **40.171103 N, -76.671026 W**
Degrees Minutes Seconds: **40° 10' 16" N, -76° 40' 15.7" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

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PA Game Commission

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

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RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission

RESPONSE: Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

PFBC Species: (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)
Scientific Name: Lampsilis cariosa
Common Name: Yellow Lampmussel
Current Status: Special Concern Species*

U.S. Fish and Wildlife Service

RESPONSE: No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.* is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

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__X__ **SIGNED** copy of this Project Environmental Review Receipt
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__X__ Project location information (name of USGS Quadrangle, Township/Mu?icipality, and County)
__X__ USGS 7.5-minute Quadrangle with project boundary clearly indicated, and quad name on the map

The inclusion of the following information may expedite the review process.
__X__ A basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
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For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA. 17105-8552
Fax:(717) 772-0271

U.S. Fish and Wildlife Service
Endangered Species Section
315 South Allen Street, Suite 322, State College, PA. 16801-4851
NO Faxes Please.

PA Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane, Bellefonte, PA 16823-7437
NO Faxes Please

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

7. PROJECT CONTACT INFORMATION

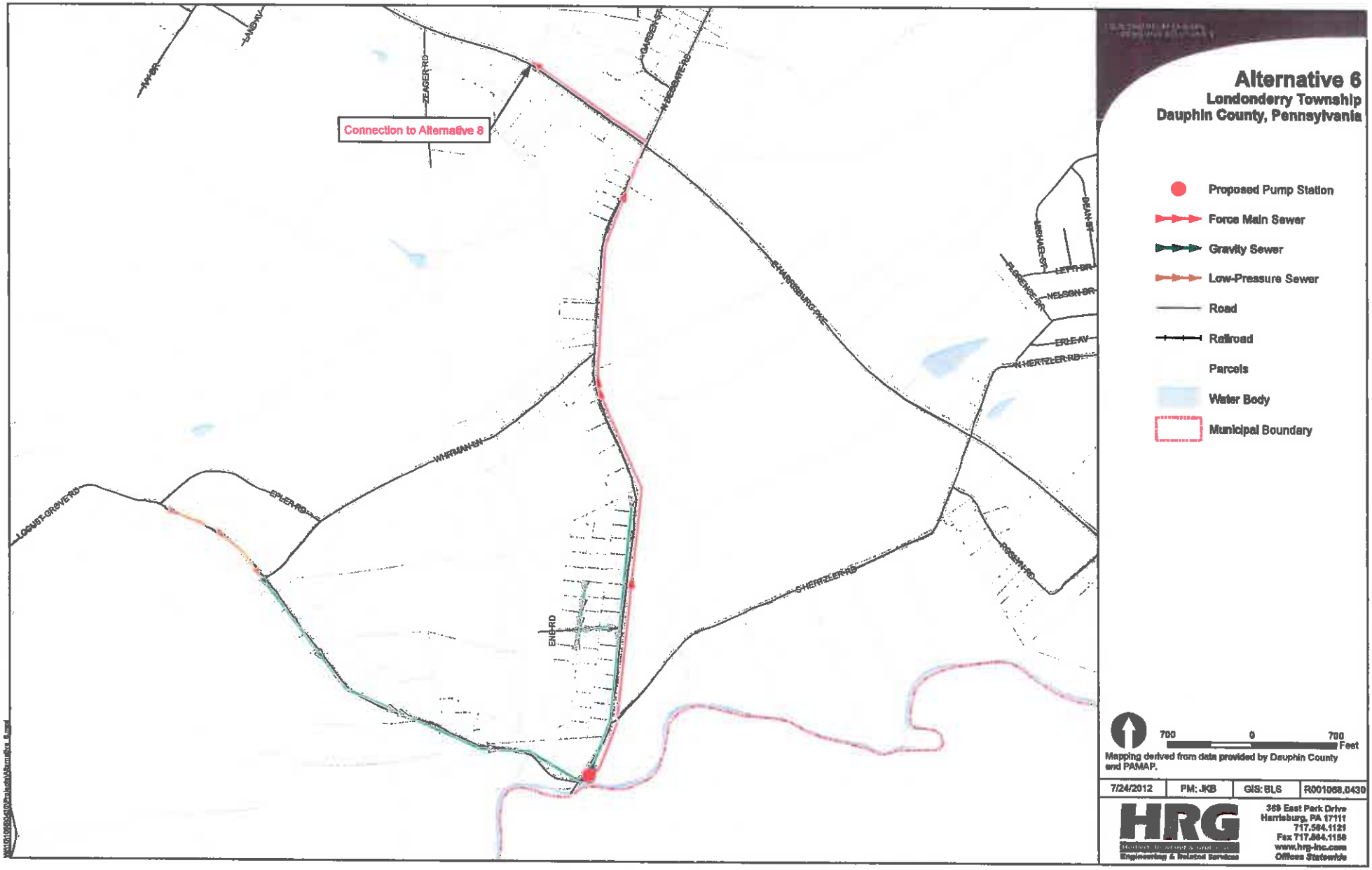
Name: Staci Tupta
Company/Business Name: Herbert, Rowland & Grubic, Inc.
Address: 369 East Parks Drive
City, State, Zip: Harrisburg, PA 17111
Phone: (717) 564-1121 Fax: (717) 564-1158
Email: Stupta@hrg-inc.com

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

Staci Tupta
applicant/project proponent signature

9/23/2014
date


Connection to Alternative 8
ZEAGER RD
HARRISBURG PKE
WHITMAN DR
LOCUST GROVE RD
EPLER RD
ENE RD
SHERTZLER RD
ROSLYN RD
N HERTZLER RD
ERLE AV
NELSON DR
FLORENCE DR
LEITH DR
BEAN ST
Alternative 6
Londonderry Township
Dauphin County, Pennsylvania
Proposed Pump Station
Force Main Sewer
Gravity Sewer
Low-Pressure Sewer
Road
Railroad
Parcels
Water Body
Municipal Boundary
700
0
700
Feet
Mapping derived from data provided by Dauphin County and PAMAP.
7/24/2012
PM: JKB
GIS: BLS
R001068.0430
HRG
Engineering & Related Services
369 East Park Drive
Harrisburg, PA 17111
717.564.1121
Fax 717.564.1158
www.hrg-inc.com
Offices Statewide

1. PROJECT INFORMATION

Project Name: **Conveyance System**
Date of review: **9/22/2014 2:38:25 PM**
Project Category: **Waste Transfer, Treatment, and Disposal,Liquid waste/Effluent,Sewage module/Act 537 plan**
Project Length: **43963.4** feet
County: **Dauphin** Township/Municipality: **Londonderry**
Quadrangle Name: **MIDDLETOWN** ~ ZIP Code: **17022,17057**
Decimal Degrees: **40.217702 N, -76.731730 W**
Degrees Minutes Seconds: **40° 13' 3.7" N, -76° 43' 54.2" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE: Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

PGC Species: (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)
Scientific Name: Sensitive Species**
Common Name:
Current Status: Endangered

PA Department of Conservation and Natural Resources

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission

RESPONSE: Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

PFBC Species: (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)
Scientific Name: Lampsilis cariosa
Common Name: Yellow Lampmussel
Current Status: Special Concern Species*

U.S. Fish and Wildlife Service

RESPONSE: No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.* is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictinal agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, send the following information to the agency(s) seeking this information (see AGENCY CONTACT INFORMATION).

Check-list of *Minimum* Materials to be submitted:

X **SIGNED** copy of this Project Environmental Review Receipt
X Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
X Project location information (name of USGS Quadrangle, Township/Mu?icipality, and County)
X USGS 7.5-minute Quadrangle with project boundary clearly indicated, and quad name on the map

The inclusion of the following information may expedite the review process.
X A basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
____Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. For cases where a "Potential Impact" to threatened and endangered species has been identified before the application has been submitted to DEP, the application should not be submitted until the impact has been resolved. For cases where "Potential Impact" to special concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at http://www.naturalheritage.state.pa.us.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA. 17105-8552
Fax:(717) 772-0271

U.S. Fish and Wildlife Service
Endangered Species Section
315 South Allen Street, Suite 322, State College, PA. 16801-4851
NO Faxes Please.

PA Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

7. PROJECT CONTACT INFORMATION

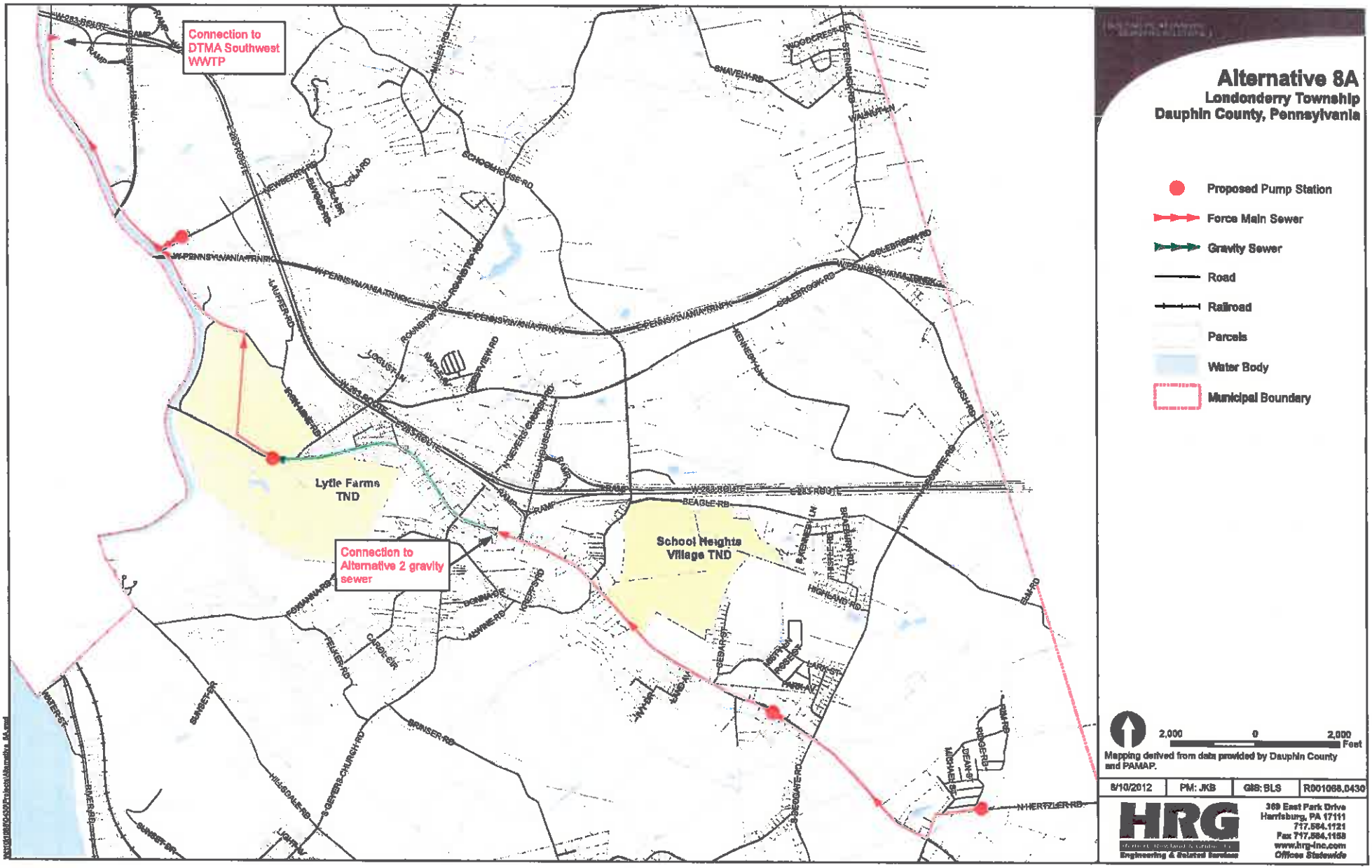
Name: STACI TUPTA
Company/Business Name: HERBERT, ROWLAND, & GRUBIC, INC.
Address: 369 EAST PARK DRIVE
City, State, Zip: HARRISBURG, PA 17111
Phone: (717) 564-1121 Fax: (717) 564-1158
Email: STUPTA@HRG-INC.COM

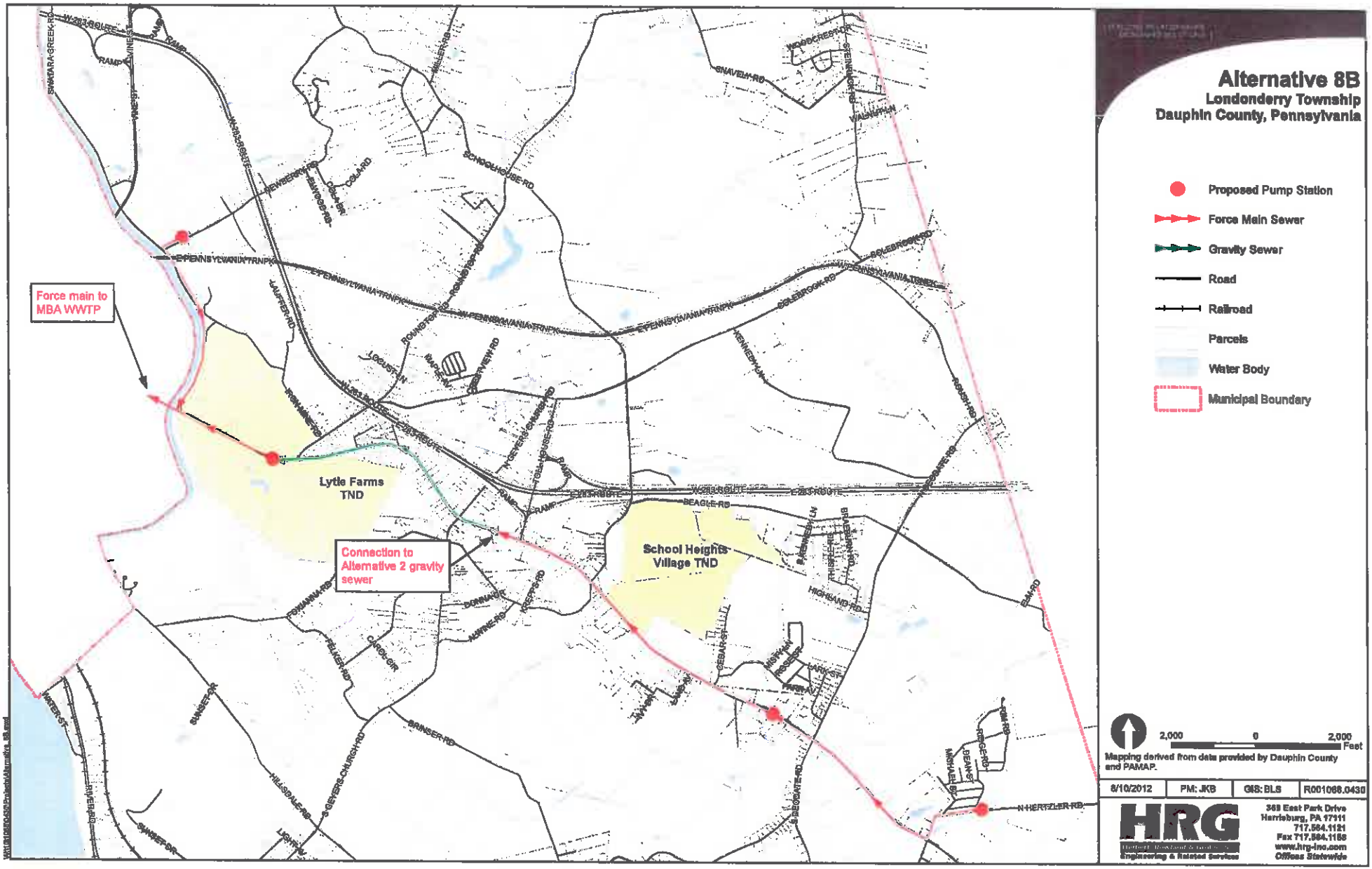
8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

