22. Other requirements. Demonstrate compliance with the following:

b. For **wastewater** system acquisitions, provide a copy of the DEP-approved Act 537 Official Sewage Facilities Plans for the affected municipalities.

AMENDED RESPONSE:

b. See enclosed copies of documents pertaining to the DEP-approved Act 537 Official Sewage Facilities Plans for Upper Pottsgrove attached as follows:

- **Appendix A-22-b.1** – Upper Pottsgrove Act 537 Plan
- **Appendix A-22-b.2** – Upper Pottsgrove DEP Approval Letter
- **Appendix A-22-b.3** – Upper Pottsgrove Act 537 Plan Update Revised Implementation Schedule
- **Amended Appendix A-22-b.4** – Douglass Township Act 537 Plan (current DEP-approved)

In response to a request for its Act 537 Plan, Douglass Township communicated that Douglass Township has submitted an Act 537 Plan to PA-DEP in 2019, which covers the area of the two subject properties. However, the Act 537 Plan was not approved. Additional well water sampling is needed to complete the plan. Because of COVID-19; the Township has not completed this work because they felt it was not prudent to go door-to-door to collect the necessary samples. Once COVID-19 subsides, they will complete the sampling and resubmit the plan to PA-DEP for approval. **Amended Appendix A-22-b.4** is the Douglass Township Act 537 Plan currently in effect.

DOUGLASS TOWNSHIP

BERKS COUNTY PENNSYLVANIA

ACT 537 PLAN UPDATE

SEPTEMBER 1993

VOLUME 1 OF 2

PREPARED FOR:

DOUGLASS TOWNSHIP
BERKS COUNTY PENNSYLVANIA

PREPARED BY:

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DOUGLASS TOWNSHIP
ACT 537 PLAN UPDATE

SEPTEMBER 1993

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DOUGLASS TOWNSHIP

BERKS COUNTY PENNSYLVANIA

ACT 537 PLAN UPDATE

SEPTEMBER 1993

1.00 INTRODUCTION

1.10 PURPOSE AND OBJECTIVE

The purpose of this Act 537 Plan Update is to comply with the Pennsylvania Department of Environmental Resources (PA DER) Act 537 requirements regarding Sewage Facilities Planning. The Planning Objectives will analyze and identify potential wastewater treatment alternatives based on existing and future wastewater treatment needs for the Douglass Township Planning Area. The Selected Alternatives will become the foundation for the Official Sewage Plan for Douglass Township that will function as a regulatory plan for resolving wastewater management problems associated with development and will provide guidance for new procedures and ordinances incorporated by the Township. It should be noted that the length of the planning period for this Act 537 Plan Update shall be 20 years.

The Douglass Township Act 537 Plan Update will include recommendations regarding the feasibilities for expanding wastewater treatment facilities into areas of the Township which have had problems in the past. The Plan will also focus on the evaluation of on-lot sewage disposal technology and planning.

1.20 BACKGROUND

The Douglass Township Planning Area is geographically located in southeastern Berks County and is part of the Reading Metropolitan Statistical Area (MSA). Douglass Township has a land area of 13.6 square miles (8704 acres) and is bounded to the north by Colebrookdale Township; to the east by West Pottsgrove, East Pottsgrove and Douglass Townships (Montgomery County); to the south by Union Township; and to the west by Amity and Earl Townships. The Planning Area is located approximately 12 miles east of the City of Reading and 1 mile west of the Borough of Pottstown. The Planning Area is illustrated in FIGURE 1.

Historically, the population of Douglass Township has grown at a moderate to considerable rate compared to most of Berks County. The population of the Township for 1988 has been estimated at 3,380 persons by the U.S. Census Bureau. The Planning Area has experienced mostly residential subdivision activity with single family dwellings as the predominate land use with some exceptions. This subdivision and land development activity has basically occurred throughout the Township with higher concentrations in and around the unincorporated areas of Douglassville, Greshville, Colebrookdale\Little Oley, Pine Forge and Worman.

Presently, there are no municipal wastewater treatment services available within Douglass Township. There is a package treatment plant that services the Pine Forge Institute. The balance of the Township is serviced by on-lot sewage facilities. However, due to the presence of unfavorable soil conditions, geological features and topographical characteristics, the use of on-lot sewage facilities is not the most effective method for sewage disposal within the Planning Area. Therefore, the Township does recognize that there is a need for an Official Sewage Plan for the Planning Area.

1.30 ACT 537 PLANNING

The Pennsylvania Sewage Facilities Act (Act 537), enacted by the Pennsylvania State Legislature in 1968, requires that every municipality in the state shall develop and maintain an up-to-date Sewage Facilities Plan. The Act provides for the planning and regulation of both community and individual wastewater disposal systems.

The purpose of the Sewage Facilities Plan is outlined under Section 3 (Declaration of Policy) of Act 537. This purpose is listed as follows:

1. To protect the public health, safety and welfare of its citizens through the development and implementation of plans for the sanitary disposal of sewage waste.

2. To promote inter-municipal cooperation in the implementation and administration of such plans by local government.

3. To prevent and eliminate pollution of waters of the Commonwealth by coordinating planning for the sanitary disposal of sewage wastes with a comprehensive program of water quality management.

4. To provide for the issuance of permits for on-lot sewage disposal systems by local government in accordance with uniform standards and to encourage inter-municipal cooperation to this end.

5. To provide for and insure a high degree of technical competency within local government in the administration of this act.

6. To encourage the use of the best available technology for on-site sewage disposal systems.

7. To insure the rights of citizens on matters of sewage disposal as they may relate to this act and the Constitution of this Commonwealth.

The Act requires that the municipality review the Official Sewage Plan every five years to determine effectiveness and/or determine the need for revisions. An Update can be flexible to include the evaluation of on-lot sewage disposal technology and/or the complexity of planning for the design and construction of a public sewage treatment system. An Official Sewage Plan must evaluate the existing and proposed wastewater treatment facilities to compensate the needs of the planning area.

As outlined by the Pennsylvania Department of Environmental Resources (PA. DER) an Official Sewage Plan will generally contain the following:

1. Planning Objectives and Needs
2. Physical Description of the Planning Area
3. Evaluation of Existing Treatment and Conveyance Systems
4. Evaluation of Wastewater Treatment Needs
5. Planning and Facilities Alternatives Evaluation and Recommendations
6. Institutional Evaluation and Recommended Alternatives
7. Selected Wastewater Treatment and Institutional Alternative
8. Implementation

2.00 BACKGROUND INFORMATION

2.10 PLANNING OBJECTIVES AND NEEDS

2.11 WASTEWATER PLANNING PREVIOUSLY UNDERTAKEN

Douglass Township has conducted and/or adopted three (3) previous wastewater planning studies. During the preparation of this Update to the Douglass Township Act 537 Plan, it was imperative to review all existing wastewater management plans with a view towards properly incorporating appropriate elements of an existing plan to avoid duplicate planning.

2.111 PINE FORGE-LITTLE OLEY ENGINEERING STUDY AND FEASIBILITY REPORT - 1969

This Study was prepared by Gilbert Associates, Inc. of Reading, PA. in June of 1969. The purpose and objective of this study was to evaluate the engineering and financial feasibility of providing a wastewater collection system in the unincorporated areas of Pine Forge and Little Oley. For a variety of reasons the recommendations of this Study were never implemented by Douglass Township.

2.112 BERKS COUNTY MASTER WATER AND SEWER PLAN - 1970

The Berks County Master Water and Sewer Plan (1970) was prepared for the Berks County Board of Commissioners by Gilbert Associates, Inc. in conjunction with the Berks County Planning Commission. The Plan evaluated a variety of alternatives for providing wastewater treatment to select areas of the Township. These select areas were based on the proximity of regional wastewater flows and physical site conditions. The Plan recommended that the Monocacy Creek Basin (Planning Area III) should connect to the Pottstown Regional Water Pollution Control System. The Plan was adopted by the Douglass Township Board of Supervisors. However, the Plan was never implemented due to a lack of regional planning coordination.

2.113 ENGINEERING STUDY AND FINANCIAL FEASIBILITY REPORT FOR SEWERAGE IN DOUGLASS TOWNSHIP - 1973

This Study was prepared by Spotts, Stevens and McCoy Consulting Engineers of Wyomissing, PA in September of 1973. The purpose and objective of this Study was to determine pertinent factors in the layout of a sanitary sewage collection system to serve selected areas of the Township. For a variety of reasons the recommendations of this Study were never implemented by Douglass Township.

2.114 BERKS COUNTY MASTER WATER AND SEWER PLAN - 1975

The Master Plan was revised to recognize Amity Township's desire to construct its own sewage treatment plant in accordance with Master Plan Alternative # 2. The proposed sewage treatment plant was recognized as a subregional facility and had the potential capabilities to treat sewage flows from parts of Douglass, Exeter and Union Township if the municipalities desire to connect into the system. The amended changes were adopted by the Douglass Township Board of Supervisors. This Act 537 Plan is consistent with this revision to the Master Plan.

2.12 COMPREHENSIVE WATER QUALITY MANAGEMENT PLAN (COWAMP)

The Douglass Township Act 537 Plan Update is consistent with all pertinent planning goals, objectives and policies identified within the Comprehensive Water Quality Management Plan, prepared by the Pennsylvania Department of Environmental Resources.

2.13 FEDERAL WATER QUALITY ACT OF 1987

The Douglass Township Act 537 Plan Update is consistent with all pertinent Plans developed under the Federal Water Quality Act of 1987. In addition, this Act 537 Plan demonstrates the following:

1. That all innovative alternatives have been evaluated;
2. That potential open space and recreational opportunities have been analyzed;
3. Non-excessive infiltration and inflow to existing sewers;
4. That the chosen alternative is the most cost-effective and environmentally sound;
5. Compliance with the National Environmental Policy Act (NEPA).

2.20 PLANNING DOCUMENTS ADOPTED PURSUANT TO ACT 247

The following planning documents have been adopted by Douglass Township pursuant to Act 247 (Pennsylvania Municipalities Planning Code):

Douglass Township Comprehensive Plan (1988)
Douglass Township Zoning Ordinance (1984)
Douglass Township Subdivision and Land Development Ordinance (1988)

2.21 COMPREHENSIVE PLAN

The Douglass Township Comprehensive Plan was adopted by the Douglass Township Board of Supervisors in 1988. The Plan includes information regarding development trends, regional influences, community goals, natural features, a community facilities plan, a transportation plan and a land use plan. The Plan does recognize the need for long term sewage disposal planning in the Township. Therefore, the Comprehensive Plan is adequate to meet the Township's sewage facility needs for the next 20 years. This document has been submitted with this Act 537 Plan as EXHIBIT 1.

2.22 ZONING ORDINANCE

The Douglass Township Zoning Ordinance was first adopted in 1974 and last amended in 1990 by the Douglass Township Board of Supervisors. The Douglass Township Zoning Ordinance consists of the following Zoning Districts:

R-1 Rural Suburban Residential District
R-2 Rural Residential Zoning District
R-3 Rural Conservation District
C-1 Neighborhood Residential District
C-2 Highway Commercial District
I-1 Limited Industrial District
I-2 General Industrial District
S-1 School District

These Zoning Districts are illustrated in FIGURE 2 of this Plan and has also been included within EXHIBIT 2.

The Ordinance does recognize the need for long term sewage disposal in the Township. The capabilities for the Township to provide municipal wastewater treatment are reflected in the area and dimensional requirements for each individual Zoning District. In addition, the Ordinance does incorporate standards and specifications for natural resource protection, open space, sewage disposal, soil erosion and grading. Therefore, the Ordinance should be adequate to meet the Township's sewage facility needs for the next 20 years. This document has been included with this Act 537 Plan as EXHIBIT 2.

2.23 SUBDIVISION AND LAND DEVELOPMENT ORDINANCE

The Douglass Township Subdivision and Land Development Ordinance was adopted in 1973 and last amended in 1989 by the Douglass Township Board of Supervisors. The Ordinance does recognize the need for long term sewage disposal in the Township. The capabilities for the Township to provide municipal wastewater treatment are reflected within the contents of this Ordinance. Therefore, this Ordinance should be adequate to meet the Township's sewage facility needs for the next 20 years. This document has been included with this Plan as EXHIBIT 3.

2.24 FLOOD PLAIN/STORMWATER MANAGEMENT AND LAND USE COMPATIBILITY

The Douglass Township Zoning Ordinance (Section 522) and Douglass Township Subdivision and Land Development Ordinance (Sections 403 and 707) addresses all regulations regarding Flood Plain Management and Development associated with Land Use Applications.

The Douglass Township Subdivision Control Ordinance (Sections 403, 510, 511 and 707) address all regulations regarding Stormwater Management and Design Standards.

2.25 ANALYSIS OF LAND USE PLANNING RELATIVE TO ENVIRONMENTALLY SENSITIVE AREAS

The analysis of land use planning and its consistency with protecting environmentally sensitive areas is recognized under the Goals and Land Use Component of the Comprehensive plan. The Douglass Township Zoning and Subdivision/Land Development Ordinances include established standards and specifications for the protection of environmentally sensitive areas.

2.26 PENNSYLVANIA NATURAL DIVERSITY INVENTORY

Based on a review of the "Pennsylvania Natural Diversity Inventory" (Pennsylvania Department of Environmental Resources) and "Natural Areas Inventory of Berks County" (Pennsylvania Science Office of Nature Conservancy) it can be concluded that there no rare, endangered or threatened species within the Douglass Township Planning Area. This information was also confirmed through consultations with the Pennsylvania Department of Environmental Resources, the Berks County Conservancy and the Berks County Planning Commission. However, the segment of the Schuylkill River that flows across the southern border of the Douglass Township Planning Area has been designated as a Pennsylvania Scenic River. It should that this Act 537 Plan Update will not disrupt or effect this designation.

2.27 ARCHAEOLOGICAL AND HISTORICAL SITES

The Pennsylvania Historical and Museum Commission, Bureau of Historical Preservation, has reviewed the Douglass Township Planning Area under the authority of the Environmental Rights Amendment of the Pennsylvania Constitution and the Pennsylvania History Code. Based on this review, the Commission has determined that there are four (4) recorded archaeological sites located within the Township. It should be noted that three (3) of these recorded archaeological sites are prehistoric sites (PASS Nos. 36 BK 127, 128 and 129) of which virtually nothing else is known at this time. The other recorded archaeological site (PASS No. 36 BK 635) is a 19th century farmstead which was identified during an archaeological survey.

As a result of this determination, the Pennsylvania Historical and Museum Commission recommended that a Phase I survey should be conducted to precisely locate the archaeological site(s) in relationship to any proposed construction impacts.

Based on all pertinent information contained in this Plan, there appears to be a need for municipal wastewater treatment within the southwestern portion of the Planning Area. Therefore, municipal wastewater treatment facilities will be required for this area of the Township. Refer to Sections 6.10 and 8.10 regarding all information pertaining to municipal wastewater treatment alternatives for the Douglass Township Planning Area for the 20 year planning period.

Most of the proposed construction impacts and encroachments will be on previously disturbed areas of the Township. Therefore, a Phase I survey is not required. However, if there are any construction impacts or encroachments on undisturbed land areas within the Planning Area, a Phase I Survey shall be required to precisely locate the archaeological site(s) in relationship to the proposed construction impacts. This information has been confirmed through correspondence and telephone conversations between Motley Engineering Company, Inc. and the Pennsylvania Historical and Museum Commission. All pertinent Correspondence has been included within APPENDIX H of this Act 537 Plan Update.

The Pennsylvania Historical and Museum Commission, has also determined that there are significant historical sites within the Township. It should be noted that this information is described within the Douglass Township Comprehensive Plan Update. There are no municipal or community wastewater treatment facilities proposed within the Township (refer to Section 8.10) that will create a disturbance on existing and/or potential historical structures. Therefore, the historical sites within the Township will not be disturbed.

2.30 IDENTIFICATION OF GROWTH AREAS

2.31 POPULATION INFORMATION

The following sequence of information regarding Historical Population, Current Population Estimates and Population Projections will be utilized to compare and analyze population data as it relates to sewage facility needs.

2.311 HISTORICAL POPULATION

Historically, Douglass Township has grown in population at a considerable rate compared to most municipalities in Berks County. TABLE A represents a summary of the Historical Population of Douglass Township from 1950-80 and TABLE B represents Historical Population Trends during the same period.

TABLE A
HISTORICAL POPULATION

Municipality	1950	1960	1970	1980
Douglass Township	1,843	2,668	2,944	3,128
Berks County	255,740	275,414	296,382	312,509

Sources: U.S. Dept. of Commerce, Bureau of Census
Berks County Planning Commission

TABLE B
HISTORICAL POPULATION TRENDS
(Percent Change)

Municipality	1950-60	1960-70	1970-80
Douglass Township	44.8%	10.3%	6.3%
Berks County	7.7%	7.6%	5.4%

Sources: U.S. Dept. of Commerce, Bureau of Census
Berks County Planning Commission

Douglass Township has had substantial growth rate between 1950-80. This population growth of 44.8% (1950-60), 10.3% (1960-70) and 6.3% (1970-80) could be attributed to the availability of reasonably priced land, economic growth, and its proximity to the cities of Reading, Philadelphia, Allentown, Bethlehem, Easton, Pottsville, Lancaster and Lebanon.

A majority of the population of Douglass Township is concentrated in and around the unincorporated villages of Douglassville, Greshville, Colebrookdale\Little Oley, Worman and Pine Forge.

2.312 CURRENT POPULATION ESTIMATES

The U.S. Department of Commerce, Bureau of Census has developed Population Estimates (1980-90) for all municipalities throughout Pennsylvania. TABLE C represents the current population estimates for Douglass Township and Berks County.

TABLE C
CURRENT POPULATION ESTIMATES

Municipality	1980	1984	1988	1990	% Change 1980-90
Douglass Twp.	3128	3166	3380	3570	14.1 %
Berks County	312509	317194	329100	336523	7.7 %

Source: U.S. Dept. of Commerce, Bureau of Census

A component procedures was used by the U.S. Department of Commerce, Bureau of Census in which each of the components of population change (births, deaths, net migration, and special populations) were estimated separately.

2.313 FUTURE POPULATION PROJECTIONS

The Berks County Planning Commission has developed Population Projections for all municipalities located in Berks County for the year 2000. In addition, the projected population for the year 2010 has been calculated for Douglass Township. TABLE D represents the population projections for the years 2000 and 2010 for Douglass Township and Berks County.

TABLE D
POPULATION PROJECTIONS

Municipality	1990	2000	2010	Percent Change 1990-2000	2000-10
Douglass Twp.	3570	3916*	4312**	9.7%	10.1%
Berks County	336523	362255*	***	7.6%	----

* Denotes that the projection has been derived by the Berks County Planning Commission utilizing the cohort-component method.

** Denotes that the projection has been derived by Douglass Township utilizing the geometric method.

*** Denotes that no projection has been derived for this particular year.

Sources: U.S. Dept. of Commerce, Bureau of Census
Berks County Planning Commission
Douglass Township

2.314 ANALYSIS OF ESTIMATES AND PROJECTIONS

The aftermath of population projections are regulated by the theories regarding future growth and development. The basis for these theories are that historical trends will continue or certain trends will change. Therefore, the accuracy of population projections are contingent upon the accuracy of background generalizations. Another important demographic theory is that the accuracy of population projections generally decreases as the size of the area involved decreases.

Consequently, some generalizations can be made concerning growth expectations regarding the Planning Area. Douglass Township will continue to experience a moderate to considerable growth rate. This projected growth rate of 9.7% (1990-2000) and 10.1% (2000-10) can be attributed to the availability of reasonably priced land, an excellent economy, and development pressures associated with suburban sprawl.

2.315 POPULATION CHARACTERISTICS

TABLE E represents the Equivalent Dwelling Unit (EDU) for Douglass Township Planning Area and Berks County. This demographic information is based on 1990 population and housing characteristics.

TABLE E
EQUIVALENT DWELLING UNIT

Municipality	1990 Population	1990 Number of Housing Units	Persons Per Household
Douglass Twp.	3570	1234	2.98
Berks County	333768	134424	2.48

Source: U.S. Dept. of Commerce, Bureau of Census

2.32 SUBDIVISION AND LAND DEVELOPMENT ACTIVITY

2.321 DOUGLASS TOWNSHIP DEVELOPMENT TRENDS

Historically, the population of Douglass Township has grown at a moderate to considerable rate compared to most of Berks County. This trend is also evident in the recorded subdivision and land development activity in Douglass Township. TABLE F depicts the subdivision and land development activity (1985-90) in Douglass Township. The locations of the subdivisions listed in TABLE F are illustrated in FIGURE 3. The map numbers can be cross referenced with the inventory that is numerically ordered in TABLE F.

Douglass Township has experienced mostly residential subdivision activity with single family dwellings as the predominate land use with some exceptions. The subdivision and land development activity has occurred in and around the unincorporated areas of Greshville, Douglassville, Colebrookdale\Little Oley, Pine Forge, and Worman.

2.322 RESIDENTIAL CONSTRUCTION ACTIVITY

The recorded subdivision and land development plans listed in TABLE F provides data used to monitor the levels of proposed construction. In order to determine actual residential growth in Douglass Township, the building permits issued must also be analyzed. Based on a review of the total number of residential building permits issued by Douglass Township from 1980-89, it is evident that the actual growth rate (11.7%) supports the population estimates and projections listed in TABLES C and D. It is also evident that most of the residential growth (87.8%) in Douglass Township during the 1980-89 time period has been single family units.

TABLE F
DOUGLASS TOWNSHIP - SUBDIVISION AND
LAND DEVELOPMENT ACTIVITY
(1985-1990)

MAP NO.	SUBDIVISION	LOCATION	LAND USE	NUMBER OF LOTS	SEWAGE DISPOSAL	YEAR APPROVED
1	MADDONA*	RATTLESNAKE HILL ROAD	SF	1	OS	*
2	DAVIDHEISER	SPRUCE DRIVE	SF	1	OS	85
3	DI MASCIO	HILL SCHOOL ROAD	SF	5	OS	86
4	TRAINER	PINE FORGE ROAD	COMM.	1	OS	85
5	ADAMS (REV.)	DOUGLASS DRIVE	SF	1	OS	89
6	GRESH	WINDING ROAD	SF	4	OS	85
7	IRONESTONE EAST*	IRONESTONE DRIVE	SF	4	SF	*
8	ROLLING VALLEY (REV.)	DOUGLASS DRIVE	SF	2	OS	87
9	ROLLING VALLEY I	DOUGLASS DRIVE	SF	8	OS	85
10	ROLLING VALLEY II-A	GRIST MILL ROAD	ANNEX	---	---	88
11	CECELIA	SUNRISE LANE	SF	4	OS	85
12	KRUK	DOUGLASS DRIVE	ANNEX	---	---	86
13	MILLER	WINDING ROAD	SF	2	OS	88
14	ACKER	GRESHVILLE ROAD	ANNEX	---	---	86
15	HILTEBEITEL	SR 422	ANNEX	---	---	86
16	BEALER	COLEBROOKDALE ROAD	SF	1	OS	86
17	MELLINGER	COLEBROOKDALE ROAD	ANNEX	---	---	86

TABLE F
DOUGLASS TOWNSHIP - SUBDIVISION AND
LAND DEVELOPMENT ACTIVITY
(1985-1990)

MAP NO.	SUBDIVISION	LOCATION	LAND USE	NUMBER OF LOTS	SEWAGE DISPOSAL	YEAR APPROVED
18	TOWSEND	HILL SCHOOL ROAD	SF	1	OS	86
19	SCHOENLY	WINDING ROAD	SF	1	OS	86
20	BOYERTOWN PACKING	FARMINGTON AVENUE	IND.	2	OS	87
21	SENDECKI	TOWNSHIP LINE ROAD	SF	3	OS	87
22	SENDECKI II	TOWNSHIP LINE ROAD	SF	2	OS	88
23	SENDECKI III	OAK LANE	SF	2	OS	88
24	ZUBER	ENGLESVILLE ROAD	SF	1	OS	87
25	VALLEY PROTEIN*	DOUGLASS DRIVE	SF	4	OS	*
26	SAYOR	SQUIRREL HOLLOW ROAD	SF	1	OS	88
27	BREIDEGAM	SUNSET DRIVE	SF	1	OS	87
28	PINE FILL APARTMENTS*	DOUGLASS DRIVE	APTS.	10	OS	*
29	BUCK RUN	EDGEHILL ROAD	SF	5	OS	88
30	CHRISTMAN	GRIST MILL ROAD	SF	1	OS	88
31	YORGEY	IRONESTONE DRIVE	SF	1	OS	88
32	STERCULA	COLEBROOKDALE ROAD	SF	1	OS	88
33	STAINLESS, INC.	MANATAWNY ROAD	SF	2	OS	88
34	YODER	SR 422	COMM.	1	OS	89

TABLE F
DOUGLASS TOWNSHIP - SUBDIVISION AND
LAND DEVELOPMENT ACTIVITY
(1985-1990)

MAP NO.	SUBDIVISION	LOCATION	LAND USE	NUMBER OF LOTS	SEWAGE DISPOSAL	YEAR APPROVED
35	TOWNSHIP LINE ROAD SUB.	TOWNSHIP LINE ROAD	SF	5	OS	88
36	BJ FARMS	SUNRISE ROAD	SF	1	OS	89
37	EAST COURT*	COLEBROOKDALE ROAD	SF	22	OS	*
38	IRONESTONE GLEN*	GRIST MILL ROAD	SF	31	OS	*
39	HOFFMAN	EDGE HILL ROAD	ANNEX	---	---	89
40	GIFT*	SR 562	ANNEX	---	---	*
41	FADLER	GRESHVILLE ROAD	SF	3	OS	89
42	FERRANTI	HILL SCHOOL ROAD	SF	2	OS	89
43	DODDS*	OLD PHILADELPHIA PIKE	SF	1	OS	89
44	DOUGLASS CROSSING	IRONESTONE DRIVE	SF	16	OS	*
45	KOLARZ	DOUGLASS DRIVE	SF	4	OS	90
46	CINAGLIA	SUNRISE LANE	SF	2	OS	90

*Denotes that the Subdivision Plan has not been offically approved by the Douglass Township Board of Supervisors and/or has not been recorded at the Office of the Berks County Recorder of Deeds. The Subdivision Plan could still be pending municipal action by Douglass Township.

3.00 PHYSICAL DESCRIPTION OF PLANNING AREA

3.10 PLANNING AREA BOUNDARIES

The Douglass Township Planning Area is geographically located in southeastern Berks County and is part of the Reading Metropolitan Statistical Area (MSA). Douglass Township has a land area of 13.6 square miles (8704 acres) and is bounded to the north by Colebrookdale Township; to the east by West Pottsgrove, East Pottsgrove and Douglass Townships (Montgomery County); to the south by Union Township; and to the west by Amity and Earl Townships. The Planning Area is located approximately 12 miles east of the City of Reading and 1 mile west of the Borough of Pottstown. The Planning Area is illustrated in FIGURE 1.

3.20 SOIL ANALYSIS

Soils form primarily by weathering of bedrock, and therefore have characteristics similar to those of the underlying rock formations. Most of Douglass Township (approximately 62%) is covered with moderately deep, and deep, well-drained to poorly drained soils formed in material weathered from red shale and some soft sandstone. Approximately 21% of the Township is covered by deep, well-drained soils on ironstone ridges and in adjacent areas. Approximately 9% of the Township is covered by deep, well-drained, undulating soils forms in material weather from limestone in limestone valleys. About 5% in the northwest corner of the Township is covered by deep and moderately deep, well-drained and moderately well drained, rolling to hilly soils formed in material weather from granitic gneiss and other igneous or metamorphosed rocks in Reading Hills and South Mountain. The remaining 3% of the Township is covered by deep and moderately deep, well-drained, rolling to hilly soils formed in material weather from red sandstone conglomerate and some shale, this lies in a thin strip along the southern border. A map representing the soils of the Township is shown on FIGURE 4.

3.21 SOIL DESCRIPTIONS

The following detailed soil descriptions that make up the Township are excerpted from the Berks County Soil Survey.

ATKINS SERIES

The Atkins series consists of soils that are poorly drained and medium textured. These soils have formed in alluvial sediment that originated in uplands underlain by shale, sandstone, and quartzite. These soils are primarily located along streams that have a slight gradient in the Township. Flooding occurs frequently in spring and during intense thunderstorms.

In a cultivated soil typical of the Atkins series, the plow layer is dark grayish-brown, mottled silt loam about 8 inches thick. It is underlain by a subsurface layer of grayish-brown, mottled silt loam about 3 inches thick. The subsoil has subangular or blocky structure. The upper part, between a depth of 11 and 17 inches, is dark grayish-brown, mottled silt loam. The lower part, between a depth of 17 and 36 inches, is gray, mottled silt loam. The content of sand increases below a depth of about 36 inches. The substratum of dark-brown, mottled loam is at that depth.

Atkins soils are easily tilled but are wet much of the time. Mottling within 8 inches of the surface and throughout the rest of the profile indicates that water stands in these soils during much of the year. Permeability is moderate, and the available moisture capacity is high.

BAILE SERIES

The Baile series consists of soils that are deep and poorly drained. These soils have formed in material weathered from bedrock and in colluvium derived from granitic gneiss. These soils are primarily located in drainageways, depressions, and nearly level areas at the foot of slopes in the Township.

In a cultivated soil typical of the Baile series, the plow layer is dark grayish-brown silt loam about 8 inches thick. The upper part of the subsoil, between a depth of 8 and 20 inches, is gray silty clay loam that has a few spots and streaks of yellowish brown. The lower part, between a depth of 20 and 40 inches, is grayish-brown silty clay loam containing a few, distinct, brown mottles. The substratum extends to a depth of 60 inches or more and is gray, mottled clay loam. The spots and streaks in the upper part of the subsoil indicate that water stands in the Baile soils and makes them wet during most of the year. When disturbed, the soil material breaks to weak, prism-shaped blocks.

Runoff is slow, and permeability is slow. Though the soils are wet, outlets for drains are difficult to find. The large number of stones in many areas makes these soils difficult to manage.

BOWMANSVILLE SERIES

In the Bowmansville series are poorly drained soils that formed in alluvial sediment underlain by reddish conglomerate, sandstone, and shale. These soils are located along stream segments in the Township. They are in swales, low spots, or oxbows, where surface water and floodwaters remain for several days after heavy rains or floods. Flooding is most common in spring and fall. Each time it occurs, the water deposits fresh sediment. The profile of these soils is medium textured throughout, and the surface is free of stones.

In a cultivated soil typical of the Bowmansville series, the plow layer is reddish-brown silt loam about 9 inches thick. The upper part of the subsoil, between depths of 9 and 17 inches, is dark reddish-brown silt loam about 9 inches thick. The upper part of the subsoil, between depths of 9 and 17 inches, is dark reddish-brown or reddish-brown, mottled silt loam that has weak subangular blocky structure. The lower part, extending to a depth of 42 inches, is gray, mottled silt loam that has angular blocky structure. The substratum, at a depth of about 42 inches, is gray, mottled fine sandy loam underlain by coarse sand and sandstone pebbles.

Most areas of Bowmansville soils are moderately fertile. These soils are so wet and so frequently flooded, however, that they are used mainly for pasture. Cultivated crops are grown, to some extent, where these soils have been drained.

BRECKNOCK SERIES

Deep, well-drained, gently sloping to steep soils make up the Brecknock series. These soils have formed in material weathered from shale and siltstone that were metamorphosed by heat and pressure when the adjacent diabase intrusions were formed. They have inherited their dark colors and low chroma from the very dark gray or purplish-gray colors of the baked shale. These soils contain a large number of dark-colored, platy, coarse fragments. These soils are scattered throughout the Township.

In a cultivated soil typical of the Brecknock series, the plow layer is very dark grayish-brown, slightly acid channery silt loam about 8 inches thick. The subsoil is dark grayish-brown, friable, strongly acid channery silt loam that has subangular blocky or platy structure in the lower part and extends to a depth of about 38 inches. The substratum is yellowish-brown very channery sandy loam that is underlain by very dark gray, platy shale at a depth of about 48 inches. The solum contains a large number of coarse fragments, and coarse fragments occupy about 70 percent of the substratum.

Brecknock soils have low natural fertility. Most of the acreage is in pasture or trees, but field crops are grown in small areas. The soils under trees are generally very stony.

CHESTER SERIES

The Chester series consists of deep, well-drained, gently sloping to hilly soils that formed in material weathered from granitic gneiss. In many places these soils have large stones and boulders on the surface. These soils are found primarily in the northern part of the Township.

In a cultivated soil typical of the Chester series, the plow layer is dark-brown channery silt loam about 8 inches thick. The upper part of the subsoil, extending to a depth of 39 inches, is yellowish-red silt loam. The lower part is reddish-brown, friable loam that has thin platy structure. AT a depth of about 44 inches, this loam grades to the reddish-yellow, yellowish-red, and pink fine sandy loam of the substratum, which has platy structure. these soils contain many coarse fragments and are underlain by saprolite of gritty or very coarse sandy material in many places. The content of coarse fragments increases at a depth of about 44 inches, and coarse fragments are dominant at a depth of about 80 inches.

Surface runoff is slow to very rapid, permeability throughout the profile is moderate, and the available moisture capacity is high. These soils are easily worked, but some areas are very stony.

Except for their slopes and past erosion, the Chester soils have few limitations to farm sue. They are generally well suited to the crops commonly grown in the county.

CROTON SERIES

The Croton series consists of soils that are deep and poorly drained. These soils have formed in material weathered from bedrock and in local colluvium derived from weathered red shale, sandstone, and conglomerate. They are basically located in depressions, in nearly level areas, and in drainageways in the Township.

In a cultivates soil typical of the Croton series, the plow layer is dark reddish-brown silt loam about 8 inches thick. The upper part of the subsoil, extending to a depth of about 30 inches, is light brownish-gray, mottled, firm silt loam to silty clay loam. The lower part between a depth of 30 to 40 inches, is a fragipan of weak-red, mottled, firm or very firm silt loam that has prismatic structure. At a depth of about 40 inches, the material in the subsoil grades to soft, red rock.

The well-developed fragipan in the subsoil of the Croton soils impedes the penetration of roots and slows the movement of water through the profile. The water table is high.

About half of the acreage of Croton soils is in trees. The rest generally is cultivated, though most of the steep areas are idle.

DUFFIELD SERIES

The Duffield series consists of deep, well-drained, nearly level to steep soils formed in material weathered from impure limestone. These soils are generally located in the northeastern portion of the Township.

In a cultivated soil typical of the Duffield series, the plow layer is dark-brown silt loam about 8 inches thick. the upper part of the subsoil, extending to a depth of about 41 inches, is strong brown silt loam to silty clay loam. The lower part is yellowish-brown silty clay loam to a depth of about 52 inches. Hard, gray limestone is generally at a depth of 52 inches.

Natural fertility and the available moisture capacity are high. where little erosion has taken place, the surface layer is mellow and this soil is easily worked.

The main limitations of the Duffield soils are sinkholes and caverns. Where these occur, the areas around the sinkhole or cavern are subject to collapse or subsidence. In areas where the slopes are not too steep, and where erosion is only moderate or slight, these soils are well suited to crops. Most of the acreage has been cleared and is farmed intensively.

EDGEMONT SERIES

Deep, well-drained, gently sloping to steep soils make up the Edgemont series. These soils have formed in material weathered from hard sandstone, quartzite, granitic gneiss, and other igneous or metamorphic rocks. These soils are located on ridges and side slopes in the northern part of the Township.

In a wooded soil typical of the Edgemont series, a thin layer of leaves overlies a very dark gray mat of organic matter that, in turn, overlies a layer of black-channery coarse sandy loam. Each of these layers is about an inch thick. The main part of the surface layer is light yellowish-brown channery sandy loam to loam. It has subangular blocky or blocky structure and contains many coarse fragments. The substratum, below a depth of about 36 inches, is light yellowish-brown sandy loam, and it also contains many coarse fragments. Hard quartzite is at a depth of about 50 inches. Reaction throughout the profile is generally very strongly acid in areas that have not been limed.

The available moisture capacity is moderate to low, and permeability is moderate to rapid. Natural fertility is low.

Most areas of these soils are in trees. Some small areas are in crops or pasture.

GLENVILLE SERIES

In the Glenville series are deep, moderately well drained, nearly level or gently sloping soils that formed in material weathered from granitic gneiss. These soils are located primarily in the northern portion of the Township.

In a cultivated soil typical of the Glenville series, the plow layer is very dark grayish-brown silt loam about 8 inches thick. The upper part of the subsoil, to a depth of about 20 inches, is strong-brown, mottled silt loam that has blocky or platy structure. A fragipan, consisting of strong-brown or dark-brown, mottled silt loam or heavy silt loam is at a depth between 20 and 27 inches. The fragipan is firm and brittle and has tick, platy structure. The lower part o the subsoil, between depths of 27 and 40 inches, is dark-brown, mottled loam. The substratum, below a depth of 40 inches, is dark-brown loam that has weak, thin, platy structure.

The available moisture capacity is moderate, and permeability is moderately slow throughout the profile. These soils have a seasonal high water table.

The Glenville soils are mainly in pasture or trees. Small areas are in cultivated crops.

KLINESVILLE SERIES

In the Klinesville series are well-drained, gently sloping to moderately steep soils that are shallow over red shale. These soils are located throughout the Township.

In a cultivated soil typical of the Klinesville series, the plow layer is dark reddish-brown, strongly acid shaly silt loam about 8 inches thick. The subsoil is reddish-brown, strongly acid very shaly silt loam about 7 inches thick. Below the subsoil is a mass of dark-red fragments of shale and a small amount of soil material. The fragments of shale are strongly acid.

The available moisture capacity is low. Permeability is moderately rapid throughout the profile.

Some areas of Klinesville soils can be used for crops. These soils are droughty, and they have a shallow rooting depth.

LEHIGH SERIES

The Lehigh series consists of soils that are deep, moderately well drained, and nearly level to sloping. These soils have formed in material that weathered from metamorphosed red sandstone, conglomerate, and shale. They occur near diabase intrusions, mainly in the southern portion of the Township.

In a cultivated soil typical of the Lehigh series, the plow layer is dark grayish-brown silt loam that contains a few angular fragments of stone and is about 8 inches thick. The upper part of the subsoil, between a depth of 8 and about 14 inches, is very dark grayish-brown friable silt loam that has granular structure. Between a depth of 14 and 50 inches, the subsoil is very dark grayish-brown to dark-brown, mottled channery silt loam to channery clay loam that has subangular blocky structure. The substratum is at a depth of 50 inches. About 95 percent of the substratum consists of fragments of dark shale.

The available moisture capacity is medium to high, natural fertility is low, and permeability is moderate to slow. The water table is high in some seasons.

Lehigh soils are only fairly well suited to cultivated crops. Most of the acreage is idle or in trees, but some areas are used for crops or pasture.

MELVIN SERIES

The Melvin series consists of soils that are poorly drained and nearly level. These soils have formed in alluvium derived from sediment originating in uplands underlain by limestone and calcareous shale. They are occur along streams that drain the limestone valleys in the Township.

In a cultivated soil typical of the Melvin series, the surface layer is very dark grayish-brown and dark grayish-brown, mottled silt loam about 11 inches thick. The upper part of the subsoil, extending to a depth of about 22 inches, is grayish-brown, mottled heavy silt loam to silty clay loam. Below a depth of about 22 inches, this material grades to grayish-brown or yellowish-brown, mottled silty clay loam. The substratum is at a depth of about 42 inches. It generally consists of yellowish-brown mottled silty clay.

Little or no runoff takes place. Therefore, these soils are not subject to erosion or are only slightly subject to erosion, except where stream gouging occurs during floods. The available moisture capacity is high, and permeability is moderately slow throughout the profile. Because the water table is high, these soils are wet most of the year. Also, they are subject to frequent flooding, and water is ponded in low spots and in closed depressions for several days after flooding occurs.

Most of the acreage is in pasture or trees. A few small areas are cultivated.

MURRILL SERIES

Soils of the Murrill series are deep and well drained. They formed in colluvium derived from granitic gneiss, quartzite, and sandstone. The colluvium overlies buried soils that formed in material weathered from limestone. Where the layer of colluvium is thin, sinkholes are common. The Murrill soils are primarily located in the northern section of the Township.

In a cultivated soil typical of the Murrill series, the plow layer is very dark brown gravelly loam about 8 inches thick. The upper part of the subsoil, extending to a depth of about 19 inches, is dark-brown to dark yellowish-brown heavy silt loam to silty clay loam that has blocky or subangular blocky structure. The lower part extending to a depth of 60 inches, is yellowish-brown to dark-brown or strong-brown silty clay loam to silt loam. The substratum is at a depth of about 60 inches.

NESHAMINY SERIES

The Neshaminy series consists of deep, well-drained, gently sloping to steep soils formed in material that weathered from diabase rocks. These soils are located throughout the Township.

In a cultivated soil typical of the Neshaminy series, the plow layer is reddish-brown silt loam about 8 inches thick. The subsoil is reddish silt loam to silty clay loam. it has subangular blocky and blocky structure and is medium acid in the upper part and strongly acid in the lower part. The lower part of the subsoil contains many fragments of stones.

These soils have high available moisture capacity because of their moderately fine textured subsoil. Natural fertility is high. Permeability throughout the profile is moderate.

Large areas of these soils are in trees or pasture. Smaller areas are idle or are used for crops.

PENN SERIES

Soils that are moderately deep, well drained, and gently sloping to moderately steep make up the Penn series. These soils have formed in material that weathered from red shale and sandstone. They are located throughout the Township.

In a cultivated soil typical of the Penn series, the plow layer is dark brown silt loam about 8 inches thick. The subsoil, between depths of 8 and about 24 inches is dark reddish-brown to dusky-red shaly silt loam that has subangular blocky or blocky structure. The substratum, between depths of about 24 and about 28 inches, is dusky-red very shaly loam. The subsoil contains many coarse fragments, and about 80 percent of the substratum is coarse fragments.

The Penn soils are low in natural fertility, moderate to low in available moisture capacity and moderately rapid in permeability. The steeper slopes are susceptible to erosion.

Penn soils are easily tilled. They are generally suited to the crops commonly grown in the county, except where they are too steep or eroded.

READINGTON SERIES

Deep, moderately well drained, nearly level or gently sloping soils are in the Readington series. These soils have formed on uplands under a forest cover of mixed oaks. The material in which they formed was weathered from red sandstone, conglomerate, and shale. These soils are located on upland flats, in drainageways, and in seepy areas in the Township.

In a cultivated soil typical of the Readington series, the plow layer is dark reddish-brown silt loam about 8 inches thick. The upper part of the subsoil, to a depth of 21 inches, is yellowish-red silt loam to silty clay loam that contains a few coarse fragments and has blocky structure. A well-defined fragipan of yellowish-red, mottled clay loam to dark reddish-brown loam is between depths of 21 and about 44 inches. The substratum, below a depth of 44 inches, is dark reddish-brown and pinkish-gray, massive shaly loam.

The available moisture capacity is moderate. The fragipan is brittle, dense, and slowly permeable to air and water, and the rest of the profile is also slowly permeable. In some seasons the water table is high.

Cultivated crops are grown in some places, but many areas are in pasture or trees, and some are idle. In general, these soils are suitable for crops that can tolerate excess moisture.

REAVILLE SERIES

The Reaville series consists of soils that are moderately deep, moderately well drained or somewhat poorly drained, and nearly level to gently sloping. These soils have formed in material that weathered from red shale, siltstone, and fine-grained sandstone. They are located on uplands in the Township.

In a cultivated soil typical of the Reaville series, the plow layer is dark reddish-gray shaly silt loam about 7 inch thick. The subsoil is reddish-gray shaly silt loam to very shaly silty clay loam that is mottled in the lower part and is about 19 inches thick. The subsoil has subangular blocky or blocky structure and contains coarse fragments that re more numerous in its lower than in its upper part. Soft, red shale that becomes firmer with increasing depth is below a depth of 26 inches.

The available moisture capacity is low to very low, and permeability is slow. The water table is high early in spring. It falls rapidly late in spring, and the soul is droughty late in summer. These characteristics interfere with farming.

Most of the acreage is in crops, though large areas are idle or in pasture. Smaller areas are in trees.

ROWLAND SERIES

In the Rowland series are soils that are deep, moderately well drained, and nearly level. These soils have formed in alluvial sediment washed from uplands underlain by reddish conglomerate, sandstone and shale. They are located on flood plains and other streams in the Township.

In a cultivated soil typical of the Rowland series, the plow layer is dark reddish-brown silt loam about 10 inches thick. The upper part of the subsoil, between depths of 10 and 26 inches, is reddish-brown, friable loam that has subangular blocky structure and is medium acid. The lower part, between a depth of 26 and 42 inches is dark-gray, mottled loam that has subangular blocky structure. The substratum is below a depth of 42 inches. About 90 percent of the substratum is gravel, but some coarse sand is mixed with the gravel.

These soils are only slightly susceptible to erosion or are not susceptible. Flooding is a hazard in spring or in summer after intense thunderstorms. Water accumulates on the surface or is ponded for short periods because the soils are in slightly concave areas. The floodwaters deposit fresh sediment in some places and remove soil material in others. The available moisture capacity is moderate to high and permeability throughout the profile is moderate to slow. The water table is high in some seasons.

The seasonal high water table limits the kinds of crops that can be grown on the Rowland soils. Only a small acreage is cultivated. The rest is in pasture or trees.

3.22 SOIL SURVEY OF DOUGLASS TOWNSHIP RELATIVE TO ON-LOT SEWAGE DISPOSAL

Soil features that are related to use of soils for community developments are their on-lot septic systems are: depth to bedrock, degree of slope, permeability, incidence of flooding, depth to seasonal high water table, texture of the soils and stoniness. Additionally, where soils are underlain by limestone, the groundwater can become contaminated by seepage through crevices in the rocks, or through solution channels. In FIGURE 5, ratings of slight, moderate, and severe have been used to describe the degree of limitation for development. A rating of moderate indicates soil limitations that may require special practices to overcome (elevated sandmound). A rating of severe indicates soil limitations that generally are difficult to overcome. Most of the Township is rated as severe.

The main limiting features of the soils for drainage fields for septic tanks are restricted permeability, steepness of slope, shallowness over bedrock, and the presence of a seasonal high water table. Soils that have a rating of slight generally have few or no limitations that affect their use as disposal fields for sewage effluent. Those that have a rating of moderate may be borderline and should be investigated carefully at the exact site where a disposal field is proposed. For some soils that have a rating of severe, especially careful investigation is needed at the site of the proposed disposal field to see if it can be expected to function properly. Limitation for disposal fields that are used only a short time each year for summer camps or similar uses may be less severe than indicated in FIGURE 5.

TABLE G indicates all the soil series that are found in Douglass Township and the PA DER classification by soil group. Each group is characterized by conditions that indicate suitability for on-lot sewage disposal. FIGURES 4, 5 and 6 can be used to locate a soil series for a specific area to locate in TABLE G.

To assist in understanding the terminology used relative to soil suitability, the following definitions are provided from the PA DER SEO manual (DeBenedictis 1983).

Soil Suitability for Subsurface Disposal of Septic Tank Effluent

1. Suitable: deep, well drained, permeable soil with good filtration. 13% of Pa. has such soil.

2. Suitable but with Hazard of Groundwater Pollution: deep well-drained, permeable soils over gravel or limestone with fissures. 6% of Pa. has such soil.

3. Marginal: moderately deep or moderately sloping soils. 39% of Pa. has such soil.

4. Unsuitable: steep, shallow, not well-drained or subject to flooding. 42% of Pa. has such soil.

TABLE G
SOIL SERIES IN DOUGLASS TOWNSHIP RELATIVE TO SUITABILITY FOR ON-LOT SEWAGE DISPOSAL

Soil Series	Map Symbol	DER Soil Group	DER Description
Atkins	Au	13	Soil series that occur on flood plains and have a high flooding hazard. Not suitable for subsurface disposal system.
Baile	Ba Bd	15	Somewhat poorly, poorly, and very poorly drained soils on upland sites. These soils have high water tables and are unsuitable for subsurface disposal systems.
Bowmansville	Bo	13	Soil series that occur on floodplains and have a high flooding hazard. Not suitable for subsurface disposal systems.

Brecknock	BsB BsC2 BsD3 BtB BtD BtF	5	Moderately deep, well drained soils with probably percolation rates of 1 inch of water in 15-30 minutes. (Rates are quite variable in short distances due to variations of material immediately under the soil).
Chester	ChB2 ChC2 ChC3 ChD2 ChE3 CnB CnD CnF	4	Deep, well drained soils with probable percolation rates of 1 inch of water in 15-30 minutes.
Croton	CrA CrB2	15	Somewhat poorly, poorly and very poorly drained soils on upland sites. These soils have high water tables and are unsuitable for subsurface disposal systems.
Duffield	DfA DfB2 DfC2 DfD2	11	Soils series that are underlain by limestone and have a high hazard of ground water pollution through solution channels
Edgemont	EcB2 EcC2 EcD2	6	Deep well drained soils with probable percolation rates of 1 inch of water in 30-45 minutes.
Glenville	GlA GlB2	14	Moderately well drained soils on upland sites. These soils have seasonal high water tables which is the major limitation on use for subsurface disposal system.
Klinesville	KlB2 KlC2 KlD2 KlF2	12	Well drained soils that are shallow or very shallow to bedrock.