Staci Tupta
applicant/project proponent signature

9/23/2014
date


Connection to DTMA Southwest WWTP
Lytle Farms TND
School Heights Village TND
Connection to Alternative 2 gravity sewer
Alternative 8A
Londonderry Township
Dauphin County, Pennsylvania
Proposed Pump Station
Force Main Sewer
Gravity Sewer
Road
Railroad
Parcels
Water Body
Municipal Boundary
2,000 0 2,000 Feet
Mapping derived from data provided by Dauphin County and PAMAP.
8/10/2012
PM: JKB
GIS: BLS
R001068.0430
HRG
Engineering & Related Services
369 East Park Drive
Harrisburg, PA 17111
717.564.1121
Fax 717.564.1158
www.hrg-inc.com
Offices Statewide


Force main to MBA WWTP
Connection to Alternative 2 gravity sewer
Lytle Farms TND
School Heights Village TND
Alternative 8B
Londonderry Township
Dauphin County, Pennsylvania
Proposed Pump Station
Force Main Sewer
Gravity Sewer
Road
Railroad
Parcels
Water Body
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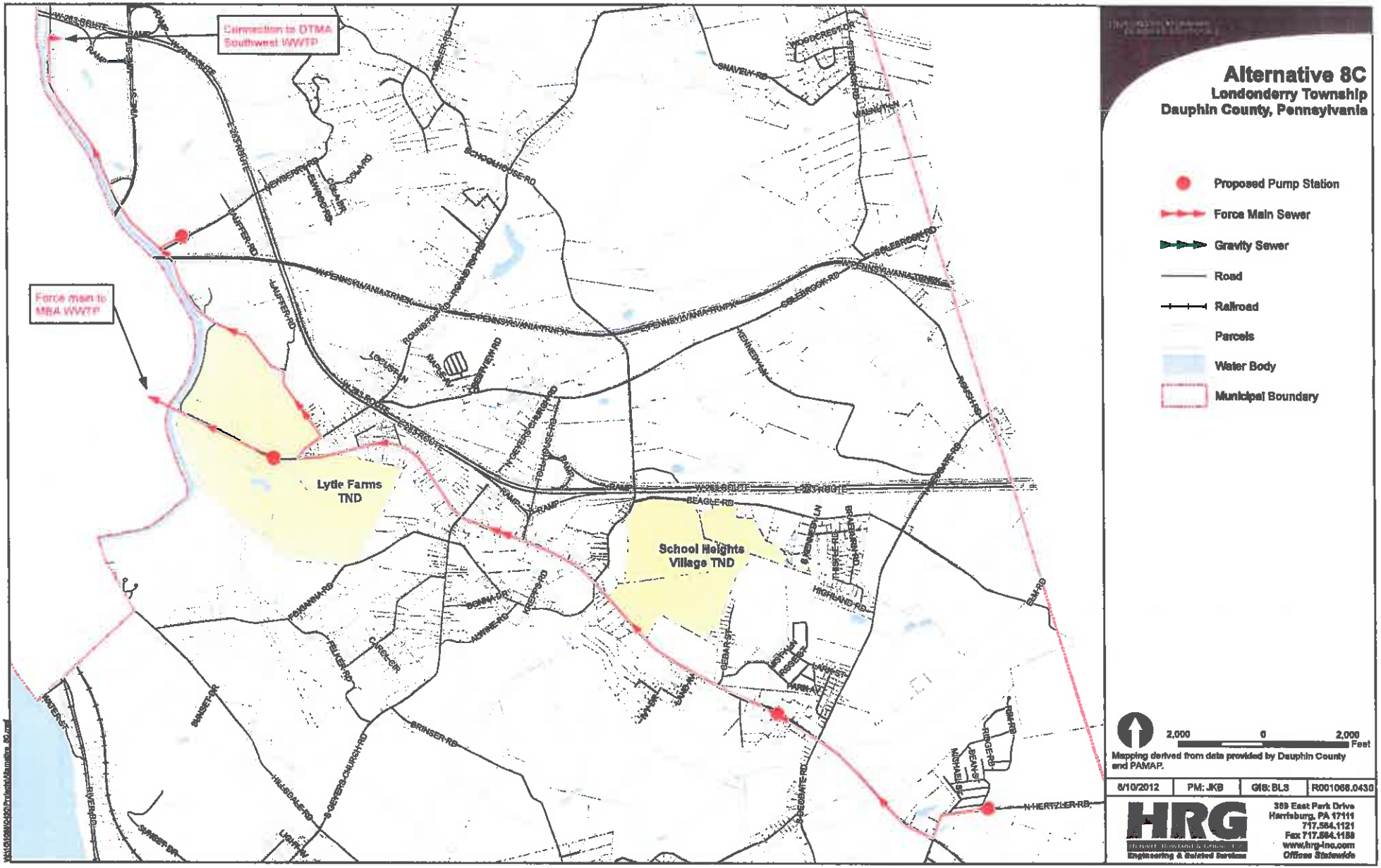
Connection to DTMA Southwest WWTP
Force main to MRA WWTP
Lytle Farms TND
School Heights Village TND
Alternative 8C
Londonderry Township
Dauphin County, Pennsylvania
Proposed Pump Station
Force Main Sewer
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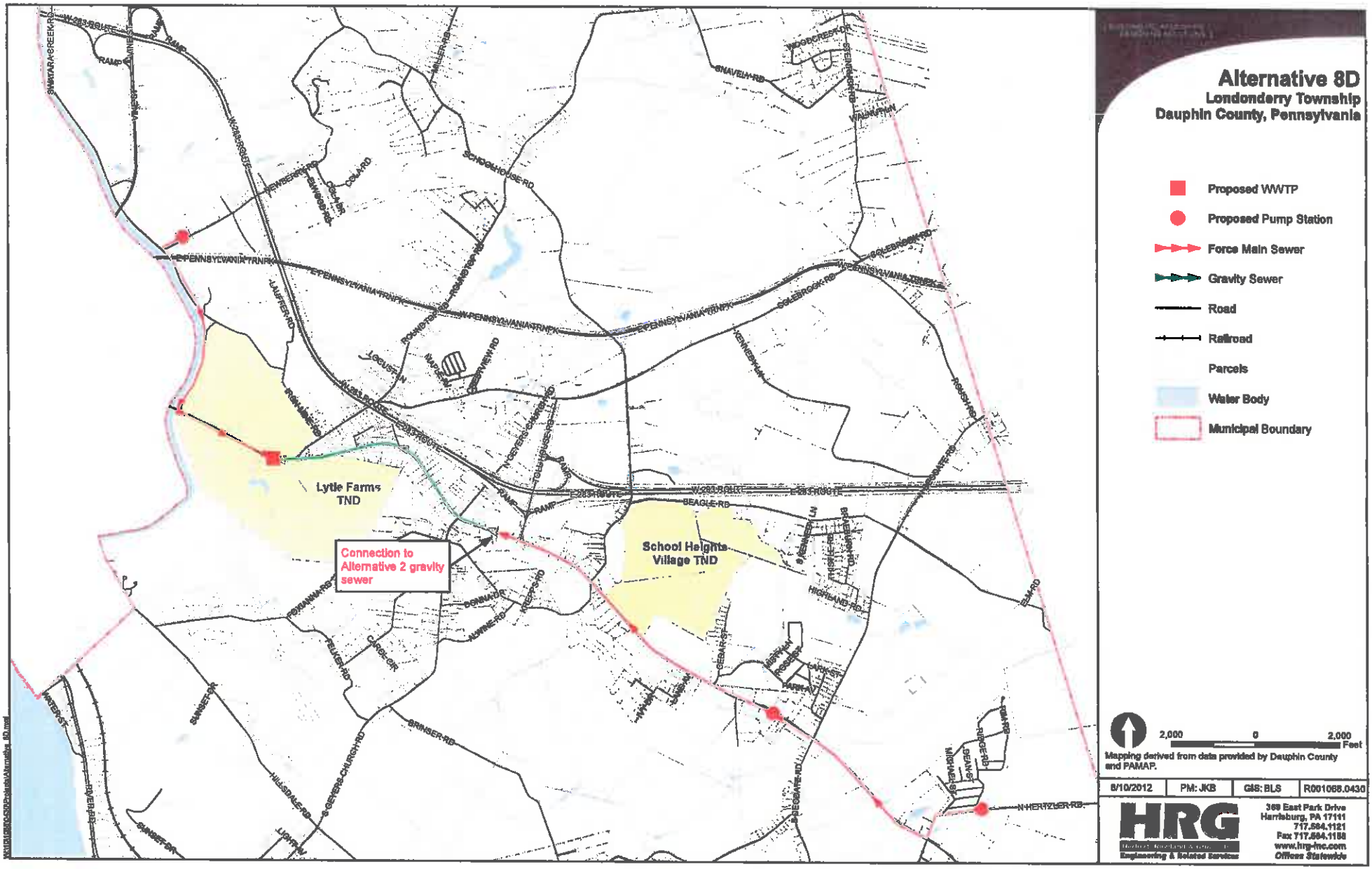
Lytle Farms TND
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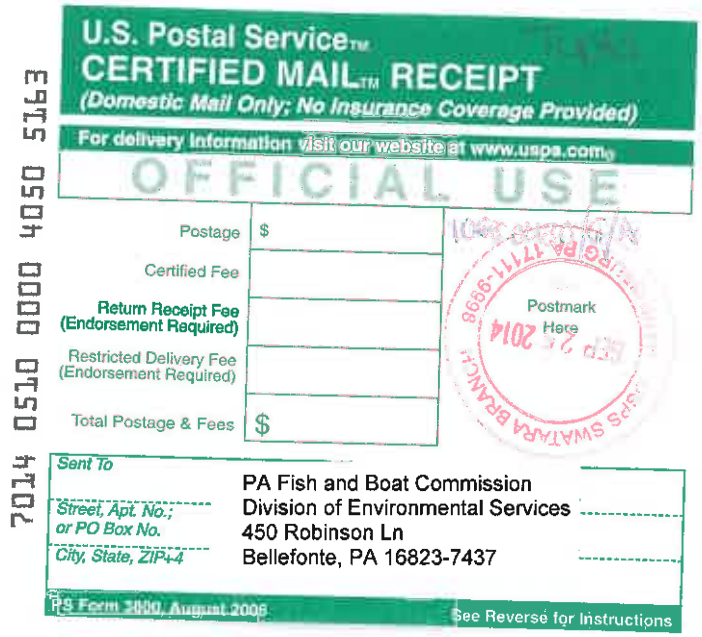

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Sent To
PA Fish and Boat Commission
Street, Apt. No.; or PO Box No.
Division of Environmental Services
450 Robinson Ln
City, State, ZIP+4
Bellefonte, PA 16823-7437

PS Form 3800, August 2006 See Reverse for Instructions

1268.430-Ob-A

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

PA Fish and Boat Commission
Division of Environmental Services
450 Robinson Ln
Bellefonte, PA 16823-7437

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Dawn Jones ☐ Agent ☐ Addressee

B. Received by (Printed Name) Dawn Jones
C. Date of Delivery 9-29-14

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

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

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7014 0510 0000 4050 5163

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

Pennsylvania Fish & Boat Commission
established 1866

Division of Environmental Services
Natural Diversity Section
450 Robinson Lane
Bellefonte, PA 16823
814-359-5237

October 9, 2014

IN REPLY REFER TO
SIR# 43253

HRG Engineering, Inc.
Staci Tupta
369 E. Park Drive
Harrisburg, Pennsylvania 17111

RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No. 20140922467824
Service Area 5
DAUPHIN County: Londonderry Township

Dear Staci Tupta:

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflict" or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code.

An element occurrence of a rare, candidate, threatened, or endangered species under our jurisdiction is known from the vicinity of the proposed project. However, given the nature of the proposed project, the immediate location, or the current status of the nearby element occurrence(s), no adverse impacts are expected to the species of special concern.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

If you have any questions regarding this review, please contact Nevin Welte at 412-586-2334 and refer to the SIR # 43253. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,

Christopher A. Urban, Chief
Natural Diversity Section

CAU/NTW/dn

Pennsylvania Fish & Boat Commission
established 1866

Division of Environmental Services
Natural Diversity Section
450 Robinson Lane
Bellefonte, PA 16823
814-359-5237

October 9, 2014

IN REPLY REFER TO
SIR# 43254

HRG Engineering, Inc.
Staci Tupta
369 E. Park Drive
Harrisburg, Pennsylvania 17111

RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No. 20140922467825
Service Area 6
DAUPHIN County: Londonderry Township

Dear Staci Tupta:

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflict" or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code.

Freshwater Mussels

Rare or protected freshwater mussel species are known from the vicinity of the project area. Freshwater mussels are the most imperiled taxonomic group in North America. Nearly 20% of the species historically known to occur in the Commonwealth are now extirpated (locally extinct). Additionally 60% of Pennsylvania's remaining species are of conservation concern. We are concerned about direct and indirect (i.e., runoff) effects that the proposed project may have on the species of concern. Freshwater mussel species are extremely vulnerable to physical (i.e., siltation, dredging, trenching, rip-rap) and chemical (i.e., pH, temperature, dissolved oxygen, organic contaminants, heavy metals) changes to their aquatic environment. Therefore, we recommend construction techniques that eliminate in-stream work, sedimentation and changes to water quality. I recommend that you avoid any in-stream disturbance or water quality degradation during and after the project installation. Storm sewers and retention basins should be designed so as to minimize/remove all silt from the water before it is released into the stream. Strict erosion and sedimentation control measures, as well as best management practices should be employed.

Provided that these recommendations are followed, in-stream work is avoided, strict E&S control measures are maintained, and best management practices are employed, we do not foresee any significant adverse impacts from the proposed activity to the freshwater mussel species of special concern.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

If you have any questions regarding this review, please contact Nevin Welte at 412-586-2334 and refer to the SIR # 43254. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,

Christopher A. Urban, Chief
Natural Diversity Section

CAU/NTW/dn

HRG
Herbert, Rowland & Grubic, Inc.
Engineering & Related Services

369 East Park Drive
Harrisburg, PA 17111
(717) 564-1121
FAX (717) 564-1158
www.hrg-inc.com

VIA CERTIFIED MAIL

September 25, 2014

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

Re: PNDI Project Environmental Review
Londonderry Township Act 537 Plan Update
Londonderry Township, Dauphin County

Dear Sir or Madam:

I am contacting you to request comment on possible impact upon natural resources within your jurisdiction. Please find enclosed one (1) copy each of the following:

- Project narrative
- USGS map
- PNDI Project Environmental Review Receipt for Service Area 2 (Project Search ID 20140922467810)
- Proposed sanitary sewer Alternatives 2A, 2B and 2C drawings
- PNDI Project Environmental Review Receipt for Conveyance System (Project Search ID 20140922467832)
- Proposed sanitary sewer Alternatives 8A, 8B, 8C and 8D drawings

Please contact me if you have any questions or need further information.

Very Truly Yours,

Herbert, Rowland & Grubic, Inc.

Staci A. Tupta, E.I.T.
Staff Professional I

SAT/vjm
001068.0430/06/A
P:\0010\001068_0430\Admin\Clearances\PNDI\2014.09.25 PA Game Cover Letter.docx

Enclosures

c: File (w/encl.)

Project Narrative
Act 537 Official Sewage Facilities Plan Update
Londonderry Township, Dauphin County

Londonderry Township is currently preparing an Act 537 Plan Update that includes Sewer District Nos. 2 and 3 in their entirety, as well as a developed portion of On-Lot Management District B known as Londonderry Estates. An evaluation of existing on-lot disposal systems indicated that there is a need for improved wastewater disposal in several areas throughout the Township. The seven (7) service areas were identified based on needs derived from previous planning, number of on-lot malfunctions, well water sample results, and unsuitable soil type.

At this time, several areas are being evaluated in order to determine if the installation of a public sanitary sewer system is feasible. Although several alternatives have been evaluated for the public treatment of wastewater generated by the installation of a new sanitary sewer system, the wastewater from this project will most likely be conveyed to the Middletown Borough Authority's Wastewater Treatment Plant (MBA WWTP) and/or Derry Township Municipal Authority's Southwest Wastewater Treatment Plant (DTMA SW WWTP). Collection and conveyance alternatives being evaluated in the service areas include any of the following or a combination of: gravity sewer mains, low-pressure sewer mains and individual grinder pump units located at each residence, and installation of pumping stations and associated force mains.

All new facilities will be constructed below grade within existing roadways, access drives, and rights-of-way where feasible.

Of the seven (7) service areas, the PNDI search indicated one (1) service area and the conveyance system as having potential impact upon natural resources within your jurisdiction. The one (1) service area and conveyance system are indicated on the attached USGS map. Also attached are the proposed collection and conveyance alternative drawings for the one (1) service area and the conveyance system.

The total area studied for the Act 537 Update is approximately 605 acres. The actual disturbance from the potential sewer system is unknown at this time; however, the total disturbed area for Service Area 2 and the Conveyance System was estimated based on the proposed alternative drawings. The estimated disturbed area for Service Area 2 is 23,800 linear feet or 2.2 acres and the Conveyance System is 33,500 linear feet of 3.1 acres.

MIDDLETOWN QUADRANGLE

GRAPHIC SCALE

4000' 2000' 0' 4000'

SCALE: 1"= 4000'

HRG
Engineering & Related Services
AN EMPLOYEE-OWNED COMPANY

369 East Park Drive
Harrisburg, PA 17111
(717) 564-1121
Fax (717) 564-1158
hrg@hrg-inc.com
www.hrg-inc.com

ACT 537 PLAN SERVICE AREAS FOR LONDONDERRY TOWNSHIP

LONDONDERRY TOWNSHIP DAUPHIN COUNTY PENNSYLVANIA

PROJ. MGR. –	MDC
DESIGN–	SAT
CADD–	RSF
CHECKED–	
SCALE–	AS NOTED
DATE–	SEPT. 2014

DRAWING NO. 1

SHEET NO. 1 OF 1

PROJECT 001008.0430

1. PROJECT INFORMATION

Project Name: **Service Area 2**
Date of review: **9/22/2014 1:57:39 PM**
Project Category: **Waste Transfer, Treatment, and Disposal,Liquid waste/Effluent,Sewage module/Act 537 plan**
Project Area: **153.5** acres
County: **Dauphin** Township/Municipality: **Londonderry**
Quadrangle Name: **MIDDLETOWN** ~ ZIP Code: **17057**
Decimal Degrees: **40.199422 N, -76.700216 W**
Degrees Minutes Seconds: **40° 11' 57.9" N, -76° 42' 0.8" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
PA Department of Conservation and Natural Resources	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE: Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

PGC Species: (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)
Scientific Name: Sensitive Species**
Common Name:
Current Status: Endangered

PA Department of Conservation and Natural Resources

RESPONSE: Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

DCNR Species: (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here: http://www.gis.dcnr.state.pa.us/hgis-er/PNDI_DCNR.aspx.)
Scientific Name: Rudbeckia fulgida
Common Name: Eastern Coneflower
Current Status: Special Concern Species*
Proposed Status: Threatened

PA Fish and Boat Commission

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern

species and resources.

U.S. Fish and Wildlife Service

RESPONSE: No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.* is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictinal agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, send the following information to the agency(s) seeking this information (see AGENCY CONTACT INFORMATION).

Check-list of *Minimum* Materials to be submitted:

__X__ **SIGNED** copy of this Project Environmental Review Receipt
__X__ Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
__X__ Project location information (name of USGS Quadrangle, Township/Mu?icipality, and County)
__X__ USGS 7.5-minute Quadrangle with project boundary clearly indicated, and quad name on the map

The inclusion of the following information may expedite the review process.
__X__ A basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
____ Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____ Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. For cases where a "Potential Impact" to threatened and endangered species has been identified before the application has been submitted to DEP, the application should not be submitted until the impact has been resolved. For cases where "Potential Impact" to special concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at http://www.naturalheritage.state.pa.us.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA. 17105-8552
Fax:(717) 772-0271

U.S. Fish and Wildlife Service
Endangered Species Section
315 South Allen Street, Suite 322, State College, PA. 16801-4851
NO Faxes Please.

PA Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

7. PROJECT CONTACT INFORMATION

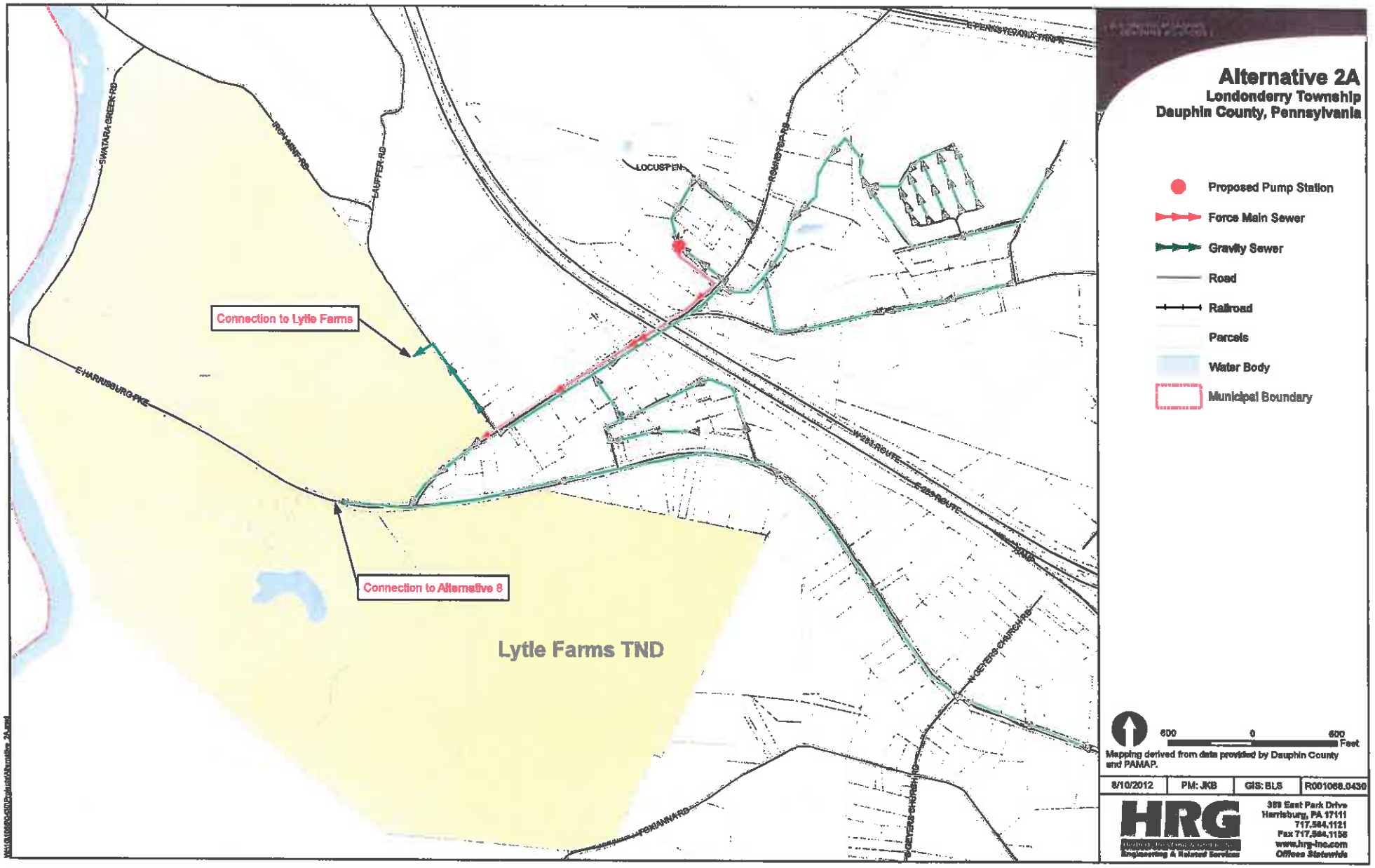
Name: STACI TUPTA
Company/Business Name: HERBERT, ROWLAND & GRUBIC, INC.
Address: 369 EAST PARK DRIVE
City, State, Zip: HARRISBURG, PA 17111
Phone: (717) 564-1121 Fax: (717) 564-1158
Email: STUPTA@HRG-INC.COM

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

Staci Tupta
applicant/project proponent signature

9/23/2014
date


Alternative 2A
Londonderry Township
Dauphin County, Pennsylvania
Proposed Pump Station
Force Main Sewer
Gravity Sewer
Road
Railroad
Parcels
Water Body
Municipal Boundary
Connection to Lytle Farms
Connection to Alternative 8
Lytle Farms TND
E HARRISBURG PIKE
SWATARA CREEK RD
IRONMINE RD
LAUFFER RD
LOCUST LN
ROUNDTOP RD
E PENNSYLVANIA RAILROAD
E 283 ROUTE
E 283 ROUTE
STATE
PETERS CHURCH RD
FOXIANA RD
PETERS CHURCH RD
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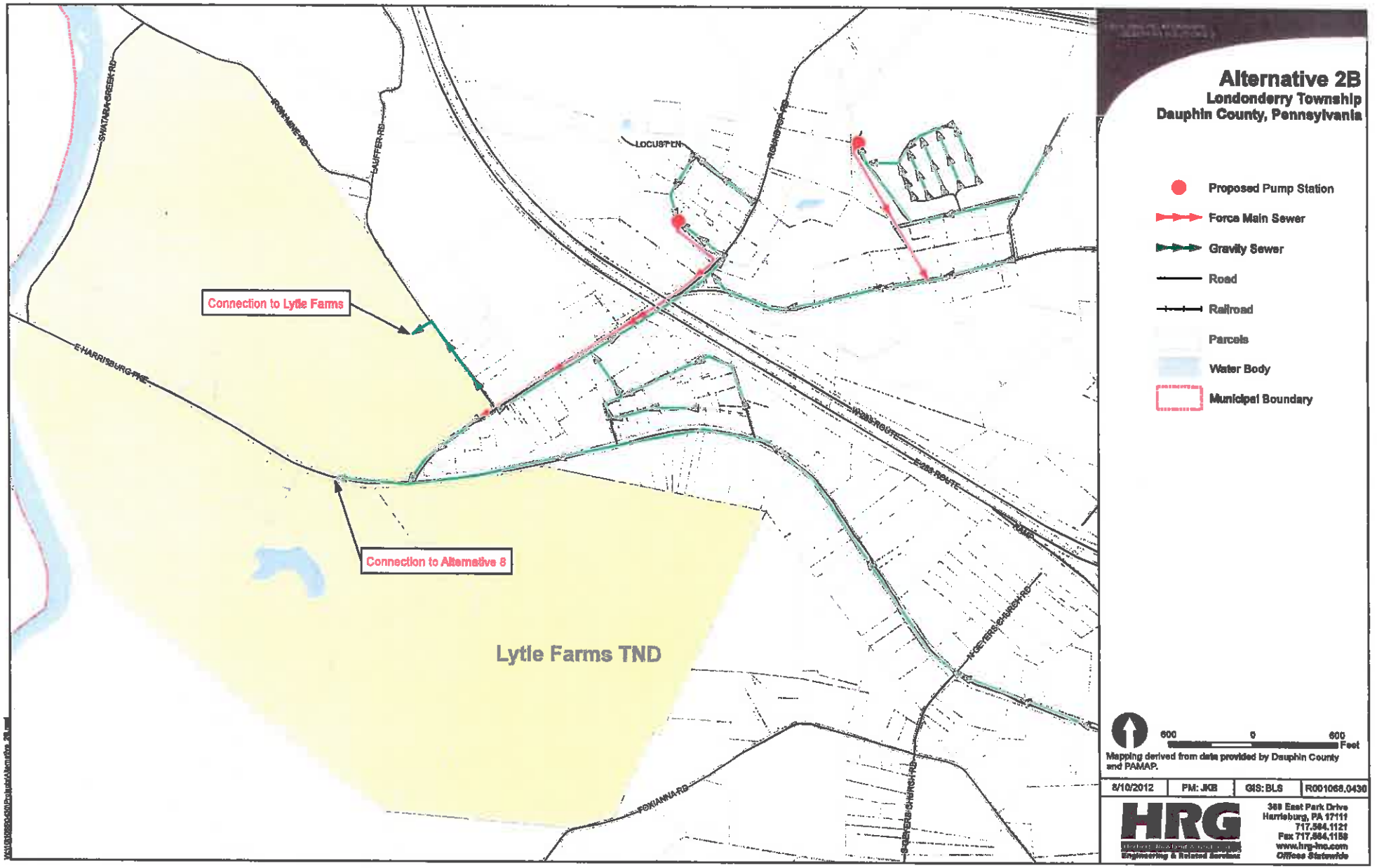
Mapping derived from data provided by Dauphin County and PAMAP.
8/10/2012
PM: JKB
GIS: BLS
R001068.0430
HRG
Engineering & Related Services
389 East Park Drive
Harrisburg, PA 17111
717.564.1121
Fax 717.564.1156
www.hrg-inc.com
Offices Statewide