Lehigh	LhA LhB2 LhC3	14	Moderately well drained soils on upland sites. These soils have seasonal high water tables which is the major limitation on use for subsurface disposal system.
Melvin	Ml	13	Soil series that occur on floodplains and have a high flooding hazard. Not suitable for subsurface disposal system.
Murrill	MrA3 MuA MuB2 MuC2 MrB MrC	11	Soils series that are underlain by limestone and have a high hazard of groundwater pollution through solution channels
Neshaminy	NaC3 NaD3 NeB2 NeC2 NsD NsF	8	Deep, well drained soils with probably percolation rates of 1 inch of water in 45-60 minutes.
Penn	PeB2 PeC2 PeD2	7	Moderately deep, well drained soils with probable percolation rates of 1 inch of water in 30-45 minutes. (Rates are quite variable in short distances due to variations of material immediately under the soil).
(Very shallow variant)		12	Well drained soils that are shallow or very shallow to bedrock.
Readington	ReA RlB2	14	Moderately well drained soils on upland sites. these soils have seasonal high water tables which is the major limitation on use for subsurface disposal system.

Reaville	R1A2 R1B2	15	Somewhat poorly, poorly, and very poorly drained soils on upland sites. These soils have high water tables and are unsuitable for subsurface disposal systems.
Rowland	Ro	13	Soil series that occur on floodplains and have a high flooding hazard. Not suitable for subsurface disposal systems.

3.23 EFFECTS OF ON-LOT SEPTIC SYSTEMS OF GROUNDWATER QUALITY AND AVAILABILITY

On-lot septic systems (OLS) are in use throughout rural areas of the world as an effective way for treating everyday household sewage. A properly designed and installed septic system in an acceptable geologic environment can be very effective in filtering out and removing fecal coliform and particulate contaminants from waste water before it reaches the groundwater system. The advantage of OLS is that they recycle approximately 85% of the removed groundwater, returning it to the water table in the area from which it was withdrawn.

Problems can be caused by OLS when they are used beyond their serviceable lifetime, spaced too closely together, or improperly installed. OLS remove contaminates by utilizing the filtration, adsorption and processing abilities of the soil in which they are installed. Particulate matter is filtered out by the fine-grained soil, and other contaminants adhere to the surface of clay particles through adsorption. The abilities of various soils to filter and adsorb are different, and have a finite time period. When the use of an OLS exceeds this time period, the soil can become "worn-out" and lose its contaminant removing abilities. The soil becomes clogged and wastewater can back up onto the ground surface and be carried into steams by storm runoff. Contaminated wastewater can also flow through the overstressed soil and into the groundwater without being purified. The normal effective lifetime of an OLS is 5 to 20 years, and depends very heavily on the soils, geologic properties and maintenance, as well as use of each individual system.

One of the contaminants present in household sewage that cannot be filtered out by the soil is ammonia nitrate (NO3-). Nitrate poses a health hazard when present in drinking water in high concentrations. It is, therefore, limited by the Department of Environmental Resources to concentrations below 10 mg/l in public water supplies. Since nitrate concentrations in septic system effluent is approximately 40 to 50 mg/l (Canter & Knox, 1984) and cannot be filtered by soil, it must be diluted by groundwater to acceptable limits. Plumes of water with high concentrations of nitrate may extend hundreds of feet in the downgradient direction of a heavily used OLS. In some areas where OLS are spaced too closely, the nitrate plumes may intersect, increasing the concentrations of nitrate. Nitrate concentrations may not be sufficiently diluted before reaching a water supply well. Studies done by Cain & Beatty (1973) suggest a minimum parcel size of 1 acre per OLS and a minimum of 2-3 acres where an OLS and water supply well are located on the same parcel. However, this is highly dependent on individual site characteristics. Although individual sites may vary in infiltration and adsorption ability, it is questionable that smaller parcels can consistently act as a source of potable water and disposal area for wastewater over a long period of time, especially in crowded subdivision (Cain and Beatty, 1973).

Organic solvents, such as trichloroethylene (TCE) are sometimes used to clean out septic tanks. This can allow the solvents to enter the ground and contaminated groundwater. It is quite probable that some of the TCE problems existing today have been the result of this practice.

3.24 PRIME AGRICULTURAL SOILS

The capability classification is a grouping of soils to show, in a general way, their suitability for most kinds of farming. It is a practical classification based on limitations of the soils, the risk of damage when they are used, and the way they respond to treatment. Class I and II soils are generally areas of prime agricultural soils. FIGURE 6 provides a prime agricultural analysis of the Planning Area. This analysis provides a scale for the suitability for agricultural uses. FIGURE 6 should be utilized by the Township to prevent the encroachment of potential sanitary sewage lines into areas that are most suitable for agricultural uses.

3.30 GEOLOGIC ANALYSIS

The geologic characteristics of Douglass Township can be predominantly categorized as red shale and limestone composites. These composites include Triassic red shales, limestones, and sandstones. FIGURE 7 illustrates the geologic formations that are present in the Township.

The oldest geologic formations occur in the northwestern portion of the Township. The Precambrian Gneisses are the oldest formations found in Douglass Township and are older than 600 million years. The gneisses is very resistant to erosion and therefore tends to form hills and ridges. The two types of Gneiss groups that are found in the Township are:

GRANITIC GNEISS
Granitic Gneiss is buff to pink in color. It weathers to large slabs and spheroidal boulders. Grain size is usually around 1 mm. Foliation is poorly defined in massive rocks but prominent inmigmatites. The principle minerals are microcline, quartz, horn blend and biotite.

GRAPHITIC GNEISS
Graphitic Gneiss is light to medium grey in color. Its principle minerals are quartz, orthoclase, horn blend, biotite and graphite.

Both types of gneiss are very similar in terms of their hydrogeology. Gneiss is a very compact rock without much in the way of interconnecting pore spaces. Therefore, all storage and flow of groundwater within Gneiss takes place in joints and fractures. These fractures are often widely spaced and covered with sand. This makes it difficult to locate and obtain high well yields. Its low permeability imposes severe restrictions or use as a drainage field. Gneiss often contains a weathered zone that can extend from 10 to 100 feet below the surface. This weathered zone is shown as saprolite, yields are generally higher than of unweathered gneiss. However, the aerial extent of saprolite is not usually sufficient for long term usage.

The Cambrian Formations represent the next oldest geologic formations in the Township. They also occupy part of the northwestern portion of Douglass Township.

HARDYSTON FORMATION

The Hardyston Formation non-conformably overlies Pre-Cambrian Gneiss. The contact between these two formations is not exposed but the basal conglomeratic member commonly forms ridges and can usually be traced without difficulty. It consists of thick-bedded brown to blue-grey metamorphosed quartz sandstone called quartzite. The upper portion of this formation is relatively thin-bedded and decomposes into a silaceous clay. The lower portion of the formation is composed of rounded pebbles of quartz called conglomeratic. This formation, located in the northwestern portion of the Township, is very resistant to erosion and forms high ridges and hills including the highest elevation in the Township (820' ASL). Silicon cementation and metamorphism have closed almost all intergranular pore spaces. The Hardyston Formation has hydraulic properties much like Precambrian Gneiss.

LEITHVILLE FORMATION

The Middle Cambrian Leithville Formation is also located in the northwestern portion of the Township. This formation consists mainly of grey crystalline dolomite that is shaly in the upper part and has considerable amounts of chert in the lower part.

The balance of the Township is comprised of the younger Triassic shale, limestone, Argillite and Diabase.

LACKATONG FORMATION

The Lackatong Formation consists of interbedded grey to black argillite and occasional zones of thinly bedded shale with calcite, dolomite, and pipite mineral deposits. The argillite occurs in beds about one foot thick. It is interfingered with red shale of the Brunswick Formation which is conformably in contact with it. It occurs at the surface as a series of narrow line or bands trending East West in the Township.

The Lackatong Formation cannot be considered a reliable source of large amounts of water. The pore spaces are small and most groundwater flow and storage occurs in a series of interconnected joints. Fractures are spaced widely apart to store and transmit water effectively.

BRUNSWICK FORMATION SHALE

The Brunswick Formation is comprised primarily of red argillaceous shale, irregularly bedded in places with red sandstone and siltstone. Some beds of grey harder shales are formed in the lower part of the Formation. In general, the Brunswick Formation lithofacies conformably overlie the Lackatone lithofacies.

Since the shale of the Lackatong Formation is not as highly fractures as that of the Brunswick Formation, and relatively impermeable, it causes deeper units of Brunswick shale to behave as confined (artesian) aquifers, and it may also act as a permeable barrier. This formation occurs throughout the lowland areas of Douglass Township.

The Brunswick Formation is an area of highly fractured shale. This can greatly improve the water storage capability of the rock. Water is stored under the water table and in confined aquifers in the weathered zone of the rock formation which may extend to 600' in depth.

The Formation is highly permeable due to high concentrations of horizontal and vertical joint plains oriented at intersecting angles, providing channels through which groundwater can flow.

DIABASE

Triassic Diabase is an igneous rock very similar to granite. It was injected, while in its molten state, into the Brunswick Formation forming dikes and sills. Dikes are wall-like igneous intrusions that are inserted perpendicular to the existing rock layers. In general, the larger bodies of diabase are sills and the smaller bodies are dikes.

Diabase is known for its poor water bearing capabilities. It yields barely enough water for residential use. Diabase resides in the northeastern part of the Township forming intrusions into the neighboring rock formation, and in the southcentral portion of the Township where it is surrounded by the more permeable Brunswick Formation.

LIMESTONE FANGLOMMERATES

Fanglommerates occupy a small portion of the north and central part of the Township. These were deposited as alluvial forms by streams and are some of the youngest beds within the Brunswick Formation. They are mostly limestone pebbles in a reddish-brown buff. Quartzite may also be present in the matrix. They are interbedded with the Brunswick and siltstone. The beds of limestone breccia grade along strike into reddish brown sandstone and then shale.

3.31 CARBONATE BEDROCK

The Department of Environmental Resources has determined that sewage disposal in soils of this parent material creates a high hazard of groundwater pollution through solution channels. These channels frequently cover long distances and are formed when the interaction of air and water forms a weak carbonic acid which with the help of homic acid dissolves the carbonate rock in solution. These soils are generally DER soils group 11. Limestone is the most common parent material forming these soils which are illustrated in FIGURE 4.

3.40 TOPOGRAPHICAL AND DRAINAGE ANALYSIS

3.41 TOPOGRAPHICAL ANALYSIS

The topography of Douglass Township varies from a hilly terrain in the north and central part of the Township to a more level terrain along the peripheries. The elevations within the Township range between 140 to 820 feet above mean sea level. The highest elevations were found in the northwestern part of the Township near Union Mission Camp and the lowest elevations were found in the south at the Schuylkill River.

FIGURE 8 depicts the generalized topography of Douglass Township by categorizing the degree of slope. Slope is defined as the change in vertical distance per unit area of horizontal distance. Based on this generalized topographic analysis, steep slops can be found in most areas of the Township, especially in the north and central portions.

The topography of a particular area can prescribe the sites ability to achieve adequate on-site sewage disposal. Steep slopes generally indicate that the bedrock is of shallow depth. This can significantly hinder the process of excavating for sewage disposal systems. Steep slopes underlain at shallow depths by impervious material can lead to seepage of sewage effluent to the surface. Problems with erosion may also develop on steep slopes. Standard beds may be used as an absorption area up to and including 8 percent in slope. Trenches are acceptable up to 25 percent in slope. On the basis of this topographic analysis most of the Township is suitable for bed designs and trenches.

3.42 DRAINAGE ANALYSIS

Douglass Township lies in the Schuylkill River Basin. The Pine Forge area of the Township is drained by Manatawny Creek and its tributaries. The Little Oley area is drained by Ironstone Creek, and the extreme southernmost portion of Douglass Township is drained by the Schuylkill River. These major drainage basins are identified and geographically illustrated on FIGURE 9. Due to hilly terrain drainage can only occur in short reaches.

The major and minor drainage basins, delineated by ridge lines, are logical areas for planning and designing water control facilities. Water quality and quantity are related to both land and water management. Most municipalities do not comprehend the environmental value of their river system until they become polluted, depleted and/or poses a threat from flooding. It is essential to look by and the streams and other water courses to identify the drainage basins which are drained by these identified waterways.

3.50 FLOODWAY CONTROL ANALYSIS

3.51 100 YEAR FLOODPLAIN

Floodplains provide ecological, aesthetic and recreational benefits, while imposing constraints to development. The primary function of a floodplain is to provide an area that will accommodate the floodwaters of a given storm. The National Flood Insurance Program has defined the floodplain by the 100 year or base flood which has a 1% change of being equaled or exceeded in a given year. The Douglass Township Board of Supervisors has adopted regulations for Floodplain Management established by the Federal Emergency Management Agency for the following purposes:

1. To promote the general health, welfare, and safety of the community;
2. To encourage the utilization of appropriate construction practices in order to prevent or minimize flood damage in the future;
3. To minimize danger to public health by protecting water supply and natural drainage;
4. to reduce financial burdens imposed on the community, its governmental units, and its residents, by preventing excessive development in areas subject to flooding.
5. To comply with federal and state floodplain management requirements.

The minimum requirements established under the National Flood Insurance Program prohibits new construction or substantial improvements to existing structures, fill or encroachments within the 100-year flood plain. FIGURE 10 illustrates the 100-year flood plain, as established by the Federal Emergency Management Agency on the Douglass Township Flood Insurance Rate Map.

Sewage Disposal Systems should not be located in areas subject to flooding because of possible contamination of the stream and the generally high water tables occurring near streams. This would not allow for enough distance between the sewage facility and the surface water for the sewage material to be renovated prior to reaching the stream. During time of flooding sewage effluent may contaminated surface water, and the effluency of the filter fields can be dramatically decreased.

DOUGLASS TOWNSHIP

BERKS COUNTY PENNSYLVANIA

ACT 537 PLAN UPDATE

SEPTEMBER 1993

VOLUME 1 OF 2

PREPARED FOR:

DOUGLASS TOWNSHIP
BERKS COUNTY PENNSYLVANIA

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DOUGLASS TOWNSHIP
ACT 537 PLAN UPDATE

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DOUGLASS TOWNSHIP

BERKS COUNTY PENNSYLVANIA

ACT 537 PLAN UPDATE

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1.00 INTRODUCTION

1.10 PURPOSE AND OBJECTIVE

The purpose of this Act 537 Plan Update is to comply with the Pennsylvania Department of Environmental Resources (PA DER) Act 537 requirements regarding Sewage Facilities Planning. The Planning Objectives will analyze and identify potential wastewater treatment alternatives based on existing and future wastewater treatment needs for the Douglass Township Planning Area. The Selected Alternatives will become the foundation for the Official Sewage Plan for Douglass Township that will function as a regulatory plan for resolving wastewater management problems associated with development and will provide guidance for new procedures and ordinances incorporated by the Township. It should be noted that the length of the planning period for this Act 537 Plan Update shall be 20 years.

The Douglass Township Act 537 Plan Update will include recommendations regarding the feasibilities for expanding wastewater treatment facilities into areas of the Township which have had problems in the past. The Plan will also focus on the evaluation of on-lot sewage disposal technology and planning.

1.20 BACKGROUND

The Douglass Township Planning Area is geographically located in southeastern Berks County and is part of the Reading Metropolitan Statistical Area (MSA). Douglass Township has a land area of 13.6 square miles (8704 acres) and is bounded to the north by Colebrookdale Township; to the east by West Pottsgrove, East Pottsgrove and Douglass Townships (Montgomery County); to the south by Union Township; and to the west by Amity and Earl Townships. The Planning Area is located approximately 12 miles east of the City of Reading and 1 mile west of the Borough of Pottstown. The Planning Area is illustrated in FIGURE 1.

Historically, the population of Douglass Township has grown at a moderate to considerable rate compared to most of Berks County. The population of the Township for 1988 has been estimated at 3,380 persons by the U.S. Census Bureau. The Planning Area has experienced mostly residential subdivision activity with single family dwellings as the predominate land use with some exceptions. This subdivision and land development activity has basically occurred throughout the Township with higher concentrations in and around the unincorporated areas of Douglassville, Greshville, Colebrookdale\Little Oley, Pine Forge and Worman.

Presently, there are no municipal wastewater treatment services available within Douglass Township. There is a package treatment plant that services the Pine Forge Institute. The balance of the Township is serviced by on-lot sewage facilities. However, due to the presence of unfavorable soil conditions, geological features and topographical characteristics, the use of on-lot sewage facilities is not the most effective method for sewage disposal within the Planning Area. Therefore, the Township does recognize that there is a need for an Official Sewage Plan for the Planning Area.

1.30 ACT 537 PLANNING

The Pennsylvania Sewage Facilities Act (Act 537), enacted by the Pennsylvania State Legislature in 1968, requires that every municipality in the state shall develop and maintain an up-to-date Sewage Facilities Plan. The Act provides for the planning and regulation of both community and individual wastewater disposal systems.

The purpose of the Sewage Facilities Plan is outlined under Section 3 (Declaration of Policy) of Act 537. This purpose is listed as follows:

1. To protect the public health, safety and welfare of its citizens through the development and implementation of plans for the sanitary disposal of sewage waste.

2. To promote inter-municipal cooperation in the implementation and administration of such plans by local government.

3. To prevent and eliminate pollution of waters of the Commonwealth by coordinating planning for the sanitary disposal of sewage wastes with a comprehensive program of water quality management.

4. To provide for the issuance of permits for on-lot sewage disposal systems by local government in accordance with uniform standards and to encourage inter-municipal cooperation to this end.

5. To provide for and insure a high degree of technical competency within local government in the administration of this act.

6. To encourage the use of the best available technology for on-site sewage disposal systems.

7. To insure the rights of citizens on matters of sewage disposal as they may relate to this act and the Constitution of this Commonwealth.

The Act requires that the municipality review the Official Sewage Plan every five years to determine effectiveness and/or determine the need for revisions. An Update can be flexible to include the evaluation of on-lot sewage disposal technology and/or the complexity of planning for the design and construction of a public sewage treatment system. An Official Sewage Plan must evaluate the existing and proposed wastewater treatment facilities to compensate the needs of the planning area.

As outlined by the Pennsylvania Department of Environmental Resources (PA. DER) an Official Sewage Plan will generally contain the following:

1. Planning Objectives and Needs
2. Physical Description of the Planning Area
3. Evaluation of Existing Treatment and Conveyance Systems
4. Evaluation of Wastewater Treatment Needs
5. Planning and Facilities Alternatives Evaluation and Recommendations
6. Institutional Evaluation and Recommended Alternatives
7. Selected Wastewater Treatment and Institutional Alternative
8. Implementation

2.00 BACKGROUND INFORMATION

2.10 PLANNING OBJECTIVES AND NEEDS

2.11 WASTEWATER PLANNING PREVIOUSLY UNDERTAKEN

Douglass Township has conducted and/or adopted three (3) previous wastewater planning studies. During the preparation of this Update to the Douglass Township Act 537 Plan, it was imperative to review all existing wastewater management plans with a view towards properly incorporating appropriate elements of an existing plan to avoid duplicate planning.

2.111 PINE FORGE-LITTLE OLEY ENGINEERING STUDY AND FEASIBILITY REPORT - 1969

This Study was prepared by Gilbert Associates, Inc. of Reading, PA. in June of 1969. The purpose and objective of this study was to evaluate the engineering and financial feasibility of providing a wastewater collection system in the unincorporated areas of Pine Forge and Little Oley. For a variety of reasons the recommendations of this Study were never implemented by Douglass Township.

2.112 BERKS COUNTY MASTER WATER AND SEWER PLAN - 1970

The Berks County Master Water and Sewer Plan (1970) was prepared for the Berks County Board of Commissioners by Gilbert Associates, Inc. in conjunction with the Berks County Planning Commission. The Plan evaluated a variety of alternatives for providing wastewater treatment to select areas of the Township. These select areas were based on the proximity of regional wastewater flows and physical site conditions. The Plan recommended that the Monocacy Creek Basin (Planning Area III) should connect to the Pottstown Regional Water Pollution Control System. The Plan was adopted by the Douglass Township Board of Supervisors. However, the Plan was never implemented due to a lack of regional planning coordination.

2.113 ENGINEERING STUDY AND FINANCIAL FEASIBILITY REPORT FOR SEWERAGE IN DOUGLASS TOWNSHIP - 1973

This Study was prepared by Spotts, Stevens and McCoy Consulting Engineers of Wyomissing, PA in September of 1973. The purpose and objective of this Study was to determine pertinent factors in the layout of a sanitary sewage collection system to serve selected areas of the Township. For a variety of reasons the recommendations of this Study were never implemented by Douglass Township.

2.114 BERKS COUNTY MASTER WATER AND SEWER PLAN - 1975

The Master Plan was revised to recognize Amity Township's desire to construct its own sewage treatment plant in accordance with Master Plan Alternative # 2. The proposed sewage treatment plant was recognized as a subregional facility and had the potential capabilities to treat sewage flows from parts of Douglass, Exeter and Union Township if the municipalities desire to connect into the system. The amended changes were adopted by the Douglass Township Board of Supervisors. This Act 537 Plan is consistent with this revision to the Master Plan.

2.12 COMPREHENSIVE WATER QUALITY MANAGEMENT PLAN (COWAMP)

The Douglass Township Act 537 Plan Update is consistent with all pertinent planning goals, objectives and policies identified within the Comprehensive Water Quality Management Plan, prepared by the Pennsylvania Department of Environmental Resources.

2.13 FEDERAL WATER QUALITY ACT OF 1987

The Douglass Township Act 537 Plan Update is consistent with all pertinent Plans developed under the Federal Water Quality Act of 1987. In addition, this Act 537 Plan demonstrates the following:

1. That all innovative alternatives have been evaluated;
2. That potential open space and recreational opportunities have been analyzed;
3. Non-excessive infiltration and inflow to existing sewers;
4. That the chosen alternative is the most cost-effective and environmentally sound;
5. Compliance with the National Environmental Policy Act (NEPA).

2.20 PLANNING DOCUMENTS ADOPTED PURSUANT TO ACT 247

The following planning documents have been adopted by Douglass Township pursuant to Act 247 (Pennsylvania Municipalities Planning Code):

Douglass Township Comprehensive Plan (1988)
Douglass Township Zoning Ordinance (1984)
Douglass Township Subdivision and Land Development Ordinance (1988)

2.21 COMPREHENSIVE PLAN

The Douglass Township Comprehensive Plan was adopted by the Douglass Township Board of Supervisors in 1988. The Plan includes information regarding development trends, regional influences, community goals, natural features, a community facilities plan, a transportation plan and a land use plan. The Plan does recognize the need for long term sewage disposal planning in the Township. Therefore, the Comprehensive Plan is adequate to meet the Township's sewage facility needs for the next 20 years. This document has been submitted with this Act 537 Plan as EXHIBIT 1.

2.22 ZONING ORDINANCE

The Douglass Township Zoning Ordinance was first adopted in 1974 and last amended in 1990 by the Douglass Township Board of Supervisors. The Douglass Township Zoning Ordinance consists of the following Zoning Districts:

R-1 Rural Suburban Residential District
R-2 Rural Residential Zoning District
R-3 Rural Conservation District
C-1 Neighborhood Residential District
C-2 Highway Commercial District
I-1 Limited Industrial District
I-2 General Industrial District
S-1 School District

These Zoning Districts are illustrated in FIGURE 2 of this Plan and has also been included within EXHIBIT 2.

The Ordinance does recognize the need for long term sewage disposal in the Township. The capabilities for the Township to provide municipal wastewater treatment are reflected in the area and dimensional requirements for each individual Zoning District. In addition, the Ordinance does incorporate standards and specifications for natural resource protection, open space, sewage disposal, soil erosion and grading. Therefore, the Ordinance should be adequate to meet the Township's sewage facility needs for the next 20 years. This document has been included with this Act 537 Plan as EXHIBIT 2.

2.23 SUBDIVISION AND LAND DEVELOPMENT ORDINANCE

The Douglass Township Subdivision and Land Development Ordinance was adopted in 1973 and last amended in 1989 by the Douglass Township Board of Supervisors. The Ordinance does recognize the need for long term sewage disposal in the Township. The capabilities for the Township to provide municipal wastewater treatment are reflected within the contents of this Ordinance. Therefore, this Ordinance should be adequate to meet the Township's sewage facility needs for the next 20 years. This document has been included with this Plan as EXHIBIT 3.

2.24 FLOOD PLAIN/STORMWATER MANAGEMENT AND LAND USE COMPATIBILITY

The Douglass Township Zoning Ordinance (Section 522) and Douglass Township Subdivision and Land Development Ordinance (Sections 403 and 707) addresses all regulations regarding Flood Plain Management and Development associated with Land Use Applications.

The Douglass Township Subdivision Control Ordinance (Sections 403, 510, 511 and 707) address all regulations regarding Stormwater Management and Design Standards.

2.25 ANALYSIS OF LAND USE PLANNING RELATIVE TO ENVIRONMENTALLY SENSITIVE AREAS

The analysis of land use planning and its consistency with protecting environmentally sensitive areas is recognized under the Goals and Land Use Component of the Comprehensive plan. The Douglass Township Zoning and Subdivision/Land Development Ordinances include established standards and specifications for the protection of environmentally sensitive areas.

2.26 PENNSYLVANIA NATURAL DIVERSITY INVENTORY

Based on a review of the "Pennsylvania Natural Diversity Inventory" (Pennsylvania Department of Environmental Resources) and "Natural Areas Inventory of Berks County" (Pennsylvania Science Office of Nature Conservancy) it can be concluded that there no rare, endangered or threatened species within the Douglass Township Planning Area. This information was also confirmed through consultations with the Pennsylvania Department of Environmental Resources, the Berks County Conservancy and the Berks County Planning Commission. However, the segment of the Schuylkill River that flows across the southern border of the Douglass Township Planning Area has been designated as a Pennsylvania Scenic River. It should that this Act 537 Plan Update will not disrupt or effect this designation.

2.27 ARCHAEOLOGICAL AND HISTORICAL SITES

The Pennsylvania Historical and Museum Commission, Bureau of Historical Preservation, has reviewed the Douglass Township Planning Area under the authority of the Environmental Rights Amendment of the Pennsylvania Constitution and the Pennsylvania History Code. Based on this review, the Commission has determined that there are four (4) recorded archaeological sites located within the Township. It should be noted that three (3) of these recorded archaeological sites are prehistoric sites (PASS Nos. 36 BK 127, 128 and 129) of which virtually nothing else is known at this time. The other recorded archaeological site (PASS No. 36 BK 635) is a 19th century farmstead which was identified during an archaeological survey.

As a result of this determination, the Pennsylvania Historical and Museum Commission recommended that a Phase I survey should be conducted to precisely locate the archaeological site(s) in relationship to any proposed construction impacts.

Based on all pertinent information contained in this Plan, there appears to be a need for municipal wastewater treatment within the southwestern portion of the Planning Area. Therefore, municipal wastewater treatment facilities will be required for this area of the Township. Refer to Sections 6.10 and 8.10 regarding all information pertaining to municipal wastewater treatment alternatives for the Douglass Township Planning Area for the 20 year planning period.

Most of the proposed construction impacts and encroachments will be on previously disturbed areas of the Township. Therefore, a Phase I survey is not required. However, if there are any construction impacts or encroachments on undisturbed land areas within the Planning Area, a Phase I Survey shall be required to precisely locate the archaeological site(s) in relationship to the proposed construction impacts. This information has been confirmed through correspondence and telephone conversations between Motley Engineering Company, Inc. and the Pennsylvania Historical and Museum Commission. All pertinent Correspondence has been included within APPENDIX H of this Act 537 Plan Update.

The Pennsylvania Historical and Museum Commission, has also determined that there are significant historical sites within the Township. It should be noted that this information is described within the Douglass Township Comprehensive Plan Update. There are no municipal or community wastewater treatment facilities proposed within the Township (refer to Section 8.10) that will create a disturbance on existing and/or potential historical structures. Therefore, the historical sites within the Township will not be disturbed.

2.30 IDENTIFICATION OF GROWTH AREAS

2.31 POPULATION INFORMATION

The following sequence of information regarding Historical Population, Current Population Estimates and Population Projections will be utilized to compare and analyze population data as it relates to sewage facility needs.

2.311 HISTORICAL POPULATION

Historically, Douglass Township has grown in population at a considerable rate compared to most municipalities in Berks County. TABLE A represents a summary of the Historical Population of Douglass Township from 1950-80 and TABLE B represents Historical Population Trends during the same period.

TABLE A
HISTORICAL POPULATION

Municipality	1950	1960	1970	1980
Douglass Township	1,843	2,668	2,944	3,128
Berks County	255,740	275,414	296,382	312,509

Sources: U.S. Dept. of Commerce, Bureau of Census
Berks County Planning Commission

TABLE B
HISTORICAL POPULATION TRENDS
(Percent Change)

Municipality	1950-60	1960-70	1970-80
Douglass Township	44.8%	10.3%	6.3%
Berks County	7.7%	7.6%	5.4%

Sources: U.S. Dept. of Commerce, Bureau of Census
Berks County Planning Commission

Douglass Township has had substantial growth rate between 1950-80. This population growth of 44.8% (1950-60), 10.3% (1960-70) and 6.3% (1970-80) could be attributed to the availability of reasonably priced land, economic growth, and its proximity to the cities of Reading, Philadelphia, Allentown, Bethlehem, Easton, Pottsville, Lancaster and Lebanon.

A majority of the population of Douglass Township is concentrated in and around the unincorporated villages of Douglassville, Greshville, Colebrookdale\Little Oley, Worman and Pine Forge.

2.312 CURRENT POPULATION ESTIMATES

The U.S. Department of Commerce, Bureau of Census has developed Population Estimates (1980-90) for all municipalities throughout Pennsylvania. TABLE C represents the current population estimates for Douglass Township and Berks County.

TABLE C
CURRENT POPULATION ESTIMATES

Municipality	1980	1984	1988	1990	% Change 1980-90
Douglass Twp.	3128	3166	3380	3570	14.1 %
Berks County	312509	317194	329100	336523	7.7 %

Source: U.S. Dept. of Commerce, Bureau of Census

A component procedures was used by the U.S. Department of Commerce, Bureau of Census in which each of the components of population change (births, deaths, net migration, and special populations) were estimated separately.

2.313 FUTURE POPULATION PROJECTIONS

The Berks County Planning Commission has developed Population Projections for all municipalities located in Berks County for the year 2000. In addition, the projected population for the year 2010 has been calculated for Douglass Township. TABLE D represents the population projections for the years 2000 and 2010 for Douglass Township and Berks County.

TABLE D
POPULATION PROJECTIONS

Municipality	1990	2000	2010	Percent Change 1990-2000	2000-10
Douglass Twp.	3570	3916*	4312**	9.7%	10.1%
Berks County	336523	362255*	***	7.6%	----

* Denotes that the projection has been derived by the Berks County Planning Commission utilizing the cohort-component method.

** Denotes that the projection has been derived by Douglass Township utilizing the geometric method.

*** Denotes that no projection has been derived for this particular year.

Sources: U.S. Dept. of Commerce, Bureau of Census
Berks County Planning Commission
Douglass Township

2.314 ANALYSIS OF ESTIMATES AND PROJECTIONS

The aftermath of population projections are regulated by the theories regarding future growth and development. The basis for these theories are that historical trends will continue or certain trends will change. Therefore, the accuracy of population projections are contingent upon the accuracy of background generalizations. Another important demographic theory is that the accuracy of population projections generally decreases as the size of the area involved decreases.

Consequently, some generalizations can be made concerning growth expectations regarding the Planning Area. Douglass Township will continue to experience a moderate to considerable growth rate. This projected growth rate of 9.7% (1990-2000) and 10.1% (2000-10) can be attributed to the availability of reasonably priced land, an excellent economy, and development pressures associated with suburban sprawl.

2.315 POPULATION CHARACTERISTICS

TABLE E represents the Equivalent Dwelling Unit (EDU) for Douglass Township Planning Area and Berks County. This demographic information is based on 1990 population and housing characteristics.

TABLE E
EQUIVALENT DWELLING UNIT

Municipality	1990 Population	1990 Number of Housing Units	Persons Per Household
Douglass Twp.	3570	1234	2.98
Berks County	333768	134424	2.48

Source: U.S. Dept. of Commerce, Bureau of Census

2.32 SUBDIVISION AND LAND DEVELOPMENT ACTIVITY

2.321 DOUGLASS TOWNSHIP DEVELOPMENT TRENDS

Historically, the population of Douglass Township has grown at a moderate to considerable rate compared to most of Berks County. This trend is also evident in the recorded subdivision and land development activity in Douglass Township. TABLE F depicts the subdivision and land development activity (1985-90) in Douglass Township. The locations of the subdivisions listed in TABLE F are illustrated in FIGURE 3. The map numbers can be cross referenced with the inventory that is numerically ordered in TABLE F.

Douglass Township has experienced mostly residential subdivision activity with single family dwellings as the predominate land use with some exceptions. The subdivision and land development activity has occurred in and around the unincorporated areas of Greshville, Douglassville, Colebrookdale\Little Oley, Pine Forge, and Worman.

2.322 RESIDENTIAL CONSTRUCTION ACTIVITY

The recorded subdivision and land development plans listed in TABLE F provides data used to monitor the levels of proposed construction. In order to determine actual residential growth in Douglass Township, the building permits issued must also be analyzed. Based on a review of the total number of residential building permits issued by Douglass Township from 1980-89, it is evident that the actual growth rate (11.7%) supports the population estimates and projections listed in TABLES C and D. It is also evident that most of the residential growth (87.8%) in Douglass Township during the 1980-89 time period has been single family units.

TABLE F
DOUGLASS TOWNSHIP - SUBDIVISION AND
LAND DEVELOPMENT ACTIVITY
(1985-1990)

MAP NO.	SUBDIVISION	LOCATION	LAND USE	NUMBER OF LOTS	SEWAGE DISPOSAL	YEAR APPROVED
1	MADDONA*	RATTLESNAKE HILL ROAD	SF	1	OS	*
2	DAVIDHEISER	SPRUCE DRIVE	SF	1	OS	85
3	DI MASCIO	HILL SCHOOL ROAD	SF	5	OS	86
4	TRAINER	PINE FORGE ROAD	COMM.	1	OS	85
5	ADAMS (REV.)	DOUGLASS DRIVE	SF	1	OS	89
6	GRESH	WINDING ROAD	SF	4	OS	85
7	IRONESTONE EAST*	IRONESTONE DRIVE	SF	4	SF	*
8	ROLLING VALLEY (REV.)	DOUGLASS DRIVE	SF	2	OS	87
9	ROLLING VALLEY I	DOUGLASS DRIVE	SF	8	OS	85
10	ROLLING VALLEY II-A	GRIST MILL ROAD	ANNEX	---	---	88
11	CECELIA	SUNRISE LANE	SF	4	OS	85
12	KRUK	DOUGLASS DRIVE	ANNEX	---	---	86
13	MILLER	WINDING ROAD	SF	2	OS	88
14	ACKER	GRESHVILLE ROAD	ANNEX	---	---	86
15	HILTEBEITEL	SR 422	ANNEX	---	---	86
16	BEALER	COLEBROOKDALE ROAD	SF	1	OS	86
17	MELLINGER	COLEBROOKDALE ROAD	ANNEX	---	---	86

TABLE F
DOUGLASS TOWNSHIP - SUBDIVISION AND
LAND DEVELOPMENT ACTIVITY
(1985-1990)

MAP NO.	SUBDIVISION	LOCATION	LAND USE	NUMBER OF LOTS	SEWAGE DISPOSAL	YEAR APPROVED
18	TOWSEND	HILL SCHOOL ROAD	SF	1	OS	86
19	SCHOENLY	WINDING ROAD	SF	1	OS	86
20	BOYERTOWN PACKING	FARMINGTON AVENUE	IND.	2	OS	87
21	SENDECKI	TOWNSHIP LINE ROAD	SF	3	OS	87
22	SENDECKI II	TOWNSHIP LINE ROAD	SF	2	OS	88
23	SENDECKI III	OAK LANE	SF	2	OS	88
24	ZUBER	ENGLESVILLE ROAD	SF	1	OS	87
25	VALLEY PROTEIN*	DOUGLASS DRIVE	SF	4	OS	*
26	SAYOR	SQUIRREL HOLLOW ROAD	SF	1	OS	88
27	BREIDEGAM	SUNSET DRIVE	SF	1	OS	87
28	PINE FILL APARTMENTS*	DOUGLASS DRIVE	APTS.	10	OS	*
29	BUCK RUN	EDGEHILL ROAD	SF	5	OS	88
30	CHRISTMAN	GRIST MILL ROAD	SF	1	OS	88
31	YORGEY	IRONESTONE DRIVE	SF	1	OS	88
32	STERCULA	COLEBROOKDALE ROAD	SF	1	OS	88
33	STAINLESS, INC.	MANATAWNY ROAD	SF	2	OS	88
34	YODER	SR 422	COMM.	1	OS	89

TABLE F
DOUGLASS TOWNSHIP - SUBDIVISION AND
LAND DEVELOPMENT ACTIVITY
(1985-1990)

MAP NO.	SUBDIVISION	LOCATION	LAND USE	NUMBER OF LOTS	SEWAGE DISPOSAL	YEAR APPROVED
35	TOWNSHIP LINE ROAD SUB.	TOWNSHIP LINE ROAD	SF	5	OS	88
36	BJ FARMS	SUNRISE ROAD	SF	1	OS	89
37	EAST COURT*	COLEBROOKDALE ROAD	SF	22	OS	*
38	IRONESTONE GLEN*	GRIST MILL ROAD	SF	31	OS	*
39	HOFFMAN	EDGE HILL ROAD	ANNEX	---	---	89
40	GIFT*	SR 562	ANNEX	---	---	*
41	FADLER	GRESHVILLE ROAD	SF	3	OS	89
42	FERRANTI	HILL SCHOOL ROAD	SF	2	OS	89
43	DODDS*	OLD PHILADELPHIA PIKE	SF	1	OS	89
44	DOUGLASS CROSSING	IRONESTONE DRIVE	SF	16	OS	*
45	KOLARZ	DOUGLASS DRIVE	SF	4	OS	90
46	CINAGLIA	SUNRISE LANE	SF	2	OS	90

*Denotes that the Subdivision Plan has not been offically approved by the Douglass Township Board of Supervisors and/or has not been recorded at the Office of the Berks County Recorder of Deeds. The Subdivision Plan could still be pending municipal action by Douglass Township.

3.00 PHYSICAL DESCRIPTION OF PLANNING AREA

3.10 PLANNING AREA BOUNDARIES

The Douglass Township Planning Area is geographically located in southeastern Berks County and is part of the Reading Metropolitan Statistical Area (MSA). Douglass Township has a land area of 13.6 square miles (8704 acres) and is bounded to the north by Colebrookdale Township; to the east by West Pottsgrove, East Pottsgrove and Douglass Townships (Montgomery County); to the south by Union Township; and to the west by Amity and Earl Townships. The Planning Area is located approximately 12 miles east of the City of Reading and 1 mile west of the Borough of Pottstown. The Planning Area is illustrated in FIGURE 1.

3.20 SOIL ANALYSIS

Soils form primarily by weathering of bedrock, and therefore have characteristics similar to those of the underlying rock formations. Most of Douglass Township (approximately 62%) is covered with moderately deep, and deep, well-drained to poorly drained soils formed in material weathered from red shale and some soft sandstone. Approximately 21% of the Township is covered by deep, well-drained soils on ironstone ridges and in adjacent areas. Approximately 9% of the Township is covered by deep, well-drained, undulating soils forms in material weather from limestone in limestone valleys. About 5% in the northwest corner of the Township is covered by deep and moderately deep, well-drained and moderately well drained, rolling to hilly soils formed in material weather from granitic gneiss and other igneous or metamorphosed rocks in Reading Hills and South Mountain. The remaining 3% of the Township is covered by deep and moderately deep, well-drained, rolling to hilly soils formed in material weather from red sandstone conglomerate and some shale, this lies in a thin strip along the southern border. A map representing the soils of the Township is shown on FIGURE 4.

3.21 SOIL DESCRIPTIONS

The following detailed soil descriptions that make up the Township are excerpted from the Berks County Soil Survey.

ATKINS SERIES

The Atkins series consists of soils that are poorly drained and medium textured. These soils have formed in alluvial sediment that originated in uplands underlain by shale, sandstone, and quartzite. These soils are primarily located along streams that have a slight gradient in the Township. Flooding occurs frequently in spring and during intense thunderstorms.

In a cultivated soil typical of the Atkins series, the plow layer is dark grayish-brown, mottled silt loam about 8 inches thick. It is underlain by a subsurface layer of grayish-brown, mottled silt loam about 3 inches thick. The subsoil has subangular or blocky structure. The upper part, between a depth of 11 and 17 inches, is dark grayish-brown, mottled silt loam. The lower part, between a depth of 17 and 36 inches, is gray, mottled silt loam. The content of sand increases below a depth of about 36 inches. The substratum of dark-brown, mottled loam is at that depth.

Atkins soils are easily tilled but are wet much of the time. Mottling within 8 inches of the surface and throughout the rest of the profile indicates that water stands in these soils during much of the year. Permeability is moderate, and the available moisture capacity is high.

BAILE SERIES

The Baile series consists of soils that are deep and poorly drained. These soils have formed in material weathered from bedrock and in colluvium derived from granitic gneiss. These soils are primarily located in drainageways, depressions, and nearly level areas at the foot of slopes in the Township.

In a cultivated soil typical of the Baile series, the plow layer is dark grayish-brown silt loam about 8 inches thick. The upper part of the subsoil, between a depth of 8 and 20 inches, is gray silty clay loam that has a few spots and streaks of yellowish brown. The lower part, between a depth of 20 and 40 inches, is grayish-brown silty clay loam containing a few, distinct, brown mottles. The substratum extends to a depth of 60 inches or more and is gray, mottled clay loam. The spots and streaks in the upper part of the subsoil indicate that water stands in the Baile soils and makes them wet during most of the year. When disturbed, the soil material breaks to weak, prism-shaped blocks.

Runoff is slow, and permeability is slow. Though the soils are wet, outlets for drains are difficult to find. The large number of stones in many areas makes these soils difficult to manage.

BOWMANSVILLE SERIES

In the Bowmansville series are poorly drained soils that formed in alluvial sediment underlain by reddish conglomerate, sandstone, and shale. These soils are located along stream segments in the Township. They are in swales, low spots, or oxbows, where surface water and floodwaters remain for several days after heavy rains or floods. Flooding is most common in spring and fall. Each time it occurs, the water deposits fresh sediment. The profile of these soils is medium textured throughout, and the surface is free of stones.

In a cultivated soil typical of the Bowmansville series, the plow layer is reddish-brown silt loam about 9 inches thick. The upper part of the subsoil, between depths of 9 and 17 inches, is dark reddish-brown silt loam about 9 inches thick. The upper part of the subsoil, between depths of 9 and 17 inches, is dark reddish-brown or reddish-brown, mottled silt loam that has weak subangular blocky structure. The lower part, extending to a depth of 42 inches, is gray, mottled silt loam that has angular blocky structure. The substratum, at a depth of about 42 inches, is gray, mottled fine sandy loam underlain by coarse sand and sandstone pebbles.

Most areas of Bowmansville soils are moderately fertile. These soils are so wet and so frequently flooded, however, that they are used mainly for pasture. Cultivated crops are grown, to some extent, where these soils have been drained.

BRECKNOCK SERIES

Deep, well-drained, gently sloping to steep soils make up the Brecknock series. These soils have formed in material weathered from shale and siltstone that were metamorphosed by heat and pressure when the adjacent diabase intrusions were formed. They have inherited their dark colors and low chroma from the very dark gray or purplish-gray colors of the baked shale. These soils contain a large number of dark-colored, platy, coarse fragments. These soils are scattered throughout the Township.

In a cultivated soil typical of the Brecknock series, the plow layer is very dark grayish-brown, slightly acid channery silt loam about 8 inches thick. The subsoil is dark grayish-brown, friable, strongly acid channery silt loam that has subangular blocky or platy structure in the lower part and extends to a depth of about 38 inches. The substratum is yellowish-brown very channery sandy loam that is underlain by very dark gray, platy shale at a depth of about 48 inches. The solum contains a large number of coarse fragments, and coarse fragments occupy about 70 percent of the substratum.

Brecknock soils have low natural fertility. Most of the acreage is in pasture or trees, but field crops are grown in small areas. The soils under trees are generally very stony.

CHESTER SERIES

The Chester series consists of deep, well-drained, gently sloping to hilly soils that formed in material weathered from granitic gneiss. In many places these soils have large stones and boulders on the surface. These soils are found primarily in the northern part of the Township.

In a cultivated soil typical of the Chester series, the plow layer is dark-brown channery silt loam about 8 inches thick. The upper part of the subsoil, extending to a depth of 39 inches, is yellowish-red silt loam. The lower part is reddish-brown, friable loam that has thin platy structure. AT a depth of about 44 inches, this loam grades to the reddish-yellow, yellowish-red, and pink fine sandy loam of the substratum, which has platy structure. these soils contain many coarse fragments and are underlain by saprolite of gritty or very coarse sandy material in many places. The content of coarse fragments increases at a depth of about 44 inches, and coarse fragments are dominant at a depth of about 80 inches.

Surface runoff is slow to very rapid, permeability throughout the profile is moderate, and the available moisture capacity is high. These soils are easily worked, but some areas are very stony.

Except for their slopes and past erosion, the Chester soils have few limitations to farm sue. They are generally well suited to the crops commonly grown in the county.

CROTON SERIES

The Croton series consists of soils that are deep and poorly drained. These soils have formed in material weathered from bedrock and in local colluvium derived from weathered red shale, sandstone, and conglomerate. They are basically located in depressions, in nearly level areas, and in drainageways in the Township.

In a cultivates soil typical of the Croton series, the plow layer is dark reddish-brown silt loam about 8 inches thick. The upper part of the subsoil, extending to a depth of about 30 inches, is light brownish-gray, mottled, firm silt loam to silty clay loam. The lower part between a depth of 30 to 40 inches, is a fragipan of weak-red, mottled, firm or very firm silt loam that has prismatic structure. At a depth of about 40 inches, the material in the subsoil grades to soft, red rock.

The well-developed fragipan in the subsoil of the Croton soils impedes the penetration of roots and slows the movement of water through the profile. The water table is high.

About half of the acreage of Croton soils is in trees. The rest generally is cultivated, though most of the steep areas are idle.

DUFFIELD SERIES

The Duffield series consists of deep, well-drained, nearly level to steep soils formed in material weathered from impure limestone. These soils are generally located in the northeastern portion of the Township.

In a cultivated soil typical of the Duffield series, the plow layer is dark-brown silt loam about 8 inches thick. the upper part of the subsoil, extending to a depth of about 41 inches, is strong brown silt loam to silty clay loam. The lower part is yellowish-brown silty clay loam to a depth of about 52 inches. Hard, gray limestone is generally at a depth of 52 inches.

Natural fertility and the available moisture capacity are high. where little erosion has taken place, the surface layer is mellow and this soil is easily worked.

The main limitations of the Duffield soils are sinkholes and caverns. Where these occur, the areas around the sinkhole or cavern are subject to collapse or subsidence. In areas where the slopes are not too steep, and where erosion is only moderate or slight, these soils are well suited to crops. Most of the acreage has been cleared and is farmed intensively.

EDGEMONT SERIES

Deep, well-drained, gently sloping to steep soils make up the Edgemont series. These soils have formed in material weathered from hard sandstone, quartzite, granitic gneiss, and other igneous or metamorphic rocks. These soils are located on ridges and side slopes in the northern part of the Township.

In a wooded soil typical of the Edgemont series, a thin layer of leaves overlies a very dark gray mat of organic matter that, in turn, overlies a layer of black-channery coarse sandy loam. Each of these layers is about an inch thick. The main part of the surface layer is light yellowish-brown channery sandy loam to loam. It has subangular blocky or blocky structure and contains many coarse fragments. The substratum, below a depth of about 36 inches, is light yellowish-brown sandy loam, and it also contains many coarse fragments. Hard quartzite is at a depth of about 50 inches. Reaction throughout the profile is generally very strongly acid in areas that have not been limed.

The available moisture capacity is moderate to low, and permeability is moderate to rapid. Natural fertility is low.

Most areas of these soils are in trees. Some small areas are in crops or pasture.

GLENVILLE SERIES

In the Glenville series are deep, moderately well drained, nearly level or gently sloping soils that formed in material weathered from granitic gneiss. These soils are located primarily in the northern portion of the Township.

In a cultivated soil typical of the Glenville series, the plow layer is very dark grayish-brown silt loam about 8 inches thick. The upper part of the subsoil, to a depth of about 20 inches, is strong-brown, mottled silt loam that has blocky or platy structure. A fragipan, consisting of strong-brown or dark-brown, mottled silt loam or heavy silt loam is at a depth between 20 and 27 inches. The fragipan is firm and brittle and has tick, platy structure. The lower part o the subsoil, between depths of 27 and 40 inches, is dark-brown, mottled loam. The substratum, below a depth of 40 inches, is dark-brown loam that has weak, thin, platy structure.

The available moisture capacity is moderate, and permeability is moderately slow throughout the profile. These soils have a seasonal high water table.

The Glenville soils are mainly in pasture or trees. Small areas are in cultivated crops.

KLINESVILLE SERIES

In the Klinesville series are well-drained, gently sloping to moderately steep soils that are shallow over red shale. These soils are located throughout the Township.

In a cultivated soil typical of the Klinesville series, the plow layer is dark reddish-brown, strongly acid shaly silt loam about 8 inches thick. The subsoil is reddish-brown, strongly acid very shaly silt loam about 7 inches thick. Below the subsoil is a mass of dark-red fragments of shale and a small amount of soil material. The fragments of shale are strongly acid.