Alternative 2B
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Parcels
Water Body
Municipal Boundary
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Connection to Alternative 8
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RON MAR RD
LAUFFER RD
LOCUST LN
ROUNDTOP RD
WALNUT ST
OLD ROUTE
ALGIERS CHURCH RD
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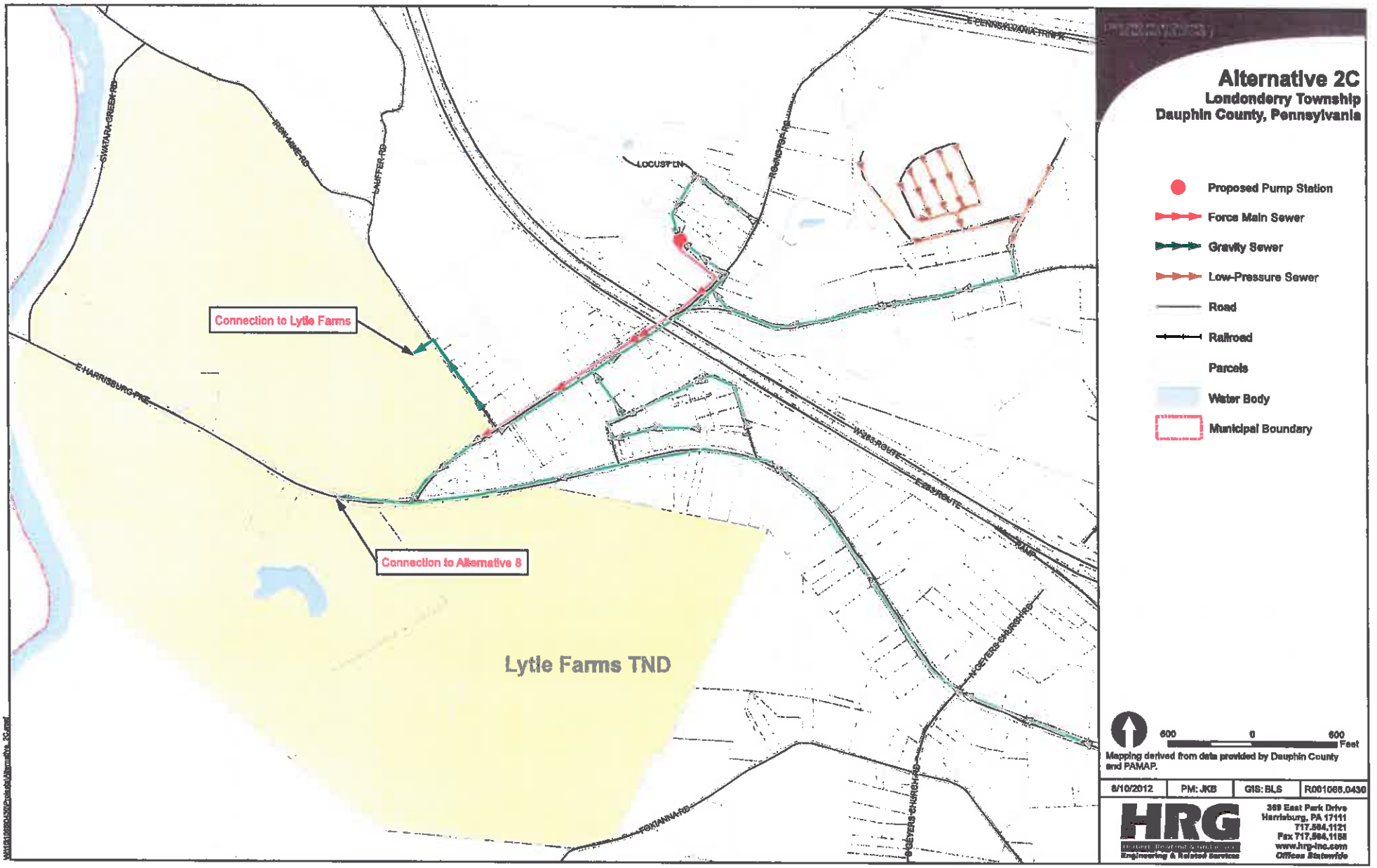
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SWATARA GREEN RD
IRONMINE RD
LAUFFER RD
LOCUST LN
E HARRISBURG PKE
E PENNSYLVANIA TRKPK
W 283 ROUTE
E 283 ROUTE
ROESTERS CHURCH RD
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717.564.1121
Fax 717.564.1158
www.hrg-inc.com
Offices Statewide

1. PROJECT INFORMATION

Project Name: **Conveyance System**
Date of review: **9/22/2014 2:38:25 PM**
Project Category: **Waste Transfer, Treatment, and Disposal,Liquid waste/Effluent,Sewage module/Act 537 plan**
Project Length: **43963.4** feet
County: **Dauphin** Township/Municipality: **Londonderry**
Quadrangle Name: **MIDDLETOWN** ~ ZIP Code: **17022,17057**
Decimal Degrees: **40.217702 N, -76.731730 W**
Degrees Minutes Seconds: **40° 13' 3.7" N, -76° 43' 54.2" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE: Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

PGC Species: (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)
Scientific Name: Sensitive Species**
Common Name:
Current Status: Endangered

PA Department of Conservation and Natural Resources

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission

RESPONSE: Further review of this project is necessary to resolve the potential impacts(s). Please send project information to this agency for review (see WHAT TO SEND).

PFBC Species: (Note: The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)
Scientific Name: Lampsilis cariosa
Common Name: Yellow Lampmussel
Current Status: Special Concern Species*

U.S. Fish and Wildlife Service

RESPONSE: No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.* is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictinal agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, send the following information to the agency(s) seeking this information (see AGENCY CONTACT INFORMATION).

Check-list of *Minimum* Materials to be submitted:

__X__ **SIGNED** copy of this Project Environmental Review Receipt
__X__ Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
__X__ Project location information (name of USGS Quadrangle, Township/Mu?icipality, and County)
__X__ USGS 7.5-minute Quadrangle with project boundary clearly indicated, and quad name on the map

The inclusion of the following information may expedite the review process.
__X__ A basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
____ Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____ Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams

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Fax:(717) 772-0271

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NO Faxes Please

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Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

7. PROJECT CONTACT INFORMATION

Name: STACI TUPTA
Company/Business Name: HERBERT, ROWLAND & GRUBIC, INC.
Address: 369 EAST PARK DRIVE
City, State, Zip: HARRISBURG, PA 17111
Phone: (717) 564-1121 Fax: (717) 564-1158
Email: STUPTA@HRG-INC.COM

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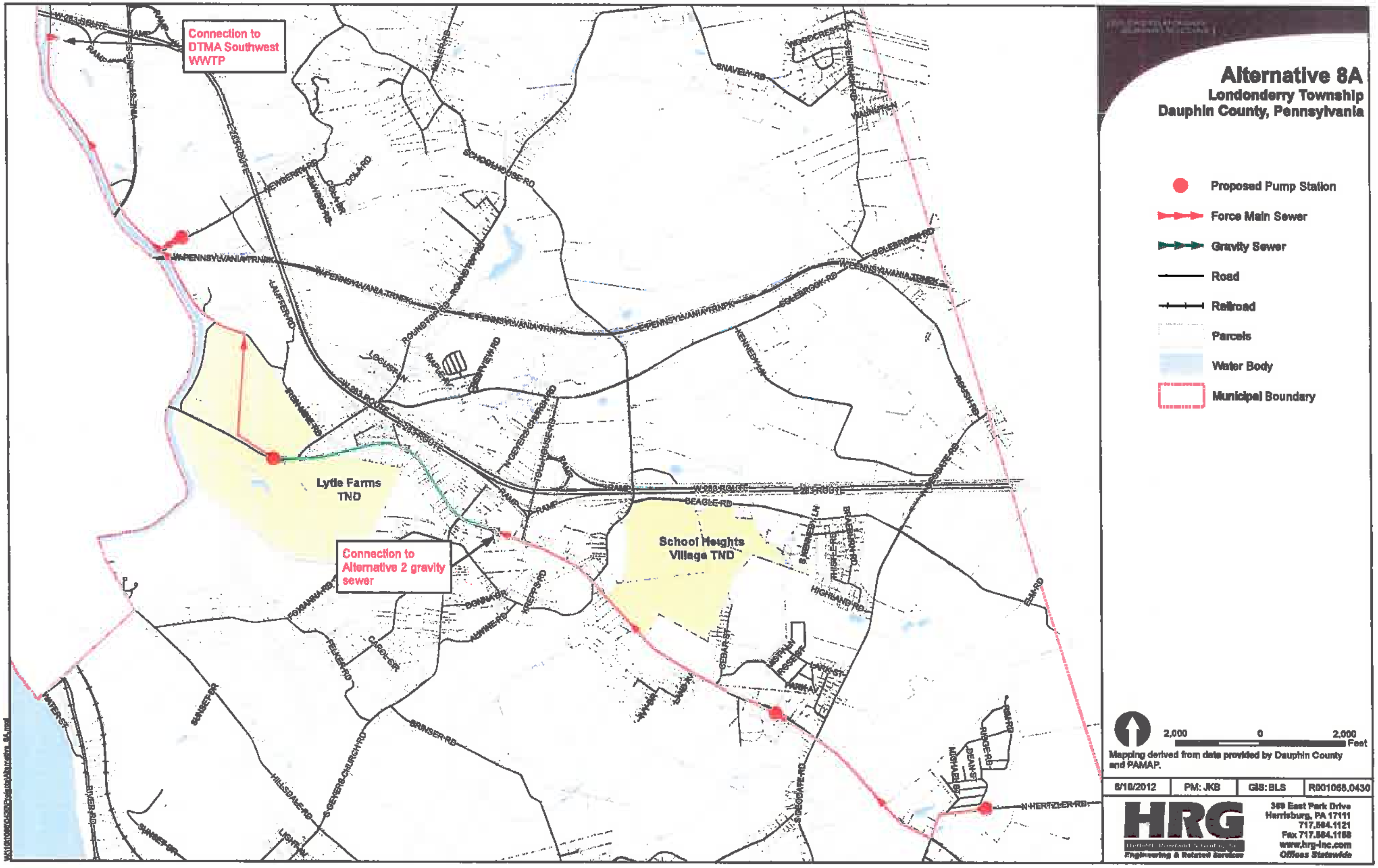
Staci Tupta
applicant/project proponent signature

9/23/2014
date



Alternative 8A
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Fax 717.564.1158
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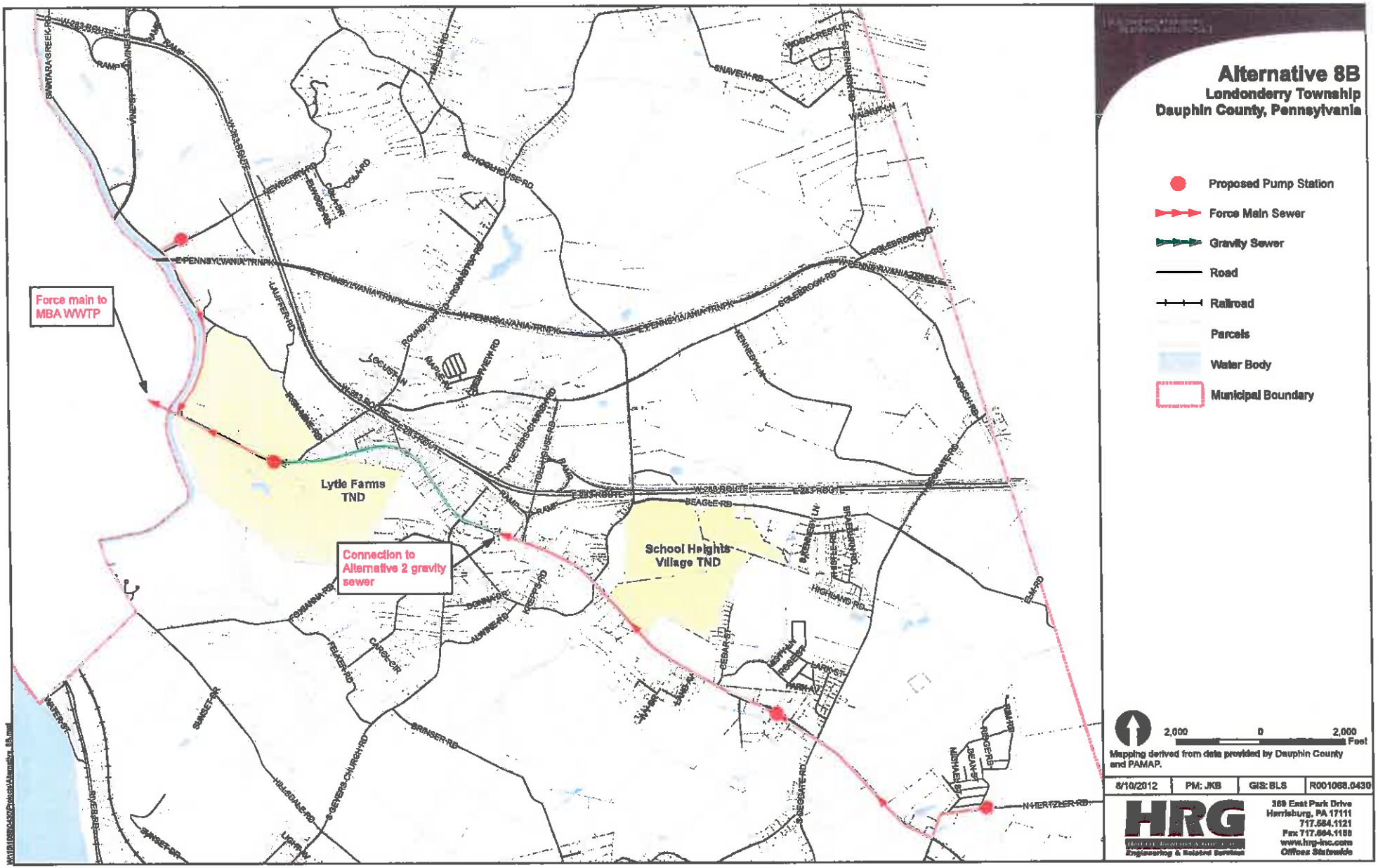
Connection to DTMA Southwest WWTP
Connection to Alternative 2 gravity sewer
Lytle Farms TND
School Heights Village TND
SCHOOLHOUSE-RD
W-PENNSYLVANIA-TRNPK
E-PENNSYLVANIA-TRNPK
COLEBROOK-RD
BEAGLE-RD
HIGHLAND-RD
CEDAR-ST
BRINSER-RD
HILLSDALE-RD
S-GEYERS-CHURCH-RD
N-HERTZLER-RD
ROUSH-RD
ELM-RD
SNAVELY-RD
KENNEDY-LN
LAUFFER-RD
CAROL-CIR
FELKER-RD
SUNSET-DR
RIVER-RD
WATER-ST
VINE-ST
RAMP