The available moisture capacity is low. Permeability is moderately rapid throughout the profile.

Some areas of Klinesville soils can be used for crops. These soils are droughty, and they have a shallow rooting depth.

LEHIGH SERIES

The Lehigh series consists of soils that are deep, moderately well drained, and nearly level to sloping. These soils have formed in material that weathered from metamorphosed red sandstone, conglomerate, and shale. They occur near diabase intrusions, mainly in the southern portion of the Township.

In a cultivated soil typical of the Lehigh series, the plow layer is dark grayish-brown silt loam that contains a few angular fragments of stone and is about 8 inches thick. The upper part of the subsoil, between a depth of 8 and about 14 inches, is very dark grayish-brown friable silt loam that has granular structure. Between a depth of 14 and 50 inches, the subsoil is very dark grayish-brown to dark-brown, mottled channery silt loam to channery clay loam that has subangular blocky structure. The substratum is at a depth of 50 inches. About 95 percent of the substratum consists of fragments of dark shale.

The available moisture capacity is medium to high, natural fertility is low, and permeability is moderate to slow. The water table is high in some seasons.

Lehigh soils are only fairly well suited to cultivated crops. Most of the acreage is idle or in trees, but some areas are used for crops or pasture.

MELVIN SERIES

The Melvin series consists of soils that are poorly drained and nearly level. These soils have formed in alluvium derived from sediment originating in uplands underlain by limestone and calcareous shale. They are occur along streams that drain the limestone valleys in the Township.

In a cultivated soil typical of the Melvin series, the surface layer is very dark grayish-brown and dark grayish-brown, mottled silt loam about 11 inches thick. The upper part of the subsoil, extending to a depth of about 22 inches, is grayish-brown, mottled heavy silt loam to silty clay loam. Below a depth of about 22 inches, this material grades to grayish-brown or yellowish-brown, mottled silty clay loam. The substratum is at a depth of about 42 inches. It generally consists of yellowish-brown mottled silty clay.

Little or no runoff takes place. Therefore, these soils are not subject to erosion or are only slightly subject to erosion, except where stream gouging occurs during floods. The available moisture capacity is high, and permeability is moderately slow throughout the profile. Because the water table is high, these soils are wet most of the year. Also, they are subject to frequent flooding, and water is ponded in low spots and in closed depressions for several days after flooding occurs.

Most of the acreage is in pasture or trees. A few small areas are cultivated.

MURRILL SERIES

Soils of the Murrill series are deep and well drained. They formed in colluvium derived from granitic gneiss, quartzite, and sandstone. The colluvium overlies buried soils that formed in material weathered from limestone. Where the layer of colluvium is thin, sinkholes are common. The Murrill soils are primarily located in the northern section of the Township.

In a cultivated soil typical of the Murrill series, the plow layer is very dark brown gravelly loam about 8 inches thick. The upper part of the subsoil, extending to a depth of about 19 inches, is dark-brown to dark yellowish-brown heavy silt loam to silty clay loam that has blocky or subangular blocky structure. The lower part extending to a depth of 60 inches, is yellowish-brown to dark-brown or strong-brown silty clay loam to silt loam. The substratum is at a depth of about 60 inches.

NESHAMINY SERIES

The Neshaminy series consists of deep, well-drained, gently sloping to steep soils formed in material that weathered from diabase rocks. These soils are located throughout the Township.

In a cultivated soil typical of the Neshaminy series, the plow layer is reddish-brown silt loam about 8 inches thick. The subsoil is reddish silt loam to silty clay loam. it has subangular blocky and blocky structure and is medium acid in the upper part and strongly acid in the lower part. The lower part of the subsoil contains many fragments of stones.

These soils have high available moisture capacity because of their moderately fine textured subsoil. Natural fertility is high. Permeability throughout the profile is moderate.

Large areas of these soils are in trees or pasture. Smaller areas are idle or are used for crops.

PENN SERIES

Soils that are moderately deep, well drained, and gently sloping to moderately steep make up the Penn series. These soils have formed in material that weathered from red shale and sandstone. They are located throughout the Township.

In a cultivated soil typical of the Penn series, the plow layer is dark brown silt loam about 8 inches thick. The subsoil, between depths of 8 and about 24 inches is dark reddish-brown to dusky-red shaly silt loam that has subangular blocky or blocky structure. The substratum, between depths of about 24 and about 28 inches, is dusky-red very shaly loam. The subsoil contains many coarse fragments, and about 80 percent of the substratum is coarse fragments.

The Penn soils are low in natural fertility, moderate to low in available moisture capacity and moderately rapid in permeability. The steeper slopes are susceptible to erosion.

Penn soils are easily tilled. They are generally suited to the crops commonly grown in the county, except where they are too steep or eroded.

READINGTON SERIES

Deep, moderately well drained, nearly level or gently sloping soils are in the Readington series. These soils have formed on uplands under a forest cover of mixed oaks. The material in which they formed was weathered from red sandstone, conglomerate, and shale. These soils are located on upland flats, in drainageways, and in seepy areas in the Township.

In a cultivated soil typical of the Readington series, the plow layer is dark reddish-brown silt loam about 8 inches thick. The upper part of the subsoil, to a depth of 21 inches, is yellowish-red silt loam to silty clay loam that contains a few coarse fragments and has blocky structure. A well-defined fragipan of yellowish-red, mottled clay loam to dark reddish-brown loam is between depths of 21 and about 44 inches. The substratum, below a depth of 44 inches, is dark reddish-brown and pinkish-gray, massive shaly loam.

The available moisture capacity is moderate. The fragipan is brittle, dense, and slowly permeable to air and water, and the rest of the profile is also slowly permeable. In some seasons the water table is high.

Cultivated crops are grown in some places, but many areas are in pasture or trees, and some are idle. In general, these soils are suitable for crops that can tolerate excess moisture.

REAVILLE SERIES

The Reaville series consists of soils that are moderately deep, moderately well drained or somewhat poorly drained, and nearly level to gently sloping. These soils have formed in material that weathered from red shale, siltstone, and fine-grained sandstone. They are located on uplands in the Township.

In a cultivated soil typical of the Reaville series, the plow layer is dark reddish-gray shaly silt loam about 7 inch thick. The subsoil is reddish-gray shaly silt loam to very shaly silty clay loam that is mottled in the lower part and is about 19 inches thick. The subsoil has subangular blocky or blocky structure and contains coarse fragments that re more numerous in its lower than in its upper part. Soft, red shale that becomes firmer with increasing depth is below a depth of 26 inches.

The available moisture capacity is low to very low, and permeability is slow. The water table is high early in spring. It falls rapidly late in spring, and the soul is droughty late in summer. These characteristics interfere with farming.

Most of the acreage is in crops, though large areas are idle or in pasture. Smaller areas are in trees.

ROWLAND SERIES

In the Rowland series are soils that are deep, moderately well drained, and nearly level. These soils have formed in alluvial sediment washed from uplands underlain by reddish conglomerate, sandstone and shale. They are located on flood plains and other streams in the Township.

In a cultivated soil typical of the Rowland series, the plow layer is dark reddish-brown silt loam about 10 inches thick. The upper part of the subsoil, between depths of 10 and 26 inches, is reddish-brown, friable loam that has subangular blocky structure and is medium acid. The lower part, between a depth of 26 and 42 inches is dark-gray, mottled loam that has subangular blocky structure. The substratum is below a depth of 42 inches. About 90 percent of the substratum is gravel, but some coarse sand is mixed with the gravel.

These soils are only slightly susceptible to erosion or are not susceptible. Flooding is a hazard in spring or in summer after intense thunderstorms. Water accumulates on the surface or is ponded for short periods because the soils are in slightly concave areas. The floodwaters deposit fresh sediment in some places and remove soil material in others. The available moisture capacity is moderate to high and permeability throughout the profile is moderate to slow. The water table is high in some seasons.

The seasonal high water table limits the kinds of crops that can be grown on the Rowland soils. Only a small acreage is cultivated. The rest is in pasture or trees.

3.22 SOIL SURVEY OF DOUGLASS TOWNSHIP RELATIVE TO ON-LOT SEWAGE DISPOSAL

Soil features that are related to use of soils for community developments are their on-lot septic systems are: depth to bedrock, degree of slope, permeability, incidence of flooding, depth to seasonal high water table, texture of the soils and stoniness. Additionally, where soils are underlain by limestone, the groundwater can become contaminated by seepage through crevices in the rocks, or through solution channels. In FIGURE 5, ratings of slight, moderate, and severe have been used to describe the degree of limitation for development. A rating of moderate indicates soil limitations that may require special practices to overcome (elevated sandmound). A rating of severe indicates soil limitations that generally are difficult to overcome. Most of the Township is rated as severe.

The main limiting features of the soils for drainage fields for septic tanks are restricted permeability, steepness of slope, shallowness over bedrock, and the presence of a seasonal high water table. Soils that have a rating of slight generally have few or no limitations that affect their use as disposal fields for sewage effluent. Those that have a rating of moderate may be borderline and should be investigated carefully at the exact site where a disposal field is proposed. For some soils that have a rating of severe, especially careful investigation is needed at the site of the proposed disposal field to see if it can be expected to function properly. Limitation for disposal fields that are used only a short time each year for summer camps or similar uses may be less severe than indicated in FIGURE 5.

TABLE G indicates all the soil series that are found in Douglass Township and the PA DER classification by soil group. Each group is characterized by conditions that indicate suitability for on-lot sewage disposal. FIGURES 4, 5 and 6 can be used to locate a soil series for a specific area to locate in TABLE G.

To assist in understanding the terminology used relative to soil suitability, the following definitions are provided from the PA DER SEO manual (DeBenedictis 1983).

Soil Suitability for Subsurface Disposal of Septic Tank Effluent

1. Suitable: deep, well drained, permeable soil with good filtration. 13% of Pa. has such soil.

2. Suitable but with Hazard of Groundwater Pollution: deep well-drained, permeable soils over gravel or limestone with fissures. 6% of Pa. has such soil.

3. Marginal: moderately deep or moderately sloping soils. 39% of Pa. has such soil.

4. Unsuitable: steep, shallow, not well-drained or subject to flooding. 42% of Pa. has such soil.

TABLE G
SOIL SERIES IN DOUGLASS TOWNSHIP RELATIVE TO SUITABILITY FOR ON-LOT SEWAGE DISPOSAL

Soil Series	Map Symbol	DER Soil Group	DER Description
Atkins	Au	13	Soil series that occur on flood plains and have a high flooding hazard. Not suitable for subsurface disposal system.
Baile	Ba Bd	15	Somewhat poorly, poorly, and very poorly drained soils on upland sites. These soils have high water tables and are unsuitable for subsurface disposal systems.
Bowmansville	Bo	13	Soil series that occur on floodplains and have a high flooding hazard. Not suitable for subsurface disposal systems.

Brecknock	BsB BsC2 BsD3 BtB BtD BtF	5	Moderately deep, well drained soils with probably percolation rates of 1 inch of water in 15-30 minutes. (Rates are quite variable in short distances due to variations of material immediately under the soil).
Chester	ChB2 ChC2 ChC3 ChD2 ChE3 CnB CnD CnF	4	Deep, well drained soils with probable percolation rates of 1 inch of water in 15-30 minutes.
Croton	CrA CrB2	15	Somewhat poorly, poorly and very poorly drained soils on upland sites. These soils have high water tables and are unsuitable for subsurface disposal systems.
Duffield	DfA DfB2 DfC2 DfD2	11	Soils series that are underlain by limestone and have a high hazard of ground water pollution through solution channels
Edgemont	EcB2 EcC2 EcD2	6	Deep well drained soils with probable percolation rates of 1 inch of water in 30-45 minutes.
Glenville	GlA GlB2	14	Moderately well drained soils on upland sites. These soils have seasonal high water tables which is the major limitation on use for subsurface disposal system.
Klinesville	KlB2 KlC2 KlD2 KlF2	12	Well drained soils that are shallow or very shallow to bedrock.

Lehigh	LhA LhB2 LhC3	14	Moderately well drained soils on upland sites. These soils have seasonal high water tables which is the major limitation on use for subsurface disposal system.
Melvin	Ml	13	Soil series that occur on floodplains and have a high flooding hazard. Not suitable for subsurface disposal system.
Murrill	MrA3 MuA MuB2 MuC2 MrB MrC	11	Soils series that are underlain by limestone and have a high hazard of groundwater pollution through solution channels
Neshaminy	NaC3 NaD3 NeB2 NeC2 NsD NsF	8	Deep, well drained soils with probably percolation rates of 1 inch of water in 45-60 minutes.
Penn	PeB2 PeC2 PeD2	7	Moderately deep, well drained soils with probable percolation rates of 1 inch of water in 30-45 minutes. (Rates are quite variable in short distances due to variations of material immediately under the soil).
(Very shallow variant)		12	Well drained soils that are shallow or very shallow to bedrock.
Readington	ReA RlB2	14	Moderately well drained soils on upland sites. these soils have seasonal high water tables which is the major limitation on use for subsurface disposal system.

Reaville	R1A2 R1B2	15	Somewhat poorly, poorly, and very poorly drained soils on upland sites. These soils have high water tables and are unsuitable for subsurface disposal systems.
Rowland	Ro	13	Soil series that occur on floodplains and have a high flooding hazard. Not suitable for subsurface disposal systems.

3.23 EFFECTS OF ON-LOT SEPTIC SYSTEMS OF GROUNDWATER QUALITY AND AVAILABILITY

On-lot septic systems (OLS) are in use throughout rural areas of the world as an effective way for treating everyday household sewage. A properly designed and installed septic system in an acceptable geologic environment can be very effective in filtering out and removing fecal coliform and particulate contaminants from waste water before it reaches the groundwater system. The advantage of OLS is that they recycle approximately 85% of the removed groundwater, returning it to the water table in the area from which it was withdrawn.

Problems can be caused by OLS when they are used beyond their serviceable lifetime, spaced too closely together, or improperly installed. OLS remove contaminates by utilizing the filtration, adsorption and processing abilities of the soil in which they are installed. Particulate matter is filtered out by the fine-grained soil, and other contaminants adhere to the surface of clay particles through adsorption. The abilities of various soils to filter and adsorb are different, and have a finite time period. When the use of an OLS exceeds this time period, the soil can become "worn-out" and lose its contaminant removing abilities. The soil becomes clogged and wastewater can back up onto the ground surface and be carried into steams by storm runoff. Contaminated wastewater can also flow through the overstressed soil and into the groundwater without being purified. The normal effective lifetime of an OLS is 5 to 20 years, and depends very heavily on the soils, geologic properties and maintenance, as well as use of each individual system.

One of the contaminants present in household sewage that cannot be filtered out by the soil is ammonia nitrate (NO3-). Nitrate poses a health hazard when present in drinking water in high concentrations. It is, therefore, limited by the Department of Environmental Resources to concentrations below 10 mg/l in public water supplies. Since nitrate concentrations in septic system effluent is approximately 40 to 50 mg/l (Canter & Knox, 1984) and cannot be filtered by soil, it must be diluted by groundwater to acceptable limits. Plumes of water with high concentrations of nitrate may extend hundreds of feet in the downgradient direction of a heavily used OLS. In some areas where OLS are spaced too closely, the nitrate plumes may intersect, increasing the concentrations of nitrate. Nitrate concentrations may not be sufficiently diluted before reaching a water supply well. Studies done by Cain & Beatty (1973) suggest a minimum parcel size of 1 acre per OLS and a minimum of 2-3 acres where an OLS and water supply well are located on the same parcel. However, this is highly dependent on individual site characteristics. Although individual sites may vary in infiltration and adsorption ability, it is questionable that smaller parcels can consistently act as a source of potable water and disposal area for wastewater over a long period of time, especially in crowded subdivision (Cain and Beatty, 1973).

Organic solvents, such as trichloroethylene (TCE) are sometimes used to clean out septic tanks. This can allow the solvents to enter the ground and contaminated groundwater. It is quite probable that some of the TCE problems existing today have been the result of this practice.

3.24 PRIME AGRICULTURAL SOILS

The capability classification is a grouping of soils to show, in a general way, their suitability for most kinds of farming. It is a practical classification based on limitations of the soils, the risk of damage when they are used, and the way they respond to treatment. Class I and II soils are generally areas of prime agricultural soils. FIGURE 6 provides a prime agricultural analysis of the Planning Area. This analysis provides a scale for the suitability for agricultural uses. FIGURE 6 should be utilized by the Township to prevent the encroachment of potential sanitary sewage lines into areas that are most suitable for agricultural uses.

3.30 GEOLOGIC ANALYSIS

The geologic characteristics of Douglass Township can be predominantly categorized as red shale and limestone composites. These composites include Triassic red shales, limestones, and sandstones. FIGURE 7 illustrates the geologic formations that are present in the Township.

The oldest geologic formations occur in the northwestern portion of the Township. The Precambrian Gneisses are the oldest formations found in Douglass Township and are older than 600 million years. The gneisses is very resistant to erosion and therefore tends to form hills and ridges. The two types of Gneiss groups that are found in the Township are:

GRANITIC GNEISS
Granitic Gneiss is buff to pink in color. It weathers to large slabs and spheroidal boulders. Grain size is usually around 1 mm. Foliation is poorly defined in massive rocks but prominent inmigmatites. The principle minerals are microcline, quartz, horn blend and biotite.

GRAPHITIC GNEISS
Graphitic Gneiss is light to medium grey in color. Its principle minerals are quartz, orthoclase, horn blend, biotite and graphite.

Both types of gneiss are very similar in terms of their hydrogeology. Gneiss is a very compact rock without much in the way of interconnecting pore spaces. Therefore, all storage and flow of groundwater within Gneiss takes place in joints and fractures. These fractures are often widely spaced and covered with sand. This makes it difficult to locate and obtain high well yields. Its low permeability imposes severe restrictions or use as a drainage field. Gneiss often contains a weathered zone that can extend from 10 to 100 feet below the surface. This weathered zone is shown as saprolite, yields are generally higher than of unweathered gneiss. However, the aerial extent of saprolite is not usually sufficient for long term usage.

The Cambrian Formations represent the next oldest geologic formations in the Township. They also occupy part of the northwestern portion of Douglass Township.

HARDYSTON FORMATION

The Hardyston Formation non-conformably overlies Pre-Cambrian Gneiss. The contact between these two formations is not exposed but the basal conglomeratic member commonly forms ridges and can usually be traced without difficulty. It consists of thick-bedded brown to blue-grey metamorphosed quartz sandstone called quartzite. The upper portion of this formation is relatively thin-bedded and decomposes into a silaceous clay. The lower portion of the formation is composed of rounded pebbles of quartz called conglomeratic. This formation, located in the northwestern portion of the Township, is very resistant to erosion and forms high ridges and hills including the highest elevation in the Township (820' ASL). Silicon cementation and metamorphism have closed almost all intergranular pore spaces. The Hardyston Formation has hydraulic properties much like Precambrian Gneiss.

LEITHVILLE FORMATION

The Middle Cambrian Leithville Formation is also located in the northwestern portion of the Township. This formation consists mainly of grey crystalline dolomite that is shaly in the upper part and has considerable amounts of chert in the lower part.

The balance of the Township is comprised of the younger Triassic shale, limestone, Argillite and Diabase.

LACKATONG FORMATION

The Lackatong Formation consists of interbedded grey to black argillite and occasional zones of thinly bedded shale with calcite, dolomite, and pipite mineral deposits. The argillite occurs in beds about one foot thick. It is interfingered with red shale of the Brunswick Formation which is conformably in contact with it. It occurs at the surface as a series of narrow line or bands trending East West in the Township.

The Lackatong Formation cannot be considered a reliable source of large amounts of water. The pore spaces are small and most groundwater flow and storage occurs in a series of interconnected joints. Fractures are spaced widely apart to store and transmit water effectively.

BRUNSWICK FORMATION SHALE

The Brunswick Formation is comprised primarily of red argillaceous shale, irregularly bedded in places with red sandstone and siltstone. Some beds of grey harder shales are formed in the lower part of the Formation. In general, the Brunswick Formation lithofacies conformably overlie the Lackatone lithofacies.

Since the shale of the Lackatong Formation is not as highly fractures as that of the Brunswick Formation, and relatively impermeable, it causes deeper units of Brunswick shale to behave as confined (artesian) aquifers, and it may also act as a permeable barrier. This formation occurs throughout the lowland areas of Douglass Township.

The Brunswick Formation is an area of highly fractured shale. This can greatly improve the water storage capability of the rock. Water is stored under the water table and in confined aquifers in the weathered zone of the rock formation which may extend to 600' in depth.

The Formation is highly permeable due to high concentrations of horizontal and vertical joint plains oriented at intersecting angles, providing channels through which groundwater can flow.

DIABASE

Triassic Diabase is an igneous rock very similar to granite. It was injected, while in its molten state, into the Brunswick Formation forming dikes and sills. Dikes are wall-like igneous intrusions that are inserted perpendicular to the existing rock layers. In general, the larger bodies of diabase are sills and the smaller bodies are dikes.

Diabase is known for its poor water bearing capabilities. It yields barely enough water for residential use. Diabase resides in the northeastern part of the Township forming intrusions into the neighboring rock formation, and in the southcentral portion of the Township where it is surrounded by the more permeable Brunswick Formation.

LIMESTONE FANGLOMMERATES

Fanglommerates occupy a small portion of the north and central part of the Township. These were deposited as alluvial forms by streams and are some of the youngest beds within the Brunswick Formation. They are mostly limestone pebbles in a reddish-brown buff. Quartzite may also be present in the matrix. They are interbedded with the Brunswick and siltstone. The beds of limestone breccia grade along strike into reddish brown sandstone and then shale.

3.31 CARBONATE BEDROCK

The Department of Environmental Resources has determined that sewage disposal in soils of this parent material creates a high hazard of groundwater pollution through solution channels. These channels frequently cover long distances and are formed when the interaction of air and water forms a weak carbonic acid which with the help of homic acid dissolves the carbonate rock in solution. These soils are generally DER soils group 11. Limestone is the most common parent material forming these soils which are illustrated in FIGURE 4.

3.40 TOPOGRAPHICAL AND DRAINAGE ANALYSIS

3.41 TOPOGRAPHICAL ANALYSIS

The topography of Douglass Township varies from a hilly terrain in the north and central part of the Township to a more level terrain along the peripheries. The elevations within the Township range between 140 to 820 feet above mean sea level. The highest elevations were found in the northwestern part of the Township near Union Mission Camp and the lowest elevations were found in the south at the Schuylkill River.

FIGURE 8 depicts the generalized topography of Douglass Township by categorizing the degree of slope. Slope is defined as the change in vertical distance per unit area of horizontal distance. Based on this generalized topographic analysis, steep slops can be found in most areas of the Township, especially in the north and central portions.

The topography of a particular area can prescribe the sites ability to achieve adequate on-site sewage disposal. Steep slopes generally indicate that the bedrock is of shallow depth. This can significantly hinder the process of excavating for sewage disposal systems. Steep slopes underlain at shallow depths by impervious material can lead to seepage of sewage effluent to the surface. Problems with erosion may also develop on steep slopes. Standard beds may be used as an absorption area up to and including 8 percent in slope. Trenches are acceptable up to 25 percent in slope. On the basis of this topographic analysis most of the Township is suitable for bed designs and trenches.

3.42 DRAINAGE ANALYSIS

Douglass Township lies in the Schuylkill River Basin. The Pine Forge area of the Township is drained by Manatawny Creek and its tributaries. The Little Oley area is drained by Ironstone Creek, and the extreme southernmost portion of Douglass Township is drained by the Schuylkill River. These major drainage basins are identified and geographically illustrated on FIGURE 9. Due to hilly terrain drainage can only occur in short reaches.

The major and minor drainage basins, delineated by ridge lines, are logical areas for planning and designing water control facilities. Water quality and quantity are related to both land and water management. Most municipalities do not comprehend the environmental value of their river system until they become polluted, depleted and/or poses a threat from flooding. It is essential to look by and the streams and other water courses to identify the drainage basins which are drained by these identified waterways.

3.50 FLOODWAY CONTROL ANALYSIS

3.51 100 YEAR FLOODPLAIN

Floodplains provide ecological, aesthetic and recreational benefits, while imposing constraints to development. The primary function of a floodplain is to provide an area that will accommodate the floodwaters of a given storm. The National Flood Insurance Program has defined the floodplain by the 100 year or base flood which has a 1% change of being equaled or exceeded in a given year. The Douglass Township Board of Supervisors has adopted regulations for Floodplain Management established by the Federal Emergency Management Agency for the following purposes:

1. To promote the general health, welfare, and safety of the community;
2. To encourage the utilization of appropriate construction practices in order to prevent or minimize flood damage in the future;
3. To minimize danger to public health by protecting water supply and natural drainage;
4. to reduce financial burdens imposed on the community, its governmental units, and its residents, by preventing excessive development in areas subject to flooding.
5. To comply with federal and state floodplain management requirements.

The minimum requirements established under the National Flood Insurance Program prohibits new construction or substantial improvements to existing structures, fill or encroachments within the 100-year flood plain. FIGURE 10 illustrates the 100-year flood plain, as established by the Federal Emergency Management Agency on the Douglass Township Flood Insurance Rate Map.

Sewage Disposal Systems should not be located in areas subject to flooding because of possible contamination of the stream and the generally high water tables occurring near streams. This would not allow for enough distance between the sewage facility and the surface water for the sewage material to be renovated prior to reaching the stream. During time of flooding sewage effluent may contaminated surface water, and the effluency of the filter fields can be dramatically decreased.

3.52 WETLANDS

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

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

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

FIGURE 10 illustrates the locations of "hydric soils" that are present within the Township, and are not overlapped by the 100 year flood boundary. These locations may indicate the presence of a wetlands area. The final determination of whether an area is a wetland and whether the activity requires a permit must be made by the US Army Corps of Engineers. Wetland areas are not suitable for on-lot sewage disposal. When the groundwater level is high and near the surface, the uppermost soil horizons will become saturated with sewage effluents. This would result in a potential health hazard for the public.

3.53 HIGH WATER TABLE SOILS

The High Water Table Overlay District shall include all areas subject to inundation of soils which are characteristic and categorized as being Alluvial and/or as High Water Table Soils by the Soil Survey of Berks County, Pennsylvania prepared by the United States Department of Agriculture (Soil Conservation Service) in cooperation with the Pennsylvania State University and Pennsylvania Department of Agriculture.

Alluvial Soils are defined as soils which have been deposited in the past by stream or flooding. The presence of these soils is a reliable indication that heavy runoff conditions will probably create flooding in the future.

High Water Table Soils are defined as surface soils which are within 3 feet of the seasonable high water table as described and identified by the United States Department of Agriculture in the Soil Survey of Berks County. Most of the High Water Table Soils are located in the low lying areas adjacent to the streams and drainage channels.

FIGURE 10 illustrates the locations of the Alluvial and/or High Water Table Soils that are present within the Township that are not overlapped by the 100-year flood boundary and/or hydric soils. These areas are not suitable for on-lot sewage disposal. When the groundwater level is high and near the surface, the uppermost soil horizons will become saturated with sewage effluents. This would result in a potential health hazard for the public. The purpose of establishing provisions for areas which may encounter a high water table is to promote and protect the general health, welfare and safety of the community; secure environmentally sensitive lands; encourage the utilization of appropriate construction practices; and to minimize hazards to public health.

3.54 AREAS OF PAST FLOODING

FIGURE 10 also illustrates the locations within the Township that have experienced flooding in the past that are not overlapped by the 100-year flood boundary and/or soils that are considered hydric, alluvial and/or having a high water table. Due to potential flooding conditions these areas are not suitable for on-lot sewage disposal.

3.60 HYDROGEOLOGICAL ANALYSIS OF GROUNDWATER

The Pennsylvania Department of Environmental Resources requires, through the guidelines of Act 537 that the Planning Area conduct a preliminary hydrogeological analysis of the groundwater. The preliminary hydrogeological analysis shall include the sampling of drinking water wells (properly constructed) and a laboratory analysis to determine the following:

Nitrate levels
Total Coliform
Fecal Coliform
Fecal Streptococcus

3.61 ANALYSIS PROCEDURE

After telephone conversations with PA DER-Bureau of Water Quality Management, it was determined that 45 groundwater samples, geographically spaced, would constitute an adequate sampling aggregate for the Douglass Township Planning Area. After consulting with the Douglass Township Board of Supervisors, it was determined that the Township would solicit volunteers within its boarders by newspaper advertisement. The 45 selected volunteers were chosen from a field of 60 based on their geographic location and present well water conditions. FIGURE 11 illustrates the locations of the 45 selected volunteers.

The domestic groundwater sampling was scheduled between 7:00 a.m. and 4:00 p.m. on Saturday, November 4, 1989. The samples were collected by trained representatives of Motley Engineering Co., Inc. The most important collection procedure was insuring that the sample was obtained from an untreated source. The groundwater samples were submitted to Hydro-Analysis Associates, Inc. (PA DER Lab. 06-317) of Kutztown, Pa. for analysis and testing. The results of which are contained in TABLE H.

3.62 ANALYSIS OF RESULTS

The United States Environmental Protection Agency (EPA) has established limits for drinking water standards. The EPA recommended limit for nitrates is 10 mg/l and 1 colony per 100 ml for total coliform. There are no recommended limits for fecal coliform and fecal streptococcus, but complete absence of this bacteria is desirable.

TABLE H
HYDROGEOLOGICAL ANALYSIS OF GROUNDWATER

MAP NO.	NITRATE NITROGEN (MG/L)	TOTAL COLIFORM (COL/100ml)	FECAL COLIFORM (COL/100ml)	FECAL STREP (COL/100ml)
1	0.68	0	0	0
2	1.5	8	3	0
3	2.1	0	0	0
4	0.62	0	0	0
5	0.31	0	0	1
6	0.86	0	0	0
7	2.0	82	2	82
8	4.8	0	0	1
9	2.1	0	0	17
10	5.1	0	0	0
11	8.4	3	0	0
12	1.5	0	0	0
13	2.1	1	0	0
14	2.4	0	0	0
15	5.3	0	0	0
16	3.8	0	0	0
17	3.7	0	0	0
18	4.7	18	0	2
19	2.7	0	0	0
20	0.8	97	0	6
21	2.9	1	0	0
22	2.6	1	0	0
23	0.76	0	0	0
24	3.9	81	8	1
25	8.4	0	0	0
26	5.8	0	0	0
27	5.2	32	3	11
28	5.4	0	0	0
29	3.9	0	0	0
30	4.1	0	0	0
31	4.0	6	3	0
32	3.5	0	0	0
33	3.6	0	0	0
34	4.9	0	0	0
35	4.6	1	0	0
36	2.1	31	0	0
37	0.42	0	0	0
38	6.0	0	0	0
39	6.2	21	0	0
40	0.70	1	0	0
41	0.42	0	0	22
42	4.0	43	15	32
43	0.5	0	0	0
44	0.78	0	0	0
45	4.0	2	0	0

Sources: Motley Engineering Co., Inc.
Hydro-Analysis Assoc., Inc.

Nitrate concentration is a measure of the chemical pollution present in a water sample. Principle sources of nitrates are fertilizers, barnyard wastes, decaying organic matter and wastewater from on-site sewage disposal systems. Nitrate levels with concentrations exceeding 10 mg/l in drinking water may be hazardous to children under 2 years of age and fetation of pregnant women. None of the samples tested have exceeded the EPA recommended limit of 10 mg/l of nitrates. The treatment methods and/or options for reducing nitrate levels include a reverse-osmosis system, an ion-exchange system, or purchasing bottled water for human consumption.

Total coliform, fecal coliform and fecal streptococcus concentrations are a measure of the bacteriological contamination in a water supply. Most bacteria in water are derived from contact with air, soil, living or decaying plants or animals and fecal excrement. Many diseases such as typhoid fever, dysentery and diarrhea are associated with bacteriological contamination. Sample numbers 2, 7, 11, 18, 20, 24, 27, 31, 36, 39, 42 and 45 have exceeded the EPA recommended limit of 1 colony/100 ml of total coliform. Sample numbers 2, 7, 24, 27, 31, and 42 have some indication of fecal coliform present. Sample numbers 7, 9, 20, 27, 41 and 42 have indicated a significant measure (over 5 colonies/100 ml) of fecal streptococcus present in their water sample. The treatment methods and/or option for reducing bacteriological contamination of groundwater include chemical treatment (chlorine, iodine, potassium permanganate), a quartz-mercury vapor lamp (ultraviolet light), boiling water or purchasing bottled water for human consumption.

APPENDIX A of this Plan includes the specifications for each well sampled for this Hydrogeological Analysis. This data includes background information concerning the source of the supply, the type of well/system, the depth of the well/system, treatment methods (if any were encountered), and the age of the well/system. It should be noted that this data was obtained during the sampling of the domestic wells. In some cases the age and depth of the well were estimated.

Ordinance No. 1990-7 outlines all general standards and specifications for on-lot water supply in the Township. This includes all required studies, groundwater testing procedures and well construction standards. A copy of this Ordinance has been included within APPENDIX A of this Act 537 Plan Update.

3.63 SUPPLEMENTARY REPORTS

GROUNDWATER RESOURCES STUDY

This study was conducted by International Exploration Inc. (INTEX) in February of 1988. The Berks-Montgomery Council of Governments (COG) retained INTEX to conduct a groundwater resources study of the Townships of Earl, Colebrookdale, Washington, Douglass (Berks), Douglass (Montgomery) and the Boroughs of Bally and Bechtelsville. The purpose of this investigation was to provide the municipalities within the COG Study Area with information on the quantity and quality of groundwater within the COG regional area; to discuss the physical and environmental impacts of development on groundwater availability; and to provide recommendations on conventional and proper development and conservation of groundwater resources.

In order to determine the overall quality of the groundwater within the study area, water samples from 49 representative wells were collected and analyzed. APPENDIX B of this Plan provides the laboratory results, summary, conclusion, and recommendations of this study prepared by INTEX.

PA DER SURFACE WATER INVESTIGATION

In January of 1992, the PA DER conducted a surface water investigation in the Douglassville area of the Township. The purpose of this investigation was to conduct a bacteriological analysis of the surface water in this particular area of the Township. It should be noted that the parameters measured were total coliforms and fecal coliforms.

Based on a review of the test results, it appears that there is some surface water contamination in this particular area of the Township. The results indicate a high level of total coliforms and fecal coliforms in a stagnant drainage ditch on the south side of the Ben Franklin Highway (U.S. 422). This wastewater treatment problem should be further reviewed under Sections 4.00, 5.00 and 6.00 of this Plan. A copy of the results have been included in APPENDIX C of this Plan.

3.64 FUTURE PLANNING CONSIDERATIONS

The Township should continue to monitor the groundwater within the Planning Area. Ordinance 1990-7 outlines all required studies and groundwater testing procedures for proposed subdivision and land development activity. A copy of this adopted Ordinance has been included within APPENDIX A of this Plan. Sections 6.32 and 8.132 of this Plan outline additional planning alternatives the Township should consider for future development activity within the Planning Area. The Township should consider these measures in future amendments to the Douglass Township Subdivision Ordinance. In addition, the Township should evaluate the overall effectiveness of Ordinance 1990-7 on an annual basis. If the Township determines that the required studies, groundwater testing procedures and well construction standards are inadequate, the Ordinance should be amended to meet the needs of the Township.

4.00 EVALUATION OF EXISTING WASTEWATER TREATMENT FACILITIES

4.10 WASTEWATER COLLECTION AND CONVEYANCE SYSTEMS

4.11 PUBLIC OR MUNICIPAL SYSTEMS

Douglass Township has one (1) residential single family detached dwelling unit connected into a public or municipal wastewater treatment system. This unit is located along Dori Lane and is connected into the West Pottsgrove Collection System. The wastewater is treated at the Pottstown Wastewater Treatment Plant.

4.12 PACKAGE TREATMENT PLANTS

Douglass Township has one (1) "package treatment plant" within its municipal borders. This system provides wastewater treatment to the Pine Forge Academy. The system services approximately 400 students and faculty.

4.20 ON-LOT SEWAGE DISPOSAL TECHNOLOGY

4.21 INDIVIDUAL ON-LOT SEWAGE DISPOSAL SYSTEMS

The majority of sewage disposal systems within the Planning Area are individual on-site sewage disposal systems. These systems vary technologically, from cesspools to systems designed under Chapter 73 of PA DER regulations. An estimated 1,178 households presently rely on on-lot sewage disposal technology. Based on an estimated wastewater flow of 290 gallons per day per household, approximately 341,620 gallons of wastewater is generated per day within the Planning Area.

4.22 COMMUNITY ON-LOT DISPOSAL SYSTEMS

There are several community on-lot sewage disposal systems located within the Planning Area. Some of the more prominent systems include the Pine Forge Elementary School located on Pine Forge Road, the Y.M.C.A. Camp located on Hill School Road, Boyertown Packaging located on Farmington Avenue, and the three ~~(3) Peterson~~ Apartment Complexes located on Douglass Drive. In addition to these systems, there are a few small flow commercial and residential community on-lot sewage systems located within the Township.

4.23 RETAINING TANK SEWAGE DISPOSAL SYSTEMS

There are several commercial and residential land uses within the Planning Area that utilize a holding tank(s) for wastewater management. Most of these systems are located in the southern portion of the Township. The Township does have a Holding Tank Ordinance that has been adopted by the Board of Supervisors on August 8, 1990. A copy of this Ordinance has been included within this Plan as APPENDIX D.

4.30 ANALYSIS OF MALFUNCTIONING SYSTEMS

The Douglass Township Sewage Enforcement Officer (SEO) has reported, investigated and/or corrected eight (8) individual on-lot system malfunctions between 1985 and 1990. FIGURE 12 depicts the locations of these reported malfunctions. The malfunctions have occurred due to a combination of improper soils, age of the system, improper design, improper installation and/or improper maintenance. The types of discharge associated with these malfunctions have mostly been surface discharge. All of these identified malfunctions have been properly corrected. There has been no documentation of public health problems and there is no knowledge of illegal sewage disposal systems within the Township.

4.40 ANALYSIS OF MUNICIPAL REGULATIONS

Douglass Township administers all municipal on-lot sewage disposal regulations through the Pennsylvania Department of Environmental Resources (PA DER) through the Township's Sewage Enforcement Officer, Planning Commission, Board of Supervisors and Engineer. All policies concerning review procedures are specified in the Douglass Township Zoning and Subdivision Ordinance. The Township Sewage Enforcement Officer conforms to all regulations specified by PA DER's guidelines specified under Chapters 71, 72 and 73 under the Pennsylvania Sewage Facilities Act.

4.50 EVALUATION OF ON-LOT SEWAGE DISPOSAL SYSTEMS DESIGNED AND INSTALLED PRIOR TO 1967

The Pennsylvania Department of Environmental Resources, through the established guidelines of Act 537, requires the Township to evaluate the on-lot sewage disposal systems that were designed and constructed prior to 1967. The purpose for this evaluation is to determine the functional operation of the on-lot sewage disposal systems that were installed prior to the enactment of the Pennsylvania Sewage Facilities Act.

To proceed with this evaluation program, the existing dwelling units within the Township that utilize on-lot sewage disposal technology and constructed prior to 1967, were plotted on a map. This information was collected by reviewing tax records, building permits, approved subdivision plans, land use maps and aerial photographs. From this information, the existing on-lot sewage disposal systems were evaluated based on their proximity to the 100-Year Flood Plain, hazardous soils, hydric soils, steep slopes, contaminated groundwater, recent on-lot sewage malfunctions and high residential densities. FIGURE 13-A delineates the approximate locations of these on-lot sewage systems as they relate to certain physical development limitations. It should be noted that the municipalities within Berks County do have Tax Maps. Therefore, property boundaries could not be properly delineated on any of the FIGURES within this Plan. Based on this information, the following assumptions can be made regarding the approximate location of on-lot sewage disposal systems that were designed and constructed within the Douglass Township Planning Area prior to 1967:

1. There was an estimated total of 780 on-lot sewage disposal systems within the Township prior to 1967.

2. An estimated 40 of the 780 on-lot sewage disposal systems appear to be located on soils that are considered "hazardous" as defined by the PA DER and delineated by the U.S. Department of Agriculture. This represents 5.1 percent of the overall total.

3. An estimated 37 of the 780 on-lot sewage disposal systems appear to be located within the FEMA 100-Year Flood Plain. This represents 4.7 percent of the overall total.

4. An estimated 45 of the 780 on-lot sewage disposal systems appear to be located on soils that are considered "hydric" as defined by the PA DER and delineated by the U.S. Department of Agriculture. Hydric soils may be indicative of a wetlands area. This represents 5.8 percent of the overall total.

5. An estimated 91 of the 780 EDU's appear to be located on slopes exceeding 25 percent in grade. This represents 11.7 percent of the overall total. Approximately 5 on-lot sewage disposal systems (0.42 percent of the overall total) appear to be located on slopes exceeding 25 percent.

6. An estimated 567 of the 780 on-lot sewage disposal systems appear to be located in an area unobstructed by physical limitations for on-lot sewage development. This represents 72.7 percent of the overall total.

7. An estimated 212 of the 780 on-lot sewage disposal systems appear to be located in an area obstructed by some physical limitations for on-lot sewage development. This represents 27.2 percent of the overall total.

Based on the information provided within this Section of the Plan, it is possible to determine the location of potential "problem areas" for on-lot sewage disposal within the Township. For the purposes of this Act 537 Plan, these areas have been classified as a potential "problem area" based on existing development patterns in relationship to the location of certain physical development constraints. FIGURE 13-B depicts the limits of eleven (11) potential "problem areas" within the Township. It should be noted that these "problem areas" vary in size and by degree of severity. Therefore, it was imperative to focus on the "problem areas" which require the most attention. Based on all pertinent information the Township concluded that the following areas should be examined in further detail:

Village of Little Oley: This unincorporated village is located in the northeast portion of the Township. Many of the on-lot sewage disposal systems within this area are located on hydric soils or on steep slopes.

Village of Greshville: This unincorporated village is located along State Route 562 in the northwest portion of the Township. Many of the on-lot sewage disposal systems within this area are located on hazardous soils.

Village of Pine Forge: This unincorporated village is located in the center of the Township. Many of the on-lot sewage disposal systems within this area are located within the 100-Year Flood Plain, on hydric soils, or on steep slopes.

Village of Douglassville: This unincorporated village is located in the southwestern portion of the Township. Many of the on-lot sewage disposal systems within this area are located within the 100-Year Flood Plain, on hydric soils, or on steep slopes.

To further analyze the functional operation of on-lot sewage disposal systems, the Township initiated and conducted an on-site inspection of systems within the identified "problem areas". For the purposes of this evaluation program, the Township selected five (5) residential dwelling units in each of the identified "problem areas" described above. Therefore, the Township conducted a detailed on-site evaluation of twenty (20) on-lot sewage disposal systems. It should be noted that the system where randomly selected based on its estimated age, proximity and physical site conditions. In addition, the selected sites were evenly disbursed throughout the zone. Based on this detailed on-site evaluation, the following conclusions have been derived by the Township for each of the identified "problem areas":

Village of Little Oley: Of the five (5) sites selected for the on-site inspection/evaluation, it appears that two (2) of the sites revealed some visible indications that the system could be malfunctioning. The other three (3) sites did not reveal any visible indications of a malfunction. It should be noted that the systems adjacent to the potential malfunctions did not reveal any visible indications of a malfunction. In addition, there were no traces of sewage at selected check points along the Ironstone Creek. Therefore, no pattern could be established for this particular "problem area".

Village of Greshville: Of the five (5) sites selected for the on-site inspection/evaluation, it appears that one (1) of the sites revealed some visible indications that the system could be malfunctioning. The other four (4) sites did not reveal any visible indications of a malfunction. It should be noted that the systems adjacent to the potential malfunctions did not reveal any visible indications of a malfunction. In addition, there were no traces of sewage at selected check points along the western tributaries to the Ironstone Creek. Therefore, no pattern could be established for this particular "problem area".

Village of Pine Forge: Of the five (5) sites selected for the on-site inspection/evaluation, it appears that one (1) of the sites revealed some visible indications that the system could be malfunctioning. The other four (4) sites did not reveal any visible indications of a malfunction. It should be noted that the systems adjacent to the potential malfunctions did not reveal any visible indications of a malfunction. In addition, there were no traces of sewage at selected check points along the Manatawny Creek. Therefore, no pattern could be established for this particular "problem area".

Village of Douglassville: Of the five (5) sites selected for the on-site inspection/evaluation, it appears that two (2) of the sites revealed some visible indications that the system could be malfunctioning. The other three (3) sites did not reveal any visible indications of a malfunction. It should be noted that the systems adjacent to the potential malfunctions did not reveal any visible indications of a malfunction. In addition, there were no traces of sewage at selected check points along the northern tributaries to the Schuylkill River. Therefore, no pattern could be established for this particular "problem area".

In conclusion, of the twenty (20) residential dwelling units, it appears that six (6) of the sites revealed some visible indications that the system could be malfunctioning. It is recommended that the Township Sewage Enforcement Officer should investigate these potential malfunctions to determine if it is an actual on-lot sewage malfunction. In addition, the Township should utilize the information and results of this particular evaluation in Section 5.00 (Evaluation of Wastewater Treatment Needs) and Section 6.00 (Planning and Facilities Alternatives). This analysis will enable the Township to comprehensively determine the most advantageous method of wastewater treatment management for the Douglass Township Planning Area during the 20-year planning period.

5.00 EVALUATION OF WASTEWATER TREATMENT NEEDS

This Section of the Plan will evaluate the wastewater treatment needs of Douglass Township. To accomplish this task, the Township has provided and/or conducted an evaluation of individual need areas (Section 5.10), a needs analysis chart (Section 5.20) and a detailed evaluation of on-lot sewage disposal systems in problem areas of the Township (Section 5.30). A summary of the wastewater treatment needs has been included within Section 5.40 of the Plan. The objective of this Section of the Plan is to determine the wastewater treatment needs of Douglass Township. This information will be utilized to determine the most effective alternatives for resolving the wastewater treatment needs within the Township over the 20-year planning period.

5.10 EVALUATION OF INDIVIDUAL NEED AREAS

The purpose of this analytical procedure is to evaluate the wastewater treatment needs of individual Study Areas within the Township. This breakdown will enable the Township to determine which zones within the Planning Area have the highest needs for wastewater treatment and management. This Section will also examine the environmental and economical feasibility of extending wastewater collection lines into the Township. Section 6.00 of this Plan will further analyze all potential alternatives for wastewater collection, conveyance, treatment and management.

To proceed with this analytical approach, the Planning Area was divided into seven (7) Study Areas. The Study Areas were divided by delineating boundaries according to drainage basins, physical barriers and/or municipal borders. The purpose of this delineation is to theoretically analyze each Study Area in terms of its geographic location, size (acres), zoning, land use, growth potential, soils, geology, topography, drainage basins, hydrogeology, and the functional and economical feasibility to expand the wastewater treatment system. FIGURE 14 illustrates the seven (7) delineated Study Areas within the Planning Area.

5.11 STUDY AREA 1

Study Area 1 consists of 1007 acres (1.57 square miles) and is located in the southwestern portion of the Planning Area. A comprehensive description and analysis of this Study Area has been outlined below:

Land Use Analysis

Existing Land Use Composition: Study Area 1 is composed of a mixture of low density residential, commercial, agricultural and woodland uses.
Existing Zoning: This Study Area is zoned for low to medium density residential and commercial development.
Projected Land Use Composition: Study Area 1 should experience a mixture of land development activity in the future. This activity is projected to consist of low to high density residential development, commercial and light industrial development.

Physical Characteristics

Soils Analysis: Study Area 1 consists of a variety of soil groups. These soils groups have moderate to severe limitations for on-lot sewage development and disposal. Approximately 20 percent of this area has productive prime agricultural soils.
Geologic Analysis: The geology of the Study Area can be generalized as having igneous granitic and argillaceous shale characteristics with permeability ranging from poor to high.
Topographic Analysis: The topography of the area is basically a flat to rolling terrain. Although the degree of slope varies within this area, most of the slopes are between the 8 and 25 percent range.
Drainage Analysis: Study Area 1 drains in a southerly direction to the Schuylkill River.
Floodway Control Analysis: The limits of the 100-Year Flood Plain is extended along the Schuylkill River. In addition, there is a significant amount of hydric and high water table soils within this Study Area.
Hydrogeological Analysis: The hydrogeological analysis indicated that the area has experienced high levels of total coliform, fecal coliform and fecal streptococcus.

Wastewater Treatment Analysis

Existing Treatment Methods: Study Area 1 is dependant upon on-lot sewage disposal systems for the treatment of wastewater. It should be noted that there are some residential and commercial land uses along US Route 422 that utilize holding tanks for wastewater management.

Problem Area Analysis: Based upon the data contained within Section 4.50 of this Plan, it was possible to determine the location of potential "problem areas" for on-lot sewage disposal. Within Study Area 1, the Village of Douglassville has been identified as an area which requires significant attention. Based on a field survey and an on-site inspection of the existing systems within this identified "problem area", no patterns could be established. In addition, there has been 1 reported on-lot sewage malfunction in this area since 1985. This malfunction has been corrected. The Township should evaluate this particular area in further detail in Sections 5.20 and 5.30.
Future Treatment Capabilities: Based on all relevant information, most of this Study Area is not compatible for on-lot sewage technology. The area would best be serviced by a municipal or community system for wastewater treatment. This Study Area has been identified as a potential service area in the Amity Township Act 537 Plan. It appears, however, that direct gravity flow could be a problem. The engineering and economical feasibility for the extension of wastewater collection into this area will be further evaluated in Section 6.10 of this Plan.