Force main to MBA WWTP
Lytle Farms TND
Connection to Alternative 2 gravity sewer
School Heights Village TND
Alternative 8B
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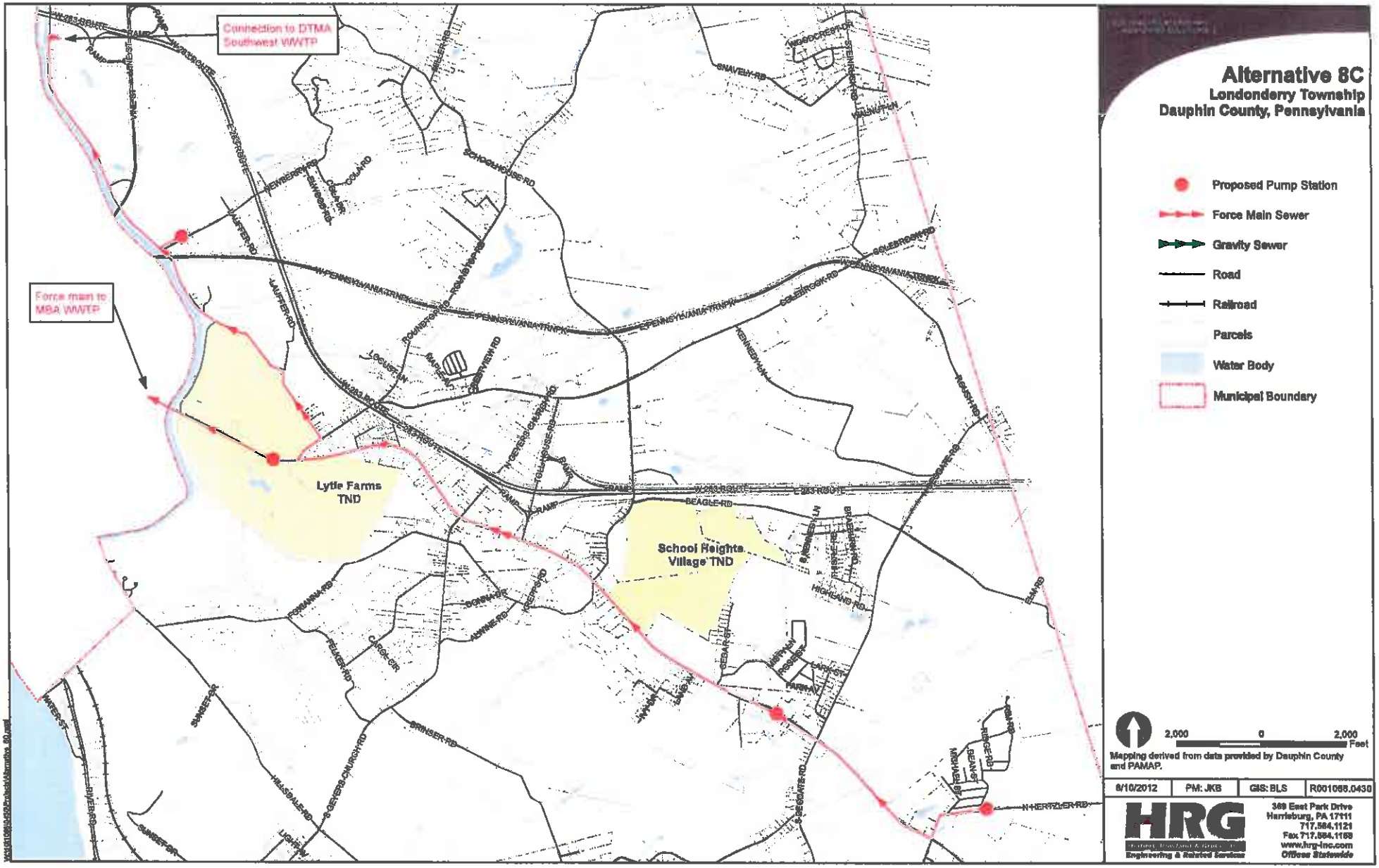
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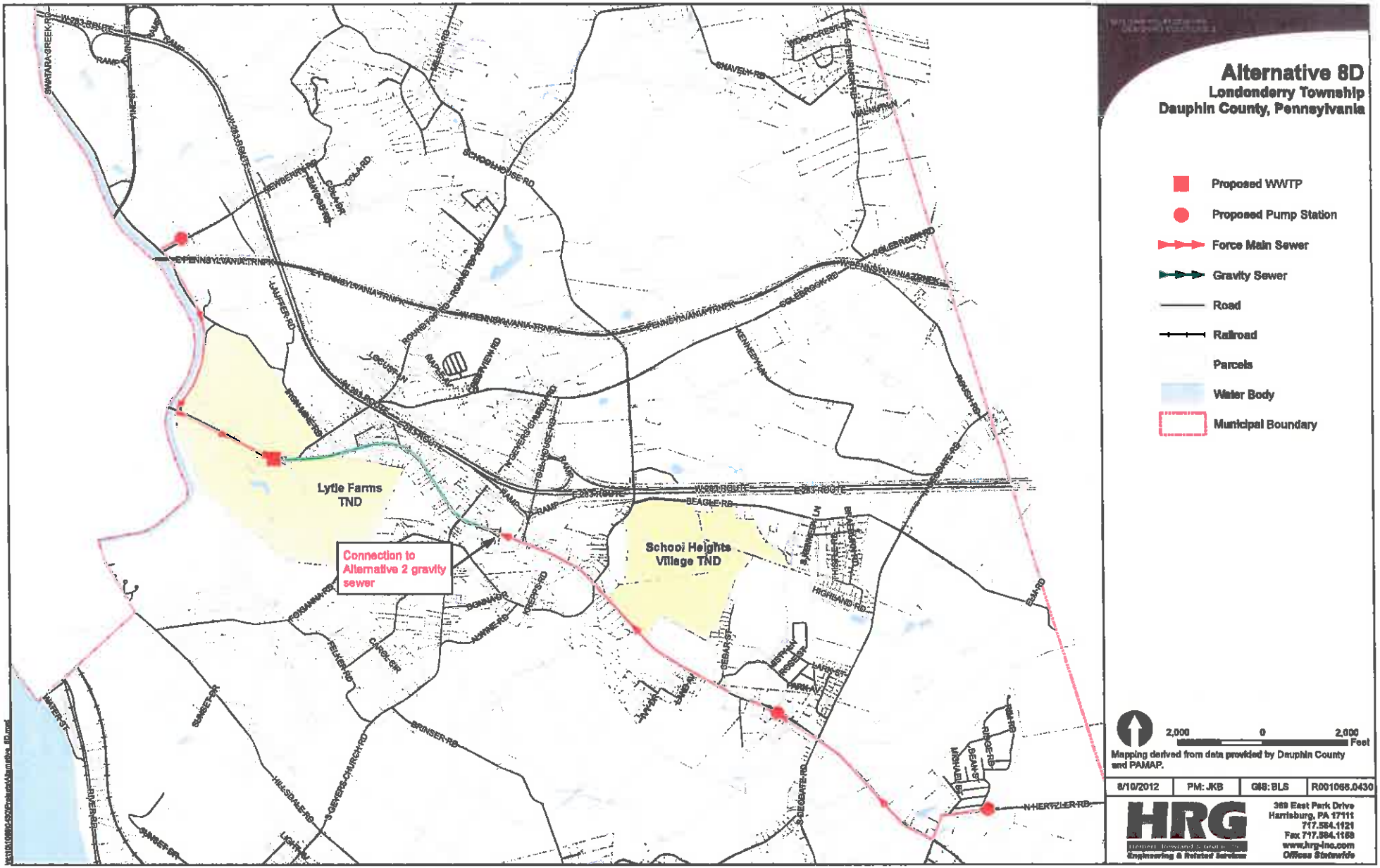
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Total Postage & Fees $

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HARRISBURG PA 17111-9998

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Sent To
Street, Apt. No.; or PO Box No.
City, State, ZIP+4

PA Game Commission
Bureau of Wildlife Habitat Management
Div of Env Planning & Habitat Protection
2001 Elmerton Ave
Harrisburg, PA 17110-9797

PS Form 3800, August 2006 — See Reverse for Instructions

1068.430-06-A

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

PA Game Commission
Bureau of Wildlife Habitat Management
Div of Env Planning & Habitat Protection
2001 Elmerton Ave
Harrisburg, PA 17110-9797

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) [illegible] C. Date of Delivery 9-29-14

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

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

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7014 0510 0000 4050 5149

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

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

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

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

ADMINISTRATIVE BUREAUS:

ADMINISTRATION.....717-787-5670
HUMAN RESOURCES.....717-787-7836
FISCAL MANAGEMENT.....717-787-7314
CONTRACTS AND PROCUREMENT.....717-787-6594
LICENSING.....717-787-2084
OFFICE SERVICES.....717-787-2116
WILDLIFE MANAGEMENT.....717-787-5529
INFORMATION & EDUCATION.....717-787-6286
WILDLIFE PROTECTION.....717-783-6526
WILDLIFE HABITAT MANAGEMENT.....717-787-6818
REAL ESTATE DIVISION.....717-787-6568
AUTOMATED TECHNOLOGY SERVICES.....717-787-4076

www.pgc.state.pa.us

September 30, 2014 PNDI Number: 20140922467810

Ms. Staci Tupta
Herbert, Rowland & Grubic, Inc.
369 East Park Drive
Harrisburg, Pennsylvania 17111

Re: Service Area 2
Londonderry Township, Dauphin County, PA

Dear Ms. Tupta,

Thank you for submitting the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Receipt Number 20140922467810 for review. The Pennsylvania Game Commission (PGC) screened this project for potential impacts to species and resources of concern under PGC responsibility, which includes birds and mammals only.

No Impact Anticipated

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

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

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

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

Resources, and/or the PA Fish and Boat Commission have been contacted regarding this project as directed by the online PNDI ER Tool found at www.naturalheritage.state.pa.us.

Sincerely,

Olivia A. Mowery
Environmental Planner
Division of Environmental Planning & Habitat Protection
Bureau of Wildlife Habitat Management
Phone: 717-787-4250, Extension 3128
Fax: 717-787-6957
E-mail:OMowery@pa.gov

A PNHP Partner

OAM/oam

cc: File

HRG
Herbert, Rowland & Grubic, Inc.
Engineering & Related Services

369 East Park Drive
Harrisburg, PA 17111
(717) 564-1121
FAX (717) 564-1158
www.hrg-inc.com

VIA CERTIFIED MAIL

September 25, 2014

Pennsylvania Historical and Museum Commission
Bureau of Historic Preservation
400 North Street, Second Floor
Harrisburg, Pennsylvania 17120-0093

Re: Cultural Resource Notice
Londonderry Township Act 537 Plan
Londonderry Township, Dauphin County

Dear Sir or Madam:

Attached is a Cultural Resource Notice and supplemental material relative to the above referenced project. Please review and comment at your earliest convenience.

Please contact me if you have any questions or need further information. I look forward to hearing from you.

Very Truly Yours,

Herbert, Rowland & Grubic, Inc.

Staci A. Tupta, E.I.T.
Staff Professional

SAT/vjm
001068.0430/06/A
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Enclosures

c: File (w/encl.)

0120-PM-PY0003 Rev. 5/2006
NOTICE

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CULTURAL RESOURCE NOTICE

DEP USE ONLY
Date Received

Read the instructions before completing this form.

SECTION A. APPLICANT IDENTIFIER

Applicant Name	Londonderry Township				
Street Address	783 South Geyers Church Road				
City	Middletown	State	PA	Zip	17057
Telephone Number	(717) 944-1803				
Project Title	Act 537 Official Sewage Facilities Plan Update				

SECTION B. LOCATION OF PROJECT

Municipality: Londonderry Township | County Name: Dauphin County | DEP County Code: 22

SECTION C. PERMITS OR APPROVALS

Name of Specific DEP Permit or Approval Requested: Act 537 Planning

Anticipated federal permits:

- ☐ Surface Mining
- ☐ Army Corps of Engineers
- ☐ 401 Water Quality Certification
- ☐ 404 Water Quality Permit
- ☐ Federal Energy Regulatory Commission
- ☐ Other: _____

SECTION D. GOVERNMENT FUNDING SOURCES

- ☒ State: (Name) PENNVEST
- ☐ Federal: (Name) _____
- ☒ Local: (Name) Township General Funds
- ☐ Other: (Name) _____

SECTION E. RESPONSIBLE DEP REGIONAL, CENTRAL, DISTRICT MINING or OIL & GAS MGMT OFFICE

DEP Regional Office Responsible for Review of Permit Application

- ☐ Central Office (Harrisburg)
- ☐ Southeast Regional Office (Norristown)
- ☐ Northeast Regional Office (Wilkes-Barre)
- ☒ Southcentral Regional Office (Harrisburg)
- ☐ Northcentral Regional Office (Williamsport)
- ☐ Southwest Regional Office (Pittsburgh)
- ☐ Northwest Regional Office (Meadville)
- ☐ District Mining Office: _____
- ☐ Oil & Gas Office: _____

SECTION F. RESPONSIBLE COUNTY CONSERVATION DISTRICT, if applicable.