5.12 STUDY AREA 2

Study Area 2 consists of 993 acres (1.55 square miles) and is located in the southeastern portion of the Planning Area. A comprehensive description and analysis of this Study Area has been outlined below:

Land Use Analysis

Existing Land Use Composition: Study Area 2 is composed of a mixture of low density residential, commercial, industrial, agricultural and woodland uses.
Existing Zoning: This Study Area is zoned for low to medium density residential, commercial and industrial development.
Projected Land Use Composition: Study Area 2 should experience a mixture of land development activity in the future. This activity is projected to consist of low to high density residential development, commercial and industrial development.

Physical Characteristics

Soils Analysis: Study Area 2 consists of a variety of soil groups. These soils groups have moderate to severe limitations for on-lot sewage development and disposal. Approximately 30 percent of this area has productive prime agricultural soils.

Geologic Analysis: The geology of the Study Area can be generalized as having igneous granitic and argillaceous dolomite characteristics with permeability ranging from poor to high.
Topographic Analysis: The topography of the area is basically a flat to rolling terrain. Although the degree of slope varies within this area, most of the slopes are between the 8 and 25 percent range.
Drainage Analysis: Study Area 2 drains in a southerly direction to the Schuylkill River.
Floodway Control Analysis: The limits of the 100-Year Flood Plain is extended along the Schuylkill River. In addition, there is a significant amount of hydric and high water table soils within this Study Area.
Hydrogeological Analysis: The hydrogeological analysis indicated that the quality of the groundwater within this particular area is relatively good.

Wastewater Treatment Analysis
Existing Treatment Methods: Study Area 2 is dependant upon on-lot sewage disposal systems for the treatment of wastewater. It should be noted that there are some residential and commercial land uses along US Route 422 that utilize holding tanks for wastewater management.
Problem Area Analysis: Based upon the data contained within Section 4.50 of this Plan, it was possible to determine the location of potential "problem areas" for on-lot sewage disposal. Within Study Area 2, a portion of the Village of Douglassville has been identified as an area which requires significant attention. Based on a field survey and an on-site inspection of the existing systems within this identified "problem area", no patterns could be established. In addition, there has been 2 reported on-lot sewage malfunction in this area since 1985. Thess malfunction have been properly corrected. The Township should evaluate this particular area in further detail in Sections 5.20 and 5.30.
Future Treatment Capabilities: Based on all relevant information, most of this Study Area is not compatible for on-lot sewage technology. The area would best be serviced by a municipal or community system for wastewater treatment. There are two (2) options for the wastewater collection and treatment in this zone.

Option 1: The wastewater could be transported into the West Pottsgrove Township Sewer System and eventually treated at the Pottstown Wastewater Treatment Plant; or
Option 2: The wastewater could be transported into the Amity Township Sewer System and treated at the Amity Township Wastewater Treatment Plant.

It appears, however, that direct gravity flow could be a problem in both options. The engineering and economical feasibility for the extension of wastewater collection into this area will be further evaluated in Section 6.10 of this Plan.

5.13 STUDY AREA 3

Study Area 3 consists of 2047 acres (3.20 square miles) and is located in the central portion of the Planning Area. A comprehensive description and analysis of this Study Area has been outlined below:

Land Use Analysis

Existing Land Use Composition: Study Area 3 is composed of a mixture of low density residential, commercial, industrial, public/quasi-public, agricultural and woodland uses.

Existing Zoning: This Study Area is zoned for low to medium density residential, commercial, industrial and institutional development.

Projected Land Use Composition: Study Area 3 should experience a mixture of land development activity in the future. This activity is projected to consist of low to medium density residential, commercial, industrial and institutional development.

Physical Characteristics

Soils Analysis: Study Area 3 consists of a variety of soil groups. These soils groups have moderate to severe limitations for on-lot sewage development and disposal. Approximately 35 percent of this area has productive prime agricultural soils.

Geologic Analysis: The geology of the Study Area can be generalized as having igneous granitic and argillaceous dolomite characteristics with permeability ranging from poor to high.

Topographic Analysis: The topography of the area is basically a flat to rolling terrain. Although the degree of slope varies within this area, most of the slopes are between the 8 and 25 percent range.

Drainage Analysis: Study Area 3 drains in a easterly direction to and along the Manatawny Creek.

Floodway Control Analysis: The limits of the 100-Year Flood Plain is extended along the Manatawny Creek. In addition, there is a significant amount of hydric and high water table soils within this Study Area.

Hydrogeological Analysis: The hydrogeological analysis indicated that the area has experienced some high levels of total coliform and fecal coliform.

Wastewater Treatment Analysis

Existing Treatment Methods: Study Area 3 is mostly dependant upon on-lot sewage disposal systems for the treatment of wastewater. In addition, there is also a package treatment plant (Pine Forge Academy) and a few community treatment systems within this Study Area.

Problem Area Analysis: Based upon the data contained within Section 4.50 of this Plan, it was possible to determine the location of potential "problem areas" for on-lot sewage disposal. Within Study Area 3, the Village of Pine Forge has been identified as an area which requires significant attention. Based on a field survey and an on-site inspection of the existing systems within this identified "problem area", no patterns could be established. In addition, there has been 1 reported on-lot sewage malfunction in this area since 1985. This malfunction has been properly corrected. The Township should evaluate this particular area in further detail in Sections 5.20 and 5.30.

Future Treatment Capabilities: Based on all relevant information, most of this Study Area is not compatible for on-lot sewage technology. The area would best be serviced by a municipal system for wastewater treatment. It appears, however, that direct gravity will be a problem. The wastewater from this area could be pumped into the West Pottsgrove Township Sewer System and eventually treated at the Pottstown Wastewater Treatment Plant. It should be noted that West Pottsgrove Township has had a negative approach towards a regional wastewater treatment planning efforts in the past.

5.14 STUDY AREA 4

Study Area 4 consists of 697 acres (1.09 square miles) and is located in the western portion of the Planning Area. A comprehensive description and analysis of this Study Area has been outlined below:

Land Use Analysis

Existing Land Use Composition: Study Area 4 is composed of a mixture of low density residential, public/quasi-public, agricultural and woodland uses.

Existing Zoning: This Study Area is zoned for low to medium density residential development.

Projected Land Use Composition: Study Area 4 should experience mostly low to medium density residential land development activity.

Physical Characteristics

Soils Analysis: Study Area 4 consists of a variety of soil groups. These soils groups have moderate to severe limitations for on-lot sewage development and disposal. Approximately 30 percent of this area has productive prime agricultural soils.

Geologic Analysis: The geology of the Study Area can be generalized as having igneous granitic, argillaceous shale and limestone characteristics with permeability ranging from poor to high.

Topographic Analysis: The topography of the area is basically a flat to rolling terrain. Although the degree of slope varies within this area, most of the slopes are between the 8 and 25 percent range.

Drainage Analysis: This area drains in a southeasterly direction to and along a western tributary of the Ironstone Creek.

Floodway Control Analysis: There is a fair amount of hydric and high water table soils within this zone.

Hydrogeological Analysis: The results indicated that the quality of the groundwater is relatively good for this particular area.

Wastewater Treatment Analysis

Existing Treatment Methods: Study Area 4 is dependant upon on-lot sewage disposal systems for the treatment of wastewater.

Problem Area Analysis: Based upon the data contained within Section 4.50 of this Plan, it was possible to determine the location of potential "problem areas" for on-lot sewage disposal. It should be noted that there are no identified "problem areas" within this particular Study Area. Based on a brief field survey of this Study Area 4, there appears to be no existing wastewater management problems. In addition, there have been no reported on-lot sewage malfunctions in this particular area since 1985. The Township should evaluate this particular area in further detail in Sections 5.20 and 5.30.

Future Treatment Capabilities: Based on all relevant information, most of this Study Area is not compatible for on-lot sewage technology. The area would best be serviced by a municipal system for wastewater treatment. It appears, however, that direct gravity flow is a major obstacle for this Study Area. It is recommended that due to the existing density, projected growth, zoning designations and proximity of existing wastewater collection lines, it is economically and environmentally unfeasible to extend wastewater collection lines into this Study Area at this point in time.

5.15 STUDY AREA 5

Study Area 5 consists of 1980 acres (3.09 square miles) and is located in the northeastern portion of the Planning Area. A comprehensive description and analysis of this Study Area has been outlined below:

Land Use Analysis

Existing Land Use Composition: Study Area 5 is composed of a mixture of low to medium density residential, public/quasi-public, industrial, agricultural and woodland uses.

Existing Zoning: This Study Area is zoned for low to medium density residential, commercial and industrial development.

Projected Land Use Composition: Study Area 5 should experience a mixture of land development activity in the future. This activity is projected to consist of low to medium density residential, commercial, and industrial development.

Physical Characteristics

Soils Analysis: Study Area 5 consists of a variety of soil groups. These soils groups have moderate to severe limitations for on-lot sewage development and disposal. Approximately 20 percent of this area has productive prime agricultural soils.

Geologic Analysis: The geology of the Study Area can be generalized as having igneous granitic and argillaceous shale characteristics with permeability ranging from poor to high.

Topographic Analysis: The topography of the area is basically a flat to rolling terrain. Although the degree of slope varies within this area, most of the slopes are between the 8 and 25 percent range.

Drainage Analysis: Study Area 5 drains in a southerly direction to and along the Ironstone Creek.

Floodway Control Analysis: The limits of the 100-Year Flood Plain is extended along the Ironstone Creek. In addition, there is a significant amount of hydric and high water table soils within this Study Area.

Hydrogeological Analysis: The hydrogeological analysis indicated that the area has experienced some high levels of total coliform, fecal coliform and fecal streptococcus.

Wastewater Treatment Analysis

Existing Treatment Methods: Study Area 5 is dependant upon on-lot sewage disposal systems for the treatment of wastewater.

Problem Area Analysis: Based upon the data contained within Section 4.50 of this Plan, it was possible to determine the location of potential "problem areas" for on-lot sewage disposal. Within Study Area 5, the Village of Little Oley has been identified as an area which requires significant attention. Based on a field survey and an on-site inspection of the existing systems within this identified "problem area", no patterns could be established. In addition, there have been 3 reported on-lot sewage malfunction in this area since 1985. These malfunctions have been properly corrected. The Township should evaluate this particular area in further detail in Sections 5.20 and 5.30.

Future Treatment Capabilities: Based on all relevant information, most of this Study Area is not compatible for on-lot sewage technology. It appears, however, that direct gravity flow is a major obstacle for this Study Area. It is recommended that due to the existing density, projected growth, zoning and proximity of existing wastewater collection lines it is economically and environmentally unfeasible to extend wastewater collection lines into this Study Area at this point in time.

5.16 STUDY AREA 6

Study Area 6 consists of 1757 acres (2.75 square miles) and is located in the northeastern portion of the Planning Area. A comprehensive description and analysis of this Study Area has been outlined below:

Land Use Analysis

Existing Land Use Composition: Study Area 6 is composed of a mixture of low to medium density residential, commercial, agricultural and woodland uses.

Existing Zoning: This Study Area is zoned for low to medium density residential and commercial development.

Projected Land Use Composition: Study Area 6 should experience a mixture of land development activity in the future. This activity is projected to consist of low to medium density residential and commercial development.

Physical Characteristics

Soils Analysis: Study Area 6 consists of a variety of soil groups. These soils groups have moderate to hazardous limitations for on-lot sewage development and disposal. Approximately 30 percent of this area has productive prime agricultural soils.

Geologic Analysis: The geology of the Study Area can be generalized as having igneous granitic, argillaceous shale and limestone characteristics with permeability ranging from poor to high.

Topographic Analysis: The topography of the area is basically a flat to rolling terrain. Although the degree of slope varies within this area, most of the slopes are between the 8 and 25 percent range.

Drainage Analysis: This area drains in a southeasterly direction to and along western tributaries of the Ironstone Creek.

Floodway Control Analysis: There is a fair amount of hydric and high water table soils within this zone.

Hydrogeological Analysis: The hydrogeological analysis indicated that the area has experienced some high levels of total coliform.

Wastewater Treatment Analysis

Existing Treatment Methods: Study Area 6 is dependant upon on-lot sewage disposal systems for the treatment of wastewater.

Problem Area Analysis: Based upon the data contained within Section 4.50 of this Plan, it was possible to determine the location of potential "problem areas" for on-lot sewage disposal. Within Study Area 6, the Village of Greshville has been identified as an area which requires significant attention. Based on a field survey and an on-site inspection of the existing systems within this identified "problem area", no patterns could be established. In addition, there has been 1 reported on-lot sewage malfunction in this area since 1985. This malfunctions has been properly corrected. The Township should evaluate this particular area in further detail in Sections 5.20 and 5.30.

Future Treatment Capabilities

Based on all relevant information, most of this Study Area is not compatible for on-lot sewage technology. It appears, however, that direct gravity flow is a major obstacle for this Study Area. It is recommended that due to the existing density, zoning, projected growth and proximity of existing wastewater collection lines it is economically and environmentally unfeasible to extend wastewater collection lines into this Study Area at this point in time. This area should be evaluated on a continuous basis.

5.17 STUDY AREA 7

Study Area 7 consists of 223 acres (0.35 square miles) and is located in the northeast corner of the Planning Area. A comprehensive description and analysis of this Study Area has been outlined below:

Land Use Analysis

Existing Land Use Composition: Study Area 7 is composed of a mixture of low density residential, agricultural and woodland uses.
Existing Zoning: This Study Area is zoned for medium density residential development.
Projected Land Use Composition: Study Area 7 should experience a mixture of low to medium density residential development.

Physical Characteristics

Soils Analysis: Study Area 7 consists of a variety of soil groups. These soils groups have moderate to severe limitations for on-lot sewage development and disposal. Approximately 40 percent of this area has productive prime agricultural soils.
Geologic Analysis: The geology of the Study Area can be generalized as having igneous granitic, argillaceous shale and limestone characteristics with permeability ranging from poor to high.
Topographic Analysis: The topography of the area is basically a flat to rolling terrain. Although the degree of slope varies within this area, most of the slopes are between the 8 and 15 percent range.
Drainage Analysis: Study Area 7 drains in a northeasterly direction to the Minster Creek.
Floodway Control Analysis: There is a fair amount of hydric and high water table soils within this Study Area.
Hydrogeological Analysis: The results indicated that the quality of the groundwater is relatively good for this particular area.

Wastewater Treatment Analysis

Existing Treatment Methods: Study Area 7 is dependant upon on-lot sewage disposal systems for the treatment of wastewater.

Problem Area Analysis: Based upon the data contained within Section 4.50 of this Plan, it was possible to determine the location of potential "problem areas" for on-lot sewage disposal. Within Study Area 7, a portion of the Village of Little Oley has been identified as an area which requires significant attention. Based on a field survey and an on-site inspection of the existing systems within this identified "problem area", no patterns could be established. In addition, there have been no reported on-lot sewage malfunctions in this area since 1985. The Township should evaluate this particular area of the Township in further detail in Sections 5.20 and 5.30.

Future Treatment Capabilities: Based on all relevant information, some of this Study Area is not compatible for on-lot sewage technology. The area would best be serviced by a municipal system for wastewater treatment. However, due to topographical conditions, direct gravity flow to the Morysville Wastewater Treatment Plant is a problem. The wastewater from this area could be pumped and eventually treated at the Morysville Wastewater Treatment Plant. It should also be noted that the Berks-Montgomery Municipal Authority has had a negative approach towards a regional wastewater treatment planning effort. It is recommended that due to the existing density, projected growth and proximity of existing wastewater collection lines it is economically and environmentally unfeasible to extend wastewater collection lines into this Study Area at this point in time.

5.20 NEEDS ANALYSIS CHART

In order to document the wastewater treatment needs within the Planning Area, the Pennsylvania Department of Environmental Resources (PA DER) has required the Township to complete a Needs Analysis Chart. The original Needs Analysis Chart, supplied by the (PA DER) has been modified by Douglass Township in order to be more specific regarding on-lot sewage development. The modified Needs Analysis Chart has been included within APPENDIX E of this Plan. It should be noted that the information utilized to complete the Needs Analysis Chart was obtained through a review of the SEO's records, sewage permits, tax records, building permits, approved subdivision plans, land use maps and aerial photographs. APPENDIX E also provides a list of general notes, conclusions and recommendations.

5.30 EVALUATION OF EXISTING ON-LOT SEWAGE DISPOSAL SYSTEMS

Based on the data contained in preceding Sections of this Plan, it was apparent that the Township should conduct a detailed evaluation of on-lot sewage disposal systems in "problem areas" of the Township. To perform this evaluation, the Township has conducted a survey and inspection of residences utilizing on-lot sewage disposal systems in designated problem areas of the Township. This evaluation is a preventive measure by which the Township can counteract against any potential environmental imperilment. Due to the size and density of the Township, this evaluation has been divided into four (4) phases by the Township. FIGURE 15 of this Plan depicts the four (4) phases of the Township to be evaluated. The following sub-sections of this Plan contain a procedural breakdown on how this evaluation will be performed by the Township.

5.31 PHASE 1 EVALUATION

Phase 1 will consist of a detailed evaluation of the southern portion of the Planning Area. This area includes the Village of Douglassville (FIGURE 15). Based on the previous Sections of this Plan, it appears that this particular area of the Township has the highest needs for wastewater treatment and management. Therefore, this area will be evaluated as part of this Act 537 Plan Update. The results from this evaluation will be utilized by the Township to determine the extent of the wastewater management problems in this area of the Township.

Phase 1 of this evaluation consists of 1131 acres and 186 on-lot sewage disposal systems. Based on the results of the detailed evaluation, it appears that 9 of the 186 (4.8 %) of the on-lot sewage disposal systems are possibly malfunctioning. It also appears that 23 of the 186 (12.4 %) of the on-lot sewage disposal systems are pre-regulatory in terms of its design and/or discharge. In total, it appears that 34 of the 186 (17.2 %) of the on-lot sewage disposal systems are either illegal or malfunctioning. A copy of the data sheets for this survey have been included within APPENDIX F of this Plan. APPENDIX F also contains a map depicting the locations of the on-lot sewage disposal system in Phase 1. EXHIBIT 4 of the Plan contains a mapping of the existing dwelling units within the Township utilizing on-lot sewage disposal technology. EXHIBIT 4 also provides a complete breakdown of the individual on-lot sewage disposal systems in terms of its physical limitations.

5.32 PHASE 2 EVALUATION

Phase 2 will consist of a detailed evaluation of the northeastern portion of the Planning Area. This area includes the Villages of Little Oley and Colebrookdale (FIGURE 15). Phase 2 of this evaluation consists of 2337 acres and 327 on-lot sewage disposal systems. Based on the previous Sections of this Plan, it appears that this particular area of the Township has some needs for wastewater treatment and management. This area will be evaluated in the year 1994 and shall be considered a post-planning effort to this Act 537 Plan Update. The results from the Phase 2 Evaluation will be utilized by Douglass Township to determine the extent of the wastewater management problems in this area of the Township. The results will be incorporated as an addendum to this Act 537 Plan Update. In addition, revisions to the Act 537 Plan will be considered based on the results of the evaluation. If the needs of this particular area are substantial, the Plan shall be revised accordingly. It should be noted that this may include municipal wastewater treatment and/or municipal wastewater management programs.

5.33 PHASE 3 EVALUATION

Phase 3 will consist of a detailed evaluation of the central portion of the Douglass Township Planning Area. This particular area includes the Village of Pine Forge (FIGURE 15). Phase 3 of this evaluation consists of 1858 acres and 317 on-lot sewage disposal systems. Based on the previous Sections of this Plan, it appears that this area of the Township has some moderate needs for wastewater treatment and management. This area will be evaluated in the year 1995 and shall be considered a post-planning effort to this Act 537 Plan Update. The results from the Phase 3 Evaluation will be utilized by the Township to determine the extent of the wastewater management problems in this area of the Township. The results will be incorporated as an addendum to this Act 537 Plan Update. Revisions to the Act 537 Plan will be considered based on the results of the evaluation. If the needs of this particular area are substantial, the Plan shall be revised accordingly. It should be noted that this may include municipal wastewater treatment and/or municipal wastewater management programs.

5.34 PHASE 4 EVALUATION

Phase 4 will consist of a detailed evaluation of the northwestern portion of the Douglass Township Planning Area. This particular area includes the Village of Greshville (FIGURE 15). Phase 4 of this evaluation consists of 3378 acres and 335 on-lot sewage disposal systems. Based on the previous Sections of this Plan, it appears that this area of the Township has some moderate needs for wastewater treatment and management. This area will be evaluated in the year 1996 and shall be considered a post-planning effort to this Act 537 Plan Update. The results from the Phase 4 Evaluation will be utilized by the Township to determine the extent of the wastewater management problems in this area of the Township. The results will be incorporated as an addendum to this Act 537 Plan Update. Revisions to the Act 537 Plan will be considered based on the results of the evaluation. If the needs of this particular area are substantial, the Plan shall be revised accordingly. It should be noted that this may include municipal wastewater treatment and/or municipal wastewater management programs.

5.40 SUMMARY OF WASTEWATER TREATMENT NEEDS

The purpose of this detailed analytical procedure was to evaluate the wastewater treatment needs within the Douglass Township Planning Area. In order to determine these needs it was imperative to review and analyze all pertinent background data contained within this Act 537 Plan Update. Sections 4.50, 5.10, 5.20 and 5.30 of the Plan were utilized extensively for this evaluation.

Section 4.50 of the Plan evaluated the on-lot sewage disposal systems that were designed and constructed prior to 1967. The purpose of this evaluation was to determine the functional operation of the on-lot sewage disposal systems that were installed prior to the enactment of the Pennsylvania Sewage Facilities Act.

Section 5.10 of the Plan evaluated the wastewater treatment needs of individual Study Areas within the Township. This breakdown has enabled the Township to determine which zones within the Planning Area have the highest needs for wastewater treatment and management.

Section 5.20 of the Plan evaluates and documents the wastewater treatment needs within the Planning Area. The Township has accomplished this task by completing a Needs Analysis Chart. The Needs Analysis Chart has been included within APPENDIX E of this Plan.

Section 5.30 of the Plan provides a detailed evaluation of on-lot sewage disposal systems in selected problem areas of the Township. The Township has conducted, or is in the process of conducting, a survey and inspection of residences utilizing on-lot sewage disposal systems in designated problem areas of the Township. This evaluation enables the Township to document the wastewater treatment needs within selected areas of the Planning Area. Douglass Township has completed a Phase 1 Evaluation of the Township. The Phase 2 Evaluation is scheduled for 1994, the Phase 3 Evaluation is scheduled for 1995 and the Phase 4 Evaluation is scheduled for 1996. All information and data sheets pertaining to the Phase 1 Evaluation has been included within Section 5.30 and APPENDIX F of this Plan.

Based on this comprehensive analytical review of the Township, it is apparent that the entire Planning Area has some needs for wastewater treatment and management. In particular, the unincorporated areas of Little Oley, Greshville, Pine Forge and Douglassville have been identified as potential "problem areas" for on-lot sewage disposal and/or development. It should be noted that it is basically environmentally and economically unfeasible to extend municipal wastewater collection lines throughout the Planning Area. Therefore, the Township should comprehensively evaluate all pertinent wastewater planning and facility alternatives that are identified under Section 6.00 of this Plan. These alternatives will focus on alternatives relative to wastewater collection and conveyance, on-lot sewage disposal technology, sewage management programs and comprehensive planning.

6.00 PLANNING AND FACILITIES ALTERNATIVES

6.10 COLLECTION AND CONVEYANCE ALTERNATIVES

Based on the evaluation of the wastewater treatment needs (Section 5.00), it appears that Study Areas 1 and 2 (Figure 15) have the highest needs and capabilities for municipal wastewater treatment.

Two options were briefly discussed previously for providing the municipal wastewater treatment system for Study Areas 1 and 2. Option 1 involved transporting the wastewater into the West Pottsgrove Township sewer system and then treatment at the Pottstown Wastewater Treatment Plant. Option 2 involved transporting the wastewater into the Amity Township sewer system and then treatment at the Amity Township Wastewater Treatment Plant.

Based on an initial investigation concerning Option 1, it appears that it would be cost prohibitive to direct the wastewater to the Pottstown Wastewater Treatment Plant. The distance to the West Pottsgrove Township sewer system is much further than the distance to the Amity Township Wastewater Treatment Plant. The distance from the Amity Township Treatment Plant to the Douglass Township line is less than 1-3/4 miles, and less than 1/4 mile of conveyance system within Amity Township would be utilized for Option 2. The transportation costs would be significantly less for Option 2 since Option 1 would need to utilize most of West Pottsgrove's conveyance system and a portion of Pottstown's prior to entering the Pottstown Treatment Plant. Therefore, Option 2 and it's alternatives shall be evaluated within this Section of the Plan. The Township shall evaluate all pertinent alternatives for discharging sanitary sewage to the Amity Township Wastewater Treatment Plant to provide service to Study Areas 1 and 2.

Due to the extreme topographic constraints in Study Areas 1 and 2, a combination of sewer collection systems needed to be created to service the areas. Alternative 1 involves low pressure and small diameter gravity sewer systems and pump stations. Alternative 2 involves low pressure, small diameter gravity, and standard gravity sewer systems and pump stations and forcemains. These alternatives are depicted on FIGURES 16-A and 16-B of this Plan.

Alternative 1 has the higher estimated construction cost and the higher estimated maintenance cost. The operations and maintenance costs of Alternative 1 are estimated from information contained in an EPA Manual titled 'Alternative Wastewater Collection Systems', and may vary significantly. Alternative 2 has the lower estimated construction cost and lower estimated maintenance cost, and consists mostly of gravity sewer systems which are quite common and fairly easy to maintain.

Tables I-1A and I-1B of the Plan indicate the estimated construction costs for Alternatives 1 and 2 respectively. Due to the lower estimated construction cost and maintenance cost Alternative 2 should been evaluated in further detail. Table I-2 indicates the estimated project cost for Alternative 2.

To finance the proposed project (Alternative 2) the Township could obtain a low interest loan from PENNVEST (Section 6.65) or enter into a conventional bond issue (Section 6.66). These financial alternatives are analyzed further in TABLE J-1. The Township could also evaluate other funding options including potential grants (Section 6.60). This alternative has been analyzed, assuming a 50 percent grant, in TABLE J-2. Based on all pertinent information identified in this Plan, it will be economically feasible to implement this project (Alternative 2) if a grant is obtained to off-set 50 percent of the project cost. The funding alternative shall be further discussed in Section 6.60 of this Plan.

Based on a review of Study Areas 3, 4, 5, 6 and 7 it will be economically and environmentally unfeasible to extend municipal wastewater collection lines into any of these Study Areas at this point in time. Therefore, it is recommended that the Township should comprehensively evaluate all pertinent wastewater planning and facility alternatives that are identified under Sections 6.20, 6.30 and 6.40 of this Plan. These alternatives will focus on alternatives relative to wastewater collection and conveyance, on-lot sewage disposal technology, sewage management programs and comprehensive planning. It is also recommended that the Township should continue to evaluate the municipal wastewater treatment needs (refer to Section 5.00) of all Study Areas on an annual basis or as recommended in the proposed schedule (refer to Section 5.30).

DOUGLASS TOWNSHIP
SEWERAGE FEASIBILITY STUDY
TABLE I-1A
ALTERNATIVE 1
ESTIMATED CONSTRUCTION COSTS

ITEM	DESCRIPTION	QUANTITY	UNIT COST	EXTENSION
A)	3" diameter PVC	19,325 l.f.	$ 8.00	$ 154,600.00
B)	4" diameter PVC	1,600 l.f.	$ 9.00	$ 14,400.00
		8,900 l.f.	$ 12.00	$ 106,800.00
C)	6" diameter PVC	900 l.f.	$ 11.00	$ 9,900.00
D)	1¼" diameter PVC lateral	107 each	$ 400.00	$ 42,800.00
E)	6" diameter PVC lateral	65 each	$ 700.00	$ 45,500.00
F)	Centrifugal pump and vault	21 each	$2000.00	$ 42,000.00
G)	Grinder pump and vault	107 each	$4000.00	$ 428,000.00
H)	Cleanouts	38 each	$ 300.00	$ 11,400.00
I)	3" Isolation valves	25 each	$ 300.00	$ 7,500.00
J)	4" Isolation valves	7 each	$ 350.00	$ 2,450.00
K)	Air release valves	19 each	$1800.00	$ 34,200.00
L)	Air release vents/ cleanouts	5 each	$1000.00	$ 5,000.00
M)	Manholes	9 each	$1200.00	$ 10,800.00
N)	Thrust anchors	82 each	$ 100.00	$ 8,200.00
O)	Stream crossing	130 l.f.	$ 75.00	$ 9,750.00
P)	Road crossing/boring under State highway	75 l.f.	$ 275.00	$ 20,625.00
Q)	Pump stations	Lump sum	Lump sum	$ 120,000.00
R)	Tap into existing manhole	Lump sum	Lump sum	$ 500.00
S)	New manhole over existing line	Lump sum	Lump sum	$ 1,500.00
T)	Extra length of laterals	2,225 l.f.	$ 10.00	$ 22,250.00
U)	Right-of-way acquisition	Lump sum	Lump sum	$ 10,000.00
		TOTAL CONSTRUCTION COST		**$1,103,175.00**

	No. of Units	EDU
Residential	151	151
Commercial	20	61
Churches	1	1
	172	213

ALL ESTIMATED COSTS DERIVED FROM 1993 COST FIGURES

DOUGLASS TOWNSHIP
SEWERAGE FEASIBILITY STUDY
TABLE I-1B
ALTERNATIVE 2
ESTIMATED CONSTRUCTION COSTS

ITEM	DESCRIPTION	QUANTITY	UNIT COST	EXTENSION
A)	3" diameter PVC	4,350 l.f.	$ 8.00	$ 34,800.00
B)	4" diameter PVC	8,900 l.f.	$ 12.00	$ 106,800.00
C)	4" diameter DIP	4,600 l.f.	$ 14.00	$ 64,400.00
D)	8" diameter PVC			
	0'-8' deep	10,275 l.f.	$ 19.50	$ 200,362.50
	8'-10' deep	1,000 l.f.	$ 20.50	$ 20,500.00
	10'-12' deep	2,400 l.f.	$ 25.50	$ 61,200.00
	12'-14' deep	1,050 l.f.	$ 27.50	$ 28,875.00
	14'-16' deep	1,150 l.f.	$ 41.50	$ 47,725.00
E)	1¼" diameter PVC lateral	28 each	$ 400.00	$ 11,200.00
F)	6" diameter PVC lateral	144 each	$ 700.00	$ 100,800.00
G)	Centrifugal pump and vault	21 each	$2000.00	$ 42,000.00
H)	Grinder pump and vault	28 each	$4000.00	$ 112,000.00
I)	Extra length of laterals	1,675 l.f.	$ 10.00	$ 16,750.00
J)	Cleanouts	17 each	$ 300.00	$ 5,100.00
K)	Isolation valves	17 each	$ 300.00	$ 5,100.00
L)	Air release valves	9 each	$1800.00	$ 16,200.00
M)	Air release chambers	7 each	$3000.00	$ 21,000.00
N)	Air release vents	5 each	$1000.00	$ 5,000.00
O)	Thrust anchors	43 each	$ 100.00	$ 4,300.00
P)	Manholes	53 each	$1200.00	$ 63,600.00
Q)	Stream crossing	65 l.f.	$ 75.00	$ 4,875.00
R)	Road crossing	75 l.f.	$ 275.00	$ 20,625.00
S)	Pump stations	Lump sum	Lump sum	$ 200,000.00
T)	New manhole over existing line	Lump sum	Lump sum	$ 1,500.00
U)	Right-of-way acquisition	Lump sum	Lump sum	$ 15,000.00
V)	Railroad crossing	Lump sum	Lump sum	$ 25,000.00
		TOTAL CONSTRUCTION COST		**$1,079,475.00**

ALL ESTIMATED COSTS DERIVED FROM 1993 COST FIGURES

DOUGLASS TOWNSHIP
SEWERAGE FEASIBILITY STUDY
TABLE I-2
ALTERNATIVE 2
ESTIMATED PROJECT COSTS

	With Bond Issue	With PennVest Loan
1. Construction Costs	$1,079,475.00	$1,079,475.00
*2. Sewer Reservation	$ 681,600.00	$ 681,600.00
3. Engineering Costs: Surveying	$ 13,000.00	$ 13,000.00
Design	$ 70,000.00	$ 70,000.00
Construction Phase	$ 10,000.00	$ 10,000.00
Resident Inspection	$ 72,000.00	$ 72,000.00
Financial Reports, Bond Closing and Applications	$ 4,000.00	$ 2,000.00
4. Legal Fees	$ 40,000.00	$ 40,000.00
SUB-TOTAL	$1,970,075.00	$1,968,075.00
5. Contingencies - 10% (Item #2 omitted)	$ 128,000.00	$ 128,600.00
6. Printing Costs	$ 3,500.00	N/A
7. Financial Accounting and Administration	$ 15,000.00	$ 5,000.00
8. Bond Discount	$ 35,000.00	$ N/A
9. Capitalized Interest	$ 77,000.00	$ 37,000.00
TOTAL PROJECT COSTS	**$2,228,575.00**	**$2,138,675.00**

* Amity Township Sewer Capacity Reservation
$3,200.00 per EDU

ALL ESTIMATED COSTS DERIVED FROM 1993 COST FIGURES

DOUGLASS TOWNSHIP
SEWERAGE FEASIBILITY STUDY
TABLE J-1
ALTERNATIVE 2
ASSESSMENTS AND ANNUAL RENTALS

	BOND ISSUE 20 YRS @ 5.6%	PENN VEST LOAN 20 YRS. @ 2.629%
TOTAL PROJECT COSTS	$2,228,575.00	$2,138,675.00
Connection Fees	$ 681,600.00	$ 681,600.00
Local Share to be Funded	$1,546,975.00	$1,457,075.00
Annual Costs:		
1. Debt Service	$ 129,450.00	$ 94,600.00
2. Operation and Maintenance	$ 50,890.00	$ 50,890.00
TOTAL ANNUAL COSTS	$ 180,340.00	$ 145,490.00
COST/EDU*	**$ 846.00**	**$ 683.00**

* NOTES:

- Costs are based on 213 EDU's, 2.629% Penn Vest loan or 5.6% conventional financing
- Annual O & M costs are based on $180 per EDU for treatment, $75 per EDU for low pressure system, $50 per EDU for small diameter gravity system, $35 per EDU for gravity and $1,500 each for pump station.

ALL ESTIMATED COSTS DERIVED FROM 1993 COST FIGURES

DOUGLASS TOWNSHIP
SEWERAGE FEASIBILITY STUDY
TABLE J-2
ALTERNATIVE 2
EFFECT OF GRANT ON ANNUAL RENTALS

	ASSUME 50% GRANT
TOTAL PROJECT COST (With Penn Vest Loan)	$2,138,675.00
50% Grant (½ of $1,968,075)	$ 984,000.00
ADJUSTED PROJECT COST	$1,154,675.00
Connection Fee	$ 681,600.00
Amount of Loan	$ 473,075.00
Annual Costs:	
1. Debt Service (2.629%, 20 yrs.)	$ 30,717.00
2. Operation and Maintenance	$ 50,890.00
TOTAL ANNUAL COSTS	$ 81,607.00
COST/EDU*	**$ 383.00**

* TOTAL EDU'S = 213

ALL ESTIMATED COSTS DERIVED FROM 1993 COST FIGURES

It should be noted that all estimated costs identified on TABLES I-1A, I-1B, I-2, J-1 and J-2 have been derived utilizing 1993 cost figures. Alternative 2 appears to be the most cost effective alternative and should be considered to provide municipal sewer service to Study Areas 1 and 2.

6.20 IDENTIFICATION AND ANALYSIS OF FACILITY ALTERNATIVES

6.21 ON-LOT SEWAGE DISPOSAL SYSTEMS

The Township has considered this alternative. Due to the increasing urbanization within the Planning Area, it is not the most comprehensive method of wastewater treatment. However, due to the physical, environmental and economic conditions within the Township, this may be viable alternative.

All proposed individual on-lot sewage disposal systems shall be designed and installed in accordance with all pertinent guidelines and regulations established by the PA DER (Act 537, as amended) and Douglass Township. These proposed systems shall not have any significant physical limitations (soil, slope, geologic and/or hydrogeologic). In addition, a strong on-lot sewage management program is also recommended due to the many environmental factors that exist within the Planning Area.

6.22 COMMUNITY SUBSURFACE SEWAGE DISPOSAL SYSTEMS

A community system collects wastewater from two or more lots and treats the waste in a centralized location. Community subsurface systems are infrequently used in the Township at the present time. Community systems have the advantage of being easy to monitor and maintain due to the reduced number of locations involved. Disadvantages exist with the shared property and the shared maintenance costs.

Community treatment systems are generally not a viable alternative for a majority of the Planning Area due to the physical limitations (soils, slope, geology and hydrology) that presently exist. Due to these physical limitations, community systems should be restricted from the areas that are considered environmentally sensitive (Section 3.00). The potential for groundwater contamination by high nitrate and organic loadings is enhanced by these physical limitations, and may have an adverse effect on the environment.

The areas of the Township which do not indicate the presence of physical limitations and have a minimal potential for groundwater contamination may consider the feasibility of community treatment systems as an option for individual on-lot sewage disposal. All proposed community systems shall be designed in order to meet or exceed the guidelines and regulations established by the PA DER (Act 537, as amended) and Douglass Township. These treatment systems shall not be considered unless they are certified operational by the appropriate agencies. In addition, a plan shall be developed by the owner for the perpetual operation and maintenance of the proposed community treatment system. An agreement should be executed between the developer and Township reflecting the conditions of this plan.

6.23 ON-LOT TREATMENT SYSTEMS

This type of sewage treatment methodology includes various technological approaches ranging from aerobic treatment tank to package treatment plants. These systems incorporate the extended aeration principle of sewage treatment, whereby compressed air is interjected into the bottom of the system generating rapid decomposition of the sewage by aerobic bacteria. This technology provides viable options to areas that are confined by physical limitations. The aerobic treatment technology reduces the potential for groundwater contamination, odor and other unethical factors that may be detrimental to the environment. The aerobic treatment tanks are limited by the capacity the system can treat. The package treatment plants, however, can handle larger scaled developments which require a considerable comprehensive approach for wastewater treatment.

All proposed on-lot treatment systems shall be designed and installed in order to meet or exceed the guidelines and regulations established by the PA DER (Act 537, as amended) and Douglass Township. These treatment systems shall not be considered unless they are certified operational by the appropriate agencies. In addition, a plan shall be developed by the owner for the perpetual operation and maintenance of the proposed on-lot treatment system. An agreement should be executed between the developer and Township reflecting the conditions of this plan.

6.24 SMALL FLOW SEWAGE TREATMENT FACILITIES

Small flow sewage treatment facilities are generally designed to treat less than 2000 gallons of wastewater per day. These facilities can take a variety of forms, as might be needed to deal with a unique disposal situation. The flow criterion of 2000 gallons/day would be approximately equivalent to 5 residential dwellings and would not require a PA DER certified operator.

A small treatment facility would be an alternative in areas that regularly experience surface discharge due to the inability of the soils to accept the volume of wastewater. Depending on the type of land use, density and physical characteristics of the site, a small treatment facility may solve the problem. A treatment facility may consist of a central septic tank, a sand filter, and a chlorinator with stream discharge. The stream discharge eliminates the use of any absorption area. However, the PA DER may require spray irrigation in areas where the soil conditions are suitable.

All proposed small flow sewage treatment systems shall designed and installed in accordance with all pertinent guidelines and regulations established by the PA DER (Act 537, as amended) and Douglass Township. These treatment systems shall not be considered unless they are certified operational by the appropriate agencies. In addition, the owner(s) or developer shall be responsible for inspecting the functional operation of the system. The results of this inspection shall be forwarded to the Township on a quarterly basis. A Plan shall be developed by the owner for the perpetual operation and maintenance of the proposed small flow treatment system. An agreement should be executed between the developer and Township reflecting the conditions of this plan.

6.25 UPGRADING EXISTING MALFUNCTIONING SYSTEMS

The Douglass Township Sewage Enforcement Officer has the power to order the repair of malfunctioning on-lot sewage disposal systems, after they are reported and investigated. A permit for a malfunction repair is required under Chapter 71.41(a) of PA DER regulations. The Sewage Enforcement Officer is provided with solution alternatives under Chapter 73 of PA DER guidelines. In situations where Chapter 73 is not advantageous, the Sewage Enforcement Officer may experiment with an aerobic tank, chlorinator, pressure dosing and water reduction devices. This particular alternative has been successful in the past and should continue in the future.

6.26 RETAINING TANKS

Douglass Township has adopted a Holding Tank Ordinance. This Ordinance establishes a procedure for the issuance of permits, regulations for operation and maintenance, and provisions for the financial assurances. A copy of this Ordinance has been included with this Act 537 Plan as APPENDIX D.

6.30 SEWAGE MANAGEMENT PROGRAM ALTERNATIVES

6.31 FIELD TESTING POLICY

In order to prevent or overcome an on-lot sewage disposal malfunction, the Township could adopt the following field testing policy:

1. The Township Sewage Enforcement Officer (SEO) must be present to observe all testing procedures. Any testing performed without SEO approval will be considered invalid and must be retested.
2. Where testing is to be conducted the applicant shall (at the discretion of the Township SEO) obtain the services of a Soil Scientist to prepare soil descriptions.
3. The applicant must obtain the services of a qualified person to perform percolation tests according to the procedures outlined by the SEO.
4. All lots must have an additional approved replacement area. This is to ensure that the lot is still useable should the first system fail.
5. The applicant must provide a backhoe and operator to be present at the site for deep probe testing.
6. All sites must be inspected prior to start of installation. The SEO must be notified at least 48 hours prior to start of installation.
7. All systems must have final inspections before covering. Any other required inspections will be determined by the type of system at the SEO's discretion to ensure proper system installation.

This alternative is a preventive measure by which the Township can counteract against any potential environmental imperilment. The basis for this testing policy is due to the existing physical limitations (soil, geologic, topographic and hydrogeological) for development and to prevent on-lot sewage malfunctions within the Planning Area. Therefore, this alternative should be considered as part of the recommended Plan.

6.32 PHYSICAL SITE ANALYSIS

As a prevention measure, the Township could require a detailed physical site analysis for all proposed subdivisions or land developments. This analysis may include the following:

Topographical Analysis: Delineate slopes under eight (8) percent, between eight (8) and twelve (12) percent, between twelve (12) and twenty-five (25) percent, and twenty-five (25) percent and over. The Township may require a field survey to verify and accurately locate these contour intervals.

Soils Analysis: Identify soils that are considered to be alluvial soils, hydric soils and high water table soils. The Township may require a on-site analysis to verify the soil conditions.

Wetlands Delineation: Delineate areas that are considered to be wetlands. These areas should be clearly and accurately located in the field by a qualified individual. No structure or on-lot sewage disposal system should be located within fifty (50) feet of a wetlands area.

Hydrological Analysis: Identify the location of all stream bodies (streams, rivers, lakes and ponds) and the FEMA 100-year flood plain boundary. The Township may require a field survey to verify and accurately locate the FEMA 100-year flood plain boundary. No structure or on-lot sewage disposal system should be located within fifty (50) feet of FEMA 100-year flood plain boundary.

Hydrogeological Analysis: Determine through proper sampling techniques and laboratory analysis if the groundwater is free of bacteriological contaminants.

Geological Analysis: Identify sinkholes, karst and/or limestone formations, outcropping and shallow bedrock areas. These areas should be clearly and accurately located in the field by a qualified individual. On-lot sewage disposal systems should be strategically located in relationship to the identified geological feature or formation.

This alternative is a preventive measure for the Township to counteract against any potential environmental imperilment. The basis for this testing policy is due to the existing physical limitations (soil, geologic, topographic and hydrogeologic) for development within the Planning Area. The Township should incorporate this policy as an amendment to the Douglass Township Subdivision and Land Development Ordinance.

6.33 EDUCATIONAL AND CONSERVATION MEASURES

The Township could undertake a program to improve public awareness of the causes of on-lot sewage malfunctions and how the probability of a malfunction can be reduced. The PA DER (Bureau Water Quality Management) has published the following consumer guides:

CONSUMERS GUIDE TO ON-LOT SEWAGE DISPOSAL SYSTEM OPERATION AND MAINTENANCE

CONSUMER GUIDE TO ON-LOT SEWAGE PERMITS

These informative consumer guides provide basic information relative to on-lot sewage disposal and management. The Township residents should be aware of the contents of these publications of which have been included within this Plan as APPENDIX G of this Plan. These publications could be kept at the Township Office for the resident to review. In addition, the Township officials, technical staff and residents should be aware of and encouraged to attend seminars and programs devoted to on-lot sewage disposal management. This alternative should be considered as part of the recommended Plan.

6.34 SEPTIC TANK MAINTENANCE

As a prevention and maintenance measure, the Township could inform or require homeowners to have their individual systems pumped and/or cleaned out. This measure could prevent malfunctions through overloading. The PA DER (Bureau Water Quality Management) has recommended a pumping schedule based on household size and tank size. This pumping schedule has been included within this Plan as
TABLE K. The educational program should be implemented by the Township on a volunteer basis. If the Township determines that the volunteer program is ineffective, the Township should consider a mandatory pumping program. This alternative should be considered as part of the recommended Plan.

TABLE K

Estimated Septic Tank Pumping Frequencies in Years (For Year-Round Residence)

Tank Size (gal)	Household Size (Number of People)									
	1	2	3	4	5	6	7	8	9	10
500	5.8	2.6	1.5	1.0	0.7	0.4	0.3	0.2	0.1	—
750	9.1	4.2	2.6	1.8	1.3	1.0	0.7	0.6	0.4	0.3
900	11.0	5.2	3.3	2.3	1.7	1.3	1.0	0.8	0.7	0.5
1,000	12.4	5.9	3.7	2.6	2.0	1.5	1.2	1.0	0.8	0.7
1,250	15.6	7.5	4.8	3.4	2.6	2.0	1.7	1.4	1.2	1.0
1,500	18.9	9.1	5.9	4.2	3.3	2.6	2.1	1.8	1.5	1.3
1,750	22.1	10.7	6.9	5.0	3.9	3.1	2.6	2.2	1.9	1.6
2,000	25.4	12.4	8.0	5.9	4.5	3.7	3.1	2.6	2.2	2.0
2,250	28.6	14.0	9.1	6.7	5.2	4.2	3.5	3.0	2.6	2.3
2,500	31.9	15.6	10.2	7.5	5.9	4.8	4.0	4.0	3.0	2.6

For example, if 6 people reside in a 3-bedroom house, a 900 gallon tank should be pumped every 1.3 years. If the same system serves a family of 2, the tank would be ready for pumping every 5.2 years. Systems installed before the current rules and regulations may have septic tanks smaller than 900 gallons. Contact the tank cleaner to determine the size. Some older tanks may need to be pumped as often as once a month. Homes utilizing garbage disposal units will also need more frequent pumping.

Source: PA DER - Bureau of Water Quality Management

6.35 SCHEDULED INSPECTIONS OF EXISTING ON-LOT SYSTEMS

Douglass Township has the legal authority to inspect on-lot sewage disposal systems and order the repair of malfunctioning systems. This inspection option is permitted under the Pennsylvania Sewage Facilities Act (Act 537), the Pennsylvania Municipalities Planning Code (Act 247), and the Second Class Township Code. This alternative is a preventive measure by which the Township can counteract against any potential environmental imperilment. However, due to the economic and administrative requirements, this alternative would not be an effective alternative for Douglass Township at this time. The Township has an exceptional record for reporting, investigating and correcting existing and potential malfunctions. Therefore, this alternative should not be considered as part of the recommended Plan. However, if the previously identified sewage management programs (Sections 6.31 through 6.34) should fail, the Township should consider this option or an evaluation program (Section 6.36) in the future.

6.36 EVALUATION OF EXISTING ON-LOT SEWAGE DISPOSAL SYSTEMS

An alternative to requiring scheduled inspections of on-lot sewage disposal systems is for the Township to conduct a detailed evaluation of on-lot sewage disposal systems in problem areas of the Township. To perform this evaluation, the Township would conduct a survey and inspection of residences utilizing on-lot sewage disposal systems in designated problem areas of the Township. This alternative is also a preventive measure by which the Township can counteract against any potential environmental imperilment. The Township has an exceptional record for reporting, investigating and correcting existing and potential malfunctions. It is recommended that the Township follow the proposed Evaluation Program outlined in Section 5.30 of the Plan. Therefore, this alternative should be considered for this planning period. However, if the previously identified sewage management programs (Sections 6.31 through 6.34) should fail, the Township should consider the mandetory/scheduled inspection program (Section 6.35) in the future. The Township shall also consider the establishment of a "Sewage Management District" if these programs should fail.

6.37 MUNICIPAL OWNERSHIP OF ALL COMMUNITY AND INDIVIDUAL ON-LOT SYSTEMS

Due to the rural characteristics of the Township this is not feasible option to consider. The administration and manpower resources to operate, maintain and repair all community and/or individual on-lot systems is extensive. Municipal ownership has few advantageous over an inspection program from the standpoint of identifying the malfunctioning system. The correction of the malfunction would be less involved since a second party would be eliminated from the standard procedure. In addition, the issue of municipal ownership of community and/or individual on-lot sewage disposal systems would have to be thoroughly evaluated from a legal standpoint if this alternative was considered. Therefore, this alternative should not be considered as part of the recommended Plan.

6.38 MUNICIPAL OWNERSHIP OF SMALL FLOW TREATMENT FACILITIES

Under this alternative, the Township would have the authority to own, operate and maintain small flow treatment facilities. The responsibility for the maintenance of these facilities would be considerably better if the individual parties were not involved. Certain types of facilities such as aerobic tanks and chlorinators need regular attention, and septic tanks need pumping on a regular basis. This would be a simple process if the Township owned the facilities. The basic disadvantage with this alternative is that the Township would have to obtain easements through all properties involved. In addition, the Township would incur additional liability and the problems associated with assessing financial responsibility to the property owners. Therefore, this alternative should not be considered as part of the recommended Plan.

6.39 JOINT MUNICIPAL SEWAGE MANAGEMENT PROGRAM

Joint municipal management of the on-lot sewage program is practiced by County Health Departments in Pennsylvania. The organization of these agencies is based on the Local Health Administration Law (Act 315) which gives counties authorization to establish a county health department. Presently Berks County does not have an established health department. County health agencies are involved in numerous public health and environmental programs, including on-lot sewage permitting. The Department hires all of the Sewage Enforcement Officers involved in the permitting process.

There are also a number of other joint municipal agencies in the Commonwealth that enforce the sewage disposal regulations, but are not involved in other public health department activities. These agencies administer sewage permits for the entire county or, in some cases, just a few municipalities. A joint agency is created by the passage of an Ordinance adopted by all participating municipalities. The agency has the power to appoint a Sewage Enforcement Officer(s), issue permits, conduct hearings, and receive reimbursements form the Pennsylvania Department of Environmental Resources.

The most notable advantage of the Joint Municipal Sewage Management Program is the standardization of the permitting process. Under the present system, each municipality in the County hires its own Sewage Enforcement Officer. As a result, individual interpretation of design and regulatory requirements varies among the municipalities in the County. Due to the established provisions for enforcement within Berks County, this alternative should not be considered as part of the recommended Plan.

6.40 NON-STRUCTURAL COMPREHENSIVE PLANNING ALTERNATIVES

6.41 COMPREHENSIVE PLAN UPDATE

The Douglass Township Comprehensive Plan was adopted in 1974 and last updated by the Douglass Township Board of Supervisors in 1988 . This Comprehensive Plan Update was utilized for background analysis and direction for existing land uses, projected future land use, community facilities (sewage facilities), information regarding physical characteristics (soils, topography, drainage, geology and hydrogeology) and population characteristics (trends, estimates, projections, and subdivision activity). The Plan does recognize the need for long term sewage disposal planning in the Township. Therefore, the Comprehensive Plan is adequate to meet the Township's sewage facility needs for the next 20 years. The Comprehensive Plan has been included with this Act 537 Plan as EXHIBIT 1.

6.42 ZONING ORDINANCE UPDATE

The Douglass Township Zoning Ordinance was adopted in 1974 and last amended in 1989. The Ordinance does recognize the need for long term sewage disposal within the Planning Area. The capabilities for the Township to provide municipal wastewater treatment are reflected in the area and dimensional requirements of each individual zoning district. In addition, the Ordinance does incorporate standards and specifications for natural resource protection, site capacity, open space, buffers, sewage disposal, soil erosion and grading. Therefore, the Ordinance should be adequate to meet the Township's sewage facility needs for the next 20 years.

However, Douglass Township should consider amending the minimum lot size for residential land uses within the R-1 (Rural Suburban Residential) Zoning District. Section 424 (Area, Yard and Height Regulations) of the Douglass Township Zoning Ordinance reveals that the lot size for residential land uses within the R-1 Zoning District shall be a minimum of one (1) acre per dwelling unit. This is assuming that the residential units will utilize individual on-lot sewage disposal systems and on-lot wells. Referring to FIGURE 2 of this Plan, the R-1 Zoning District is located in areas of the Township which have the highest potential to be serviced by a municipal wastewater collection system in the future. It should be noted that these area include the unincorporated areas of Douglassville, Little Oley, Pine Forge and Greshville. Through the evaluation of wastewater treatment needs (Sections 4.50, 5.10, 5.20 and 5.30) within the Township, it is apparent that these areas also have the highest needs for wastewater treatment and management. Based on the information contained within Sections 5.10, 5.30 and 6.10 of this Plan, it will be economically and environmentally unfeasible to extend municipal wastewater collection lines into these identified areas of the Township. However, if a grant is obtained by Douglass he Township to finance a minimum of 50 percent of the project costs, it appears that it will be economically feasible to extend wastewater collection lines from the unincorporated area of Douglassville (Study Areas 1 and 2) to the Amity Township Wastewater Treatment Plant. It should be further noted that the Township does not qualify for most of the grants that are available.

Based on this information, the Township should amend Section 424 of the Douglass Township Zoning Ordinance. It is recommended that the minimum lot size for all residential land uses, within the R-1 Zoning District, which utilize individual on-lot sewage disposal systems and on-lot wells, should be a minimum of two (2) acres per dwelling unit. In addition, all other subsequent yard requirements should be modified accordingly.

The Douglass Township Zoning Ordinance has been included with this Act 537 Plan as EXHIBIT 2.

6.43 SUBDIVISION/LAND DEVELOPMENT ORDINANCE UPDATE

The Douglass Township Subdivision and Land Development Ordinance was adopted in 1965 and was amended in 1989. The Ordinance does recognize the need for long term sewage disposal in the Township. The capabilities for the Township to provide municipal wastewater treatment are reflected within the contents of this Ordinance. The Ordinance should be adequate to meet Township's sewage facility needs for the next 20 years.

The Township should consider amending its Subdivision and Land Development Ordinance. The sewage management programs described under Sections 6.31 (Field Testing Policy) and 6.32 (Physical Site Analysis) of this Plan should be incorporated within this Ordinance.

The Township should also consider the adoption of a Dry Sewer Ordinance. This type of Ordinance would require proposed developments, located within certain areas of the Township, to provide dry or capped sewers for future connection into a municipal wastewater treatment system. Through the evaluation of wastewater treatment needs, it is apparent that the unincorporated areas of Douglassville, Little Oley, Pine Forge and Greshville have the highest needs for wastewater treatment and management. Therefore, all proposed developments in and/or around these areas should be required to install a dry or capped sewer system. It should be noted that this will encompass most of the following Zoning Districts within the Township:

R-1 Rural Suburban Residential District
C-1 Neighborhood Commercial District
C-2 Highway Commercial District
I-1 Limited Industrial District
I-2 General Industrial District

All Zoning Districts within Douglass Township are outlined on FIGURE 2 of this Plan.

It is therefore recommended that the Township should consider adopting a Dry Sewer Ordinance. All proposed developments within the R-1, C-1, C-2, I-1 and I-2 Zoning Districts should comply with all pertinent design standards and construction specifications as outlined within this Dry Sewer Ordinance. In addition, the Douglass Township Subdivision Ordinance should also be amended to reflect this improvement requirement.

The Subdivision and Land Development Ordinance has been included with this Act 537 Plan as EXHIBIT 3.

6.44 NEEDS ANALYSIS CHART

In order to document the wastewater treatment needs within the Planning Area, the Pennsylvania Department of Environmental Resources (PA DER) has required the Township to complete a Needs Analysis Chart. The original Needs Analysis Chart, supplied by the (PA DER) has been modified by Douglass Township in order to be more specific regarding on-lot sewage development. The modified Needs Analysis Chart has been included within APPENDIX E of this Plan. The information utilized to complete the Needs Analysis Chart was obtained through a review of the SEO's records, sewage permits, tax records, building permits, approved subdivision plans, land use maps and aerial photographs. APPENDIX E also provides a list of general notes, conclusions and recommendations. The Township should update the Needs Analysis Chart on a regular basis in order to monitor the wastewater treatment needs of the Planning Area. If properly updated, the Township should be able to determine the effectiveness of the alternatives that are recommended within this Act 537 Plan Update.

6.50 NO ACTION ALTERNATIVE

The Douglass Township Board of Supervisors have considered this alternative. However, due to the increasing urbanization within the Planning Area, it is not an acceptable and practical method of comprehensive wastewater treatment. In addition, this alternative does not meet the goals and objectives of the Township, PA DER and US EPA. A no action philosophy could result in environmental imperilment due to groundwater pollution and financial loss due to enforcement actions. Therefore, this alternative should not be considered as part of the recommended Plan.

6.60 ANALYSIS OF FUNDING ALTERNATIVES

6.61 PA DCA - COMMUNITY FACILITIES PROGRAM

The Pennsylvania Department of Community Affairs' Community Facilities Program provides a maximum of $50,000 to municipalities with populations under 12,000 for the construction, rehabilitation, alteration, expansion or improvement of water facilities, and sanitary sewage disposal (excluding sewage treatment plants).

6.62 PA DEPT. OF COMMERCE'S SITE DEVELOPMENT PROGRAM

The Pennsylvania Department of Commerce's Site Development Program is available to all municipalities, municipal authorities, non-profit industrial development agencies and state agencies, for the improvement of public facilities, including sewage facilities collection lines, to enhance industrial growth and expansion, including sewage facilities collection lines. The grant limit is generally $50,000 or 50 percent of a total project cost, whichever is less.

6.63 THE CONSTRUCTION GRANTS PROGRAM

The Construction Grants Program, a Federal grant program administered by the Pennsylvania Department of Environmental Resources (PA DER), provides communities with 55 percent of the eligible costs of the construction of sewage treatment facilities, including interceptor sewers and infiltration and inflow (I/I) correction and up to a maximum of 75 percent of eligible costs for use of innovative or alternative technologies. Initially, the construction grants program had provided 75 percent of the eligible cost of planning, designing, and constructing publicly owned wastewater collection and treatment facilities with Federal grants. With the passage of the construction grants amendments of 1981, Federal grant monies were reduced to 55 percent, and would be phased out by the year 1992. This phase out of the construction grants program will be coordinated with the phase in of the federal capitalization of the SRF program.

6.64 THE FARMERS HOME ADMINISTRATION

The Farmers Home Administration (FmHA). a federal rural credit agency, administers a grant and loan program targeted at small communities to provide financial assistance for water and waste disposal systems. FmHA can provide for up to 75 percent of the eligible project cost. It should be noted that based on the 1990 Census, the Township does not qualify for a grant. This was confirmed by representatives of the Farmers Home Administration.

6.65 PENNVEST

The Pennsylvania Infrastructure Investment Authority (PENNVEST) is a program that has been instituted by the Commonwealth of Pennsylvania. The PENNVEST Program offers low interest loans to municipalities to improve water and sewer systems. Although funds under this Program are substantial, they are limited, and designed to assist the municipal projects with the highest environmental and economic needs. Based on these needs, the Township should apply for a low interest loan from PENNVEST in order to finance the proposed municipal wastewater facilities/management project identified under Section 6.10 of this Plan.

6.66 BOND ISSUE

The Township could float a bond in order to finance the direct and indirect construction costs for the extension of wastewater treatment lines into the Planning Area. The Township should initially evaluate all other funding options listed under this Section in order to offset all or a part of the total cost of the project. If the Township does not obtain a grant and/or low interest loan from PENNVEST, the Township should apply for a low interest loan through a conventional bond in order to finance the proposed municipal wastewater facilities/management project identified under Section 6.10 of this Plan.

6.67 THE PRIVATE DEVELOPMENT COMMUNITY

Developers may be charged a "developers fee" by municipalities for approving residential and commercial construction. The capital that is created is reserved and used to finance the proposed wastewater collection facilities, or upgrading when necessary or used to defray any additional operational cost associated with the development.

7.00 INSTITUTIONAL EVALUATION

7.10 IDENTIFICATION AND DESCRIPTION OF RELEVANT AGENCIES

Douglass Township is a Township of the Second Class and is governed under the Second Class Township Code of the Commonwealth of Pennsylvania. The residents of the Township elect three (3) persons to hold a position on the Board of Supervisors for a six (6) year term. The Board establishes and administers the laws, finances, services and facilities that are required to operate the Township. If wastewater collection lines are extended into Douglass Township, the Board of Supervisors review all options relative to ownership, operation and maintenance.

7.20 SEWAGE ENFORCEMENT OFFICER

The Douglass Township Sewage Enforcement Officer regulates the administration, permitting and enforcement policies associated with on-lot sewage disposal technology within the boarders of Douglass Township. The Pennsylvania Sewage Facilities Act (Act 537) under Chapters 71, 72 and 73, governs procedural regulations regarding on-lot sewage disposal technology.

7.30 LEGAL AND ADMINISTRATIVE ACTIVITIES

The following legal and administrative actions are required for implementation of the Act 537 Plan Update:

The proposed Act 537 Plan Update shall be reviewed by the Berks County Planning Commission and/or applicable County agencies.

Revisions to the proposed Act 537 Plan Update shall be executed based on all County and Municipal regulations, comments and concerns.

The proposed Act 537 Plan Update shall be adopted by all applicable municipal agencies by resolution.

The adopted Act 537 Plan Update shall be submitted to the Pennsylvania Department of Environmental Resources for review and approval.

8.00 SELECTED ALTERNATIVE

8.10 SUMMARY OF RECOMMENDED PLAN

To ascertain the most feasible method of accommodating Douglass Township's sewage facility needs, the following sections were analyzed:

Section 2.00 - Background Information
Section 3.00 - Physical Description of Planning Area
Section 4.00 - Evaluation of Wastewater Treatment
Section 5.00 - Evaluation of Wastewater Treatment Needs
Section 6.00 - Planning and Facilities Alternatives

This Section identifies and describes the most feasible methodology and techniques in resolving the comprehensive sewage needs in Douglass Township.

8.11 WASTEWATER COLLECTION AND CONVEYANCE

Sections 4.50, 5.10, 5.20, 5.30 and 6.10 of this Act 537 Plan Update analyzed all practical alternatives relative to wastewater collection and conveyance. Through the evaluation of the wastewater treatment needs within the Planning Area, it has been concluded that Study Areas 1 and 2 (FIGURE 14) have the highest needs/capabilities for municipal wastewater treatment. It was further concluded that wastewater collection and conveyance can be achieved by extending collection lines to the Amity Township Wastewater Treatment Plant. The alternative (Alternative 2, Section 6.10) evaluated previously in the Plan is recommended since it provided the most economical method for a municipal sewer system and also provided the least expensive operation and maintenance costs. This alternative consists of low pressure, small diameter gravity and standard gravity sewer systems, and pump stations and forcemains. The majority of the collection and conveyance system in this alternative involves standard and small diameter gravity sewer systems which are easy to maintain and the most common public sewer system.

Based on all pertinent information, it will be economically unfeasible for the Township to implement this project unless a minimum of 50 percent of the financing is obtained by a grant or by obtaining a low interest loan from PennVest. The funding alternatives were evaluated in Sections 6.10 and 6.60 of the Plan. These alternatives were based on a 2.629% PennVest Loan and 5.6% conventional financing for 20 years. The Township should evaluate all funding options, including potential grants, that may be available in order to implement this particular project.

FIGURE 16-B depicts the schematic diagram for the selected alternative for a municipal wastewater collection system. It should be noted that this system will provide municipal wastewater treatment to 213 EDU's in the unincorporated area of Douglassville (Study Areas 1 and 2). TABLE I-1B of the Plan provides and estimated construction costs for the selected alternative. TABLE I-2 provides the estimated project costs for the selected alternative. TABLES J-1 and J-2 provide the assessments and annual rentals for the selected alternative.

Based on a review of Study Areas 3, 4, 5, 6 and 7 it will be economically and environmentally unfeasible to extend municipal wastewater collection lines into any of these Study Areas at this point in time. Therefore, the Township should comprehensively evaluate all pertinent wastewater planning and facility alternatives that are identified within this Plan. These identified alternatives will focus on wastewater collection and conveyance, on-lot sewage disposal technology, sewage management programs and comprehensive planning. It is also recommended that the Township should continue to evaluate the municipal wastewater treatment needs of all Study Areas on an annual basis. In addition, the Township should work with all adjacent municipalities in an effort to resolve any wastewater treatment needs.

8.12 ON-LOT SEWAGE DISPOSAL TECHNOLOGY

8.121 SEWAGE ENFORCEMENT

Douglass Township administers all on-lot sewage disposal regulations through PA DER via the Township's Sewage Enforcement Officer, Planning Commission, Board of Supervisors and Engineer. All policies concerning review procedures are specified in the Douglass Township Zoning and Subdivision Ordinance. The Township Sewage Enforcement Officer (SEO) conforms to all regulations specified by PA DER's guidelines specified under Chapters 71, 72 and 73 under the Pennsylvania Sewage Facilities Act. The SEO has the power to order the repair of malfunctioning on-lot sewage disposal systems, after they are reported and investigated. A permit for a malfunction repair is required under Chapter 71.41(a) of PA DER regulations. the SEO may experiment with an aerobic tank, chlorinator, pressure dosing and water reduction devices.

All proposed individual on-lot sewage disposal systems shall be designed and installed in accordance with all pertinent guidelines and regulations established by the PA DER (Act 537, as amended) and Douglass Township. These proposed systems should not have any significant physical limitations (soil, slope, geologic and/or hydrogeologic).

8.122 COMMUNITY SUBSURFACE/PACKAGE TREATMENT SYSTEMS

The areas of the Township which do not indicate the presence of physical limitations and have a minimal potential for groundwater contamination may consider a the feasibility of community treatment system or a package treatment system as an option for on-lot sewage disposal. Prior to the permitting of any community or a package treatment system, the developer shall conduct a topographical analysis, soil analysis, hydrological analysis, hydrogeological analysis, geological analysis and/or geotechnical analysis to the Township and PA DER for review and approval. All proposed community or package treatment systems shall be designed in order to meet or exceed the guidelines and regulations established by the PA DER (Act 537, as amended) and Douglass Township. These treatment systems shall not be considered unless they are certified operational by the appropriate agencies. In addition, a plan shall be developed by the owner for the perpetual operation and maintenance of the proposed community treatment system. An agreement should be executed between the developer and Township reflecting the conditions of this plan.

8.13 SEWAGE MANAGEMENT PROGRAM

8.131 FIELD TESTING POLICY

In order to prevent or overcome an on-lot sewage disposal malfunction, the Township should adopt the following field testing policy:

1. The Township Sewage Enforcement Officer (SEO) must be present to observe all testing procedures. Any testing performed without SEO approval will be considered invalid and must be retested.
2. Where testing is to be conducted the applicant shall (at the discretion of the Township SEO) obtain the services of a Soil Scientist to prepare soil descriptions.

3. The applicant must obtain the services of a qualified person to perform percolation tests according to the procedures outlined by the SEO.
4. All lots must have an additional approved replacement area. This is to ensure that the lot is still useable should the first system fail.
5. The applicant must provide a backhoe and operator to be present at the site for deep probe testing.
6. All sites must be inspected prior to start of installation. The SEO must be notified at least 48 hours prior to start of installation.
7. All systems must have final inspections before covering. Any other required inspections will be determined by the type of system at the SEO's discretion to ensure proper system installation.

This sewage management policy is a preventive measure by which Douglass Township can counteract against any potential environmental imperilment. The basis for this particular testing policy is due to the existing physical limitations (soil, geologic, topographic and hydrogeological) for development and to prevent on-lot sewage malfunctions within the Douglass Township Planning Area. Therefore, this sewage management policy is recommended and should be adopted by Douglass Township.

8.132 PHYSICAL SITE ANALYSIS

As a prevention measure, the Township should require a detailed physical site analysis for all proposed subdivisions or land developments. This analysis shall include the following:

Topographical Analysis: Delineate slopes under eight (8) percent, between eight (8) and twelve (12) percent, between twelve (12) and twenty-five (25) percent, and twenty-five (25) percent and over. The Township may require a field survey to verify and accurately locate these contour intervals.

Soils Analysis: Identify soils that are considered to be alluvial soils, hydric soils and high water table soils. The Township may require a on-site analysis to verify the soil conditions.

Wetlands Delineation: Delineate areas that are considered to be wetlands. These areas should be clearly and accurately located in the field by a qualified individual. No structure or on-lot sewage disposal system should be located within fifty (50) feet of a wetlands area.

Hydrological Analysis: Identify the location of all stream bodies (streams, rivers, lakes and ponds) and the FEMA 100-year flood plain boundary. The Township may require a field survey to verify and accurately locate the FEMA 100-year flood plain boundary. No structure or on-lot sewage disposal system should be located within fifty (50) feet of FEMA 100-year flood plain boundary.

Hydrogeological Analysis: Determine through proper sampling techniques and laboratory analysis if the groundwater is free of bacteriological contaminants.

Geological Analysis: Identify sinkholes, karst and/or limestone formations, outcropping and shallow bedrock areas. These areas should be clearly and accurately located in the field by a qualified individual. On-lot sewage disposal systems should be strategically located in relationship to the identified geological feature and formation.

This sewage management policy is a preventive measure for the Township to counteract against any potential environmental imperilment. The basis for this testing policy is due to the existing physical limitations (soil, geologic, topographic and hydrogeologic) for development within the Planning Area. Therefore, the Township should include this sewage management policy as an amendment to the Douglass Township Subdivision and Land Development Ordinance.

8.133 EDUCATIONAL AND CONSERVATION MEASURES

Douglass Township should undertake an educational program to improve public awareness of the causes of on-lot sewage malfunctions and how the probability of a malfunction can be reduced. The PA DER (Bureau Water Quality Management) has published the following consumer guides:

CONSUMERS GUIDE TO ON-LOT SEWAGE DISPOSAL SYSTEM OPERATION AND MAINTENANCE

CONSUMER GUIDE TO ON-LOT SEWAGE PERMITS

These informative consumer guides provide basic information relative to on-lot sewage disposal and management. The Township residents should be aware of the contents of these publications of which have been included within this Plan as APPENDIX G of this Plan. These publications should be kept at the Township Office for the resident to review. In addition, the Township officials, technical staff and residents should be aware of and encouraged to attend seminars and programs devoted to on-lot sewage disposal management.

8.134 SEPTIC TANK MAINTENANCE

As a prevention and maintenance measure, the Township could inform or require homeowners to have their individual systems pumped and/or cleaned out. This measure could prevent malfunctions through overloading. The PA DER (Bureau Water Quality Management) has recommended a pumping schedule based on household size and tank size. This pumping schedule has been included within this Plan as TABLE K. The educational program should be implemented by the Township on a volunteer basis. If the Township determines that the volunteer program is ineffective, the Township shall consider a mandatory pumping program.

8.135 SCHEDULED INSPECTIONS OF EXISTING ON-LOT SYSTEMS

Douglass Township has the legal authority to inspect on-lot sewage disposal systems and order the repair of malfunctioning systems. This inspection option is permitted under the Pennsylvania Sewage Facilities Act (Act 537), the Pennsylvania Municipalities Planning Code (Act 247), and the Second Class Township Code. This alternative is a preventive measure by which the Township can counteract against any potential environmental imperilment. However, due to the economic and administrative requirements, this alternative would not be an effective alternative for Douglass Township at this time. The Township has an exceptional record for reporting, investigating and correcting existing and potential malfunctions. Therefore, this alternative shall not considered for this planning period. However, if the previously identified sewage management programs (Sections 8.131 through 8.134) should fail, the Township shall consider this option or an evaluation program (Section 8.136) in the future. The Township shall also consider the establishment of a "Sewage Management District" if these programs should fail.

8.136 EVALUATION OF EXISTING ON-LOT SEWAGE DISPOSAL SYSTEMS

An alternative to requiring scheduled inspections of on-lot sewage disposal systems is for the Township to conduct a detailed evaluation of on-lot sewage disposal systems in problem areas of the Township. To perform this evaluation, the Township would conduct a survey and inspection of residences utilizing on-lot sewage disposal systems in designated problem areas of the Township. This program is also a preventive measure by which the Township can counteract against any potential environmental imperilment. The Township has an exceptional record for reporting, investigating and correcting existing and potential malfunctions. Therefore, this evaluation program shall be considered for this planning period.

The Township shall follow the Evaluation Program scheduled and outlined in Section 5.30 of this Plan. The Township has conducted, or is in the process of conducting, a survey and inspection of residences utilizing on-lot sewage disposal systems in designated problem areas of the Township. This evaluation enables the Township to document the wastewater treatment needs within selected areas of the Planning Area. Douglass Township has completed a Phase 1 Evaluation of the Township. The Phase 2 Evaluation is scheduled for 1994, the Phase 3 Evaluation is scheduled for 1995 and the Phase 4 Evaluation is scheduled for 1996. All information and data sheets pertaining to the Phase 1 Evaluation has been included within Section 5.30 and APPENDIX F of this Plan.

If the previously identified sewage management programs (Sections 8.131 through 8.134 and 8.136) should fail, the Township should consider this option or an inspection program (Section 8.135) in the future.

8.14 NON-STRUCTURAL COMPREHENSIVE PLANNING

8.141 COMPREHENSIVE PLAN UPDATE

The Douglass Township Comprehensive Plan was adopted in 1974 and last updated by the Douglass Township Board of Supervisors in 1988 . This Comprehensive Plan Update was utilized for background analysis and direction for existing land uses, projected future land use, community facilities (sewage facilities), information regarding physical characteristics (soils, topography, drainage, geology and hydrogeology) and population characteristics (trends, estimates, projections, and subdivision activity).

The Plan does recognize the need for long term sewage disposal planning in the Township. Therefore, the Comprehensive Plan should be adequate to meet the Township's sewage facility needs for the next 20 years. The Comprehensive Plan has been included with this Act 537 Plan Update as EXHIBIT 1.

8.142 ZONING ORDINANCE UPDATE

The Douglass Township Zoning Ordinance was adopted in 1974 and last amended in 1989. The Ordinance does recognize the need for long term sewage disposal within the Planning Area. The capabilities for the Township to provide municipal wastewater treatment are reflected in the area and dimensional requirements of each individual zoning district. In addition, the Ordinance does incorporate standards and specifications for natural resource protection, site capacity, open space, buffers, sewage disposal, soil erosion and grading. Therefore, the Ordinance should be adequate to meet the Township's sewage facility needs for the next 20 years.

However, Douglass Township should consider amending the minimum lot size for residential land uses within the R-1 (Rural Suburban Residential) Zoning District. Section 424 (Area, Yard and Height Regulations) of the Douglass Township Zoning Ordinance reveals that the lot size for residential land uses within the R-1 Zoning District shall be a minimum of one (1) acre per dwelling unit. This is assuming that the residential units will utilize individual on-lot sewage disposal systems and on-lot wells. Referring to FIGURE 2 of this Plan, the R-1 Zoning District is located in areas of the Township which have the highest potential to be serviced by a municipal wastewater collection system in the future. It should be noted that these area include the unincorporated areas of Douglassville, Little Oley, Pine Forge and Greshville.

Through the evaluation of wastewater treatment needs (Sections 4.50, 5.10 and 5.20) within the Township, it is apparent that these identified areas also have the highest needs for wastewater treatment and management. Based on the information contained within Sections 5.20 and 6.10 of this Act 537 Plan, it appears that if a grant is obtained by the Township, that it will be economically feasible to extend municipal wastewater collection lines from the unincorporated area of Douglassville (Study Areas 1 and 2) to the Amity Township Wastewater Treatment Plant. It should be further noted that the Township does not qualify for most of the grants that are available.

Based on this information, the Township should amend Section 424 of the Douglass Township Zoning Ordinance. It is recommended that the minimum lot size for all residential land uses, within the R-1 Zoning District, which utilize individual on-lot sewage disposal systems and on-lot wells, should be a minimum of two (2) acres per dwelling unit. In addition, all other subsequent yard requirements should be modified accordingly.

The Douglass Township Zoning Ordinance has been included with this Act 537 Plan as EXHIBIT 2.

8.143 SUBDIVISION/LAND DEVELOPMENT ORDINANCE UPDATE

The Douglass Township Subdivision and Land Development Ordinance was adopted in 1965 and was amended in 1989. The Ordinance does recognize the need for long term sewage disposal in the Township. The capabilities for the Township to provide municipal wastewater treatment are reflected within the contents of this Ordinance. The Ordinance should be adequate to meet Township's sewage facility needs for the next 20 years.

The Township should amend its Subdivision and Land Development Ordinance. The sewage management programs described under Sections 8.131 (Field Testing Policy) and 8.132 (Physical Site Analysis) of this Plan should be incorporated within this Ordinance.

The Township should adopt a Dry Sewer Ordinance. This Ordinance would require proposed developments, located within certain areas of the Township, to provide dry or capped sewers for future connection into a municipal wastewater treatment system. Through the evaluation of wastewater treatment needs, it is apparent that the unincorporated areas of Douglassville, Little Oley, Pine Forge and Greshville have the highest needs for wastewater treatment and management. Therefore, all proposed developments in and/or around these areas should be required to install a dry or capped sewer system. It should be noted that this will encompass most of the following Zoning Districts within the Township:

R-1 Rural Suburban Residential District
C-1 Neighborhood Commercial District
C-2 Highway Commercial District
I-1 Limited Industrial District
I-2 General Industrial District

All of the Zoning Districts within Douglass Township are outlined on FIGURE 2 of this Plan. All proposed developments within the R-1, C-1, C-2, I-1 and I-2 Zoning Districts should comply with all pertinent design standards and construction specifications as outlined within this Dry Sewer Ordinance. In addition, the Douglass Township Subdivision Ordinance should also be amended to reflect this improvement requirement.

The Subdivision and Land Development Ordinance has been included with this Act 537 Plan as EXHIBIT 3.

8.144 NEEDS ANALYSIS CHART

In order to document the wastewater treatment needs within the Planning Area, the Pennsylvania Department of Environmental Resources (PA DER) has required the Township to complete a Needs Analysis Chart. The original Needs Analysis Chart, supplied by the (PA DER) has been modified by Douglass Township in order to be more specific regarding on-lot sewage development. The modified Needs Analysis Chart has been included within APPENDIX E of this Plan. The information utilized to complete the Needs Analysis Chart was obtained through a review of the SEO's records, sewage permits, tax records, building permits, approved subdivision plans, land use maps and aerial photographs. APPENDIX E also provides a list of general notes, conclusions and recommendations. The Township should update the Needs Analysis Chart on a regular basis in order to monitor the wastewater treatment needs of the Planning Area.

8.20 FINANCING THE PLAN

The Township should review all grant options that may be available in order to implement the proposed Plan. It should be noted that if Douglass Township does not qualify for any significant grants (50% minimum), the extension of wastewater collection lines into Study Areas 1 and 2 will be more costly. Therefore, the Township shall evaluate all potential grant options (Sections 6.61 through 6.64) specified within the Plan. If the Township should not qualify for any grants the Township shall pursue a low interest loan from either PENNVEST (Section 6.65) and/or a conventional bond issue (Section 6.66). The existing residents and the private development community shall also participate in financing the recommended Plan.

9.00 IMPLEMENTATION OF THE PLAN

The legal and administrative actions required for the implementation of the Douglass Township Act 537 plan are outlined below:

The proposed Act 537 Plan Update shall be reviewed by the Berks County Planning Commission and/or applicable County agencies. Revisions to the proposed Act 537 Plan Update shall be executed based on all County and Municipal regulations, comments and concerns.

The proposed Act 537 Plan Update shall be adopted by all applicable municipal agencies by resolution. The adopted Act 537 Plan Update shall be submitted to the Pennsylvania Department of Environmental Resources for review and approval.

Douglass Township shall implement the Act 537 Plan Update in accordance with the implementation schedule (Section 9.10).

9.10 IMPLEMENTATION SCHEDULE

Upon approval of the proposed Act 537 Plan by the Pennsylvania Department of Environmental Resources, the Township shall implement the Plan in accordance with the following schedule:

1. The Township shall consult with the Amity Township Board of Supervisors and/or the Amity Township Sewer Authority regarding potential municipal wastewater treatment capabilities, capacity availability, financial obligations and reservation agreements. This preliminary consultation should be held prior to the Plan being approved by the PA DER.

2. The Township shall review all grant options that may be available in order to implement the proposed Plan. This should be conducted within three (3) months after the Act 537 Plan has been approved by the PA DER.

3. If the Township should not qualify for any grants the Township shall pursue a low interest loan from either PENNVEST and/or a conventional bond issue. This shall be completed within six (6) months after the Act 537 Plan has been approved by the PA DER.

4. If the Township initially fails to qualify for a grant which covers a minimum of 50 percent of the total project cost, the Township should continue to reapply for such grants on an annual basis to off-set future construction and/or maintenance costs.

5. The Township shall consult with the Amity Township Board of Supervisors and/or the Amity Township Sewer Authority in an effort to finalize any pertinent agreements. This shall be completed within six (6) months after the Act 537 Plan has been approved by the PA DER.

6. The Township shall conduct a detailed engineering feasibility study and design of the proposed wastewater collection system. This study and design should evaluate in detail on how engineering, planning and financing of this project will be further implemented. This shall be completed within twelve (12) months after the Act 537 Plan has been approved by the PA DER.

7. The Township shall complete the design and bidding for all phases of the Douglass Township wastewater collection and conveyance system within eighteen (18) months after the Act 537 Plan has been approved by the PA DER.

8. The Township shall undertake and complete the necessary financing that is required to fund the Douglass Township wastewater collection and conveyance system within twenty-four (24) months after the Act 537 Plan has been approved by the PA DER.

9. The Township shall complete the construction and installation of the Douglass Township wastewater collection and conveyance system within twenty-four (24) months after the Act 537 Plan has been approved by the PA DER.

10. The Douglass Township wastewater collection shall be connected into the Amity Township Wastewater Treatment System within twenty-four (24) months after the Act 537 Plan has been approved by the PA DER.

11. The Township shall adopt the "Field Testing Policy" identified under Section 8.131 of this Act 537 Plan. The basis for this particular testing policy is due to the existing physical limitations (soil, geologic, topographic and hydrogeological) for development and to prevent on-lot sewage malfunctions within the Planning Area. The Township should incorporate this sewage management policy as an amendment to the Douglass Township Subdivision and Land Development Ordinance. This should be conducted within twelve (12) months after the Act 537 Plan has been approved.

12. The Township shall adopt the standards and provisions for the "Physical Site Analysis" as identified under Section 8.132 of this Act 537 Plan. The basis for this particular testing policy is due to the existing physical limitations (soil, geologic, topographic and hydrogeologic) for development within the Planning Area. The Township shall incorporate this analytical procedure as an amendment to the Township Subdivision Ordinance. This should be conducted within twelve (12) months after the Act 537 Plan has been approved.

13. The Township should undertake a program to improve public awareness of the causes of on-lot sewage malfunctions and how the probability of a malfunction can be reduced. The PA DER has recommended a pumping schedule based on household size and tank size. This pumping schedule has been included within this Plan as TABLE K. This pumping schedule should be made available to all domestic households and a volunteer pumping program should be initiated by the Township. This should be conducted within eighteen (18) months after the Act 537 Plan has been approved.

14. The Township shall attempt to educate the residents of the Township regarding the operation and maintenance of on-lot sewage disposal systems. The PA DER (Bureau Water Quality Management) has published consumer guides which provide basic information relative to on-lot sewage disposal and management. The residents should be aware of the contents of these publications of which have been included within this Plan as APPENDIX G of this Act 537 Plan. These publications shall be kept at the Township Office for the resident to review. This shall be conducted within eighteen (18) months after the Act 537 Plan has been approved.

15. Douglass Township shall amend the minimum lot size for residential land uses within the R-1 (Rural Suburban Residential) Zoning District. Section 424 (Area, Yard and Height Regulations) of the Douglass Township Zoning Ordinance currently reveals that the lot size for residential land uses within the R-1 Zoning District shall be a minimum of one (1) acre per dwelling unit. Through the evaluation of wastewater treatment needs within the Township, it is apparent that the areas zoned R-1 have the highest needs for wastewater treatment and management. Based on the information contained within Sections 4.50, 5.10, 5.20, 6.10, 6.30, 6.42 and 8.142, the Township should amend Section 424 of the Zoning Ordinance. The minimum lot size for all residential land uses, within the R-1 Zoning District, which utilize individual on-lot sewage disposal systems and on-lot wells, should be a minimum of two (2) acres per dwelling unit. In addition, all other subsequent yard requirements should be modified accordingly. The Zoning Ordinance shall be properly amended within eighteen (18) months after the Act 537 Plan has been approved.

16. Douglass Township shall adopt a Dry Sewer Ordinance. This Ordinance would require proposed developments, located within certain areas of the Douglass Township Planning Area, to provide dry or capped sewers for future connection into a municipal wastewater treatment system. Through the evaluation of wastewater treatment needs, it is apparent that the R-1, C-1, C-2, I-1 and I-2 Zoning Districts have high needs for wastewater treatment and management. Therefore, the proposed developments within these Zoning Districts should comply with all pertinent design standards and construction specifications as outlined within this Dry Sewer Ordinance. The Douglass Township Subdivision Ordinance should also be amended to reflect this improvement requirement. This shall be conducted within eighteen (18) months after the Act 537 Plan has been approved.

17. In order to document the wastewater treatment needs within the Planning Area, the Township has completed a Needs Analysis Chart (APPENDIX E). The Township shall update the Needs Analysis Chart on an annual basis in order to monitor the wastewater treatment needs of the Planning Area. If properly updated, the Township should be able to determine the effectiveness of the selected alternatives that are recommended within this Act 537 Plan.

18. The Township shall conduct an evaluation of the existing on-lot sewage disposal systems as prescribed under Sections 5.30 and 8.136 of the Plan. The Evaluation Program has been initiated as part of this Act 537 Plan and shall continue as scheduled after the Plan has been approved by the PA DER.

19. The Township shall consider the need to establish a "Sewage Management District" if the Sewage Management Programs should fail. This will be evaluated on an annual basis.

20. The Township shall consider the need to conduct and schedule inspections of on-lot sewage disposal systems on a regular basis if the Sewage Management Programs should fail. This will be evaluated on an annual basis.

21. The Township should review its non-structural planning elements and policies in an effort to recognize the needs for long term municipal sewage facility planning. This review should be done on a continuous basis.

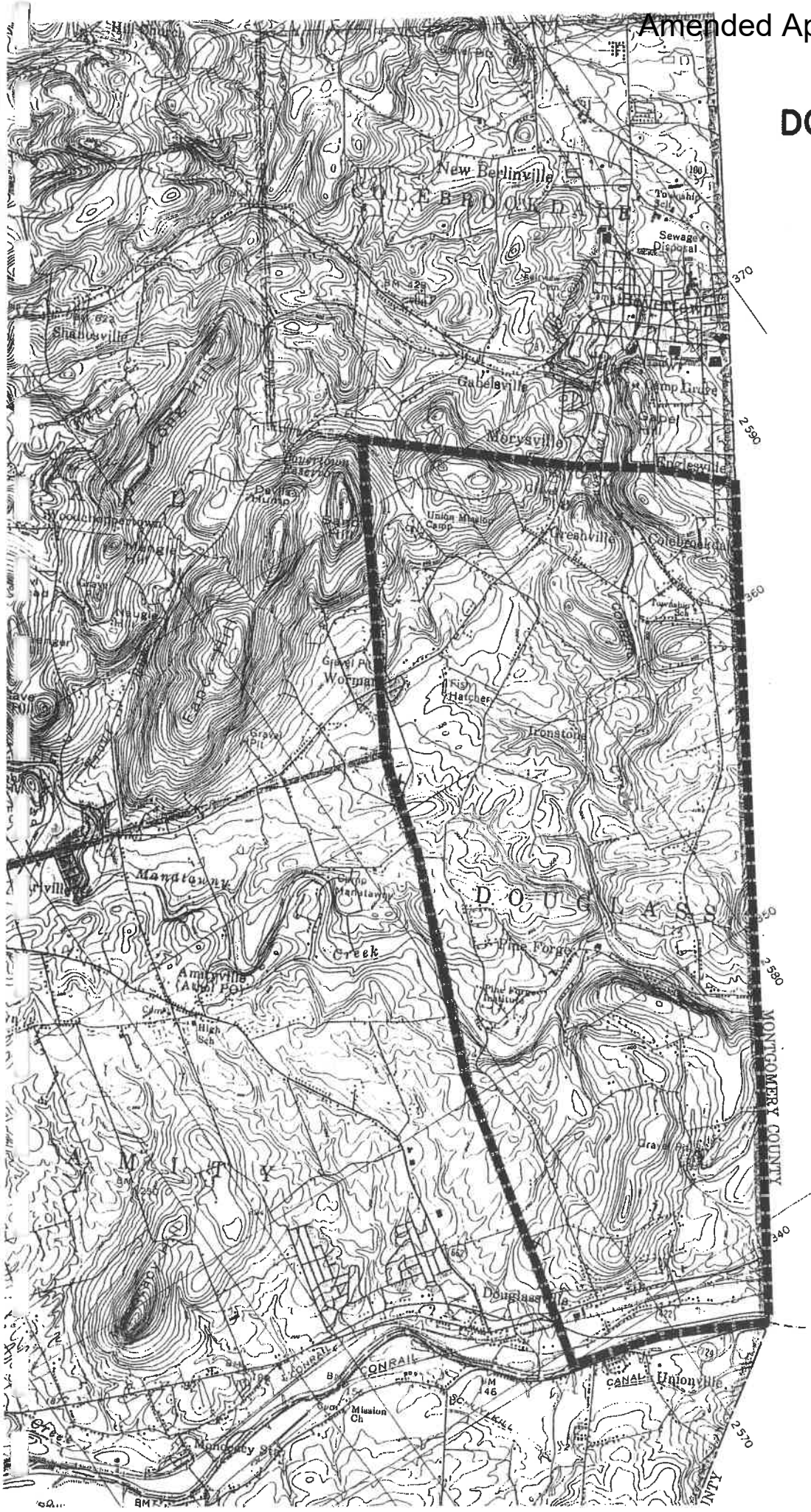
22. The Township should work with the PA DER, the Berks County Planning Commission and all adjacent municipalities in an effort to resolve any existing or potential wastewater treatment needs. This inter-governmental planning process should be conducted on a continuous basis.

23. The Township should review this Act 537 Plan on an annual basis in an effort to determine if the goals, objectives and policies of the Plan are being properly implemented.

24. Douglass Township should comprehensively update this Act 537 Plan at the end of the 20-year planning period (2014). The updated Plan should re-evaluate the wastewater treatment needs for the Township and establish a set of goals, objectives and policies in order to resolve these wastewater treatment needs for the next planning period.

FIGURES

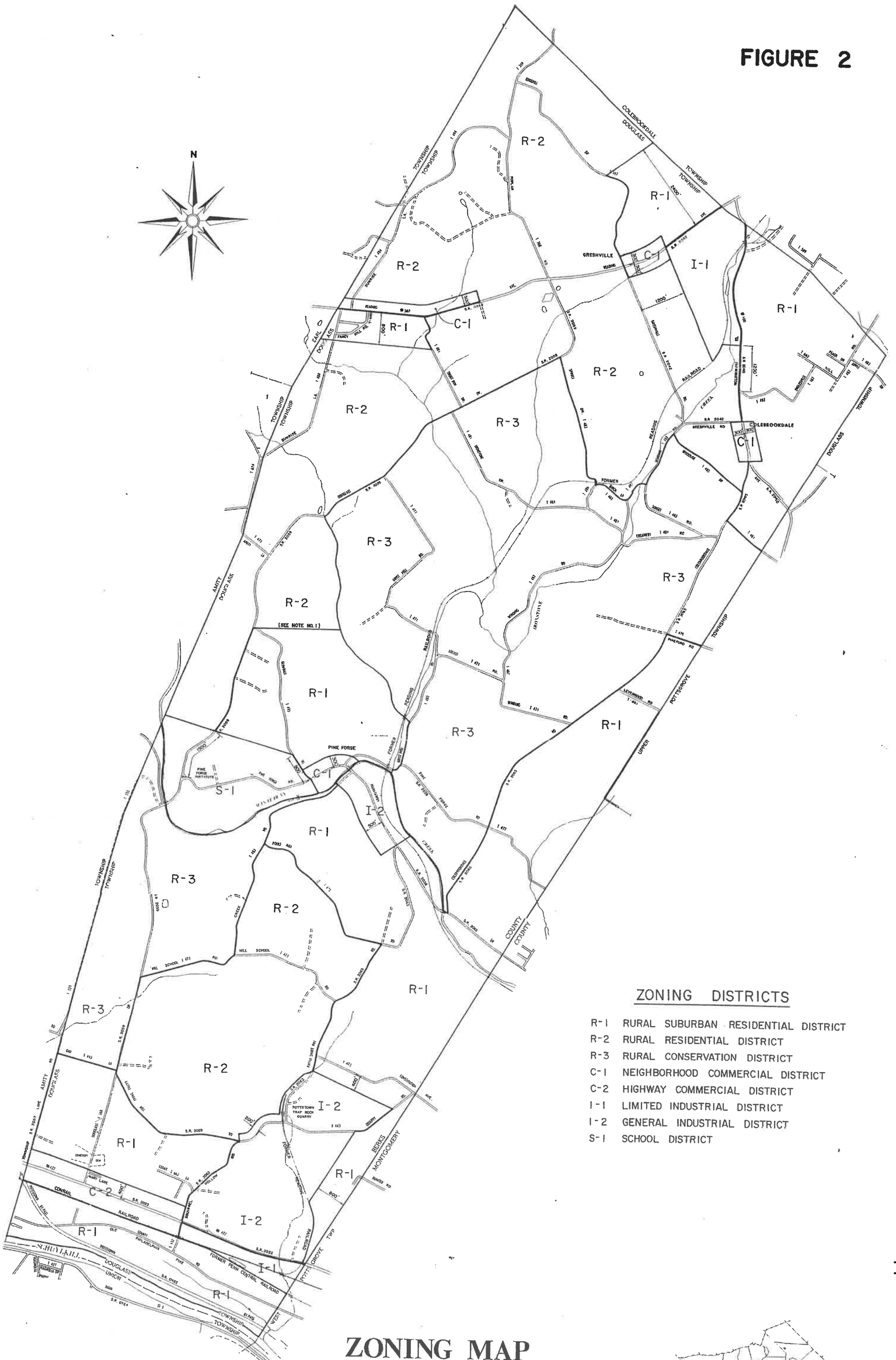
FIGURE 1
DOUGLASS TOWNSHIP
PLANNING AREA



N

SCALE: 1" = 5000'

FIGURE 2



ZONING DISTRICTS

- R-1 RURAL SUBURBAN RESIDENTIAL DISTRICT
- R-2 RURAL RESIDENTIAL DISTRICT
- R-3 RURAL CONSERVATION DISTRICT
- C-1 NEIGHBORHOOD COMMERCIAL DISTRICT
- C-2 HIGHWAY COMMERCIAL DISTRICT
- I-1 LIMITED INDUSTRIAL DISTRICT
- I-2 GENERAL INDUSTRIAL DISTRICT
- S-1 SCHOOL DISTRICT

ZONING MAP
DOUGLASS TOWNSHIP
BERKS CO., PA.

PREPARED AT THE DIRECTION OF THE DOUGLASS TOWNSHIP BOARD SUPERVISORS BY MOTLEY ENGINEERING CO., INC. MAY 1990

1" = 1600'

0 400 800 1600 2400 3200 4000 4800

NOTE:
(1) LINE DIRECTION DETERMINED BY PROJECTING EASTWARDLY TO INTERSECTION OF T-471 AND READING RAILROAD.