County Conservation District	Telephone Number, if known
Dauphin County	

SECTION G. CONSULTANT

Consultant, if applicable	Herbert, Rowland & Grubic, Inc. c/o Staci A. Tupta, E.I.T.				
Street Address	369 East Park Drive				
City	Harrisburg	State	PA	Zip	17111
Telephone Number	(717) 564-1121				

SECTION H. PROJECT BOUNDARIES AND DESCRIPTION

REQUIRED

Indicate the total acres in the property under review. Of this acreage, indicate the total acres of earth disturbance for the proposed activity.

Attach a 7.5' U.S.G.S. Map indicating the defined boundary of the proposed activity.

Attach photographs of any building over 50 years old. Indicate what is to be done to all buildings in the project area.

Attach a narrative description of the proposed activity.

Attach the return receipt of delivery of this notice to the Pennsylvania Historical and Museum Commission.

REQUESTED

Attach photographs of any building over 40 years old.

Attach site map, if available.

SECTION I. SIGNATURE BLOCK

Applicant's Signature	Date of Submission of Notice to PHMC
Stacie Tipton	9/25/2014

Project Narrative
Act 537 Official Sewage Facilities Plan Update
Londonderry Township, Dauphin County

Londonderry Township is currently preparing an Act 537 Plan Update that includes Sewer District Nos. 2 and 3 in their entirety, as well as a developed portion of On-Lot Management District B known as Londonderry Estates. An evaluation of existing on-lot disposal systems indicated that there is a need for improved wastewater disposal in several areas throughout the Township. The seven (7) service areas were identified based on needs derived from previous planning, number of on-lot malfunctions, well water sample results, and unsuitable soil type.

At this time, several areas are being evaluated in order to determine if the installation of a public sanitary sewer system is feasible. The seven (7) service areas are indicated on the attached map. Although several alternatives have been evaluated for the public treatment of wastewater generated by the installation of a new sanitary sewer system, the wastewater from this project will most likely be conveyed to the Middletown Borough Authority's Wastewater Treatment Plant (MBA WWTP) and/or Derry Township Municipal Authority's Southwest Wastewater Treatment Plant (DTMA SW WWTP). Collection and conveyance alternatives being evaluated in the seven (7) service areas include any of the following or a combination of: gravity sewer mains, low-pressure sewer mains and individual grinder pump units located at each residence, and installation of pumping stations and associated force mains.

It is believed that buildings over 50 years old are located throughout the service areas; however, none of these buildings will be affected by the proposed sanitary sewer system. All new facilities will be constructed below grade within existing roadways, access drives, and rights-of-way where feasible.

The total area studied for the Act 537 Update is approximately 605 acres. The actual disturbance from the potential sewer system is unknown at this time; however, the total disturbed area for the seven (7) service areas and conveyance system was estimated based on the proposed alternative drawings and is approximately 115,300 linear feet or 10.6 acres.

MIDDLETOWN QUADRANGLE

GRAPHIC SCALE

4000' 2000' 0' 4000'

SCALE: 1" = 4000'

HRG
Engineering & Related Services
AN EMPLOYEE-OWNED COMPANY

369 East Park Drive
Harrisburg, PA 17111
(717) 564-1121
Fax (717) 564-1158
hrg@hrg-inc.com
www.hrg-inc.com

ACT 537 PLAN SERVICE AREAS FOR LONDONDERRY TOWNSHIP

LONDONDERRY TOWNSHIP DAUPHIN COUNTY PENNSYLVANIA

PROJ. MGR. – MDC
DESIGN– SAT
CADD– RSF
CHECKED–
SCALE– AS NOTED
DATE– SEPT. 2014

DRAWING NO. 1
SHEET NO. 1 OF 1
PROJECT 001058.0430

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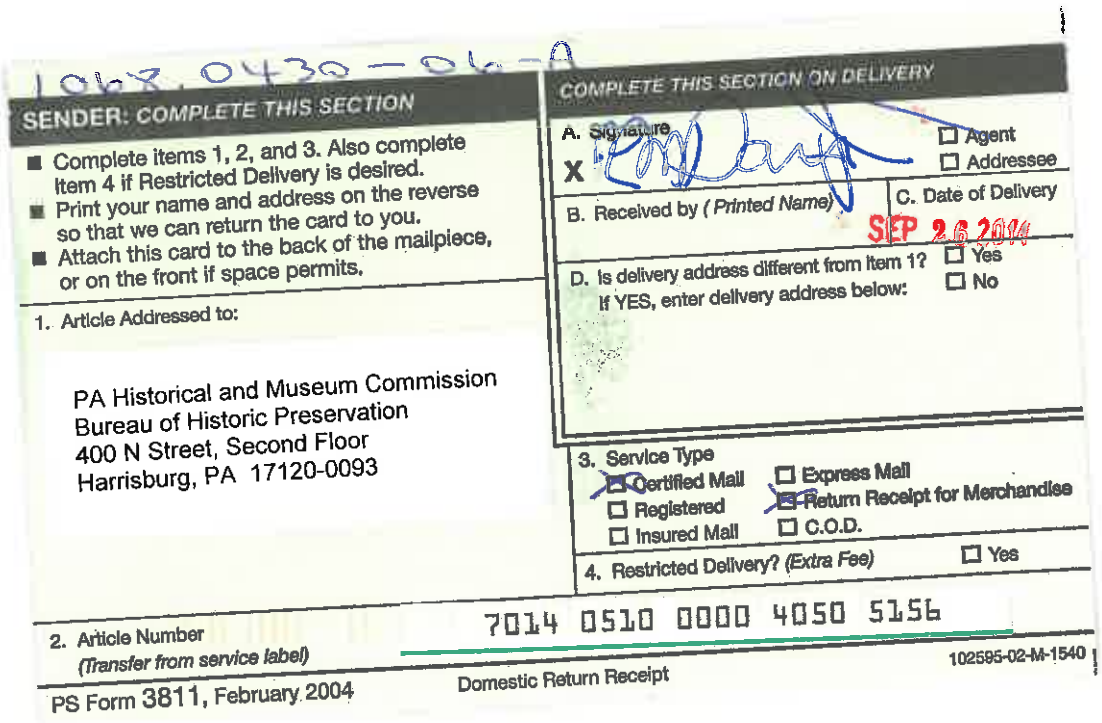
Sent To: PA Historical and Museum Commission
Street, Apt. No.; or PO Box No.: Bureau of Historic Preservation
City, State, ZIP+4: 400 N Street, Second Floor, Harrisburg, PA 17120-0093

PS Form 3800, August 2006 — See Reverse for Instructions

7014 0510 0000 4050 5156



10k8.0430-06-0

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete Item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

PA Historical and Museum Commission
Bureau of Historic Preservation
400 N Street, Second Floor
Harrisburg, PA 17120-0093

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X
☐ Agent
☐ Addressee

B. Received by (Printed Name)
C. Date of Delivery
SEP 26 2014

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

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

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7014 0510 0000 4050 5156

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

Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093
www.phmc.state.pa.us

October 23, 2014

Staci A. Tupta
HRG
369 East Park drive
Harrisburg, PA 17111

Re: ER 2014-1964-043-A
Cultural Resource Notice
Londonderry Township Act 537 Plan
Londonderry Township, Dauphin County

Dear Ms. Tupta:

Thank you for submitting information concerning the above referenced project. The Bureau for Historic Preservation (the State Historic Preservation Office) reviews projects in accordance with state and federal laws. Section 106 of the National Historic Preservation Act of 1966, and the implementing regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation, is the primary federal legislation. The Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 et seq. (1988) is the primary state legislation. These laws include consideration of the project's potential effects on both historic and archaeological resources.

This project is a planning study; therefore this office cannot assess the effects on specific historic and archaeological resources until more detailed plans are developed. Please contact our office when more specific plans are available for our review.

If you need further information, contact me at (717) 772-0925 or dmclearen@pa.gov.

Sincerely,

Douglas C. McLearen, Chief
Division of Archaeology &
Protection

HRG
Herbert, Rowland & Grubic, Inc.
Engineering & Related Services

369 East Park Drive
Harrisburg, PA 17111
(717) 564-1121
FAX (717) 564-1158
www.hrg-inc.com

VIA EMAIL AND CERTIFIED MAIL
RETURN RECEIPT REQUESTED

January 3, 2014

Mr. Ralph G. Watters
Derry Township Municipal Authority
670 Clearwater Road
Hershey, Pennsylvania 17033

Re: Derry Township Municipal Authority (DTMA)
Revised Wastewater Capacity Request
Londonderry Township Act 537 Plan Update

Dear Mr. Watters:

Londonderry Township (Township), Dauphin County, is currently updating their Act 537 Sewage Facilities Plan (Plan Update). This letter follows previous correspondence relative to the Plan Update dated 8/31/12 and 10/1/12. As part of the alternatives analysis, the Township would like to review the feasibility of wastewater treatment at DTMA and Middletown Borough Authority (MBA) WWTPs.

Herbert, Rowland & Grubic, Inc. (HRG) is working with the Township to finalize the Plan Update. Flow scenarios have updated are presented below. A revised breakdown of these flows is attached to this letter.

	DTMA SW WWTP	MBA WWTP
• Scenario 1A (Split Flow, Immediate):	155,000 gpd	60,000 gpd
• Scenario 1B (Split Flow, 20-Year):	445,000 gpd	525,000 gpd
• Scenario 2A (All flow to DTMA, Immediate):	215,000 gpd	0 gpd
• Scenario 2B (All flow to DTMA, 20-Year):	970,000 gpd	0 gpd
• Scenario 3A (All flow to MBA, Immediate):	0 gpd	215,000 gpd
• Scenario 3B (All flow to MBA, 20-Year):	0 gpd	970,000 gpd

	DTMA Main WWTP
• Scenario 4 (Flow to DTMA, Immediate):	12,000 gpd

The Township is also evaluating the feasibility of decentralized treatment systems in portions of the Township. Depending upon how decentralized treatment options are implemented and the chosen alternatives for existing mobile home parks in the Township, the planned flows may be less than those presented above.

The proposed connection point for Scenario 1 & 2 flows would be at manhole "MH-A4" on Willow Dell Drive near the DTMA SW WWTP. The proposed connection point for Scenario 4 would be at manhole

"SSMH-HW4C" on Ballyshannon Drive in the Hills of Waterford development with treatment at the main (Clearwater Road) DTMA WWTP.

In order to determine the feasibility of treatment at the DTMA WWTPs, the Township must perform cost analysis for each of the structural alternatives proposed in the Plan Update. We kindly request responses to following items:

1. Ability to convey and treat immediate flow of 155,000 gpd (Scenario 1A).
2. Ability to convey and treat 20-Year future flow of 445,000 gpd (Scenario 1B).
3. Ability to convey and treat immediate flow of 215,000 gpd (Scenario 2A).
4. Ability to convey and treat 20-Year future flow of 970,000 gpd (Scenario 2B).
5. Ability to serve immediate flow of 12,000 gpd (Scenario 4).
6. *Identify any capacity issues with collection, conveyance or WWTP facilities for items 1-5.
7. Current tapping fee that would be applied per EDU.
8. *Current cost to treat wastewater.
9. Willingness and ability to operate and maintain new collection and conveyance facilities in the Township. If willing to operate and maintain, provide an O&M cost which includes billing, management, and general administration. In the future, there may be potential for ownership of the proposed sewer facilities in the Township.

* If the requested capacities are not currently available, please provide the amount of flow that could be accepted without upgrading collection, conveyance or treatment facilities.

In order to maintain our project schedule, I respectfully request you contact me at 717-564-1121 to schedule a meeting to review this information with HRG and the Township. We thank you for your continued assistance with this important Plan Update.

Very Truly Yours,

Herbert, Rowland & Grubic, Inc.

Jeffrey K. Bowra, E.I.T.
Assistant Project Manager

JKB
001068.0430
P:\0010\001068_0430\Admin\Corres\Info to Surrounding Municipalities\DTMA\2014.01.03 DTMA WWTP Capacity Request Letter.doc

Enclosure

c: Londonderry Township Board of Supervisors (w/ Encl.)
File (w/ Encl.)

LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE

I. PROJECTED WASTEWATER FLOWS

Description	Type	Status	EDUs	Projected Average Daily Flow (gpd)
Newberry Road	Residential	Existing	41	10,660
Lauffer Hill	Residential	Proposed	100	26,000
Lytle Farms	TND	Proposed	1,730	460,000
E. Harrisburg Pike/Colebrook Road (S.D. No. 2)	Residential	Existing	134	34,840
School Heights Village	TND	Proposed	986	259,100
Breaburn	Residential	Existing	49	12,740
Crestview	MHP	Existing	75	23,000
Cedar Manor	MHP	Existing	316	104,000
Pine Manor	MHP	Existing	110	21,450
N. Deodate Rd.	Residential	Existing	19	4,940
Londonderry Estates	Residential	Existing	46	11,960

NOTES:
1. Residential connections calculated at 260 gpd/EDU.
2. TND flows are based on existing Sewage Planning and Preliminary Planning documents.
3. Pine Manor MHP connections calculated at 195 gpd/EDU.
4. Cedar Manor and Crestview MHP flows based on average 2011 flow records.

II. FLOW BREAKDOWNS AT DTMA SW WWTP:

Scenario 1A (Split Flow Immediate)

Newberry Road	10,660	gpd
Breaburn	12,740	gpd
Cedar Manor	104,000	gpd
Pine Manor	21,450	gpd
N. Deodate Rd.	4,940	gpd
Scenario 1A Total	**153,790**	**gpd**
SAY	**155,000**	**gpd**

Scenario 1B (Split Flow, 20-Year)

Newberry Road	10,660	gpd
Lauffer Hill	26,000	gpd
School Heights Village	259,100	gpd
Breaburn	12,740	gpd
Cedar Manor	104,000	gpd
Pine Manor	21,450	gpd
N. Deodate Rd.	4,940	gpd
Future Growth	5,720	gpd
Scenario 1B Total	**444,610**	**gpd**
SAY	**445,000**	**gpd**

NOTE:
1. Future growth assumed at 20% of 109 existing non-MHP EDUs (22 EDUs x 260 gpd/EDU).