PUBLIC RD

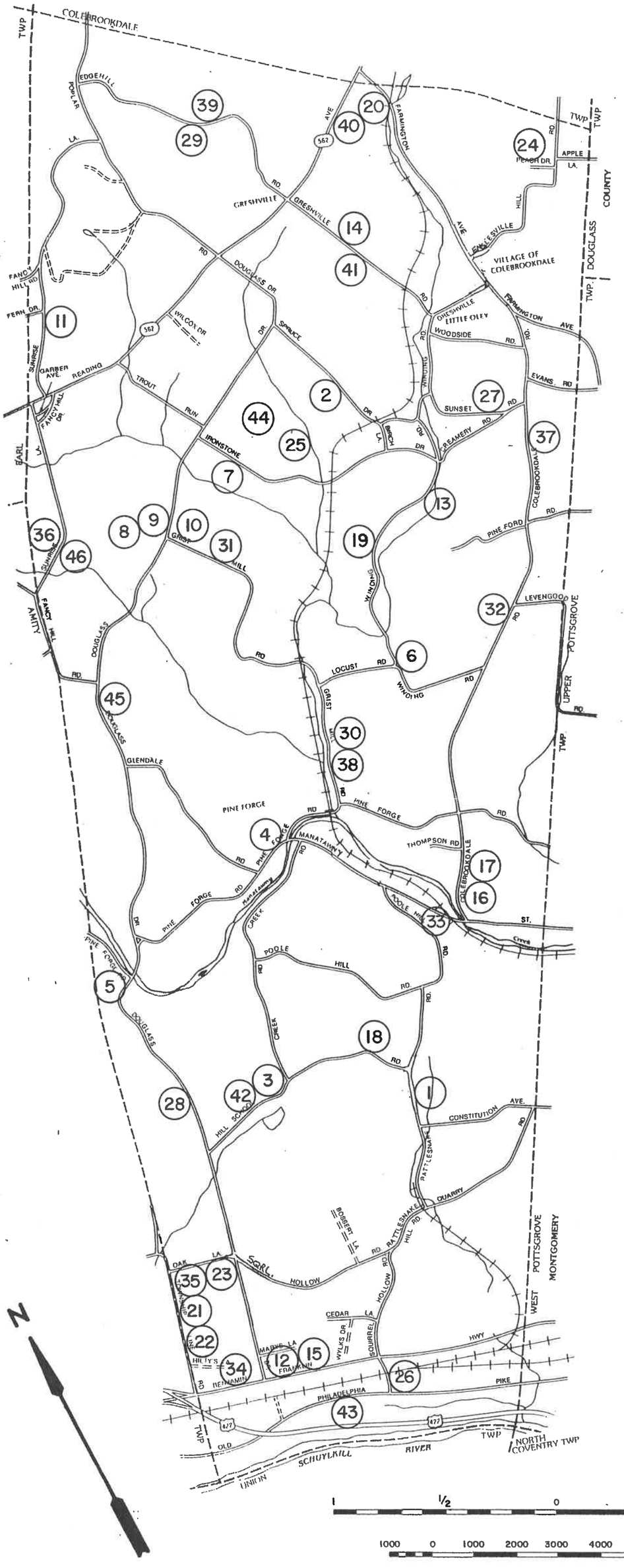
PRIVATE RD / LANE

Map may copyrighted by the PLANNING COMMISSION OF THE COUNTY OF BERKS



Amended Appendix A-22-b.4

FIGURE 3
DOUGLASS TOWNSHIP
SUBDIVISION AND LAND DEVELOPMENT ACTIVITY
(1985 – PRESENT)



MAP NO.	SUBDIVISION
1	MADDONA*
2	DAVIDHEISER
3	DI MASCIO
4	TRAINER
5	ADAMS (REV.)
6	GRESH
7	IRONESTONE EAST*
8	ROLLING VALLEY (REV.)
9	ROLLING VALLEY I
10	ROLLING VALLEY II-A
11	CECELIA
12	KRUK
13	MILLER
14	ACKER
15	HILTEBEITEL
16	BEALER
17	MELLINGER
18	TOWSEND
19	SCHOENLY
20	BOYERTOWN PACKING
21	SENDECKI
22	SENDECKI II
23	SENDECKI III
24	ZUBER
25	VALLEY PROTEIN*
26	SAYOR
27	BREIDEGAM
28	PINE FILL APARTMENTS*
29	BUCK RUN
30	CHRISTMAN
31	YORGEY
32	STERCULA
33	STAINLESS, INC.
34	YODER
35	TOWNSHIP LINE ROAD SUB.
36	BJ FARMS
37	EAST COURT*
38	IRONESTONE GLEN*
39	HOFFMAN
40	GIFT*
41	FADLER
42	FERRANTI
43	DODDS*
44	DOUGLASS CROSSING
45	KOLARZ
46	CINAGLIA

Amended Appendix A-22-b.4

Amended Appendix A-22-b.4

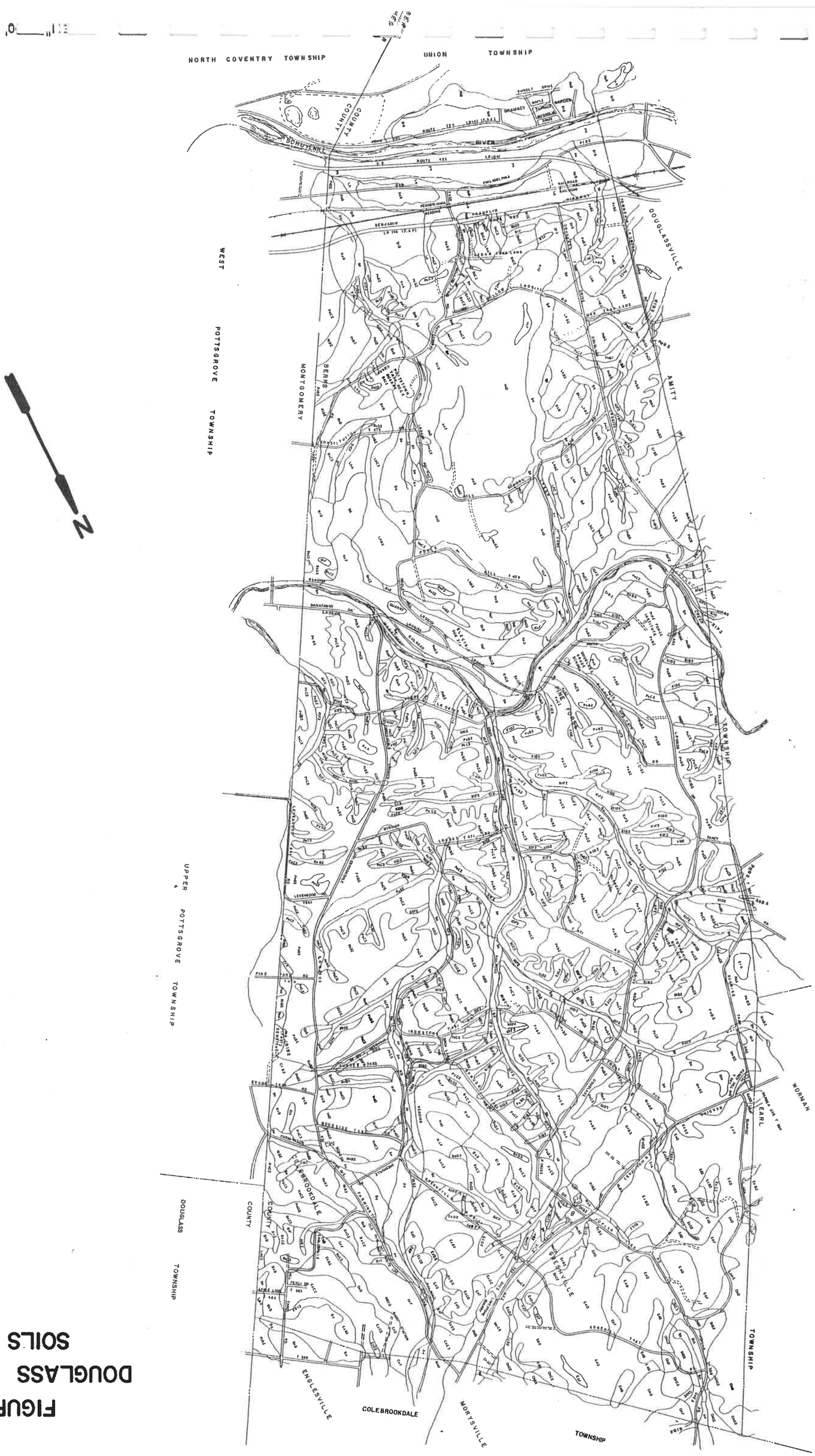


FIGURE 4
DOUGLASS TOWNSHIP
SOILS MAP

FIGURE 5
DOUGLASS TOWNSHIP
SOIL CAPABILITY
FOR DEVELOPEMENT



Amended Appendix A-22-b.4

FIGURE 6
DOUGLASS TOWNSHIP
PRIME AGRICULTURE
ANALYSIS



LEGEND

SUITABILITY FOR AGRICULTURAL USES

- MOST SUITABLE
- MIDDLE SUITABILITY
- LEAST SUITABLE

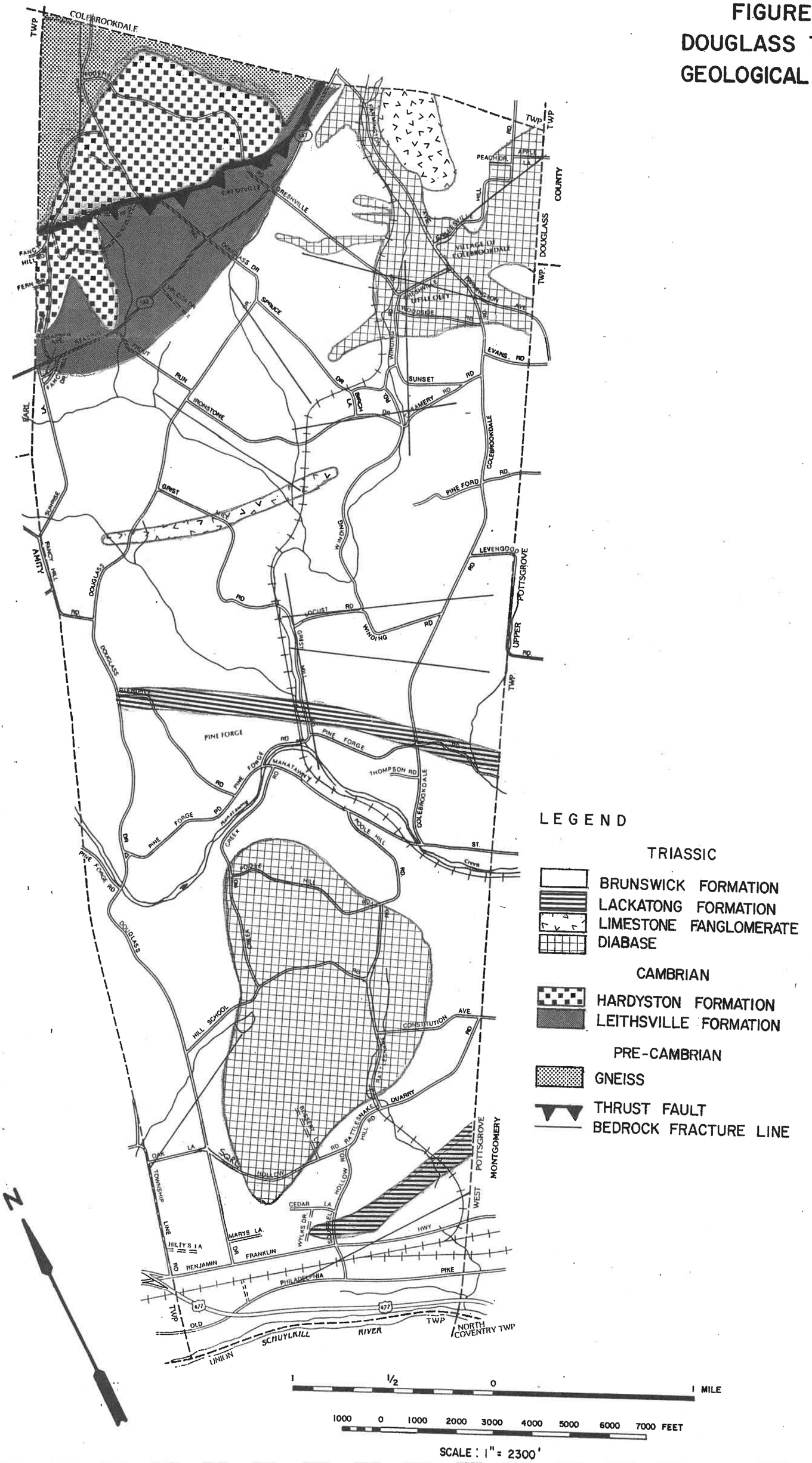
1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

SCALE : 1" = 2300'

Amended Appendix A-22-b.4

FIGURE 7
DOUGLASS TOWNSHIP
GEOLOGICAL ANALYSIS



Amended Appendix A-22-b.4

FIGURE 8
DOUGLASS TOWNSHIP
TOPOGRAPHICAL ANALYSIS



LEGEND

DEGREE OF SLOPE

- 0-8%
- 8-15%
- 15-25%
- OVER 25%

N

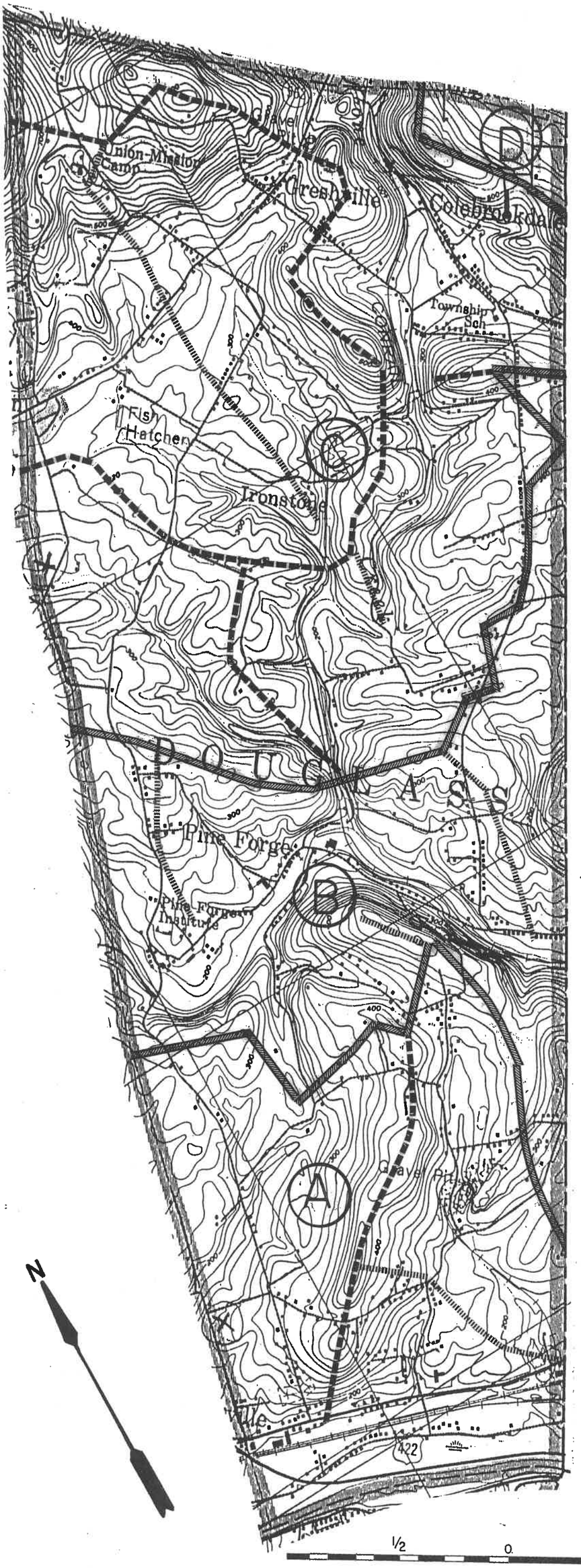
1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

SCALE : 1" = 2300'

Amended Appendix A-22-b.4

FIGURE 9
DOUGLASS TOWNSHIP
DRAINAGE BASIN ANALYSIS



LEGEND

- MAJOR RIDGE LINE
- MINOR RIDGE LINE
- SUB-MINOR RIDGE LINE

BASIN CLASSIFICATIONS

- (A) SCHUYLKILL RIVER DRAINAGE BASIN
- (B) MANATAWNY CREEK DRAINAGE BASIN
- (C) IRONSTONE CREEK DRAINAGE BASIN
- (D) MINISTER CREEK DRAINAGE BASIN

N

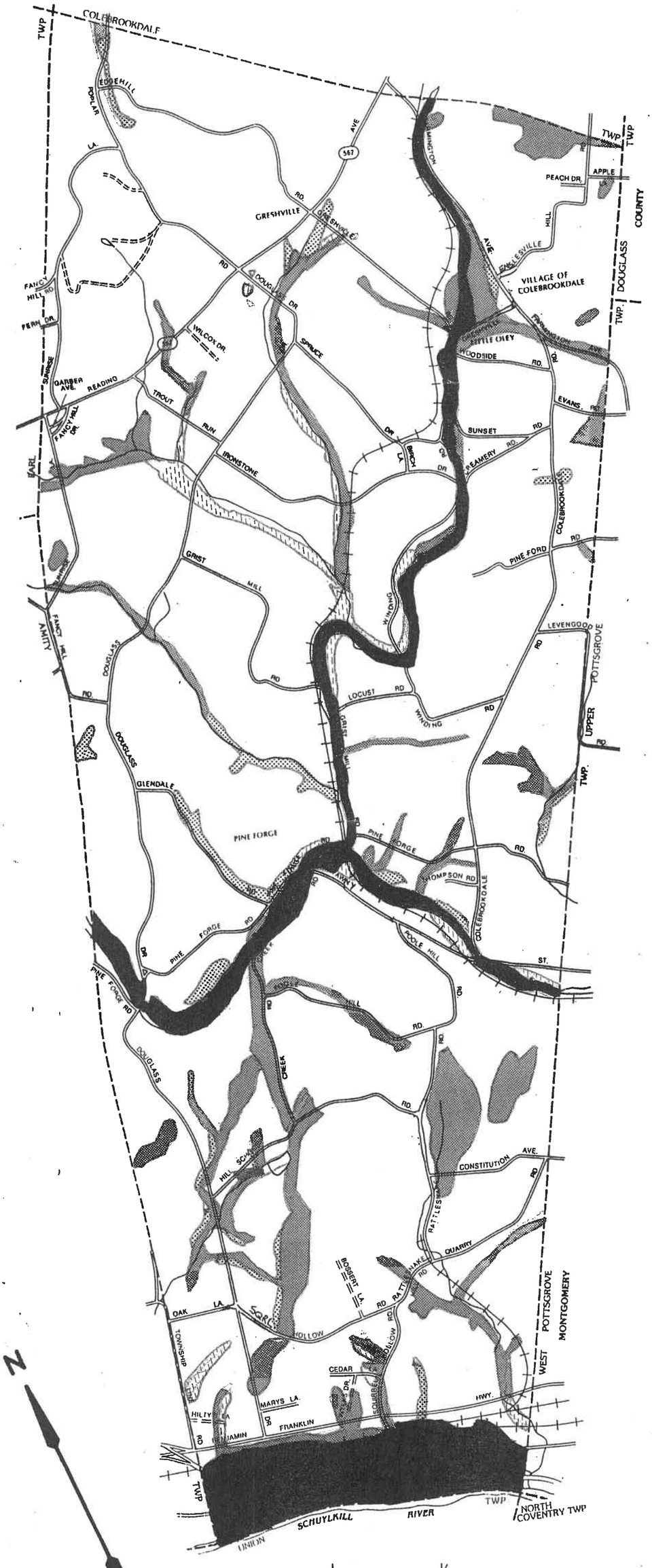
1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

SCALE: 1" = 2300

Amended Appendix A-22-b.4

FIGURE 10
DOUGLASS TOWNSHIP
FLOODWAY CONTROL
MAP



LEGEND

AREAS WITH WATER-RELATED LIMITATIONS

- 100 YEAR FLOOD PLAIN
- HYDRIC SOILS
- AREAS OF HIGH WATER TABLE
- AREAS OF PAST FLOODING

N

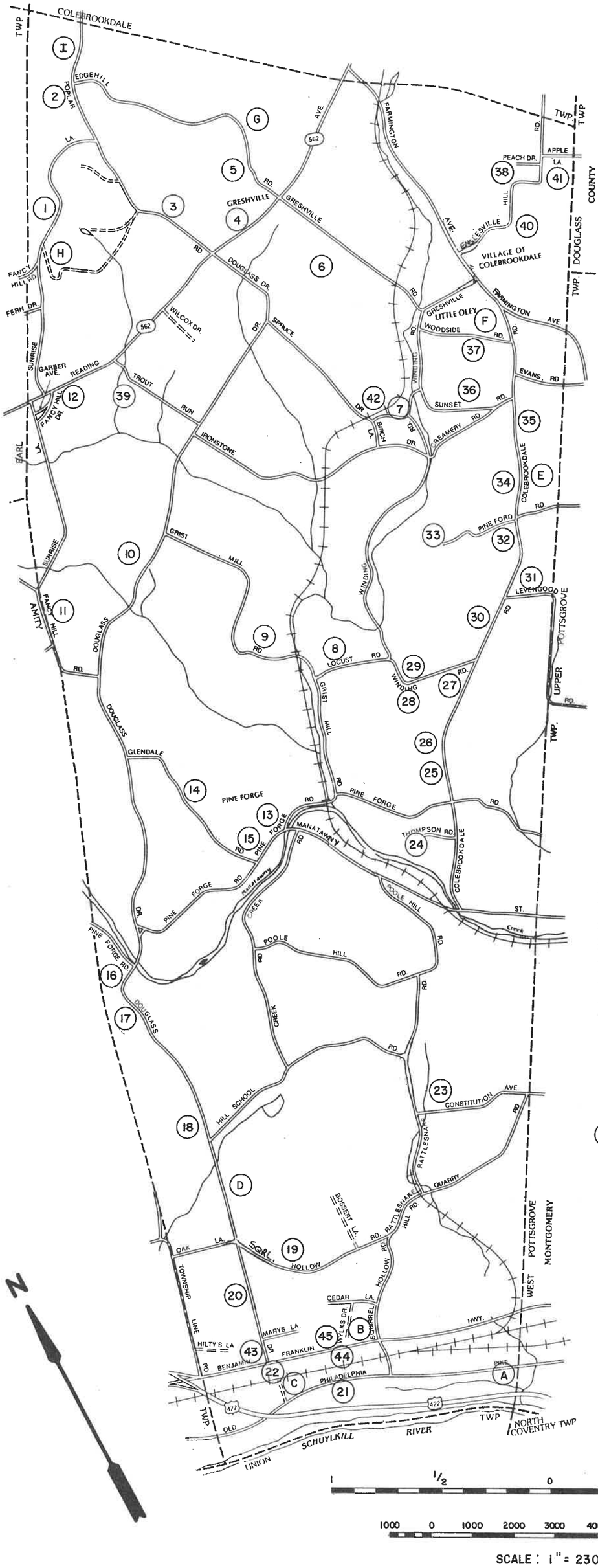
1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

SCALE: 1" = 2300'

Amended Appendix A-22-b.4

FIGURE II
DOUGLASS TOWNSHIP
HYDROGEOLOGICAL ANALYSIS



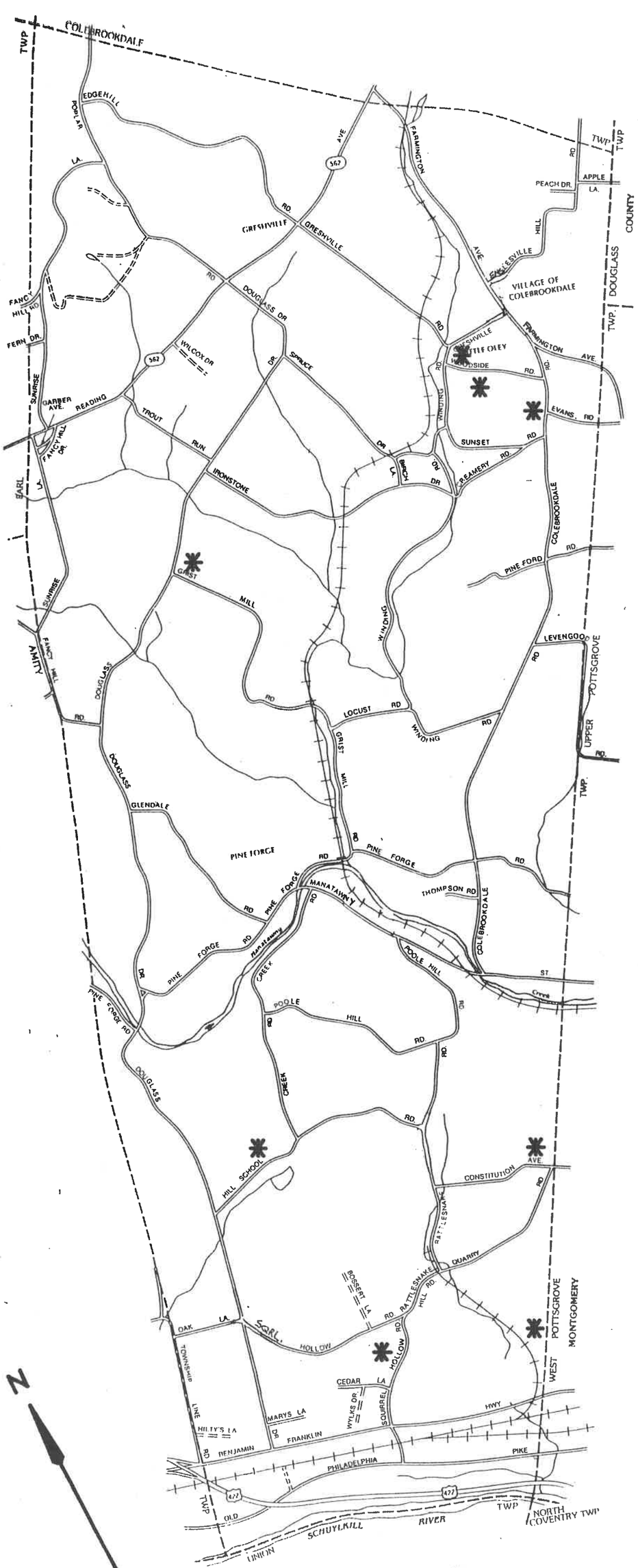
MAP NO.	NITRATE NITROGEN (MG/L)	TOTAL COLIFORM (COL/100ml)	FECAL COLIFORM (COL/100ml)	FECAL STREP (COL/100ml)
1	0.68	0	0	0
2	1.5	8	3	0
3	2.1	0	0	0
4	0.62	0	0	0
5	0.31	0	0	1
6	0.86	0	0	0
7	2.0	82	2	82
8	4.8	0	0	1
9	2.1	0	0	17
10	5.1	0	0	0
11	8.4	3	0	0
12	1.5	0	0	0
13	2.1	1	0	0
14	2.4	0	0	0
15	5.3	0	0	0
16	3.8	0	0	0
17	3.7	0	0	0
18	4.7	18	0	2
19	2.7	0	0	0
20	0.8	97	0	6
21	2.9	1	0	0
22	2.6	1	0	0
23	0.76	0	0	0
24	3.9	81	8	1
25	8.4	0	0	0
26	5.8	0	0	0
27	5.2	32	3	11
28	5.4	0	0	0
29	3.9	0	0	0
30	4.1	0	0	0
31	4.0	6	3	0
32	3.5	0	0	0
33	3.6	0	0	0
34	4.9	0	0	0
35	4.6	1	0	0
36	2.1	31	0	0
37	0.42	0	0	0
38	6.0	0	0	0
39	6.2	21	0	0
40	0.70	1	0	0
41	0.42	0	0	22
42	4.0	43	15	32
43	0.5	0	0	0
44	0.78	0	0	0
45	4.0	2	0	0

Sources: Motley Engineering Co., Inc.
Hydro-Analysis Assoc., Inc.

(A) Denotes that the Sample was analyzed by INTEX as part of the Groundwater Resources Study prepared for the Berks-Mont Council of Governments in February of 1988. Refer to Section 3.63 and APPENDIX B of the Pan for further information.

Amended Appendix A-22-b.4

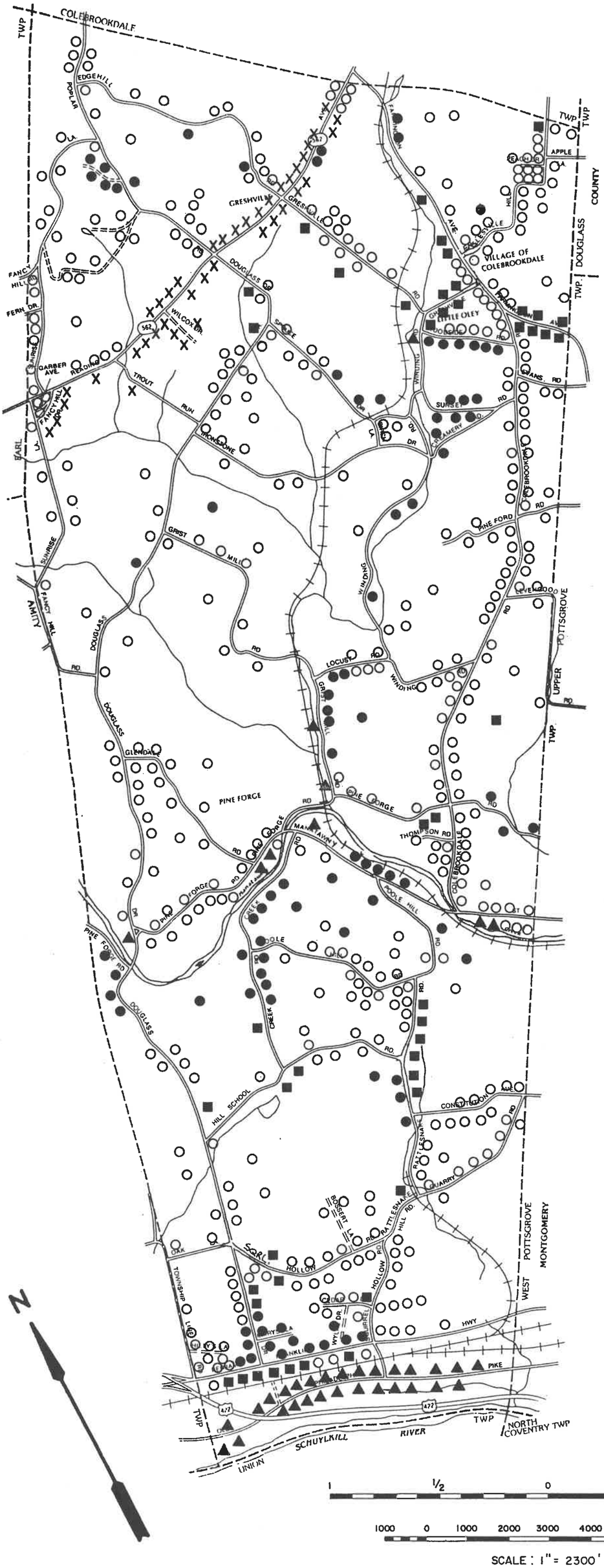
FIGURE 12
DOUGLASS TOWNSHIP
RECENT MALFUNCTIONS
(1985-1990)



✱ DENOTES THAT THE AREA HAS BEEN THE SITE OF A RECENTLY REPORTED MALFUNCTION AND REPAIR

Amended Appendix A-22-b.4

FIGURE 13-A
DOUGLASS TOWNSHIP
EXISTING DWELLING UNITS CONSTRUCTED PRIOR TO 1967 UTILIZING ON-LOT SEWAGE DISPOSAL TECHNOLOGY



X DENOTES THAT THE ON-LOT SEWAGE DISPOSAL SYSTEM MAY BE LOCATED ON HAZARDOUS SOILS AS IDENTIFIED BY THE U.S. DEPT. OF AGRICULTURE.

■ DENOTES THAT THE ON-LOT SEWAGE DISPOSAL SYSTEM MAY BE LOCATED ON HYDRIC SOILS AS IDENTIFIED BY THE U.S. DEPT. OF AGRICULTURE.

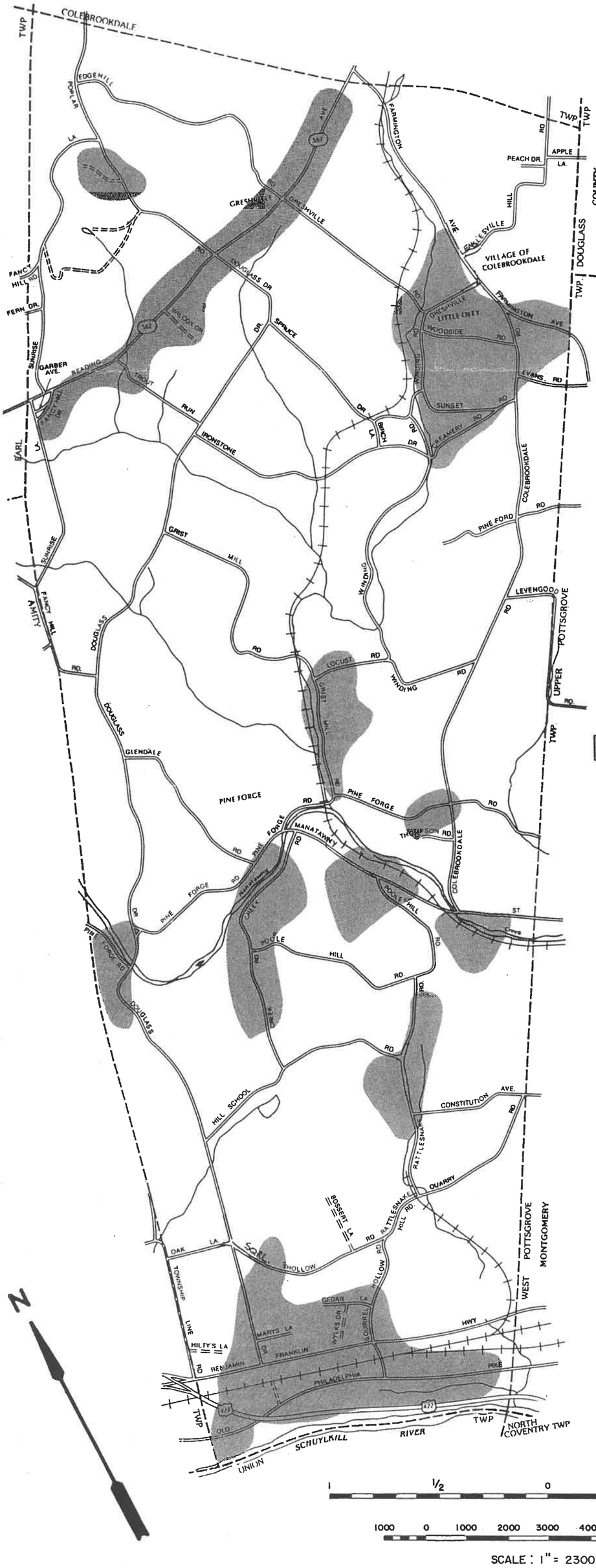
▲ DENOTES THAT THE ON-LOT SEWAGE DISPOSAL SYSTEM MAY BE LOCATED WITHIN THE 100-YEAR FLOOD PLAIN AS IDENTIFIED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

● DENOTES THAT THE ON-LOT SEWAGE DISPOSAL SYSTEM MAY BE LOCATED ON ON SLOPES EXCEEDING 25 PERCENT IN GRADE.

○ DENOTES THAT THE ON-LOT SEWAGE DISPOSAL SYSTEM HAS BEEN LOCATED IN AN AREA CONSIDERED UNOBSTRUCTED BY LIMITATIONS FOR DEVELOPMENT.

Amended Appendix A-22-b.4

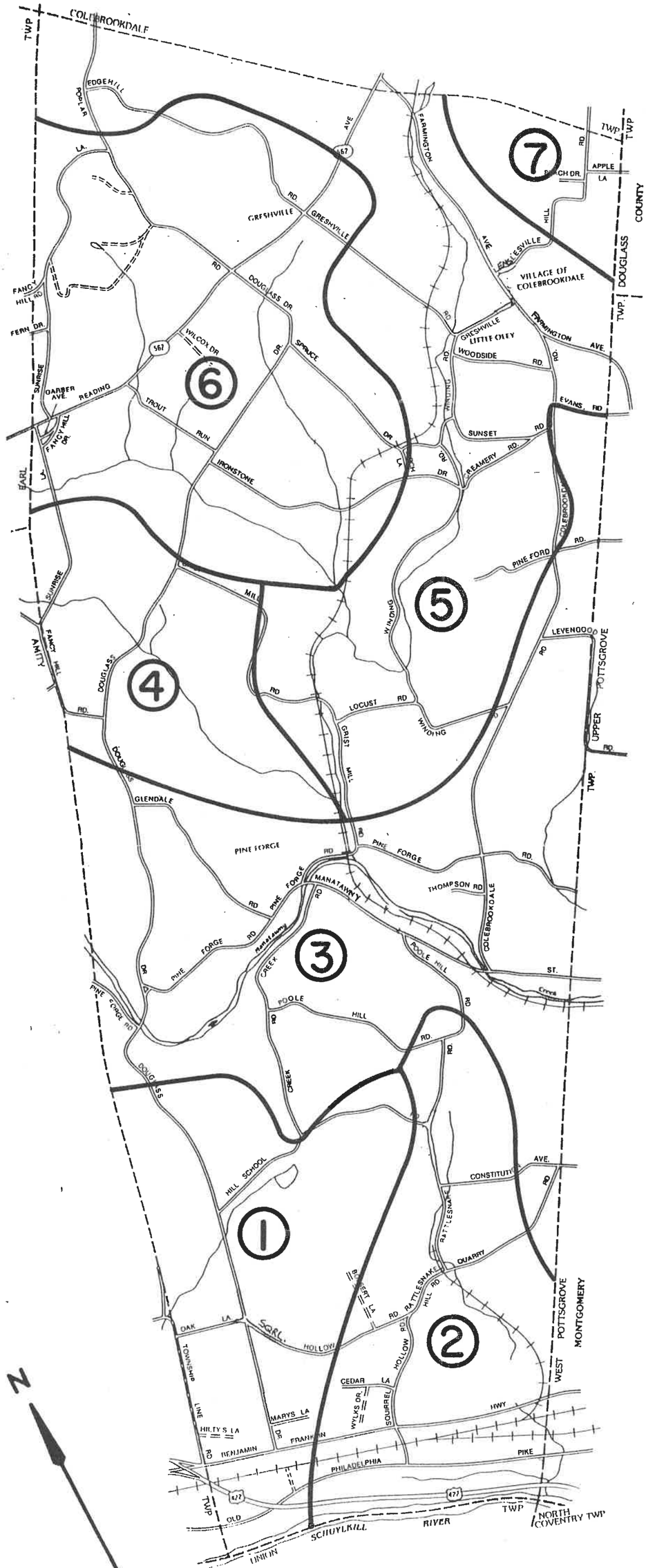
FIGURE 13-B
DOUGLASS TOWNSHIP
EXISTING ON-LOT SEWAGE DISPOSAL PROBLEM AREAS



DENOTES THAT THE IDENTIFIED AREA IS CONSIDERED TO BE A POTENTIAL "PROBLEM AREA" FOR ON-LOT SEWAGE DISPOSAL AND DEVELOPMENT WITHIN THE TOWNSHIP. THESE AREAS ARE CONSIDERED AS A "PROBLEM AREA" BASED ON EXISTING DEVELOPMENT PATTERNS IN CONJUNCTION WITH THE PHYSICAL LIMITATIONS FOR ON-LOT SEWAGE DISPOSAL IN THE TOWNSHIP. THIS TERM DOES NOT IMPLY THAT THESE AREAS ARE NOT COMPATIBLE FOR ON-LOT SEWAGE DISPOSAL IN ALL CASES.

Amended Appendix A-22-b.4

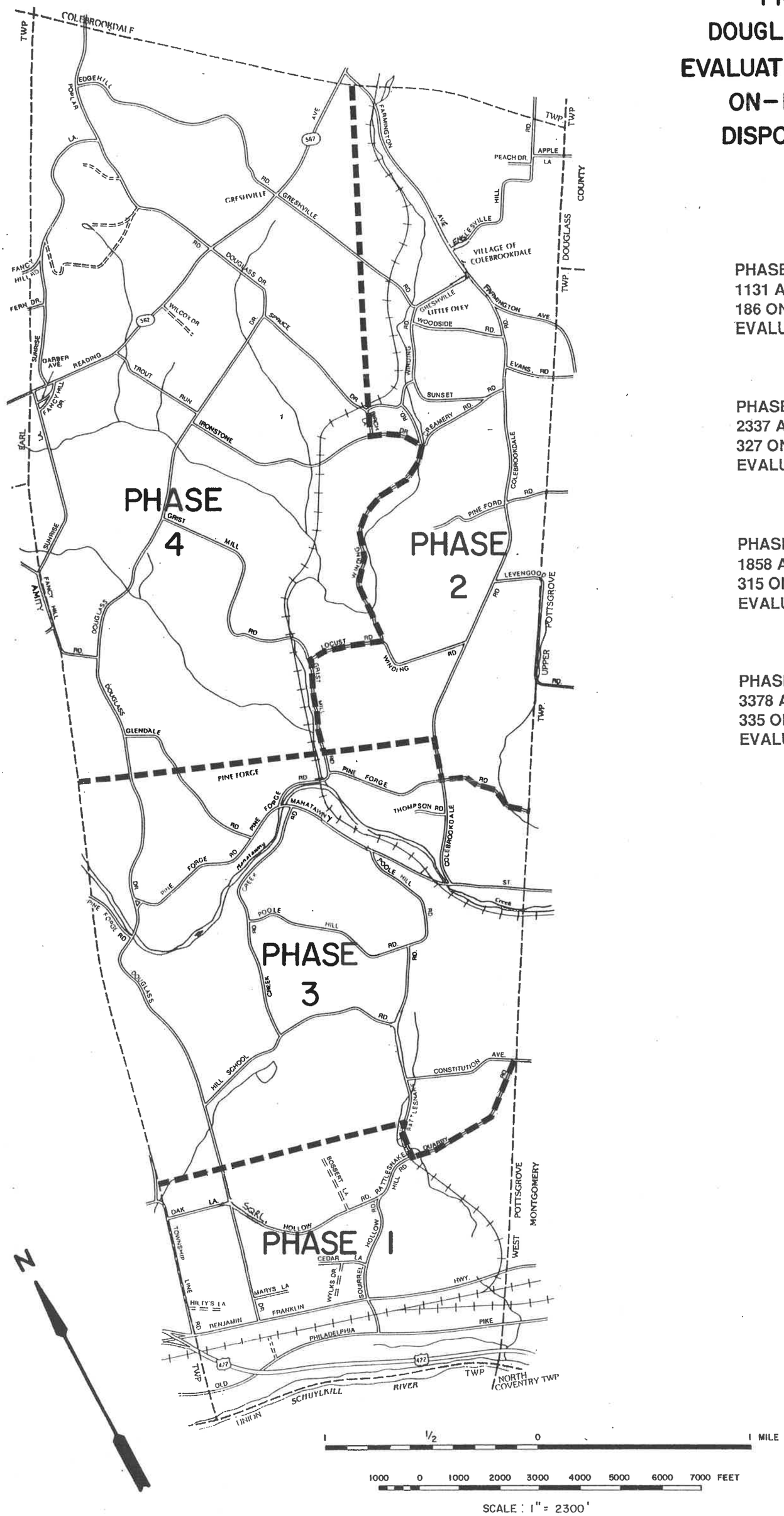
FIGURE 14
DOUGLASS TOWNSHIP
STUDY AREA ANALYSIS



STUDY AREA	ACREAGE
1	1007
2	993
3	2047
4	697
5	1980
6	1757
7	223

Amended Appendix A-22-b.4

FIGURE 15
DOUGLASS TOWNSHIP
EVALUATION OF EXISTING ON-LOT SEWAGE DISPOSAL SYSTEMS



PHASE 1 EVALUATION
1131 ACRES
186 ON-LOT SYSTEMS
EVALUATION YEAR: 1993

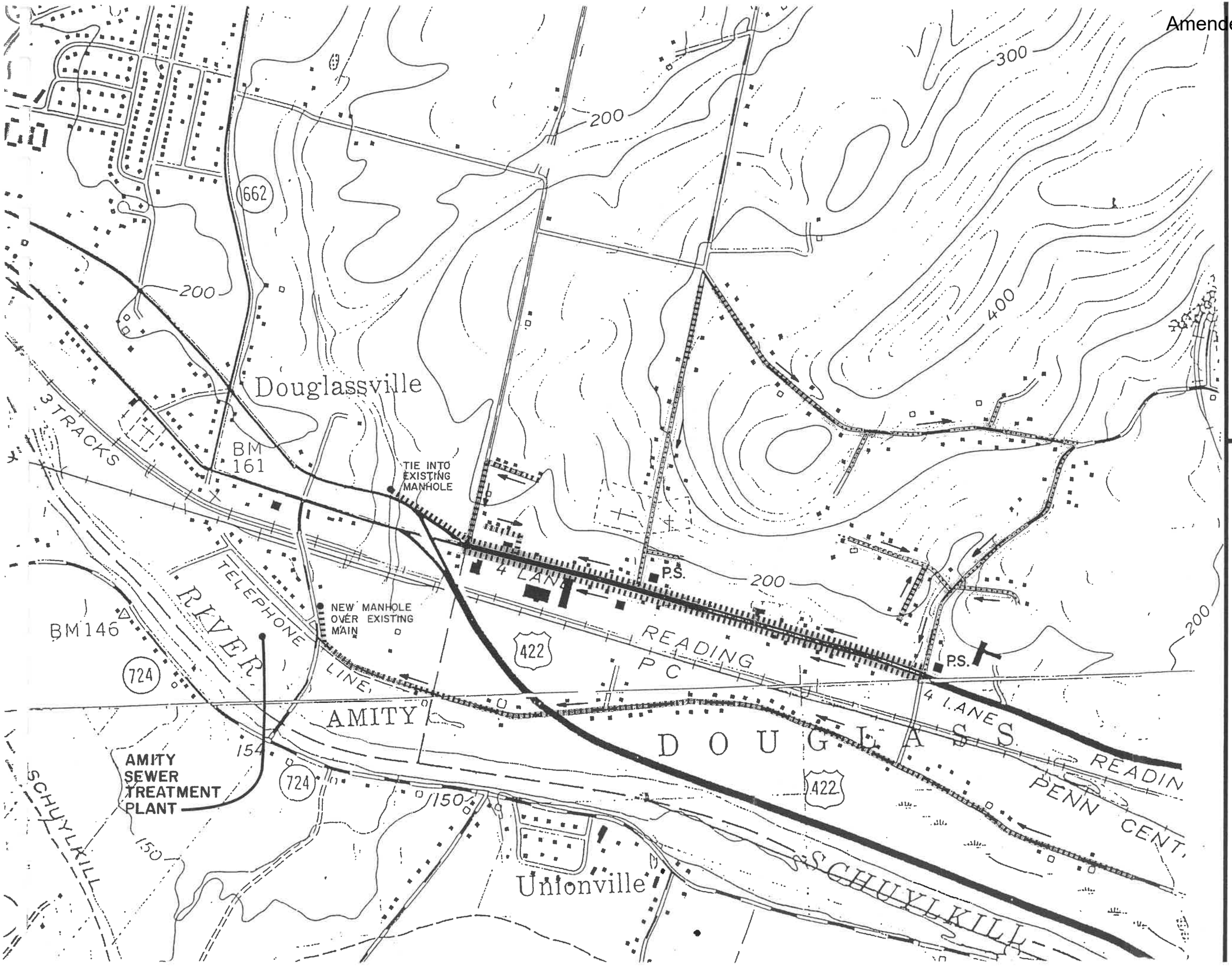
PHASE 2 EVALUATION
2337 ACRES
327 ON-LOT SYSTEMS
EVALUATION YEAR: 1994

PHASE 3 EVALUATION
1858 ACRES
315 ON-LOT SYSTEMS
EVALUATION YEAR: 1995

PHASE 4 EVALUATION
3378 ACRES
335 ON-LOT SYSTEMS
EVALUATION YEAR: 1996

Amended Appendix A-22-b.4

FIGURE 16-A
WASTEWATER COLLECTION AND CONVEYANCE ALTERNATIVES
OPTION 2, ALTERNATIVE 1
STUDY AREAS 1 AND 2



LOW PRESSURE SEWER

P.S. PUMP STATION

SMALL DIAMETER GRAVITY SEWER

N

SCALE : 1"= 800'

FIGURE 16-B
WASTEWATER COLLECTION AND CONVEYANCE ALTERNATIVES OPTION 2, ALTERNATIVE 2 STUDY AREAS 1 AND 2

LOW PRESSURE
SMALL DIAMETER GRAVITY
STANDARD GRAVITY
FORCE MAIN
P.S. PUMP STATION

N

SCALE : 1" = 800'

DOUGLASS TOWNSHIP

BERKS COUNTY PENNSYLVANIA

ACT 537 PLAN UPDATE

SEPTEMBER 1993

VOLUME 2 OF 2

PREPARED FOR:

DOUGLASS TOWNSHIP
BERKS COUNTY PENNSYLVANIA

PREPARED BY:

MOTLEY ENGINEERING CO., INC.
1300 NEW HOLLAND ROAD
KENHORST, PA 19607

215-775-0888

APPENDICES

APPENDIX A

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
APPENDIX A
HYDROGEOLOGICAL ANALYSIS
WELL SAMPLE SPECIFICATIONS

SAMPLE	SOURCE	TYPE	DEPTH	TREATMENT	AGE
1	Well	Drilled	320 ft.	None	1963
2	Well	Drilled	380 ft.	None	1980
3	Well	Drilled	Unknown	None	1975
4	Well	Drilled	240 ft.	None	1947
5	Well	Drilled	Unknown	None	1978
6	Well	Drilled	510 ft.	Bypass	1984
7	Well	Drilled	270 ft.	None	1970
8	Well	Drilled	180 ft.	None	1957
9	Spring	----	----	None	----
10	Well	Drilled	200 ft.	None	1970
11	Well	Drilled	450 ft.	Bypass	1981
12	Well	Drilled	210 ft.	None	1955
13	Well	Drilled	Unknown	None	1962
14	Well	Drilled	280 ft.	Bypass	1974
15	Well	Drilled	150 ft.	Bypass	1965
16	Well	Drilled	200 ft.	None	1960
17	Well	Drilled	310 ft.	None	1985
18	Well	Drilled	Unknown	None	1965
19	Well	Drilled	240 ft.	None	1984
20	Well	Drilled	180 ft.	None	1977
21	Well	Drilled	100 ft.	Bypass	1960
22	Well	Drilled	120 ft.	Bypass	1954
23	Well	Drilled	Unknown	None	1981
24	Well	Drilled	280 ft.	None	1987
25	Well	Drilled	310 ft.	None	1960
26	Well	Drilled	Unknown	Bypass	1961
27	Well	Drilled	350 ft.	None	1965
28	Well	Drilled	270 ft.	None	1975
29	Well	Drilled	200 ft.	None	1973
30	Well	Drilled	250 ft.	Bypass	1967
31	Spring	----	----	None	----
32	Well	Drilled	180 ft.	None	1980
33	Well	Drilled	440 ft.	Bypass	1988
34	Well	Drilled	350 ft.	None	1967
35	Well	Drilled	Unknown	None	1951
36	Well	Drilled	330 ft.	Bypass	1968
37	Well	Drilled	250 ft.	None	1963
38	Well	Drilled	330 ft.	None	1960
39	Spring	----	----	None	----
40	Well	Drilled	250 ft.	None	1950
41	Well	Drilled	400 ft.	None	1963
42	Well	Drilled	320 ft.	None	1955
43	Well	Drilled	180 ft.	Bypass	1958
44	Well	Drilled	120 ft.	Bypass	1946
45	Well	Drilled	180 ft.	None	1963

All general notes regarding the Well Sample Specifications have been included on the following pages of APPENDIX A.