Scenario 2A (All Flow to DTMA, Immediate)

Newberry Road	10,660	gpd
E. Harrisburg Pike/Colebrook Road (S.D. No. 2)	34,840	gpd
Breaburn	12,740	gpd
Crestview	23,000	gpd
Cedar Manor	104,000	gpd
Pine Manor	21,450	gpd
N. Deodate Rd.	4,940	gpd
Scenario 2A Total	**211,630**	**gpd**
SAY	**215,000**	**gpd**

Scenario 2B (All Flow to MBA, 20-Year)

Newberry Road	10,660	gpd
Lauffer Hill	26,000	gpd
Lytle Farms	460,000	gpd
E. Harrisburg Pike/Colebrook Road (S.D. No. 2)	34,840	gpd
School Heights Village	259,100	gpd
Breaburn	12,740	gpd
Crestview	23,000	gpd
Cedar Manor	104,000	gpd
Pine Manor	21,450	gpd
N. Deodate Rd.	4,940	gpd
Future Growth	12,740	gpd
Scenario 2B Total	**969,470**	**gpd**
SAY	**970,000**	**gpd**

NOTE:
1. Future growth assumed at 20% of 243 existing non-MHP EDUs (49 EDUs x 260 gpd/EDU).

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Ralph G Watters
Derry Twp Mun Authority
670 Clearwater Rd
Hershey PA 17033

PS Form 3800, August 2006 — See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

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1. Article Addressed to:

Ralph G Watters
Derry Twp Mun Authority
670 Clearwater Rd
Hershey PA 17033

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Deb Steele ☐ Agent ☐ Addressee

B. Received by (Printed Name) Deb Steele C. Date of Delivery 1-7

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If YES, enter delivery address below: ☐ No

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4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7008 3230 0002 0370 2573

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

DTMA
Derry Township Municipal Authority

March 24, 2014

Jeffrey K. Bowra EIT
Herbert Rowland & Grubic Inc.
369 E. Park Dr.
Harrisburg PA 17111

RE: Londonderry Township Act 537 Plan Update
Revised Wastewater Capacity Request

Dear Mr. Bowra:

I am responding to your January 3, 2014 request for information on Derry Township Municipal Authority's (DTMA) willingness and ability to provide wastewater service to additional portions of Londonderry Township. You inquired about service under various scenarios (Scenarios) and raised a number of other questions. The information provided in this letter is for Londonderry's general planning purposes and is subject to the Limitations paragraph near the end of this letter.

Southwest Treatment Plant Capacity

DTMA's Southwest Treatment Plant (Plant) serves portions of Derry, Londonderry, and Lower Swatara Townships. It has a permitted average daily flow of 0.600 MGD. The Plant was not constructed to meet current nutrient removal requirements for the Chesapeake Bay. Nutrient credits from DTMA's Clearwater Road Treatment Plant are used to meet permit requirements for the Southwest Plant. Average monthly daily flow for calendar year 2013 was 0.283 MGD. For purposes of this analysis 0.300 MGD will be used as the current average daily flow.

Based on identified potential development within the Plant's service area (exclusive of connections resulting from any of the Scenarios), we estimate that average monthly daily flow at the end of calendar year 2016 will be 0.360 MGD. We also assumed that increased flow from any connections under the various Scenarios would not occur before the end of 2016. This means that 0.240 MGD would be available to serve the future needs of Londonderry Township or other contributors to the Plant. Assuming DTMA were willing and able to make the entire 0.240 MGD available to serve Londonderry's needs, we could accept the projected flows from Scenarios 1A and 2A of 0.155 MGD and 0.215 MGD respectively. Under these same assumptions DTMA cannot provide the capacity required by Scenario 1B (0.445 MGD) or 2B (0.970 MGD) without constructing a plant upgrade, since projected flows from those Scenarios exceed 0.240 MGD. If in the future DTMA were willing to construct an upgrade to accept additional flow, our current perspective is that the upgrade could include the larger requirement of Scenario 2B. See our comments under System Policies below regarding costs related to a Plant upgrade.

670 Clearwater Road Hershey, PA 17033-2453 P 717.566.3237 F 717.566.7934

Conveyance System Capacity

For purposes of this response we have assumed that there are no widespread capacity limitations within DTMA's existing conveyance system that would affect our ability to serve any of the Scenarios. However, Scenarios 1B and 2B may necessitate upgrades to the sewer main leading from the proposed discharge manhole MH-A4 to the Plant. No doubt you can develop costs to upgrade the main to handle the proposed flow under the two Scenarios.

Scenario 4

We would be willing and able to provide service for this Scenario, the flow from which is estimated to be 12,000 GPD. This service area is small enough and located close enough to existing DTMA facilities that we may be willing to basically absorb it into our own operations and customer base providing O&M for the collection system and billing services which would be included in the rates below. However, our ability to do so may depend on the type of system constructed (low pressure versus gravity mains and pump station) and how it would be financed (e.g. PennVest requirements may affect system administration).

Rates, Fees, and Service Policies

Capacity Fee

$1,650 for each single-family house
$1,357 for each unit in a multi-family apartment building
$7.22 for each gallon of capacity in non-residential establishments
Capacity fees are updated periodically in accordance with the Act

Sewer User Rates

Non-Metered Accounts
Flat-rate of $38.25 per billing unit per month
Metered Accounts
Flat charge of $10.50 per billing unit per month
Consumption charge of $5.00 per 1,000 gallons of water
A billing unit generally means a single family house, one apartment, or one business.

The rates above become effective April 1, 2014. The DTMA Board has announced its intention to increase sewer user rates by 6% on January 1, 2015, and by 4% on January 1, 2016. This intention is subject to adjustment based on changes in DTMA's financial needs.

Service Policies

In the absence of an agreement expressly reserving capacity including payment of fees, DTMA has typically provided capacity on a "first come, first served basis". Reservation of capacity may be possible under terms acceptable to DTMA which include without limitation, payment of ongoing reservation of capacity fees as provided in the Municipality Authorities Act (Act), and prepayment of capacity and other applicable fees.

In the Scenarios which potentially require an upgrade to the Plant, it is difficult to predict exactly what the financial requirements might be from municipalities that

contribute flow. In the past it has sometimes been possible for DTMA to finance a project and then charge municipal customers only when capacity was required. In other cases up-front contributions toward the project were needed. In order to develop an alternative cost analysis, you may want to assume that an upfront contribution will be required. We do not have current upgrade costs for the Plant, so the costs will need to be estimated based on the extra capacity needed and published plant construction cost factors. In the alternative, the current capacity fee could be adjusted for inflation to the point in time that an upgrade is required and then applied to the capacity needed.

DTMA generally charges it municipal customers the same rates per user as it charges its own customers within Derry Township. This is true whether or not DTMA owns and/or maintains the client municipality's collection system, and provides billing service. This policy is under review and is subject to change.

DTMA believes it has the ability and it would be willing to entertain the possibility of owning, operating and maintaining the collection systems proposed under the various Scenarios, and providing billing services. In the interest of simplicity and expediting the development of this response, we recommend that you assume the rates above do not include collection system O&M and billing services. We do not have the ability to develop estimates of such costs easily or on a timely basis given the highly variable nature of which of the Scenarios may develop and when. It may be that estimates for collection system O&M can be made using unit costs available from trade literature published by industry associations such as the Water Environment Federation or the National Association of Clean Water Agencies. Costs of billing would also need to be estimated.

Limitations

The information included in this letter is for Londonderry Township's general planning purposes only. Much of the content is based on gross estimates and assumptions concerning events which may or may not actually occur. The statements in this letter are not intended to and do not represent binding commitments on the part of DTMA. Actual implementation of plan features will require that DTMA and Londonderry enter into formal written agreements which include acceptable financial and other consideration acceptable to the parties.

We hope this letter has provided sufficient information for you to complete the alternatives analysis required as part of Londonderry's Act 537 update. Please call with any questions or if you need clarification on our comments.

Sincerely,

Ralph G. Watters
General Manager

HRG
Herbert, Rowland & Grubic, Inc.
Engineering & Related Services

369 East Park Drive
Harrisburg, PA 17111
(717) 564-1121
FAX (717) 564-1158
www.hrg-inc.com

VIA EMAIL AND CERTIFIED MAIL
RETURN RECEIPT REQUESTED

January 3, 2014

Mr. Kenneth L. Klinepeter
Borough of Middletown
60 West Emaus Street
Middletown, Pennsylvania 17057

Re: Middletown Borough Authority (MBA)
Revised Wastewater Capacity Request
Londonderry Township Act 537 Plan Update

Dear Mr. Klinepeter:

Londonderry Township (Township), Dauphin County, is currently updating their Act 537 Sewage Facilities Plan (Plan Update). This letter follows previous correspondence relative to the Plan Update dated 8/31/12 and 10/4/12. As part of the alternatives analysis contained in the Plan Update, the Township would like to review the feasibility of wastewater treatment at MBA and Derry Township Municipal Authority (DTMA) WWTPs.

Herbert, Rowland & Grubic, Inc. (HRG) is working with the Township to finalize the Plan Update. Flow scenarios have updated are presented below. A revised breakdown of these flows is attached to this letter.

	DTMA SW WWTP	MBA WWTP
• Scenario 1A (Split Flow, Immediate):	155,000 gpd	60,000 gpd
• Scenario 1B (Split Flow, 20-Year):	445,000 gpd	525,000 gpd
• Scenario 2A (All flow to DTMA, Immediate):	215,000 gpd	0 gpd
• Scenario 2B (All flow to DTMA, 20-Year):	970,000 gpd	0 gpd
• Scenario 3A (All flow to MBA, Immediate):	0 gpd	215,000 gpd
• Scenario 3B (All flow to MBA, 20-Year):	0 gpd	970,000 gpd

The Township is also evaluating the feasibility of decentralized treatment systems in portions of the Township. Depending upon how decentralized treatment options are implemented and the chosen alternatives for existing mobile home parks in the Township, the planned flows may be less than those presented above.

The proposed connection point for these flows would be at the intersection of SR 230 and the railroad tracks just west of the Swatara Creek in the vicinity of MBA manhole number 318.

In order to determine the feasibility of treatment at the MBA WWTP, the Township must perform cost analysis for each of the structural alternatives proposed in the Plan Update. We kindly request responses to following items:

1. Ability to convey and treat immediate flow of 60,000 gpd (Scenario 1A).
2. Ability to convey and treat 20-Year future flow of 525,000 gpd (Scenario 1B).
3. Ability to convey and treat immediate flow of 215,000 gpd (Scenario 3A).
4. Ability to convey and treat 20-Year future flow of 970,000 gpd (Scenario 3B).
5. *Identify any capacity issues with collection, conveyance or WWTP facilities for items 1-4.
6. Current tapping fee that would be applied per EDU.
7. *Current cost to treat wastewater.
8. Willingness and ability to operate and maintain new collection and conveyance facilities in the Township. If willing to operate and maintain, provide an O&M cost which includes billing, management, and general administration. In the future, there may be potential for ownership of the proposed sewer facilities in the Township.

* If the requested capacities are not currently available, please provide the amount of flow that could be accepted without upgrading conveyance or treatment facilities.

In order to maintain our project schedule, I respectfully request you contact me at 717-564-1121 to schedule a meeting to review this information with HRG and the Township. We thank you for your continued assistance with this important Plan Update.

Very Truly Yours,

Herbert, Rowland & Grubic, Inc.

Jeffrey K. Bowra, E.I.T.
Assistant Project Manager

JKB
001068.0430
P:\0010\001068_0430\Admin\Corres\Info to Surrounding Municipalities\MBA\2014.01.03 MBA WWTP Capacity Request Letter.doc

Enclosure

c: Londonderry Township Board of Supervisors (w/Encl.)
Joshua Fox, P.E., HRG (w/Encl.)
File (w/Encl.)

LONDONDERRY TOWNSHIP ACT 537 PLAN UPDATE

I. PROJECTED WASTEWATER FLOWS

Description	Type	Status	EDUs	Projected Average Daily Flow (gpd)
Newberry Road	Residential	Existing	41	10,660
Lauffer Hill	Residential	Proposed	100	26,000
Lytle Farms	TND	Proposed	1,730	460,000
E. Harrisburg Pike/Colebrook Road (S.D. No. 2)	Residential	Existing	134	34,840
School Heights Village	TND	Proposed	986	259,100
Breaburn	Residential	Existing	49	12,740
Crestview	MHP	Existing	75	23,000
Cedar Manor	MHP	Existing	316	104,000
Pine Manor	MHP	Existing	110	21,450
N. Deodate Rd.	Residential	Existing	19	4,940
Londonderry Estates	Residential	Existing	46	11,960

NOTES:
1. Residential connections calculated at 260 gpd/EDU.
2. TND flows are based on existing Sewage Planning and Preliminary Planning documents.
3. Pine Manor MHP connections calculated at 195 gpd/EDU.
4. Cedar Manor and Crestview MHP flows based on average 2011 flow records.

II. FLOW BREAKDOWNS AT MBA WWTP:

Scenario 1A (Split Flow Immediate)

E. Harrisburg Pike/Colebrook Road (S.D. No. 2)	34,840	gpd
Crestview	23,000	gpd
Scenario 1A Total	**57,840**	**gpd**
SAY	**60,000**	**gpd**

Scenario 1B (Split Flow, 20-Year)

E. Harrisburg Pike/Colebrook Road (S.D. No. 2)	34,840	gpd
Crestview	23,000	gpd
Lytle Farms	460,000	gpd
Future Growth	7,020	gpd
Scenario 1B Total	**524,860**	**gpd**
SAY	**525,000**	**gpd**

NOTE:
1. Future growth assumed at 20% of 134 existing non-MHP EDUs (27 EDUs x 260 gpd/EDU).