HYDROGEOLOGICAL ANALYSIS
WELL SAMPLE SPECIFICATIONS

GENERAL NOTES

1. The groundwater sampling for the Douglass Township Hydrogeological Analysis was conducted on November 4, 1989. The samples were collected by trained representatives of Motley Engineering Co., Inc. The samples were submitted to Hydro-Analysis Associates, Inc. (PA DER Lab. 06-317) of Kutztown, Pa. for analysis and testing. The results of the Hydrogeological Analysis are contained under Section 3.60 of this Act 537 Plan Update.

2. FIGURE 11 of this Act 537 Plan depicts the 45 sample locations within the Township.

3. The Sample Numbers identified in this Appendix can be cross-referenced with the Map Numbers (FIGURE 11) or with the inventory of results (TABLE H).

4. The background data provided under Section 3.60 and Appendix A of this Act 537 Plan Update was obtained during the sampling of the domestic wells. It should be noted that in some cases the age and depth of the wells were estimated by the homeowner and/or by the sample collector.

5. If the well was connected to a treatment system, the sample was either obtained at an alternate source or at a point in the system that was untreated. The term "Bypass" was utilized in these cases.

6. Most of the wells that were evaluated were drilled wells with steel casing to bedrock. None of the samples collected were obtained from a "dug well" or "hand dug well". There were 3 samples that were collected in which the source was supplied by a natural spring.

7. Ordinance No. 1990-7 which amends Section 402.C of the Douglass Township Subdivision Ordinance outlines all general standards and specifications for on-lot water supply in the Township. This includes all required studies, groundwater testing procedures and well construction standards. A copy of this Ordinance has been included within APPENDIX A of this Act 537 Plan Update.

8. In 1988, International Exploration Inc. (INTEX) prepared a Groundwater Resources Study for the Berks-Montgomery Council of Governments (COG). The Douglass Township Planning Area was part of this Study. Section 3.63 and APPENDIX B of this Act 537 Plan provides the purpose, laboratory results, summary, conclusions and recommendations of this Study conducted by INTEX.

ORDINANCE No. 1990- 7

AN ORDINANCE OF THE TOWNSHIP OF DOUGLASS, COUNTY OF BERKS AND COMMONWEALTH OF PENNSYLVANIA, AMENDING THE DOUGLASS TOWNSHIP "SUBDIVISION AND LAND DEVELOPMENT REGULATIONS ORDINANCE OF 1969, AS AMENDED, ON MAY 25, 1988, BY REVISING SECTION 402 (C) TO PROVIDE FOR A FEASIBILITY REPORT ON SEWAGE AND WATER FACILITIES.

BE IT ORDAINED AND ENACTED by the Board of Supervisors of Douglass Township, Berks County, Pennsylvania, and it is hereby ordained and enacted by the authority of the same as follows:

SECTION 1. The Douglass Township Subdivision Ordinance of 1988 shall be amended as follows:

A. Section 402 subsection (C) shall be revised and amended to include a new sub-subsection (16) which shall provide the following:

16. Feasibility Report on Sewage and Water Facilities: The subdivider or developer shall submit a Feasibility Report in duplicate concerning the availability and/or adaptability of sewer and water facilities in or near a proposed subdivision or land development. Said report shall be prepared by a Registered Professional Engineer and be submitted in conjunction with the Preliminary Plan for review and recommendations by the local office of the Pennsylvania Department of Environmental Resources.

The Feasibility Report shall consist of an examination of possible connection to an existing sewerage system and supply system. The study shall include the distance from the nearest

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public sewer and the capacity of the existing system to accomodate a proposed subdivision or land development. It shall also include the distance from the nearest public water supply system and an analysis of the capacity of public water supply system to supply the water needs of subdivision or land development. The capacity of such water supply will be deemed adequate only if it is determined to be able to supply three hundred fifty (350) gallons per dwelling unit per day during periods when precipitation is forty (40) percent below normal.

If the above method of sewerage disposal is found to be feasible, formal application shall be made to the Commonwealth of Pennsylvania, Department of Environmental Resources, and a permit obtained from the Sanitary Water Board prior to the construction of sewers or treatment facilities.

As a part of the Feasibility Study, the subdivider shall state the type of sewage disposal system desired for each of the proposed lots. If other than connection to a sanitary sewer line or the installation of a conventional on-site sewage disposal system is intended on any of the lots, the fact shall be indicated on the plan itself. The Board of Supervisors will approve on-site sewage disposal systems only when the Township Sewage Enforcement Officer and/or sanitarian of the Pennsylvania Department of Environmental Resources certifies that the proposed sewage disposal system for each of the lots shown on the plan is suitable for use on that lot. Subdivisions

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proposing a lot or lots utilizing alternate on-site sewage disposal systems will not be approved by the Board of Supervisors unless:

(1) The Township Sewage Enforcement Officer and/or a sanitarian of the Department of Environmental Resources certifies that the proposed sewage disposal site cannot reasonably be located so as to enable the lot to utilize a conventional on-site sewage disposal system: and

(2) The lot itself cannot reasonably be redesigned or relocated consistent with the Township Zoning Ordinance and other Township regulations so as to enable utilization of a conventional on-site sewage disposal system.

As a part of the Feasibility Study, there shall be included the results of the probe hole analyses and soil absorption tests on each of the lots as proposed in the subdivision. These probe hole analyses and soil absorption tests shall be performed in accordance with the regulations of the Pennsylvania Department of Environmental Resources and shall be certified as accurate by the Township Sewage Enforcement Officer.

If connection to an existing public sewer system is proposed, the subdivider of developer shall so state.

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If connection to an existing public water supply system is proposed, the subdivider or developer shall submit an agreement committing the public water supply system to provide such water as will be utilized by the subdivision or land development for such period of time and under such terms and conditions as the public water supply system provides water service elsewhere in its service area.

If the water supply system proposed involves the utilization of water obtained from the tract being subdivided or developed irrespective of whether that water is being distributed as a part of a public water supply system, the Board of Supervisors will approve the proposed water supply system only when the feasibility study establishes and the engineer performing the study certifies that the ground water recharge on the tract in question after development computed during drought conditions (periods when precipitation is forty (40%) percent below normal) will exceed the anticipated water usage figures computed by using Department of Environmental Resources figures of 3.5 persons per dwelling unit and average daily usage of one hundred (100) gallons per person per day where residential use is contemplated and that the installation of the proposed systems will not lower the ground water table in the area so as to endanger or decrease the ground water supplies available to other properties in the area of the subdivision or land development and such study is approved by the Township engineer.

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When industrial or commercial use is intended, the applicant shall, in the Feasibility Study, set forth the proposed nature of the industrial or commercial use, the proposed number of employees and whether or not water will be used to clean up and/or processing or otherwise in connection with commercial or industrial use.

The applicant shall in addition set forth the proposed allocation of available water supply between or among the proposed industrial or commercial uses and shall set forth a plan or proposal pursuant to which such allocation can reasonably be monitored and enforced by the Township.

In the case of subdivisions or land developments of eight (8) or fewer existing or proposed residential units, the Water Feasibility Study is not required. For this purpose the subdivision or land development shall be considered to consist of all contiguous land owned on August 17, 1971, by the same land owner as lands owned by the applicant now proposed for subdivision or land development. Land shall be considered contiguous even though separated by public or private roads. In the case of subdivisions or land developments of nine (9) or more existing or proposed residential units, in addition to the requirements of a Feasibility Report per this section, the requirements of any "Douglass Township Water Ordinance" shall be satisfied.

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SECTION 2. All other provisions and regulations as contained in the Douglass Township Subdivision Ordinance of 1988, as amended, which have not revised or amended by this Ordinance, shall remain in full force and effect.

SECTION 3. All Ordinances and parts of Ordinances inconsistent with this Ordinance are hereby repealed, insofar, but only insofar, as the same are inconsistent herewith.

SECTION 4. The provisions of this Ordinance are severable, and if any provision or part thereof shall be held invalid, unconstitutional or inapplicable to any person or circumstances such invalidity, unconstitutionality or inapplicability shall not effect or impair the remaining provisions, or parts thereof of this Ordinance.

SECTION 5. This Ordinance shall take effect five (5) days subsequent to its passage.

ORDAINED and ENACTED by the Board of Supervisors of the Township of Douglass, Berks County, Pennsylvania, in lawful

LAW OFFICES O'PAKE, MALSNEE & ORWIG, P.C.

session duly assembled, this 24th day of October, 1990.

BOARD OF SUPERVISORS OF DOUGLASS TOWNSHIP BERKS COUNTY, PA

Chairman

Supervisor

Supervisor

Attest:

Secretary

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APPENDIX B

GROUNDWATER RESOURCES STUDY

Prepared for:

The Berks-Mont Council of Government

INTERNATIONAL EXPLORATION, INC.
577 SACKETTSFORD ROAD
WARMINSTER, PA 18974-1398
(215) 598-7137

February, 1988

INTRODUCTION

The area encompassed by the Townships and Boroughs of the Berks-Mont Council of Governments (COG) is located in fairly close proximity to expanding industry and business in the areas of Allentown, Reading and Valley Forge. In recent years there has been an increase in housing development and population, and it is conceivable that this trend will continue in the near future. In the COG area, the primary domestic water supply is from private wells serving individual homes, with the exception of the Boyertown-Gilbertsville area, which is served by a public water distribution system. The use of private wells is an acceptable method of obtaining water in areas of low density housing, where wells are widely spaced and the potential for groundwater contamination is low.

However, as the density of housing increases, well spacing decreases, which can result in interference and loss of water during periods of drought. An increase in population tends to increase the potential for the degradation of groundwater quality, especially if industry is also present. Therefore, in these areas (of high density housing and industry), a public water supply system, obtaining its water from widely spaced high yielding wells, tapping deep

aquifers, is preferable to a large number of closely spaced individual wells. The use of a limited number of wells reduces the potential for well interference and allows for close monitoring of water quality.

The Berks-Mont Council of governments has retained INTEX to conduct a groundwater resources study of the Boroughs of Bally and Bechtelsville and the Townships of Earl, Colebrookdale, Washington, Douglass Berks and Douglass Montgomery (Exhibit I). The purpose of the investigation is to provide the various municipalities of COG with information on the quantity and quality of groundwater in the various municipalities, to discuss the impacts of development on groundwater availability, and to provide recommendations on proper development and conservation of groundwater resources.

INVESTIGATIVE METHODS AND PROCEDURES

The main thrust of the investigation was to calculate an estimate of the amount of groundwater that would be available in the area during a drought situation. This was accomplished by using data collected from studies in similar geologic terrains and previous studies by INTEX in the area with the field data collected during the COG investigation.

Data on groundwater recharge was collected by measuring the discharge in streams draining individual geologic units, and comparing this baseflow data to previously calculated recharge rates using baseflow data.

Data on ambient groundwater quality was obtained by collecting water samples from residential wells drilled into each of the main geologic units underlying the study area.

Included in this report are several sections on the affects of development and industrialization on the natural groundwater regime. These affects are mainly related to reduction of recharge due to increased impermeable surfaces, and possible degradation of groundwater quality. Also included is a discussion of regulations and regulating agencies pertaining to groundwater development.

AMBIENT GROUNDWATER QUALITY

In order to determine the overall quality of the groundwater in the study area, water samples were collected from 49 representative wells. Samples were collected from wells in every Township and Borough (Exhibit VI). Within each municipality, sampling was conducted by drawing water from various lithologies. The water samples were analyzed for the groundwater quality indicator parameters listed in Table 6.

TABLE 6

GROUNDWATER QUALITY INDICATOR PARAMETERS	PA. D.E.R. LIMITS
Nitrate	10 mg/l
Total Organic Carbon (TOC)	none set
Total Dissolved Solids (TDS)	500 mg/l
Iron	0.3 mg/l
Manganese	0.05 mg/l
Sulfate	250 mg/l
Chloride	250 mg/l
Hardness	none set
Specific Conductivity	none set
pH	6.5 to 8.5
Coliform	0

The results of the chemical analysis can be found in Table 7.

With few exceptions, the quality of the groundwater in the COG study area is quite good. The most commonly occurring agents of quality degradation are excessive hardness and high levels of iron, sufates and solids. They are known as secondary contaminants. These are not hazardous, but tend to clog pipes, give water a bad taste and prevent laundry from becoming clean. The majority of the high levels of iron, sulfates, solids and hardness are from wells located in or very near the Brunswick Formation.

Isolated cases of the presence of coliform bacteria in well water have been found scattered throughout the study area. Coliform bacteria is a relatively large organism. Becuase of its size and ease of identification, it is used as an indicator, under the assumption that if something as large as coliform has migrated to the groundwater, smaller bacteria and viruses may have come along with it. The coliform anaylses are more representative of very local rather than regional quality, and are not considered to be an indicative test when studying water quality over large areas.

A few cases of elevated nitrate levels have been found. Nitrate concentrations above D.E.R. limits have been found

in Earl Township in the Oley Valley. This is in the same area where high nitrate concentrations have been found in the groundwater of the carbonate rocks of Oley Township (Technicon Enterprises, 1987). High levels of nitrates were found in 2 out of 3 wells sampled in Bally Borough. The source of these nitrates may be a high concentration of on-lot septic systems or the nearby use of large amounts of nitrate rich fertilizer.

Amended Appendix A-22-b.4



TABLE 7

WATER QUALITY SAMPLING RESULTS FOR DOUGLASS TOWNSHIP, BERKS COUNTY

REFERENCE #	COLIFORM MF/100ML	NITRATE AS N MG/L	TOC MG/L	TDS MG/L	IRON MG/L	MANGANESE MG/L	SULFATE MG/L	CHLORIDE MG/L	HARDNESS ($CaCO_3$) MG/L	CONDUCTIVITY MOHMS/CM	PH	LITHOLOGY
A	<1.0	3.00	0.56	170	0.12	<0.05	<50	30	153.9	240	6.2	TR B
B	<1.0	<0.1	1.0	320	6.45	1.35	100	120	307.8	490	5.6	TR B
C	5.0	0.24	1.20	170	5.20	<0.05	70	60	136.8	250	6.6	TR B
D	<1.0	0.65	<1.0	200	0.02	<0.05	<50	30	205.2	220	6.8	TR B
E	<1.0	2.1	<1.0	210	0.02	<0.05	60	60	205.2	220	6.0	TR B
F	4.0	1.7	2.0	200	1.53	<0.05	50	60	222.3	320	4.8	TR D
G	<1.0	2.7	2.0	84	0.11	<0.05	<50	90	102.6	160	4.8	ϵHA
H	<1.0	<0.1	0.31	70	0.06	<0.05	<50	60	51.3	44	7.2	ϵHA
I	<1.0	1.4	0.27	98	0.06	<0.05	<50	30	51.3	42	7.0	GN

TABLE 7 (CONT'D)

WATER QUALITY SAMPLING
RESULTS FOR
EARL TOWNSHIP, BERKS COUNTY

REFERENCE #	COLIFORM MF/100ML	NITRATE AS N MG/L	TOC MG/L	TDS MG/L	IRON MG/L	MANGANESE MG/L	SULFATE MG/L	CHLORIDE MG/L	HARDNESS ($CaCO_3$) MG/L	CONDUCTIVITY MOHMS/CM	PH	LITHOLOGY
J	<1.0	3.1	0.40	194	<0.01	<0.05	<50	60	136.8	310	6.3	€LV
K	44.0	<0.1	0.04	<2	0.02	<0.05	<50	60	17.1	345	7.3	€HA
L	<1.0	13.0	0.38	198	0.06	<0.05	<50	60	205.2	340	5.8	CAL
M	<1.0	3.7	0.44	64	<0.01	<0.05	<50	60	119.7	160	6.2	GN
N	<1.0	<0.1	0.09	34	0.02	<0.05	<50	60	51.3	720	7.6	CHA
O	<1.0	2.7	0.67	100	<0.01	<0.05	<50	60	85.5	52	6.2	HG
P	<1.0	0.64	0.50	208	0.26	<0.05	<50	60	205.2	300	7.5	CHA
Q	<1.0	1.7	0.16	102	0.98	<0.05	<50	60	102.6	160	7.8	GN
R	<1.0	<0.1	0.25	112	0.14	<0.06	<50	60	102.6	160	7.6	GN

TABLE 7 (CONT'D)

WATER QUALITY SAMPLING
RESULTS FOR
COLEBROOKDALE TOWNSHIP, BERKS COUNTY

REFERENCE #	COLIFORM MF/100ML	NITRATE AS N MG/L	TOC MG/L	TDS MG/L	IRON MG/L	MANGANESE MG/L	SULFATE MG/L	CHLORIDE MG/L	HARDNESS ($CaCO_3$) MG/L	CONDUCTIVITY MOHMS/CM	PH	LITHOLOGY
S	36.0	1.9	<1.0	180	0.54	<0.05	<50	30	136.8	140	5.8	GC
T	<1.0	2.6	4.6	180	0.17	<0.05	<50	60	136.8	70	5.0	GC
U	<1.0	2.5	<1.0	160	2.83	<0.05	50	60	102.6	62	6.4	HG
V	<1.0	1.1	<1.0	100	0.50	<0.05	<50	60	68.4	50	6.0	GN
W	10.0	3.8	1.51	524	<0.01	<0.05	<50	180	359.1	320	5.0	TR E
X	<1.0	5.7	<1.0	150	0.10	<0.05	<50	60	102.6	62	6.2	CLY
Y	<1.0	7.4	19	340	0.01	<0.05	50	60	324.9	230	5.0	TR I
Z	6.0	3.3	<1.0	270	0.04	<0.05	58	60	256.5	200	4.8	TR I

TABLE 7 (CONT'D)

WATER QUALITY SAMPLING
RESULTS FOR
DOUGLASS TOWNSHIP, MONTGOMERY COUNTY

REFERENCE #	COLIFORM MF/100ML	NITRATE AS N MG/L	TOC MG/L	TDS MG/L	IRON MG/L	MANGANESE MG/L	SULFATE MG/L	CHLORIDE MG/L	HARDNESS ($CaCO_3$) MG/L	CONDUCTIVITY MOHMS/CM	PH	LITHOLOGY
A	<1.0	3.3	2.0	400	0.06	<0.05	100	90	427.5	260	6.0	Tr B
BB	<1.0	2.2	<1.0	330	<0.01	<0.05	<50	90	290.7	200	6.7	Tr B
CC	<1.0	2.5	2.0	580	<0.01	<0.05	75	210	513.0	300	6.4	Tr B
DD	<1.0	9.0	1.0	340	0.01	<0.05	50	30	256.5	190	6.6	Tr B
E	4.0	2.8	<1.0	180	2.87	<0.05	<50	30	153.9	140	5.7	Tr D
F	<1.0	2.2	<1.0	670	0.03	<0.05	>200	60	495.9	300	6.5	Tr B
G	<1.0	7.5	1.0	250	0.57	<0.05	<50	60	205.2	190	5.8	Tr B
H	<1.0	<0.1	<1.0	720	0.02	<0.05	>200	60	478.8	320	6.2	Tr D
I	<1.0	0.16	<1.0	140	0.09	<0.05	<50	30	102.6	50	6.0	Tr D

TABLE 7 (CONT'D)

WATER QUALITY SAMPLING RESULTS FOR WASHINGTON TOWNSHIP, BERKS COUNTY

REFERENCE #	COLIFORM MF/100ML	NITRATE AS N MG/L	TOC MG/L	TDS MG/L	IRON MG/L	MANGANESE MG/L	SULFATE MG/L	CHLORIDE MG/L	HARDNESS ($CaCO_3$) MG/L	CONDUCTIVITY MOHMS/CM	PH	LITHOLOGY
JJ	1.0	2.0	<1.0	180	0.52	<0.05	<50	60	153.9	82	4.6	TRI
KK	4.0	2.6	<1.0	41	0.05	<0.05	<50	30	34.2	32	7.6	€LV
LL	N/A	0.79	<1.0	120	0.15	<0.05	<50	30	85.5	48	5.8	GN
MM	<1.0	2.4	<1.0	162	<0.01	<0.05	<50	30	153.9	80	6.3	TRI
NN	<1.0	9.2	<1.0	240	0.14	<0.05	<50	90	222.3	220	6.2	TRI
OO	N/A	9.8	<1.0	280	0.03	<0.05	<50	60	188.1	225	5.6	TRI
PP	N/A	2.4	1.5	330	0.22	<0.05	<50	150	153.9	250	5.6	TRI
QQ	N/A	5.5	<1.0	110	0.42	<0.05	<50	30	68.4	44	6.0	GN
RR	N/A	1.6	<1.0	98	0.07	<0.05	<50	30	34.2	38	5.2	GN

TABLE 7 (CONT'D)

WATER QUALITY SAMPLING
RESULTS FOR
THE BOROUGH OF BALLY, BERKS COUNTY

REFERENCE #	COLIFORM MF/100ML	NITRATE AS N MG/L	TOC MG/L	TDS MG/L	IRON MG/L	MANGANESE MG/L	SULFATE MG/L	CHLORIDE MG/L	HARDNESS ($CaCO_3$) MG/L	CONDUCTIVITY MOHMS/CM	PH	LITHOLOGY
[illegible]	N/A	1.2	<1	360	0.06	<0.05	<50	60	171.0	64	6.0	ЄHA
[illegible]	1.0	11	<1	230	0.06	<0.05	<50	30	205.2	74	6.0	ЋB
UU	N/A	15	<1	180	0.07	<0.05	<50	60	290.7	78	4.8	ЋB

TABLE 7 (CONT'D)

WATER QUALITY SAMPLING RESULTS FOR THE BOROUGH OF BECHTELSVILLE, BERKS COUNTY

REFERENCE #	COLIFORM MF/100ML	NITRATE AS N MG/L	TOC MG/L	TDS MG/L	IRON MG/L	MANGANESE MG/L	SULFATE MG/L	CHLORIDE MG/L	HARDNESS ($CaCO_3$) MG/L	CONDUCTIVITY MOHMS/CM	PH	LITHOLOGY
VV	<1.0	0.33	<1.0	42	0.14	<0.05	<50	60	51.3	27	6.0	CL
WW	<1.0	3.9	<1.0	110	0.02	<0.05	<50	60	119.7	56	5.0	CL

SUMMARY AND CONCLUSIONS

1) The municipalities comprising the Berks-Mont Council of Governments contain a large quantity of groundwater that is of good quality. Calculations made for this study indicate that an average of approximately 10.50 to 11.95 million gallons per day of groundwater recharge would occur in this area during a 1 in 10 year drought situation. It is believed that this calculated volume of recharge could be increased as more information is obtained on the aquifers in the area, such as long-term pumping data. However, at this time, we feel it is more prudent to assume a low preliminary estimate, for planning purposes, and then escalate the available groundwater volume based on pumping performance, rather than assume too high a figure and find that it is not available when development is already in place.

2) All of the rock types that occur in the study area, with the exception of diabase in many cases, are suitable for the development of residential water supplies. Of these rock types, the Brunswick Formation shale and the carbonate rock types are the most suitable aquifers for the development of municipal water supply wells.

3) The ability of the bedrock to store and transmit groundwater may be increased in the vicinity of the Triassic border fault, if fracturing is increased due to the presence of fault breccia and drags.

4) The large scale investigation completed in this study indicates that presently, there are no portions of the study area in which groundwater withdrawals are excessive or exceed available recharge.

5) The use of on-lot septic systems in conjunction with on-lot wells in high concentrations is a practice that cannot continue indefinately. Discharge from on-lot septic systems in high concentrations can degrade groundwater quality over a long period of time.

RECOMMENDATIONS

1) In areas planned for high density development, consideration should be given to the installation of public sewer and water supplies, to protect groundwater quality and allow more efficient development of groundwater resources.

   In areas where on-lot septic systems are permitted, they should conform to Pa. D.E.R. design standards. If these areas are not planned for public sewer services at some time in the future, a secondary area should be provided, on the lot, for a replacement absorbsion field when the soil beneath the original one becomes worn out. Wells in these areas should be cased into competent bedrock, or to a minimum of 40 feet of depth, whichever is deeper, and properly grouted with cement. Well casings should extend above the ground and should not be buried.

2) The use of chemicals or solvents to clean out septic systems, which could contaminate groundwater, should be discouraged, and if possible, prohibited.

3) All groundwater development projects should be preceeded by a preliminary feasibility study. This study

should investigate existing groundwater consumption, well depth, yields, and methods of waste disposal in the surrounding area. Also included should be a description of the proposed method of development and an estimate of its impact on the surrounding hydrogeologic regime. Larger groundwater withdrawals, of 10,000 gpd or more, should be investigated by conducting pumping tests while monitoring nearby wells. This will allow determination of the extent of effects of pumping in individual areas, and will lead to the proper spacing of large withdrawal wells.

4) Those municipalities not within the DRBC Protected Area should adopt ordinances to provide similar protection of groundwater resources.

5) The carbonate aquifers possess the greatest potential for development, and also the greatest vulnerability to contamination. Therefore, precautions should be taken to protect them, such as regulation of waste disposal and septic system installation.

6) The water levels at the two stream gauging stations set by INTEX, should be measured weekly to obtain data on streamflow. This data can be used to construct a hydrograph when rating curves are completed. Gauge readings should be taken at least 3 or 4 days after a rainfall, to avoid interference from surface runoff.

APPENDIX C

ERBL 151 7/86 Commonwealth of Pennsylvania Department of Environmental Resources · Bureau of Laboratories 706256-01 8/86 0-12248

BACTERIOLOGICAL ANALYSES

☐ REQUEST MPN

LAB NO. 000626

DATE RECEIVED 1/16 7AM

ESTABLISHMENT: JAY LANES | CASE: POSSIBLE SEWAGE DISCHARGE | FACILITY: ALONG BEN FRANKLIN HWY | PREVIOUS RESULT:

COUNTY: BERKS | MUNICIPALITY: DOUGLASS TWP | PROGRAM: NPWS | COLL. NAME: KATHY MERIDIONALE | TYPE TR.: 0

CARD (3) 1/2 | ID CODE (ALL CARDS) 4-16: Cnty | Mun | T | Est | Case | Fac | LATITUDE 4-10 | LONGITUDE 11 18: 0 | DATE 19-24: M 01 D 15 Y 92 | TIME 25-28: HR 10 Min 10 | KIND 29: 4

USGS-Q 30-34 | BUR/AMIS 35-36: 701 | Sample No. 38-43: 038001 | STREAM NAME 44-57 | Rel.Pt. 58 | Type 59 60: 07 | Source 61-62 | Reason 63-64: 04

Composite Samples: | P/U 65 | T/S 66 | Alq 67-68 | Cond. 80 | Flow: | STATION DESCRIPTION: CMP / BACK of PROPERTY

CUSTODY LOG
HOW SHIPPED: COURIER DATE: 1/15/92
LEGAL SEAL NO.:
RECEIVED BY:
CONDITION OF SEAL:

Field Analysis
Cl. Total mg/l (50060)
Cl. Free mg/l (50064)

RECEIVED
JAN 23 1992
DER-HBG. REGION
WATER QUALITY MANAGEMENT

COMMENTS: #8-468-475

Total Coliforms (Per 100 ml)	(3150 1)	0005800
Fecal Coliforms (Per 100 ml)	(3161 6)	0001100
Total Fecal Strep (Per 100 ml)	(3167)	
Total Plate Count (Per ml)	(31751)	

STD ANALYSIS | ANALYZED BY: GAB | DATE: 1/17 | ☐ SAMPLE Exceeds Time Limits of Standard Methods for Valid Analysis

ERBL 151 7/86 Commonwealth of Pennsylvania Department of Environmental Resources · Bureau of Laboratories 706256-01 8/86 0-12248

BACTERIOLOGICAL ANALYSES

☐ REQUEST MPN

LAB NO. 000627

DATE RECEIVED 1/16 7AM

ESTABLISHMENT: HAROLD BUICK | CASE: POSS. SEWAGE DISCHARGE | FACILITY: ALONG BEN FRANKLIN HWY | PREVIOUS RESULT:

COUNTY: BERKS | MUNICIPALITY: DOUGLASS TWP | PROGRAM: NPWS | COLL. NAME: KATHY MERIDIONALE | TYPE TR.: 0

CARD (3) 1/2 | ID CODE (ALL CARDS) 4-16: Cnty | Mun | T | Est | Case | Fac | LATITUDE 4-10 | LONGITUDE 11 18: 0 | DATE 19-24: M 01 D 15 Y 92 | TIME 25-28: HR 10 Min 10 | KIND 29: 4

USGS-Q 30-34 | BUR/AMIS 35-36: 701 | Sample No. 38-43: 038002 | STREAM NAME 44-57 | Rel.Pt. 58 | Type 59 60: 07 | Source 61-62 | Reason 63-64: 04

Composite Samples: | P/U 65 | T/S 66 | Alq 67-68 | Cond. 80 | Flow: | STATION DESCRIPTION: DITCH ON EAST SIDE of BUILDING

CUSTODY LOG
HOW SHIPPED: COURIER DATE: 1/15/92
LEGAL SEAL NO.:
RECEIVED BY:
CONDITION OF SEAL:

Field Analysis
Cl. Total (50060)
Cl. Free mg/l (50064)

RECEIVED
JAN 23 1992
DER-HBG. REGION
WATER QUALITY MANAGEMENT

COMMENTS: #8-468-4175

Total Coliforms (Per 100 ml)	(3150 1)	0120000
Fecal Coliforms (Per 100 ml)	(3161 6)	0010000
Total Fecal Strep (Per 100 ml)	(3167)	
Total Plate Count (Per ml)	(31751)	

STD ANALYSIS | ANALYZED BY: GAB | DATE: 1/17 | ☐ SAMPLE Exceeds Time Limits of Standard Methods for Valid Analysis

Amended Appendix A-22-b.4

ERBL 151 7/86 Commonwealth of Pennsylvania Department of Environmental Resources Bureau of Laboratories 0-12248 706256-01 8/86

REQUEST MPN

BACTERIOLOGICAL ANALYSES

LAB NO. 000620

DATE RECEIVED 1/16 11AM

ESTABLISHMENT: Residential Dwelling	CASE: Poss. Sewage Discharge	FACILITY: 210 Ben Franklin Hwy.			PREVIOUS RESULT
COUNTY: Berks	MUNICIPALITY: Douglass Twp	PROGRAM: NPWS	COLL. NAME: Kathy Meridionale	TYPE TR.: 0	

CARD (3) 1/2 | ID CODE (ALL CARDS) 4-16: Cnty | Mun | T | Est | Case | Fac | LATITUDE 4-10 | LONGITUDE 11-18: 0 | DATE 19-24: M 01 D 15 Y 92 | TIME 25-28: HR 10 Min 13 | KIND 29: 4

USGS Q 30-34 | BUR/AMIS 35-36: 70 | Sample No. 38-43: 038003 | STREAM NAME 44-57 | Rel.Pt. 58 | Type 59 60: 07 | Source 61 62 | Reason 63-64: 04

Composite Samples: | P/U 65 | T/S 66 | Alq 67-68 | Cond. 80 | Flow: | STATION DESCRIPTION: Rear of Prop. / End of Cement Ditch

CUSTODY LOG
HOW SHIPPED: Courier DATE: 1/15/92
LEGAL SEAL NO.:
RECEIVED BY:
CONDITION OF SEAL:

Field Analysis
Cl. Tot. mg/l (50060):
Cl. Free mg/l (50064):

RECEIVED
JAN 23 1992
DER-HBG. REGION
WATER QUALITY MANAGEMENT

Total Coliforms (Per 100 ml)	(3150 1)	000570 0
Fecal Coliforms (Per 100 ml)	(3161 6)	0 0 6 20
Total Fecal Strep (Per 100 ml)	(3167)	
Total Plate Count (Per ml)	(31751)	

COMMENTS: #8-468-4175

STD ANALYSIS | ANALYZED BY: JAB | DATE: 1/17

☐ SAMPLE Exceeds Time Limits of Standard Methods for Valid Analysis

ERBL 151 7/86 Commonwealth of Pennsylvania Department of Environmental Resources Bureau of Laboratories 88-12248 3746357-01 11/87

REQUEST MPN

BACTERIOLOGICAL ANALYSES

LAB NO. 000629

DATE RECEIVED 1/16 7AM

ESTABLISHMENT: Residential Dwelling	CASE: Poss. Sewage Discharge	FACILITY: 210 Ben Franklin Hwy			PREVIOUS RESULT
COUNTY: Berks	MUNICIPALITY: Douglass Twp	PROGRAM: NPWS	COLL. NAME: Kathy Meridionale	TYPE TR.: 0	

CARD (3) 1/2 | ID CODE (ALL CARDS) 4-16: Cnty | Mun | T | Est | Case | Fac | LATITUDE 4-10 | LONGITUDE 11-18: 0 | DATE 19-24: M 01 D 15 Y 92 | TIME 25-28: HR 10 Min 13 | KIND 29: 4

USGS Q 30-34 | BUR/AMIS 35-36: 70 | Sample No. 38-43: 038004 | STREAM NAME 44-57 | Rel.Pt. 58 | Type 59 60: 07 | Source 61 62 | Reason 63-64: 04

Composite Samples: | P/U 65 | T/S 66 | Alq 67-68 | Cond. 80 | Flow: | STATION DESCRIPTION: Rear of Prop. / End of PVC Pipe

CUSTODY LOG
HOW SHIPPED: Courier DATE: 1/15/92
LEGAL SEAL NO.:
RECEIVED BY:
CONDITION OF SEAL:

Field Analysis
Cl. Tot. mg/l (50060):
Cl. Free mg/l (50064):

RECEIVED
JAN 23 1992
DER-HBG. REGION
WATER QUALITY MANAGEMENT

Total Coliforms (Per 100 ml)	(3150 1)	000 1500
Fecal Coliforms (Per 100 ml)	(3161 6)	0 0 20
Total Fecal Strep (Per 100 ml)	(3167)	
Total Plate Count (Per ml)	(31751)	

COMMENTS: #8-468-4175

STD ANALYSIS | ANALYZED BY: JAB | DATE: 1/17

☐ SAMPLE Exceeds Time Limits of Standard Methods for Valid Analysis

Amended Appendix A-22-b.4

ERBL 151 Commonwealth of Pennsylvania Department of Environmental Resources Bureau of Laboratories 7/86 • 3746357-01 11/87 • 88-12248

BACTERIOLOGICAL ANALYSES

☐ REQUEST MPN

LAB NO. 000630

DATE RECEIVED 1/16 7AM

PREVIOUS RESULT

ESTABLISHMENT: PROTO CAST INC.
CASE: POSS. SEWAGE DISCHARGE
FACILITY: 210 BEN FRANKLIN HWY
COUNTY: BERKS
MUNICIPALITY: DOUGLAS TWP
PROGRAM: NPWS
COLL. NAME: KATHY MERIDIONALE
TYPE TR.: Ø

CARD (3) 1/2 | ID CODE (ALL CARDS) 4-16: Cnty | Mun | T | Est | Case | Fac | LATITUDE 4-10 | LONGITUDE 11 18: 0 | DATE 19 24: M 01 D 15 Y 92 | TIME 25 28: HR 10 Min 15 | KIND 29: 4

USGS Q 30 34 | BUR/AMIS 35-36: 70 | Sample No. 38-43: 033805 | STREAM NAME 44-57 | Rel.Pt. 58 | Type 59 60: 07 | Source 61 62 | Reason 63 64: 04

Composite Samples: | P/U 65 | T/S 66 | Alq 67-68 | Cond. 80 | Flow | STATION DESCRIPTION: REAR of PROPERTY - DITCH NEAR RR

CUSTODY LOG
HOW SHIPPED: COURIER DATE: 1/15/92
LEGAL SEAL NO.:
RECEIVED BY:
CONDITION OF SEAL:

Field Analysis
Cl. Tot. mg/l (50060):
Cl. Free mg/l (50064):

RECEIVED
JAN 23 1992
DER-HBS. REGION
WATER QUALITY MANAGEMENT

COMMENTS: * > 2,000,000
#8-468-4175

Total Coliforms (Per 100 ml)	(3150 1)	* *
Fecal Coliforms (Per 100 ml)	(3161 6)	* *
Total Fecal Strep (Per 100 ml)	(3167)	
Total Plate Count (Per ml)	(31751)	

STD ANALYSIS | ANALYZED BY: gab | DATE: 1/17 | ☐ SAMPLE Exceeds Time Limits of Standard Methods for Valid Analysis

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BACTERIOLOGICAL ANALYSES

☐ REQUEST MPN

LAB NO. 000631

DATE RECEIVED 1/16 7AM

PREVIOUS RESULT

ESTABLISHMENT: PROTO CAST INC.
CASE: POSS. SEWAGE DISCHARGE
FACILITY: 210 BEN FRANKLIN HWY
COUNTY: BERKS
MUNICIPALITY: DOUGLASS TWP
PROGRAM: NPWS
COLL. NAME: KATHY MERIDIONALE
TYPE TR.: Ø

CARD (3) 1/2 | ID CODE (ALL CARDS) 4-16: Cnty | Mun | T | Est | Case | Fac | LATITUDE 4-10 | LONGITUDE 11 18: 0 | DATE 19 24: M 01 D 15 Y 92 | TIME 25 28: HR 10 Min 15 | KIND 29: 4

USGS Q 30 34 | BUR/AMIS 35-36: 70 | Sample No. 38-43: 033806 | STREAM NAME 44-57 | Rel.Pt. 58 | Type 59 60: 07 | Source 61 62 | Reason 63-64: 04

Composite Samples: | P/U 65 | T/S 66 | Alq 67-68 | Cond. 80 | Flow. | STATION DESCRIPTION: REAR of PROPERTY / PIPE BEFORE R.R.

CUSTODY LOG
HOW SHIPPED: COURIER DATE: 1/15/92
LEGAL SEAL NO.:
RECEIVED BY:
CONDITION OF SEAL:

Field Analysis
Cl. Tot. mg/l (50060):
Cl. Free mg/l (50064):

RECEIVED
JAN 23 1992
DER-HBS. REGION
WATER QUALITY MANAGEMENT

COMMENTS:
#8-468-4175

Total Coliforms (Per 100 ml)	(3150 1)	0400000
Fecal Coliforms (Per 100 ml)	(3161 6)	0200000
Total Fecal Strep (Per 100 ml)	(3167)	
Total Plate Count (Per ml)	(31751)	

STD ANALYSIS | ANALYZED BY: gab | DATE: 1/17 | ☐ SAMPLE Exceeds Time Limits of Standard Methods for Valid Analysis

Amended Appendix A-22-b.4

ERBL 151 7/86 Commonwealth of Pennsylvania Department of Environmental Resources Bureau of Laboratories 88-12248 3746357-01 11/87

REQUEST MPN

BACTERIOLOGICAL ANALYSES

LAB NO. 000633

DATE RECEIVED 1/16 7AM

ESTABLISHMENT: PROTO CAST INC. | CASE: Poss. SEWAGE DISCHARGE | FACILITY: 210 BEN FRANKLIN HWY. | PREVIOUS RESULT:

COUNTY: BEERS | MUNICIPALITY: Douglass Twp | PROGRAM: NPWS | COLL. NAME: KATHY MERIDIONALE | TYPE TR.: 0

CARD (3) 1/2 | ID CODE (ALL CARDS) 4-16: Cnty | Mun | T | Est | Case | Fac | LATITUDE 4-10 | LONGITUDE 11 18: 0 | DATE 19 24: M 01 D 15 Y 92 | TIME 25 28: HR 10 Min 17 | KIND 29: 4

USGS Q 30 34 | BUR/AMIS 35-36: 7 0 1 | Sample No. 38-43: 0 3 3 8 0 7 | STREAM NAME 44-57 | Rel. Pt. 58 | Type 59 60: 0 7 | Source 61 62 | Reason 63-64: 0 4

Composite Samples: | P/U 65 | T/S 66 | Alq 67-68 | Cond. 80 | Flow | STATION DESCRIPTION: FRONT of PROPERTY / ROAD CULVERT ALONG HWY.

CUSTODY LOG
HOW SHIPPED: COURIER DATE: 1/15/92
LEGAL SEAL NO.:
RECEIVED BY:
CONDITION OF SEAL:

RECEIVED
JAN 23 1992
DER-HBG. REGION
WATER QUALITY MANAGEMENT

Field Analysis
Cl. Tot. mg/l (50060)
Cl. Free mg/l (50064)

COMMENTS: #8-468-4175

Total Coliforms (Per 100 ml)	(3150 1)	000 5200
Fecal Coliforms (Per 100 ml)	(3161 6)	000 1400
Total Fecal Strep (Per 100 ml)	(3167)	
Total Plate Count (Per ml)	(31751)	

STD ANALYSIS | ANALYZED BY: JAB | DATE: 1/17 | ☐ SAMPLE Exceeds Time Limits of Standard Methods for Valid Analysis

ERBL 151 7/86 Commonwealth of Pennsylvania Department of Environmental Resources Bureau of Laboratories 88-12248 3746357-01 11/87

REQUEST MPN

BACTERIOLOGICAL ANALYSES

LAB NO. 000633

DATE RECEIVED 1/16 7AM

ESTABLISHMENT: TRUCKING COMPANY | CASE: Poss. SEWAGE DISCHARGE | FACILITY: INTERSECTION / BEN FRANKLIN HWY | PREVIOUS RESULT:

COUNTY: BEERS | MUNICIPALITY: Douglass Twp | PROGRAM: NPWS | COLL. NAME: KATHY MERIDIONALE | TYPE TR.: 0

CARD (3) 1/2 | ID CODE (ALL CARDS) 4-16: Cnty | Mun | T | Est | Case | Fac | LATITUDE 4-10 | LONGITUDE 11 18: 0 | DATE 19 24: M 01 D 15 Y 92 | TIME 25 28: HR 10 Min 20 | KIND 29: 4

USGS Q 30-34 | BUR/AMIS 35-36: 7 0 1 | Sample No. 38-43: 0 3 3 8 0 8 | STREAM NAME 44-57 | Rel. Pt. 58 | Type 59 60: 0 7 | Source 61 62 | Reason 63-64: 0 4

Composite Samples: | P/U 65 | T/S 66 | Alq 67 68 | Cond. 80 | Flow | STATION DESCRIPTION: CULVERT ON S.E. CORNER Spruce Hollow Rd.

CUSTODY LOG
HOW SHIPPED: COURIER DATE: 1/15/92
LEGAL SEAL NO.:
RECEIVED BY:
CONDITION OF SEAL:

RECEIVED
JAN 23 1992
DER-HBG. REGION
WATER QUALITY MANAGEMENT

Field Analysis
Cl. Tot. mg/l (50060)
Cl. Free mg/l (50064)

COMMENTS: #8-468-4175

Total Coliforms (Per 100 ml)	(3150 1)	000 1000
Fecal Coliforms (Per 100 ml)	(3161 6)	0 — — 0 80
Total Fecal Strep (Per 100 ml)	(3167)	
Total Plate Count (Per ml)	(31751)	

STD ANALYSIS | ANALYZED BY: JAB | DATE: 1/17 | ☐ SAMPLE Exceeds Time Limits of Standard Methods for Valid Analysis

Amended Appendix A-22-b.4

ERBL 151 Commonwealth of Pennsylvania Department of Environmental Resources Bureau of Laboratories 7/86 • 3746357-01 11/87 • 88-12248

BACTERIOLOGICAL ANALYSES

☐ REQUEST MPN

LAB NO. 000634

DATE RECEIVED 1/16 7AM

PREVIOUS RESULT

ESTABLISHMENT —

CASE Poss. Sewage Discharge

FACILITY OLD READING PIKE

COUNTY Berks

MUNICIPALITY Douglass Twp

PROGRAM NPWS

COLL. NAME Kathy Meridionale

TYPE TR. ϕ

CARD (3) 1/2

ID CODE (ALL CARDS) 4-16: Cnty | Mun | T | Est | Case | Fac

LATITUDE 4-10

LONGITUDE 11-18: 0

DATE 19-24: M 01 D 15 Y 92

TIME 25-28: HR 10 Min 20

KIND 29: 4

USGS Q 30-34

BUR/AMIS 35-36: 70

Sample No. 38-43: 033809

STREAM NAME 44-57

Rel.Pt. 58

Type 59-60: 07

Source 61-62

Reason 63-64: 04

Composite Samples:

P/U 65 | T/S 66 | Alg 67-68 | Cond. 80 | Flow.

STATION DESCRIPTION: S.W. of 422 OVERPASS / culvert

CUSTODY LOG

HOW SHIPPED courier DATE 1/15/92

LEGAL SEAL NO.

RECEIVED BY

CONDITION OF SEAL

Field Analysis

Cl. Tot. mg/l (50060)

Cl. Free mg/l (50064)

RECEIVED

JAN 23 1992

DER-HBG. REGION

WATER QUALITY MANAGEMENT

COMMENTS

#8-468-4175

Total Coliforms (Per 100 ml)	(3150 1)	0014000
Fecal Coliforms (Per 100 ml)	(3161 6)	0001700
Total Fecal Strep (Per 100 ml)	(3167)	
Total Plate Count (Per ml)	(31751)	

STD ANALYSIS

ANALYZED BY JAB

DATE 1/17

☐ SAMPLE Exceeds Time Limits of Standard Methods for Valid Analysis

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BACTERIOLOGICAL ANALYSES

☐ REQUEST MPN

LAB NO. 000635

DATE RECEIVED 1/16 7AM

PREVIOUS RESULT

ESTABLISHMENT Residential Dwelling

CASE Poss. Sewage Discharge

FACILITY 46 OLD READING PIKE

COUNTY Berks

MUNICIPALITY Douglass Twp

PROGRAM NPWS

COLL. NAME Kathy Meridionale

TYPE TR. ϕ

CARD (3) 1/2

ID CODE (ALL CARDS) 4-16: Cnty | Mun | T | Est | Case | Fac

LATITUDE 4-10

LONGITUDE 11-18: 0

DATE 19-24: M 01 D 15 Y 92

TIME 25-28: HR 13 Min 00

KIND 29: 4

USGS Q 30-34

BUR/AMIS 35-36: 70

Sample No. 38-43: 033810

STREAM NAME 44-57

Rel.Pt. 58

Type 59-60: 07

Source 61-62

Reason 63-64: 04

Composite Samples:

P/U 65 | T/S 66 | Alg 67-68 | Cond. 80 | Flow.

STATION DESCRIPTION: CMP - WEST of HOUSE

CUSTODY LOG

HOW SHIPPED courier DATE 1/15/92

LEGAL SEAL NO.

RECEIVED BY

CONDITION OF SEAL

Field Analysis

Cl. Tot. mg/l (50060)

Cl. Free mg/l (50064)

RECEIVED

JAN 23 1992

DER-HBG. REGION

WATER QUALITY MANAGEMENT

COMMENTS

#8-468-4175

Total Coliforms (Per 100 ml)	(3150 1)	0002400
Fecal Coliforms (Per 100 ml)	(3161 6)	0-0900
Total Fecal Strep (Per 100 ml)	(3167)	
Total Plate Count (Per ml)	(31751)	

STD ANALYSIS

ANALYZED BY JAB

DATE 1/17

☐ SAMPLE Exceeds Time Limits of Standard Methods for Valid Analysis

Amended Appendix A-22-b.4

ERBL 151 Commonwealth of Pennsylvania Department of Environmental Resources Bureau of Laboratories 7/86 • 3746357-01 11/87 • 88-12248

EQU MPN **BACTERIOLOGICAL ANALYSES**

LAB NO. 000636 DATE RECEIVED 1/16 7AM

ESTABLISHMENT	CASE	FACILITY	PREVIOUS RESULT
	Poss. Sewage Malf.	Old Reading Pike	

COUNTY	MUNICIPALITY	PROGRAM	COLL. NAME	TYPE TR.
Berks	Douglass Twp	NPWS	Kathy Meridionale	0

CARD (3) 1/2	ID CODE (ALL CARDS) 4-16 Cnty	Mun	T	Est	Case	Fac	LATITUDE 4-10	LONGITUDE 11 18	DATE 19 24 M D Y	TIME 25 28 HR Min	KIND 29
1								0	01 15 92	13 10	4

USGS Q 30-34	BUR/AMIS 35-36	Sample No. 38-43	STREAM NAME 44-57	Rel.Pt. 58	Type 59 60	Source 61 62	Reason 63-64
	70	038001			07		04

Composite Samples:	P/U 65	T/S 66	Alq 67-68	Cond. 80	Flow.	STATION DESCRIPTION
						Creek W. of Pottstown WTP / N. side of road

CUSTODY LOG
HOW SHIPPED Courier DATE 1/15/92
LEGAL SEAL NO.
RECEIVED BY
CONDITION OF SEAL

Field Analysis
Cl. Tot. mg/l (50060)
Free Cl mg/l (50064)

COMMENTS
#8-468-4175

RECEIVED
JAN 23 1992
DER-HSC. REGION
WATER QUALITY MANAGEMENT

Total Coliforms (Per 100 ml)	(3150 1)	0+0270
Fecal Coliforms (Per 100 ml)	(3161 6)	0+080
Total Fecal Strep (Per 100 ml)	(3167)	
Total Plate Count (Per ml)	(31751)	

STD ANALYSIS | ANALYZED BY | DATE 1/17

☐ SAMPLE Exceeds Time Limits of Standard Methods for Valid Analysis

ERBL 151 Commonwealth of Pennsylvania Department of Environmental Resources Bureau of Laboratories 7/86 • 3746357-01 11/87 • 88-12248

☐ REQUEST MPN **BACTERIOLOGICAL ANALYSES**

LAB NO. 000637 DATE RECEIVED 1/16 7AM

ESTABLISHMENT	CASE	FACILITY	PREVIOUS RESULT
Gizill Restaurant	Poss. Sewage Discharge	Bed Franklin Hwy / North side	

COUNTY	MUNICIPALITY	PROGRAM	COLL. NAME	TYPE TR.
Berks	Douglass Twp	NPWS	Kathy Meridionale	0

CARD (3) 1/2	ID CODE (ALL CARDS) 4-16 Cnty	Mun	T	Est	Case	Fac	LATITUDE 4-10	LONGITUDE 11 18	DATE 19 24 M D Y	TIME 25 28 HR Min	KIND 29
1								0	01 15 92	13 15	4

USGS Q 30 34	BUR/AMIS 35-36	Sample No. 38-43	STREAM NAME 44-57	Rel.Pt. 58	Type 59 60	Source 61 62	Reason 63-64
	70	038012			07		04

Composite Samples:	P/U 65	T/S 66	Alq 67-68	Cond. 80	Flow.	STATION DESCRIPTION
						Creek West of Restaur.