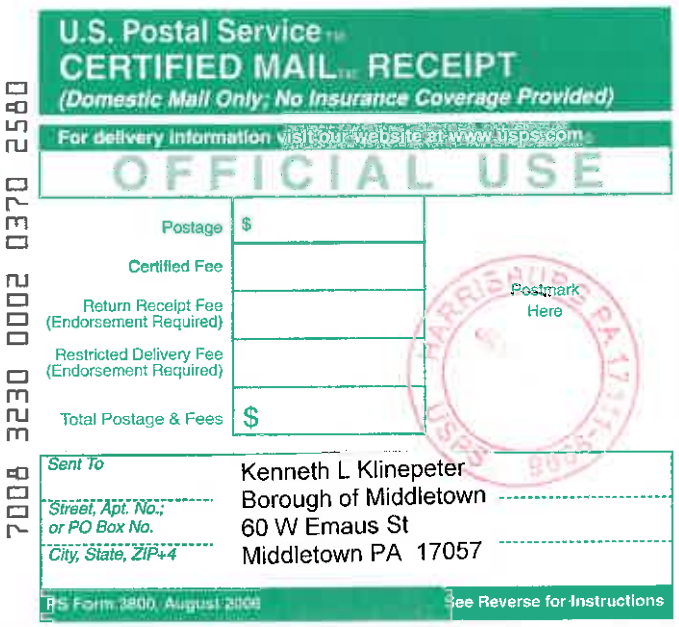
Scenario 3A (All Flow to MBA, Immediate)

Newberry Road	10,660	gpd
E. Harrisburg Pike/Colebrook Road (S.D. No. 2)	34,840	gpd
Breaburn	12,740	gpd
Crestview	23,000	gpd
Cedar Manor	104,000	gpd
Pine Manor	21,450	gpd
N. Deodate Rd.	4,940	gpd
Scenario 3A Total	**211,630**	**gpd**
SAY	**215,000**	**gpd**

Scenario 3B (All Flow to MBA, 20-Year)

Newberry Road	10,660	gpd
Lauffer Hill	26,000	gpd
Lytle Farms	460,000	gpd
E. Harrisburg Pike/Colebrook Road (S.D. No. 2)	34,840	gpd
School Heights Village	259,100	gpd
Breaburn	12,740	gpd
Crestview	23,000	gpd
Cedar Manor	104,000	gpd
Pine Manor	21,450	gpd
N. Deodate Rd.	4,940	gpd
Future Growth	12,740	gpd
Scenario 3B Total	**969,470**	**gpd**
SAY	**970,000**	**gpd**

NOTE:
1. Future growth assumed at 20% of 243 existing non-MHP EDUs (49 EDUs x 260 gpd/EDU).



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City, State, ZIP+4: 60 W Emaus St
Middletown PA 17057

PS Form 3800, August 2006 — See Reverse for Instructions

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Kenneth L Klinepeter
Borough of Middletown
60 W Emaus St
Middletown PA 17057

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www.hrg-inc.com

VIA ELECTRONIC & REGULAR MAIL

April 18, 2014

Mr. Kenneth L. Klinepeter
Borough of Middletown
60 West Emaus Street
Middletown, Pennsylvania 17057

Re: Middletown Borough Authority (MBA)
Wastewater Capacity Request
Londonderry Township Act 537 Plan Update (Plan)

Dear Mr. Klinepeter:

On behalf of Londonderry Township (Township), this letter serves as a follow-up to the January 13, 2014 meeting held between representatives of both the Township and MBA. From this meeting, it was requested that a timeframe be developed for the anticipated future sewer connections from the proposed sewer extensions to serve existing sewage needs areas and future approved development within the Township for each Flow Scenario identified in the Plan.

The Township's goal is to complete the Plan and submit it to DEP by the end of 2014. It is assumed that DEP would then approve the Plan in mid-2015. It is anticipated that it will take 2 to 3 years for the design and construction of the proposed sewer extensions after DEP approval of the Plan. Based upon this schedule, flows from the Township constructed proposed sewer extensions may not be realized until approximately 2018.

As identified in our January 3, 2014 correspondence, the Township is evaluating four (4) Flow Scenarios for providing public sewer service in the Township with conveyance of wastewater flow to MBA WWTP and/or Derry Township Municipal Authority (DTMA) WWTP for treatment. Two (2) of the flow scenarios, Flow Scenario 1 and Flow Scenario 3, evaluates the feasibility of conveyance and treatment to the MBA WWTP to accommodate the short and long-term planning needs within the Township.

Using the schedule identified above, the Township would require the following initial capacity in the MBA's system beginning in 2018 for the proposed sewer extensions to serve existing sewage needs areas:

- Flow Scenario 1 (Split flow between MBA and DTMA) – 67,000 gpd.
- Flow Scenario 3 (All flow to MBA) – 228,000 gpd.

Recognizing that the status and schedule of anticipated planned future development is dependent upon the developer, the timeframe for these anticipated planned future developments is difficult to predict. It should be noted that a developer may propose to begin development prior to the anticipated 2018 timeframe for

capacity for the Townships sewage needs areas. The Township continues to coordinate with the developers regarding their anticipated schedule. At this time, we can anticipate the projected sewage flows as provided by each developer for full build-out of their respective planned future development, which is as follows:

- Lytle Farms – 460,000 gpd
- Lauffer Hill – 26,000 gpd
- School Heights Village – 259,100 gpd

Assuming full build-out of these anticipated developments and the Township's needs for the proposed sewer extensions to serve existing sewage needs areas, the Township would ultimately require the following capacity in the MBA's system as part of its 20-year flow projections:

- Flow Scenario 1 (Split flow between MBA and DTMA) – 525,000 gpd.
- Flow Scenario 3 (All flow to MBA) – 970,000 gpd.

We understand that MBA's system does not have capacity to accommodate the Township's sewage needs areas and full build-out of the planned future development. We would like to consider that capacity remaining in the MBA's system be allocated to accommodate a portion of the anticipated planned future development in addition to the flows contributed from the Township's existing needs areas. As development needs expand beyond the available capacity of MBA's system, upgrades to the MBA system will then be required.

In order to complete a cost-benefit analysis to determine the feasibility of conveyance and treatment at the MBA WWTP, the Township respectfully requests the following information:

1. Capacity currently available for the Township's use in MBAs existing conveyance system and WWTP.
2. Ability to convey and treat an initial flow of 67,000 gpd (Scenario 1).
3. Would MBA be willing and able to convey and treat the 20-year future flow of 525,000 gpd (Scenario 1)? If so, a projected cost for the upgrade.
4. Ability to convey and treat initial flow of 228,000 gpd (Scenario 3).
5. Would MBA be willing and able to convey and treat the 20-year future flow of 970,000 gpd (Scenario 3)? If so, a projected cost for the upgrade.
6. Identify any capacity issues with collection, conveyance or WWTP facilities for items 1-4.
7. Current tapping fee that would be applied per EDU.
8. Current cost to convey and treat wastewater.
9. Willingness and ability to operate and maintain new collection and conveyance facilities in the Township. If willing to operate and maintain, provide an O&M cost which includes billing, management, and general administration. In the future, there may be potential for ownership of the proposed sewer facilities in the Township.

The Township received an extension of time from DEP for submission of the Plan no later than December 30, 2014. In order to maintain this schedule, please submit the requested information to our office no later than May 19, 2014.

Should you have any questions or require further information, please do not hesitate to contact me at (717) 564-1121. We thank you for your continued assistance with this important Plan Update.

Very Truly Yours,

Herbert, Rowland & Grubic, Inc.

William G. Rehkop, E.I.T.
Assistant Project Manager

WGR/MDC/vjm
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c: Steve Letavic, Londonderry Township
John Patton, Middletown Borough Authority
Andrew Kenworthy, P.E., HRG
Joshua T. Fox, P.E., HRG
Matthew Cichy, P.E., HRG
File

MIDDLETOWN BOROUGH AUTHORITY

60 West Emaus Street, Middletown, PA 17057

July 10, 2014

Mr. Steve Letavic
Londonderry Township
783 S Geyers Church Road
Middletown, Pennsylvania 17057

Re: Wastewater Capacity Request
Londonderry Township Act 537 Plan Update (Plan)
Middletown Borough Authority, Dauphin County

Dear Mr. Letavic:

This correspondence serves as a follow-up to the letter received from Mr. William Rehkop of Herbert, Rowland, & Grubic, Inc. (HRG) on April 18, 2014 pertaining to a request for wastewater treatment plant (WWTP) capacity for incorporation into the Londonderry Township (Township) Act 537 Plan.

The Middletown Borough Authority (Authority) undertook a planning level evaluation of the condition of, and the capacity in, the Railroad Street Interceptor and the WWTP.

As you are aware, the Authority's sanitary sewer system (system) is severely impacted by inflow and infiltration (I/I). During significant wet weather events, the I/I overwhelm the existing sanitary sewer conveyance system and causes sanitary sewer overflows in the system near Hoffer Park. The Authority is taking a proactive approach in reducing the I/I. Currently, the Authority has undertaken an I/I Study and has been flow metering the system over the past few months with the goal of identifying the worst areas impacted by the I/I and prioritizing them for repair. Additionally, the Authority is undertaking a sewer replacement project to replace sewers that are over 100 years old in the vicinity of South Union Street. The extent of the reduction in I/I is not yet known as the project has only been under construction for two (2) months; however, preliminary estimates show as much as a 500,000 gallon per day reduction during peak wet weather events.

With this in mind, we have reviewed our existing capacity in the Railroad Street Interceptor from SR 230 to the WWTP and the WWTP as well as future projected flow from the Borough of Middletown and full use of purchased capacity from the Borough of Royalton (9.09% of WWTP capacity) and Lower Swatara Township (20% of WWTP capacity).

In response to your request for additional information for your cost-benefit analysis, please find the following responses numbered to correspond directly with your requests:

1. The permitted hydraulic capacity in average daily flow (ADF) for the WWTP is 2.2 million gallons per day (MGD). The 2013 ADF recorded at the WWTP was 1.228 MGD or 55% of the

total capacity. As a result there is approximately 408,000 gallons per day (gpd) of capacity available on the basis of average daily flow. The Royalton Borough Authority had approached the Authority in 2009 to discuss selling their excess capacity. If the Royalton Borough Authority is still interested in selling their excess capacity to the Township, the remaining available capacity in the WWTP would increase to approximately 532,000 gpd. Please refer to Exhibit A for a full breakdown of the existing capacity available in the WWTP.

2. The Authority has sufficient capacity available to convey and treat an initial flow of 67,000 gpd.

3. Due to the level of effort that would be involved with providing an accurate cost estimate to upgrade the capacity of the WWTP, a cost has not been provided. Several factors would need to be evaluated in addition to the expansion of the hydraulic and organic capacity to include the provision of nutrient credits provided by the Township for abandonment of the existing on-lot disposal systems and packaged wastewater treatment plants, additional nutrient removal facilities to maintain compliance with the Authority's existing cap loads after applying the nutrient credits to the cap loading, and sludge processing and biosolids disposal methods and subsequent costs. We propose that the expansion of the WWTP be evaluated when the need arises and is paid for by the developer(s) seeking the additional capacity. It is important to note that as more WWTPs required enhanced nutrient removal, more effective treatment technologies have become available. As a result, different alternatives for enhanced nutrient removal may be available for evaluation at the time the additional capacity is being sought by the developer(s).

4. The Authority has sufficient capacity available to convey and treat an initial flow of 228,000 gpd. This assumes that a comparable quantity of I/I can be removed during peak wet weather events.

5. Please see response to item number 3.

6. The Railroad Street Interceptor has sufficient capacity to convey flow for all flow scenarios on an annual average flow basis; however, the Interceptor often surcharges and sometimes overflows during peak wet weather events. It is estimated that the no upgrades will need to be made to the existing Interceptor. This is assuming that the peak wet weather flows have been reduced by an equal amount when connection to the Township is made. The capacity available in the WWTP is described in detail above.

7. The current tapping fee is $1,175.00 per EDU.

8. The current cost to convey and treat wastewater for the Borough of Middletown is $4.32/1,000 gallons. The cost for the Township may vary slightly depending on the exact point of connection to the sanitary sewer system.

9. The Authority would be willing to consider operation, maintenance, and eventual ownership of the proposed facilities in the Township; however, the Authority is not an operating authority and all operations and maintenance, billing, and administration of the sanitary sewer system is completed by Borough of Middletown staff. The Township would need to provide a complete description of the proposed facilities requested to be operated, maintained, and administered, the Borough of Middletown would need to evaluate the increase (if any) in staff to provide the requested services to the Township, and agenda items for an intermuncipal agreement would need to be presented to the Authority and the Borough of Middletown for consideration prior to any further discussions concerning this topic.

We appreciate the Township's desire to work with the Borough of Middletown and the Middletown Borough Authority on this very important planning effort. We applaud your continued pursuit of providing a regional solution to wastewater collection, conveyance, and treatment.

We hope that the information provided is useful for completion of the Township's Act 537 Plan. The Authority is looking forward to working with the Township in the future. Please do not hesitate to contact us should you need any additional information.

Very truly yours,

Mr. John L. Patten
Chairman
Middletown Borough Authority

c: Borough of Middletown
Mr. Joshua T. Fox, P.E.
Mr. Timothy Horstmann, Solicitor
File

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Middletown WWTP Capacity Analysis

			Percentage Used
Permitted Hydraulic Capacity (ADF)	**2,200,000**	gpd	
2013 Annual Average Daily Flow	1,228,000	gpd	55.82%
2013 Lower Swatara ADF	132,249	gpd	30.06%
2013 Royalton ADF	76,888	gpd	38.45%
2013 Three-Month Max. Avg	1,437,000	gpd	65.32%
2013 Lower Swatara Three-Month Max. Avg.	162,507	gpd	36.93%
2013 Royalton Three-Month Max. Avg.	Unknown	gpd	

Allocation of Remaining Capacity	Average*		3-Month Max Avg**	
Lower Swatara Township	307,751	gpd	277,493	gpd
Borough of Royalton**	123,092	gpd	7,760	gpd
Woodland Hills Development*	87,975	gpd	115,345	gpd
Spring Street Property, LP*	44,550	gpd	58,410	gpd
Total Remaining Capacity	**408,632**	**gpd**	**303,992**	**gpd**

Londonderry Scenario 1 (GPD)	67,000	341,632	gpd	236,992	gpd
Londonderry Scenario 2 (GPD)	525,000	-116,368	gpd	-221,008	gpd
Londonderry Scenario 3 (GPD)	228,000	180,632	gpd	75,992	gpd
Londonderry Scenario 4 (GPD)	970,000	-561,368	gpd	-666,008	gpd

Capacity Allocated Per Agreement(s)	
Lower Swatara Capacity (gpd)	440,000
Borough of Royalton Capacity (gpd)	199,980

*Based on 225 gpd/EDU
** Based on Assumed Peaking Factor of 2.5 for Royalton and 295 gpd/EDU for New Development