CUSTODY LOG
HOW SHIPPED Courier DATE 1/15/92
LEGAL SEAL NO.
RECEIVED BY
CONDITION OF SEAL

Field Analysis
Cl. Tot. mg/l (50060)
Free Cl mg/l (50064)

COMMENTS
#8-468-4175

RECEIVED
JAN 23 1992
DER-HSC. REGION
WATER QUALITY MANAGEMENT

Total Coliforms (Per 100 ml)	(3150 1)	0+0700
Fecal Coliforms (Per 100 ml)	(3161 6)	0+0120
Total Fecal Strep (Per 100 ml)	(3167)	
Total Plate Count (Per ml)	(31751)	

STD ANALYSIS | ANALYZED BY | DATE 1/17

☐ SAMPLE Exceeds Time Limits of Standard Methods for Valid Analysis

Amended Appendix A-22-b.4

ERBL 151 7/86 Commonwealth of Pennsylvania Department of Environmental Resources Bureau of Laboratories 88-12248 • 3746357-01 11/87

BACTERIOLOGICAL ANALYSES

☐ REQUEST MPN

LAB NO. 000638

DATE RECEIVED 1/16 7AM

PREVIOUS RESULT

ESTABLISHMENT	CASE	FACILITY
BASSETT BEDDING	POSS. SEWAGE DISCHARGE	BEN FRANKLIN HWY / NEAR CO. LINE

COUNTY	MUNICIPALITY	PROGRAM	COLL. NAME	TYPE TR.
BERKS	DOUGLASS TWP	NPWS	KATHY MERIDIONALE	0

CARD (3) 1/2	ID CODE (ALL CARDS) 4-16 (Cnty Mun T Est Case Fac)	LATITUDE 4-10	LONGITUDE 11-18	DATE 19-24 (M D Y)	TIME 25-28 (HR Min)	KIND 29
			0	01 15 92	13 20	4

USGS Q 30-34	BUR/AMIS 35-36	Sample No. 38-43	STREAM NAME 44-57	Rel.Pt. 58	Type 59-60	Source 61-62	Reason 63-64
	71	033801 3			07		04

Composite Samples:	P/U 65	T/S 66	Alg 67-68	Cond. 80	Flow.	STATION DESCRIPTION
						CONCRET PIPE AT Y IN RR TRACKS

CUSTODY LOG

HOW SHIPPED COURIER DATE 1/15/92

LEGAL SEAL NO.

RECEIVED BY

CONDITION OF SEAL

Field Analysis

Cl. Tot. mg/l (50060)

Cl. Free mg/l (50064)

RECEIVED

JAN 23 1992

DEP HBG. REGION
WATER QUALITY MANAGEMENT

Total Coliforms (Per 100 ml)	(3150 1)	0002700
Fecal Coliforms (Per 100 ml)	(3161 6)	0-0420
Total Fecal Strep (Per 100 ml)	(3167)	
Total Plate Count (Per ml)	(31751)	

COMMENTS

#8-468-4175

STD ANALYSIS	ANALYZED BY	DATE	☐ SAMPLE Exceeds Time Limits of Standard Methods for Valid Analysis
	QAB	1/17	

ERBL 151 7/86 Commonwealth of Pennsylvania Department of Environmental Resources Bureau of Laboratories 88-12248 • 3746357-01 11/87

BACTERIOLOGICAL ANALYSES

☐ REQUEST MPN

LAB NO. 000639

DATE RECEIVED 1/16 7AM

PREVIOUS RESULT

ESTABLISHMENT	CASE	FACILITY
TRI-COUNTY NOTARY	POSS. SEWAGE DISCHARGE	OLD READING PIKE / NORTH SIDE

COUNTY	MUNICIPALITY	PROGRAM	COLL. NAME	TYPE TR.
BERCS	DOUGLASS TWP	NPWS	KATHY MERIDIONALE	0

CARD (3) 1/2	ID CODE (ALL CARDS) 4-16 (Cnty Mun T Est Case Fac)	LATITUDE 4-10	LONGITUDE 11-18	DATE 19-24 (M D Y)	TIME 25-28 (HR Min)	KIND 29
			0	01 15 92	13 30	4

USGS Q 30-34	BUR/AMIS 35-36	Sample No. 38-43	STREAM NAME 44-57	Rel.Pt. 58	Type 59-60	Source 61-62	Reason 63-64
	71	033801 4			07		04

Composite Samples:	P/U 65	T/S 66	Alg 67-68	Cond. 80	Flow.	STATION DESCRIPTION
						CREEK ON WEST SIDE OF HOUSE (TRI-COUNTY)

CUSTODY LOG

HOW SHIPPED COURIER DATE 1/15/92

LEGAL SEAL NO.

RECEIVED BY

CONDITION OF SEAL

Field Analysis

Cl. Tot. mg/l (50060)

Cl. Free mg/l (50064)

RECEIVED

JAN 23 1992

DEP HBG. REGION
WATER QUALITY MANAGEMENT

Total Coliforms (Per 100 ml)	(3150 1)	0120000
Fecal Coliforms (Per 100 ml)	(3161 6)	0065000
Total Fecal Strep (Per 100 ml)	(3167)	
Total Plate Count (Per ml)	(31751)	

COMMENTS

#8-468-4175

STD ANALYSIS	ANALYZED BY	DATE	☐ SAMPLE Exceeds Time Limits of Standard Methods for Valid Ana
	EAB	1/17	

Amended Appendix A-22-b.4

APPENDIX D

RECEIVED
DATE OCT 2 9 1998
MOTLEY ENGINEERING CO. INC.
BY

ORDINANCE No. 1990 - 6

AN ORDINANCE OF THE TOWNSHIP OF DOUGLASS, COUNTY OF BERKS AND COMMONWEALTH OF PENNSYLVANIA, ESTABLISHING A PROCEDURE FOR THE ISSUANCE OF PERMITS FOR HOLDING TANKS UNDER UTILIZED FOR LOW FLOW FACILITIES AT COMMERCIAL OR INDUSTRIAL USES; ADOPTION OF OPERATIONAL AND MAINTENANCE REGULATIONS; PROVIDING FOR MAINTENANCE AGREEMENTS AND FINANCIAL ASSURANCES FOR REPLACEMENT IMPLEMENTATION.

NOW, THEREFORE, be it ordained and enacted by the Board of Supervisors of the Township of Douglass, Berks County, Pennsylvania, as follows:

SECTION 1. Declaration of Legislative Intent.

By this Ordinance the Board of Supervisors of Douglass Township intend to serve the purpose authorized by the Rules and Regulations promulgated through Chapter 71 of the Sewage Facilities Act, as revised and effective July 10, 1989. In furtherance thereof, the provisions of this Ordinance are deemed expedient and necessary to establish procedure for the use and maintenance of low flow facility holding tanks for commercial or industrial uses, designed to receive, retain and to facilitate ultimate disposal of sewage at another site. And it is hereby declared by the enactment of this Ordinance the intention of the Township is to ensure the protection, benefit and preservation of the health, safety and welfare of the residents of this municipality, and for the requiring of control of holding tanks through specific restrictions upon their uses more fully set forth herein.

LAW OFFICES O'PAKE, MALSNEE & ORWIG, P.C.

SECTION 2. Definitions.

As used herein, the following words and phrases shall have the meanings indicated:

(a) "Township" shall mean the Board of Supervisors of Douglass Township, Berks County, Pennsylvania.

(b) "Holding tank" means a water type receptacle, whether permanent or temporary, which receives and retains sewage conveyed by a water carrying system and is designed and constructed to facilitate the ultimate disposal of sewage to another site.

(c) "Improved property" shall mean any property within the Township upon which there is erected a structure intended for continuous or periodic habitation, occupancy or use by human beings or animals, and from which structure sewage shall or may be discharged.

(d) "Owner" shall mean any person vested with ownership, legal or equitable, sole or partial, of any property located in the Township.

(e) "Person" shall mean any individual, partnership, company, association, corporation, or other group or entity.

(f) "Sewage" shall mean any substance that contains any of the waste products or excrement or other discharge from bodies of human beings or animals or any noxious or deleterious substance being harmful or inimical to the public health, or to animal or aquatic life or to the use of water for domestic water supply or for recreation.

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(g) "Municipality" shall mean the Township of Douglass.

(h) "Applicant" shall mean the owner or person applying for permission to utilize holding tank as alternative sewage disposal system.

SECTION 3. Rights and privileges granted.

That the Board of Supervisors of Douglass Township is hereby authorized and empowered to undertake within the Township the control and methods of holding tank use, sewage disposal and sewage collection and transportation thereof.

SECTION 4. Rules and regulations.

That the Township is hereby authorized and empowered to adopted such rules and regulations concerning sewage and holding tank usage, in addition to the following provisions, which it may deem necessary from time to time to effect the purposes herein:

(A) General requirements for holding tank use are as follows:

(i) Holding tanks require regular service and maintenance to prevent their malfunction and overflow, and shall be used in lieu of other methods of sewage disposal only when the following conditions are met:

LAW OFFICES O'PAKE, MALSNEE & ORWIG, P.C.

(a) The Township official plan or revisions thereto indicates that use of holding tanks for the subject property and provides for replacement of adequate sewer services in accordance with the Department of Environmental Resources approval;

(b) The Board of Supervisors identifies the Township office as the administrative entity to receive, review and retain pumping receipts for permitted holding tanks;

(c) The Board of Supervisors shall establish an annual inspection of holding tanks within the municipality with completion and retention of written inspection reports;

(d) The Board of Supervisors shall adopted by regulations, procedures and penalties for correction of malfunctions or public health hazards from holding tanks.

(ii) Applicant shall be required to execute an installation and maintenance agreement for utilization of holding tank which shall require initial filing fee for review of application by Township Engineer, require annual fee for inspection and fee for periodic inspections as required, shall require a cash escrow deposit in an amount to be determined by the Board of Supervisors to guarantee compliance with the terms of the holding tank permit and rules and regulations as more fully set forth herein.

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(iii) The proposed holding tank system application shall be approved by the Department of Environmental Resources and reviewed by the Township Engineer as to its design, construction and installation, and the owner shall certify to the Township and Department of Environmental Resources that the design, construction and installation of the holding tank has been completed in accordance with the permits granted by DER and the Township.

(iv) Owner shall provide proof of written contract through appropriate documentation evidencing contractual relationship established by owner and a DER approved site to accept untreated sewage from subject holding tank. All regulations and requirements set forth in Chapter 73 setting forth standards for operation of holding tanks as issued by the Department of Environmental Resources shall be subject to and satisfied by owner.

SECTION 5. All Ordinances and parts of Ordinances inconsistent with this Ordinance are hereby repealed, insofar, but only insofar, as the same are inconsistent herewith.

SECTION 6. The provisions of this Ordinance are severable, and if any provision or part thereof shall be held invalid, unconstitutional or inapplicable to any person or circumstances such invalidity, unconstitutionality or inapplicability shall not effect or impair the remaining provisions, or parts thereof of this Ordinance.

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SECTION 7. This Ordinance shall take effect five (5) days subsequent to its passage.

ORDAINED and ENACTED by the Board of Supervisors of the Township of Douglass, Berks County, Pennsylvania, in lawful session duly assembled, this 8th day of August, 1990.

BOARD OF SUPERVISORS OF DOUGLASS TOWNSHIP BERKS COUNTY, PA

Stephen J. Brobst
Chairman

Dale J. Trumbach
Supervisor

Supervisor

Attest:

Joan D. Adams
Township Secretary

LAW OFFICES O'PAKE, MALSNEE & ORWIG, P.C.

APPENDIX E

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
APPENDIX E

NEEDS ANALYSIS CHART

TOTAL NUMBER OF EDU'S WITH ON-LOT SEWAGE SYSTEMS = **1,178**

TOTAL NUMBER OF EDU'S WITH ON-LOT SEWAGE DISPOSAL SYSTEMS CONSTRUCTED PRIOR TO 1972 = **810**

TOTAL NUMBER OF EDU'S WITH ON-LOT SEWAGE DISPOSAL SYSTEMS CONSTRUCTED AFTER 1972 = **368**

	PRIOR TO 1972	AFTER 1972
TOTAL NUMBER OF EDU'S WITH ON-LOT SEWAGE SYSTEMS	810 EDU	368 EDU
NUMBER OF EDU'S CONSTRUCTED ON UNSUITABLE SOILS	45 EDU	5 EDU
NUMBER OF EDU'S CONSTRUCTED WITHIN 100-YEAR FLOODPLAIN	42 EDU	3 EDU
NUMBER OF EDU'S CONSTRUCTED ON SLOPES EXCEEDING 25%	100 EDU	5 EDU
NUMBER OF EDU'S CONSTRUCTED WITH SYSTEMS ON SLOPES EXCEEDING 25%	5 EDU	0 EDU
NUMBER OF EDU'S CONSTRUCTED WITH CESS POOLS	40 EDU	0 EDU
NUMBER OF EDU'S CONSTRUCTED WITH UNDER-DESIGNED SYSTEMS	150 EDU	0 EDU
NUMBER OF EDU'S WITH SYSTEMS WHICH PREVIOUSLY MALFUNCTIONED	50 EDU	10 EDU
NUMBER OF EDU'S WITH SYSTEMS WHICH ARE EXISTING MALFUNCTIONS	0 EDU	0 EDU
NUMBER OF EDU'S WITH SYSTEMS WHICH ARE PROBABLE MALFUNCTIONS	15 EDU	5 EDU
NUMBER OF EDU'S WITH SYSTEMS WHICH ARE POTENTIAL MALFUNCTIONS	150 EDU	10 EDU
NUMBER OF SEWAGE PERMIT APPLIC. ON FILE IN TOWNSHIP OFFICE	30 EDU	270 EDU

All general notes, conclusions and recommendations regarding the Needs Analysis Chart have been included on the following pages of APPENDIX E and Section 5.20.

NEEDS ANALYSIS CHART

GENERAL NOTES

1. The original Needs Analysis Chart, supplied by the Pennsylvania Department of Environmental Resources has been modified by Douglass Township in order to be more specific regarding on-lot sewage development.

2. The information utilized to complete the Needs Analysis Chart was obtained through a review of the SEO's records, sewage permits, tax records, building permits, approved subdivision plans, land use maps and aerial photographs.

3. The information contained under Section 4.50 (Evaluation of On-Lot Sewage Disposal Systems Designed and Installed Prior to 1967) of this Act 537 Plan Update was also utilized to complete the Needs Analysis Chart.

4. Most of the information contained on the Needs Analysis Chart has been depicted on FIGURES 12, 13-A and 13-B of this Act 537 Plan Update. It should be noted that Berks County does not have Tax Maps. Therefore, property boundaries could not be properly delineated on any of the FIGURES.

5. The information which has not been depicted on FIGURES 12, 13-A and 13-B of this Act 537 Plan Update has been either derived and/or estimated utilizing Township records. Therefore, this information could not be accurately plotted on the maps provided in the Plan.

6. The historical data pertaining to previous on-lot sewage malfunctions has been derived utilizing Township records. The data pertaining to existing on-lot sewage malfunctions has been derived on the premise that there are no existing malfunctions within the Township. If an existing malfunction would exist, it would have been reported, investigated and corrected. However, the Township could speculate (based on previous sewage enforcement activity/data) that there are some probable and/or potential malfunctions within the Township. Since these probable and/or potential malfunctions are assumed they cannot be identified on a location map or in the field.

7. Most of the records regarding sewage enforcement are on file at the Douglass Township Municipal Building. The Township Sewage Enforcement Officer also has some of this information on file.

NEEDS ANALYSIS CHART

CONCLUSIONS AND RECOMMENDATIONS

1. An estimated 50 of the 1178 total on-lot sewage disposal systems within the Township are located on unfavorable soil conditions. This represents 4.24 percent of the overall total. Most of these systems (45) were installed prior to 1972 and have no established pattern within the Township.

2. An estimated 45 of the 1178 total on-lot sewage disposal systems within the Township are located within the 100-Year Floodplain. This represents 3.82 percent of the overall total. Most of these systems (42) were installed prior to 1972 and are located in the southern and central portion of the Planning Area.

3. An estimated 105 of the 1178 EDU's within the Township are located on slopes exceeding 25 percent. This represents 8.91 percent of the overall total. Most of these EDU's (100) were constructed prior to 1972 and have no established pattern. Approximately 5 on-lot systems or 0.42 percent of the overall total are located on slopes exceeding 25 percent. All of these systems were installed prior to 1972 and have no established pattern within the Township.

4. An estimated 40 of the 1178 total on-lot sewage disposal systems within the Township are cess pools. This represents 3.40 percent of the overall total. All of these systems were installed prior to 1972 and have no established pattern within the Township.

5. Approximately 150 of the 1178 total on-lot sewage disposal systems within Douglass Township are considered underdesigned. This represents 12.73 percent of the overall total. All of these systems were installed prior to 1972 and have no established pattern within the Township.

6. Some of the underdesigned on-lot sewage disposal systems and/or cess pools could also be located on unsuitable soils, steep slopes or within the 100-Year Floodplain. Therefore, this data pertaining to on-lot sewage development could have a slight degree of error due to the repeated data which has been utilized to formulate the Needs Analysis Chart.

7. Based on existing sewage enforcement activity/records, it is estimated that there are 20 on-lot sewage disposal systems with probable malfunctions. This represents 1.70 percent of the overall total. It is assumed that most of these systems (15) were installed prior to 1972 and have no established pattern within the Township.

8. Based on existing sewage enforcement activity/records, it is estimated that there are 160 on-lot sewage disposal systems with potential malfunctions. This represents 13.58 percent of the overall total. It is assumed that most of these systems (150) were installed prior to 1972 and have no established pattern within the Township.

9. The data pertaining to probable and potential on-lot sewage malfunctions has been derived utilizing historical sewage enforcement records and information contained within this Act 537 Plan Update. Since this information is based on speculation, the Township cannot properly identify the malfunctioning systems on a location map or in the field. It is recommended that the Township continue to monitor the "problem areas" identified under Section 4.50 and FIGURES 13-A and 13-B of this Act 537 Plan Update.

10. The data contained within this Section should be utilized to evaluate selected problem areas in the Township. It is recommended that the Township conduct an evaluation of existing on-lot sewage disposal systems in the identified problem areas of the Township.

11. The Township should establish an evaluation program and/or an inspection program to monitor the pre-regulatory on-lot sewage disposal systems on a continuous basis.

APPENDIX F

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 1

SITE NO: 1 ADDRESS: Kieffer's

LOCATION: Route 422 - Ben Franklin Highway

TYPE OF SYSTEM: Unknown-May be hold.tank ESTIMATED AGE: 5-10

BASIS OF INVESTIGATION: Pipe sticking up towards very back of parking area

REPORT: No evidence seen of discharge - no room for system unless under parking lot

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 2 ADDRESS: Jay's Lanes Complex

LOCATION: Route 422 - Ben Franklin Highway

TYPE OF SYSTEM: Series of holding tanks? ESTIMATED AGE: 20+/-

BASIS OF INVESTIGATION: Series of vent pipes and pipes sticking up in back of building

REPORT: No discharge observed - no room for system

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 3 ADDRESS: Harold Buick

LOCATION: Route 422 - Ben Franklin Highway

TYPE OF SYSTEM: Holding Tank ESTIMATED AGE: 5+/-

BASIS OF INVESTIGATION: PVC pipe behind building & found

REPORT: Holding tank - no discharge observed - alarm wires in tank - no room for system

INVESTIGATED BY: JAW DATE: 6/18/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 2

SITE NO: 4 ADDRESS: 210 Ben Franklin Highway

LOCATION: Route 422 - Next to Harold Buick

TYPE OF SYSTEM: Inground ESTIMATED AGE: 25+/-

BASIS OF INVESTIGATION: Large lot-could be room for alt. system

REPORT: Appears that perf.pipe runs about 150-200 ft. thru back yard to tank - tank appears to have pump w/ discharge line to back where it discharges to a trench - trench dry at time of inspection

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 5 ADDRESS: Across from Douglass Dr. 206 Ben Franklin Hway.Double House & Petro Cast, Inc.

LOCATION: 2nd prop. from Harold Buick on Rt. 422 towards Pot.

TYPE OF SYSTEM: Discharge to trench in back ESTIMATED AGE: ?

BASIS OF INVESTIGATION: Discharge pipe seen-very little if any perking away through soils

REPORT: Pipeline comes from house & possibly factory bldg. & discharges to open trench - definately sewage - little possibility for siting system on site

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 6 ADDRESS: 84 Lumber

LOCATION: Route 422 - Ben Franklin Highway

TYPE OF SYSTEM: Sandmound system ESTIMATED AGE: 14

BASIS OF INVESTIGATION: Density, soils

REPORT: No malfunction - no alternate area

INVESTIGATED BY: JAW DATE: 6/18/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 3

SITE NO: 7 ADDRESS: A.E. Minotto, Inc. Auto Salvage Used Auto Parts
LOCATION: Route 422 - Ben Franklin Highway
TYPE OF SYSTEM: Inground ESTIMATED AGE: 30 +
BASIS OF INVESTIGATION: Soils, property use
REPORT: No malfunction - no area for alt. system all used for inventory storage and parking
INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 8 ADDRESS: 152 Ben Franklin Highway
LOCATION: Next to A.E. Minotto, Inc. - Route 422
TYPE OF SYSTEM: Inground ESTIMATED AGE: 25+/-
BASIS OF INVESTIGATION: Density
REPORT: No malfunction - no room for alt. system
INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 9 ADDRESS: Minotto's Garage - Auto Transmission
LOCATION: Route 422 - Ben Franklin Highway
TYPE OF SYSTEM: None - Job Johnny ESTIMATED AGE:
BASIS OF INVESTIGATION: Density
REPORT: No room for any system
INVESTIGATED BY: JAW DATE: 6/18/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 4

SITE NO: 10 ADDRESS: Ben Franklin Highway

LOCATION: Residence next to Minotto's Garage toward Pottstown

TYPE OF SYSTEM: Inground ESTIMATED AGE: 25 +

BASIS OF INVESTIGATION: Density/Lot size

REPORT: No malfunction evidence - was told an inground system
Large cement/clay bell pipe 12"? running to back of
prop. is storm sewer-does not appear to be septic

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 11 ADDRESS: 136 Ben Franklin Highway

LOCATION: Route 422

TYPE OF SYSTEM: Cesspool ESTIMATED AGE: 50 +

BASIS OF INVESTIGATION: Density

REPORT: No malfunction - no room for alt. system

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 12 ADDRESS: 132 Ben Franklin Highway

LOCATION: Route 422

TYPE OF SYSTEM: Inground-holding tank ESTIMATED AGE: 1

BASIS OF INVESTIGATION: Density

REPORT: No malfunction-holding tank 1,000 gal. just placed
recently - no room for alt. system

INVESTIGATED BY: JAW DATE: 6/18/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 5

SITE NO: 13 ADDRESS: 130 Ben Franklin Highway

LOCATION: Route 422

TYPE OF SYSTEM: Holding Tank ESTIMATED AGE: 1 yr

BASIS OF INVESTIGATION: Density

REPORT: New tank placed at same time as @ 136 - rental prop. no room for alt. system - may have overflow pipe from tank to swale - swale dry at time of inspection

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 14 ADDRESS: 128 Ben Franklin Highway

LOCATION: Route 422

TYPE OF SYSTEM: Septic Tank-disc.to swale ESTIMATED AGE: 25

BASIS OF INVESTIGATION: Density/Soils

REPORT: Swale with standing sewage not seeping away - alt. system site may be avail.,but probably not suitable

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 15 ADDRESS: Next to 128 - Possible 126 Ben Hgwy

LOCATION: Route 422 - Ben Franklin Highway

TYPE OF SYSTEM: Swale Discharge ESTIMATED AGE:

BASIS OF INVESTIGATION: Density/Soils

REPORT: Appears that perhaps roof drains & septic drain out ABS pipe in back yard - no evidence of any system on site - no suitable area for alt. system

INVESTIGATED BY: JAW DATE: 6/18/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 6

SITE NO: 16 ADDRESS: Wills Equipment Painting

LOCATION: Rt. 422-Ben Franklin Hgway behind Kastrava Printing

TYPE OF SYSTEM: None found ESTIMATED AGE: _____

BASIS OF INVESTIGATION: Density

REPORT: All area for parking and equipment - no room for system - no discharges found

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 17 ADDRESS: Kastrave Printing/M & S Pet Supply Businesses & Apartments

LOCATION: Route 422 - Ben Franklin Highway

TYPE OF SYSTEM: Inground ? ESTIMATED AGE: 25 +/-

BASIS OF INVESTIGATION: Density

REPORT: No malfunction seen - septic tank found - location of system? - no room for alternate system

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 18 ADDRESS: 116 Ben Franklin Hgway-L&L Truck Repair

LOCATION: Route 422 - next to site no. 17

TYPE OF SYSTEM: Inground ESTIMATED AGE: 25 +

BASIS OF INVESTIGATION: Whole property parking lot

REPORT: Septic tank located-system under lot?- no malfunction evident - no suitable area for replacement system

INVESTIGATED BY: JAW DATE: 6/18/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 7

SITE NO: 19 ADDRESS: Harold Reinert, Inc. Corner of Squirrel Hollow Rd. & 422

LOCATION: Route 422 - Ben Franklin Highway

TYPE OF SYSTEM: Inground ESTIMATED AGE: 15

BASIS OF INVESTIGATION: Whole lot parking

REPORT: System working fine - no evidence of malfunction - no alt. site for replacement system

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 20 ADDRESS: 102 Squirrel Hollow Road - same as above across from Site 19

LOCATION: 422 & Squirrel Hollow Rd.-facing Squirrel Hollow Rd

TYPE OF SYSTEM: Cesspool ESTIMATED AGE: 50

BASIS OF INVESTIGATION: Density

REPORT: No malfunction presently - had trouble when more people living in house - no alt. area available

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 21 ADDRESS: Has house in back not being used 137 Ben Franklin Highway

LOCATION: Route 422

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40

BASIS OF INVESTIGATION: Density

REPORT: No malfunction - no alternate system spot

INVESTIGATED BY: JAW DATE: 06/18/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 8

SITE NO: 22 ADDRESS: 139 Ben Franklin Highway

LOCATION: Route 422

TYPE OF SYSTEM: Inground ESTIMATED AGE: 35 Updated

BASIS OF INVESTIGATION: Density

REPORT: No malfunction - no alternate site available

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 23 ADDRESS: The Car Lot-145 Ben Franklin Hgway

LOCATION: Route 422

TYPE OF SYSTEM: Tied into Site 22 System ESTIMATED AGE:

BASIS OF INVESTIGATION:

REPORT:

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 24 ADDRESS: Fitness Forum Gym Aerobics Center Complex

LOCATION: Route 422 - Ben Franklin Highway

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30 +

BASIS OF INVESTIGATION: Whole property parking area - slopes

REPORT: No malfunction, system under lot, no available suitable replacement area

INVESTIGATED BY: JAW DATE: 6/18/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 9

SITE NO: 25 ADDRESS: Douglassville Auto Body & Sales

LOCATION: Route 422 - Ben Franklin Highway

TYPE OF SYSTEM: Inground ESTIMATED AGE: 25 +/-

BASIS OF INVESTIGATION: Whole property parking/slopes

REPORT: No malfunction evident-discharging something to surface - does not appear to be sewage - area dry at time of inspection

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 26 ADDRESS: Corner of 422 & Douglass Drive
177 Ben Franklin Highway

LOCATION: Route 422

TYPE OF SYSTEM: Inground ESTIMATED AGE: 50

BASIS OF INVESTIGATION: Density

REPORT: No malfunction evident - system appears to be old may have room for replacement system

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 27 ADDRESS: Corner of 422 & Douglass Drive
102 Douglass Drive (facing 422)

LOCATION: Route 422 & Douglass Dr.

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30

BASIS OF INVESTIGATION: Density

REPORT: No malfunction evident - not enough area for replacement system

INVESTIGATED BY: JAW DATE: 6/18/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 10

SITE NO: 28 ADDRESS: 205 Ben Franklin Highway

LOCATION: Route 422 across from Proto-Cast, Inc.

TYPE OF SYSTEM: Inground w/surface disch. ESTIMATED AGE: 50

BASIS OF INVESTIGATION: Density

REPORT: No one in house presently - pipe discharge to surface dry at time of inspection

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 29 ADDRESS: 207 Ben Franklin Highway

LOCATION: Route 422

TYPE OF SYSTEM: Inground ESTIMATED AGE: 35

BASIS OF INVESTIGATION: Density

REPORT: No malfunction, no alternate site

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 30 ADDRESS: Pottstown Equipment & Residence 211 Ben Franklin Highway

LOCATION: Route 422, next to Ken's Cycle Center

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30

BASIS OF INVESTIGATION: Density

REPORT: No malfunction - discharging grey water to street

INVESTIGATED BY: JAW DATE: 6/18/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 11

SITE NO: 31 ADDRESS: Ken's Cycle Center

LOCATION: Route 422 - Ben Franklin Highway

TYPE OF SYSTEM: Inground ESTIMATED AGE: 25

BASIS OF INVESTIGATION: Density/Soils

REPORT: No malfunction - may have area in back for replacement system - but soils may prohibit

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 32 ADDRESS: The Douglass Grille

LOCATION: Route 422 - across from Jay's Lanes

TYPE OF SYSTEM: Holding Tanks ESTIMATED AGE: 5-10

BASIS OF INVESTIGATION: Density

REPORT: No available area for system

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 33 ADDRESS: Norco Products, Summit Metals, Contoured Metals, GBF, Galt Force 231 Ben Franklin Highway

LOCATION: Route 422

TYPE OF SYSTEM: Inground System ESTIMATED AGE: 20

BASIS OF INVESTIGATION: Density

REPORT: Enough acreage for alt. system - no malfunctioning evident

INVESTIGATED BY: JAW DATE: 6/18/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 12

SITE NO: 34 ADDRESS: Ice City

LOCATION: Route 422 - across from Keiffer's

TYPE OF SYSTEM: Holding Tank (1,000 gal.) ESTIMATED AGE: 1

BASIS OF INVESTIGATION: Density

REPORT: No other available area for system

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 35 ADDRESS: Ben Franklin Highway

LOCATION: Off 422 back lane along RR tracks - 150 yds. near Township line

TYPE OF SYSTEM: Inground ESTIMATED AGE: 50 +

BASIS OF INVESTIGATION: Density

REPORT: No evidence of malfunction, may have enough area for alternate system

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 36 ADDRESS: Ben Franklin Highway

LOCATION: On Roue 422 just before RR crossing

TYPE OF SYSTEM: Inground ESTIMATED AGE: 50 +

BASIS OF INVESTIGATION: Density

REPORT: May have available extra land for alternate system not sure size of lot or amount of land w/ house

INVESTIGATED BY: JAW DATE: 6/18/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 13

SITE NO: 37 ADDRESS: Blue March Labs. Universal Concrete Products

LOCATION: Off 422 - Ben Franklin Highway

TYPE OF SYSTEM: 2 Systems Inground & Cesspool ESTIMATED AGE: 30 +

BASIS OF INVESTIGATION: Density - 7+ acres of land

REPORT: No malfunctions, do have enough land for alternate systems

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 38 ADDRESS: 12 Douglass Drive

LOCATION: Off Old Phila. Pike at end of lane

TYPE OF SYSTEM: Inground ESTIMATED AGE: 20

BASIS OF INVESTIGATION: Density

REPORT: No malfunction - does have enough land for alternate system

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 39 ADDRESS: 201 Old Philadelphia Pike

LOCATION: On corner of Douglass Dr. & Old Phila. Pike

TYPE OF SYSTEM: Inground ESTIMATED AGE: 35

BASIS OF INVESTIGATION: Density

REPORT: Probably enough room for alternate system on lot no malfunction

INVESTIGATED BY: JAW DATE: 6/18/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 14

SITE NO: 40 ADDRESS: 177 Old Philadelphia Pike

LOCATION: Corner of Douglass Dr. & Old Phila. Pike

TYPE OF SYSTEM: Inground ESTIMATED AGE: 35 +

BASIS OF INVESTIGATION: Density

REPORT: No malfunction, no available site for alt. system

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 41 ADDRESS: 173 Old Philadelphia Pike

LOCATION: Old Philadelphia Pike

TYPE OF SYSTEM: Inground ESTIMATED AGE: 35+

BASIS OF INVESTIGATION: Density

REPORT: No malfunction, no available site for alt. sytem

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 42 ADDRESS: 176 Old Philadelphia Pike

LOCATION: Old Phila. Pike directly across from Douglass Dr.

TYPE OF SYSTEM: Inground ESTIMATED AGE: 35 +

BASIS OF INVESTIGATION: Density/Soils

REPORT: May have room for alt. site in back, but soils will most likely prohibit - no evidence of current malf.

INVESTIGATED BY: JAW DATE: 6/18/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 15

SITE NO: 43 ADDRESS: 204 Old Philadelphia Pike

LOCATION: 1st house toward Reading across from Douglass Dr.

TYPE OF SYSTEM: Cesspool ESTIMATED AGE: 50 +

BASIS OF INVESTIGATION: Density/Soils

REPORT: Alternate site is double full - soils would prohibit anyway - not malfunctioning

INVESTIGATED BY: JAW DATE: 6/18/93

SITE NO: 44 ADDRESS: 213 Old Philadelphia Pike

LOCATION: Directly beside bypass

TYPE OF SYSTEM: Inground or Cesspool? ESTIMATED AGE: 30-50

BASIS OF INVESTIGATION: Density

REPORT: Has enough land to place replacement system - no apparent malfunction

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 45 ADDRESS: 231 Old Philadelphia Pike

LOCATION: 1st house toward Amity on other side of bypass

TYPE OF SYSTEM: Inground ? ESTIMATED AGE: 20 +

BASIS OF INVESTIGATION: Density

REPORT: May have enough room for alt. system - would be tight - no malfunction seen

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 16

SITE NO: 46 ADDRESS: 243 Old Philadelphia Pike

LOCATION: 2nd house toward Amity Twp. past bypass

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30 +

BASIS OF INVESTIGATION: Density

REPORT: Appears to be enough land available for alt. system
No malfunction observed - grass darker over line

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 47 ADDRESS: 249 Old Philadelphia Pike

LOCATION: Last house in Douglass on Old Phila. Pike

TYPE OF SYSTEM: Inground ESTIMATED AGE: 15-20

BASIS OF INVESTIGATION: Density

REPORT: May have enough land for replacement system - no
malfunction observed - grass darker over system

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 48 ADDRESS: 232 Old Philadelphia Pike

LOCATION: Across from Site 45

TYPE OF SYSTEM: Inground ESTIMATED AGE: 20 +

BASIS OF INVESTIGATION: Flood Plain

REPORT: Any system must be on flood plain here - no
trespassing signs - did not see system

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 17

SITE NO: 49 ADDRESS: 75 Old Philadelphia Pike

LOCATION: 7th house from Squirrel Hollow Rd. (tow.Pottstown)

TYPE OF SYSTEM: Inground or Cesspool ESTIMATED AGE: 50 ?

BASIS OF INVESTIGATION: Density

REPORT: No room on lot for another system - property posted with dogs on site-did not see actual system location

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 50 ADDRESS: 83 Old Philadelphia Pike

LOCATION: 6th house from Squirrel Hollow Rd.(tow. Pottstown)

TYPE OF SYSTEM: Inground ESTIMATED AGE: 20

BASIS OF INVESTIGATION: Density

REPORT: No room for replacement - no malfunction observed, grass greener over lines

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 51 ADDRESS: 85 Old Philadelphia Pike

LOCATION: 5th house from Squirrel Hollow Rd. toward Pottstown

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30

BASIS OF INVESTIGATION: Density

REPORT: May have room (depending on how far back property goes) for replacement system - malfunction may be present - wet area at site ??

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 18

SITE NO: 52 ADDRESS: 89 Old Philadelphia Pike

LOCATION: 4th house toward Pottstown from Squirrel Hollow Rd.

TYPE OF SYSTEM: Inground or Cesspool ESTIMATED AGE: 40-50

BASIS OF INVESTIGATION: Density

REPORT: No malfunction apparent, no room for alt. system placement

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 53 ADDRESS: 91 Old Philadelphia Pike

LOCATION: 3rd house from Squirrel Hollow Rd.toward Pottstown

TYPE OF SYSTEM: Inground or Cesspool ESTIMATED AGE: 40-50

BASIS OF INVESTIGATION: Density & Soils

REPORT: No malfunction apparent, no area for replaement system - very back of yard has marshy area

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 54 ADDRESS: 95 Old Philadelphia Pike

LOCATION: 2nd house toward Pottstown from Squirrel Hollow Rd.

TYPE OF SYSTEM: Inground ESTIMATED AGE: 3

BASIS OF INVESTIGATION: Density

REPORT: No room on lot for replacement, no malfunction presently

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 19

SITE NO: 55 ADDRESS: 99 Old Philadelphia Pike

LOCATION: Corner of Squirrel Hollow Rd. & Phila. Pike

TYPE OF SYSTEM: Inground or Cesspool? ESTIMATED AGE: ?

BASIS OF INVESTIGATION: Density

REPORT: No malfunction observed, location of system questionable - may be room for alternate system - would be tight

INVESTIGATED BY: JAW DATE: 6/21/93

Neighbor reports septic discharges in pipe across Squirrel Hollow Rd.

SITE NO: 56 ADDRESS: 107 Old Philadelphia Pike

LOCATION: 1st house twd Rdg. from Squirrel Hollow (422 side)

TYPE OF SYSTEM: Inground & Tank ESTIMATED AGE: 5-10

BASIS OF INVESTIGATION: Density/Soils

REPORT: May have room for alternate system - soils questionable - appears to have been problems with system - not apparent now

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 57 ADDRESS: 111 Old Philadelphia Pike

LOCATION: 2nd house towards Rdg. from Squirrel Hollow Road
Could not locate -

TYPE OF SYSTEM: Inground or Cesspool ESTIMATED AGE: ?

BASIS OF INVESTIGATION: Density

REPORT: May be area for alt. system - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 20

SITE NO: 58 ADDRESS: 219 Old Philadelphia Pike

LOCATION: 3rd house twd. Rdg. from Squirrel Hollow (422 side)

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40

BASIS OF INVESTIGATION: Density

REPORT: May have room for alt. system, no malfunction observed

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 59 ADDRESS: 121 Old Philadelphia Pike

LOCATION: 4th house twd Rdg. from Squirrel Hollow (422 side)

TYPE OF SYSTEM: Cesspool w/ overflow into trench ESTIMATED AGE: 50 +

BASIS OF INVESTIGATION: Density

REPORT: Has wash machine water bypassing system and discharing into trench, no room for alt. system - 2 dwellings at this location both on same system

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 60 ADDRESS: 129 Old Philadelphia Pike

LOCATION: 5th house twd. Rdg. from Squirrel Hollow (422 side)

TYPE OF SYSTEM: Inground ESTIMATED AGE: 20 +

BASIS OF INVESTIGATION: Density

REPORT: No malfunction observed, system location unclear - may be room for alt. system if owner owns side lot

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 21

SITE NO: 61 ADDRESS: 135 Old Philadelphia Pike

LOCATION: beside Jadko (Pottstown side)

TYPE OF SYSTEM: Inground ESTIMATED AGE: new

BASIS OF INVESTIGATION: Density

REPORT: No malfunction observed, appears new system placed or work completed on system, no room for alt. system

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 62 ADDRESS: 139 Old Philadelphia Pike

LOCATION: Jadko

TYPE OF SYSTEM: Inground - tied into 141 Old Philadelphia Pike ESTIMATED AGE: 1-1/2

BASIS OF INVESTIGATION: Density

REPORT: No room for alternate system

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 63 ADDRESS: 141 Old Philadelphia Pike

LOCATION: beside Jadko toward Reading

TYPE OF SYSTEM: Inground ESTIMATED AGE: 1-1/2

BASIS OF INVESTIGATION: Density

REPORT: No room for alt. sysem - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 22

SITE NO: 64 ADDRESS: 143 Old Philadelphia Pike

LOCATION: 2nd house toward Reading from Jadko

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30

BASIS OF INVESTIGATION: Density

REPORT: Location of system not evident - no malfunction at present - no room for alt. system

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 65 ADDRESS: 145 Old Philadelphia Pike

LOCATION: 3rd house toward Reading from Jadko

TYPE OF SYSTEM: Inground ESTIMATED AGE: 10-20

BASIS OF INVESTIGATION: Density

REPORT: May be alt. system location available (questionable) no malfunction evident

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 66 ADDRESS: 147 Old Philadelphia Pike

LOCATION: 4th house toward Reading from Jadko

TYPE OF SYSTEM: Inground trench ESTIMATED AGE: 20-30

BASIS OF INVESTIGATION: Density

REPORT: No room for alt. system, no malfunction presently - grass green over lines

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 23

SITE NO: 67 ADDRESS: 151 Old Philadelphia Pike

LOCATION: 5th house toward Reading from Jadko

TYPE OF SYSTEM: Cesspool or Inground ESTIMATED AGE: 50

BASIS OF INVESTIGATION: Density

REPORT: Area for alt. system available, no malfunction observed, system location not evident

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 68 ADDRESS: 157 Old Philadelphia Pike

LOCATION: 6th house toward Reading from Jadko

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40-50

BASIS OF INVESTIGATION: Density

REPORT: No room for alt. system, no malfunction at time of inspection but owner reported having problems earlier putting additional soils on top

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 69 ADDRESS: 166 Old Philadelphia Pike

LOCATION: 2nd house from Douglass Dr.twd. Potts. (river side)

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30 +

BASIS OF INVESTIGATION: Density/Flood Plain

REPORT: System just pumped, had problems previously, 7 acres to this property - most in flood plain - not likely to find site for system

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 24

SITE NO: 70 ADDRESS: 156 Old Philadelphia Pike

LOCATION: 3rd house from Douglass Dr.on River Side twd. Potts

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40

BASIS OF INVESTIGATION: Flood Plain

REPORT: No room for alt. system, wash water (grey water) discharges to surface

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 71 ADDRESS: 152 Old Philadelphia Pike

LOCATION: 4th house from Douglass Dr.on River Side twd.Potts

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40

BASIS OF INVESTIGATION: Flood Plain

REPORT: No malfunction at time of inspection, very little area above flood plain/marsh for alt. system site

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 72 ADDRESS: 148 Old Philadephia Pike

LOCATION: 5th house from Douglass Dr.on River Side twd. Potts

TYPE OF SYSTEM: Probably Cesspool ESTIMATED AGE: 50 +

BASIS OF INVESTIGATION: Flood Plain/Soils

REPORT: May be area for alt. system site, soils not likely acceptable - building undergoing restoration

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 25

SITE NO: 73 ADDRESS: 116 Old Philadelphia Pike

LOCATION: 2nd house twd.Rdg.from Squirrel Hollow on RiverSide

TYPE OF SYSTEM: Inground or Cesspool ESTIMATED AGE: 50 +

BASIS OF INVESTIGATION: Floodplain/Wetlands

REPORT: System location not apparent, no malfunction seen wetlands very close to house - no room for alterate system site

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 74 ADDRESS: 102 Old Philadelphia Pike

LOCATION: 1st house twd.Rdg.from Squirrel Hollow on RiverSide

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40+/-

BASIS OF INVESTIGATION: Flood Plain

REPORT: No malfunction observed, may be area for alt. system site, soils not likely suitable

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 75 ADDRESS: 62 Old Philadelphia Pike

LOCATION: 1st house twd. Potts.from Squirrel Hollow on River Side

TYPE OF SYSTEM: Inground ESTIMATED AGE: 50

BASIS OF INVESTIGATION: Flood Plain/Wetlands Soils

REPORT: No malfunction observed at time of inspection, no alternate area to place another system - tank has been dug open recently

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 26

SITE NO: 76 ADDRESS: 46 Old Philadelphia Pike

LOCATION: 2nd house from Squirrel Hollow tw. Potts. on River Side

TYPE OF SYSTEM: Cesspool ESTIMATED AGE: 50-60

BASIS OF INVESTIGATION: Floodplain

REPORT: May be site available but soils probably not good - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 77 ADDRESS: 45 Old Philadelphia Pike

LOCATION: Across from Site No. 76

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40-50

BASIS OF INVESTIGATION: Density

REPORT: No malfunction observed - have area for alt. system site

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 78 ADDRESS: Old Philadelphia Pike

LOCATION: Across from Potts. WTP - last house in Douglass

TYPE OF SYSTEM: Inground ESTIMATED AGE: 20

BASIS OF INVESTIGATION: Density

REPORT: Does not have room for alt. system site, no malfunction observed

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 27

SITE NO: 79 ADDRESS: 239 Willow Drive

LOCATION: Behind Ice City

TYPE OF SYSTEM: Cesspool ESTIMATED AGE: 40 +

BASIS OF INVESTIGATION: Density

REPORT: Not enough room for replacement system - no malfunction observed - downgradient of cesspool heavily vegetated

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 80 ADDRESS: 241 Willow Drive

LOCATION: Behind Ice City

TYPE OF SYSTEM: Inground ESTIMATED AGE: 5+/-

BASIS OF INVESTIGATION: Density

REPORT: No place for replacement system, no malfunction observed - system has inspection piping at end of it - dry on inspection

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 81 ADDRESS: 103 Township Line Road

LOCATION: 1st house off 422 - Ben Franklin Highway

TYPE OF SYSTEM: Inground or Cesspool ESTIMATED AGE: 40-50

BASIS OF INVESTIGATION: Density

REPORT: Most likely have enough area for replacement system, no malfunction observed

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 28

SITE NO: 82 ADDRESS: 113 Hilty's Lane

LOCATION: Trailer

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30-40

BASIS OF INVESTIGATION: Density

REPORT: Probably is alternate area for a system, no malfunction

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 83 ADDRESS: 113 Hilty's Lane

LOCATION: House

TYPE OF SYSTEM: Cesspool ESTIMATED AGE: 30 +

BASIS OF INVESTIGATION: Density

REPORT: Probably alternate area available, no malfunction

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 84 ADDRESS: 105 Hilty's Lane

LOCATION: 3rd house from corner of Township Line Road

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30

BASIS OF INVESTIGATION: Density

REPORT: Probably enough area for replaement system, no malfunction observed

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 29

SITE NO: 85 ADDRESS: 103 Hilty's Lane

LOCATION: 2nd from corner of Township Line Road

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40

BASIS OF INVESTIGATION: Density

REPORT: Questionable if enough area for replacement area - no malfunction observed, grass greener over system

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 86 ADDRESS: 101 Hilty's Lane

LOCATION: Corner of Hilty's Lane & Township Line Road

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40

BASIS OF INVESTIGATION: Density

REPORT: Questionable if enough area for replacement system no malfunctioning observed

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 87 ADDRESS: 221 Township Line Road

LOCATION: 1st house from Hilty's Lane

TYPE OF SYSTEM: Inground ESTIMATED AGE: 20

BASIS OF INVESTIGATION: Density

REPORT: System malfunctioning - surface breakout, is enough area for replaement system

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 30

SITE NO: 88 ADDRESS: 231 Township Line Road

LOCATION: 2nd house from Hilty's Lane

TYPE OF SYSTEM: Sand mound ESTIMATED AGE: 5

BASIS OF INVESTIGATION: Density

REPORT: No alternate area available, no malfunction

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 89 ADDRESS: 241 Township Line Road

LOCATION: 3rd house from Hilty's Lane

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30 +

BASIS OF INVESTIGATION: Density

REPORT: Questionable as to whether enough room for replaement system - no obvious malfunction

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 90 ADDRESS: 251 Township Line Road

LOCATION: 4th house from Hilty's Lane

TYPE OF SYSTEM: Sand mound ESTIMATED AGE: 4

BASIS OF INVESTIGATION: Density/Slopes

REPORT: May be enough lot area for replacement systems, however slopes may be limiting-no malfunction observed

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 31

SITE NO: 91 ADDRESS: Township Line Road

LOCATION: 4th houe from Hilty's Lane

TYPE OF SYSTEM: Sand mound ESTIMATED AGE: 5 +/-

BASIS OF INVESTIGATION: Density

REPORT: Most likely enough area for replacement system - no malfunction

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 92 ADDRESS: 325 Township Line Road

LOCATION: 5th house from Hilty's Lane

TYPE OF SYSTEM: Sand mound ESTIMATED AGE: 2-3

BASIS OF INVESTIGATION: Density

REPORT: :Lot large enough for replacement system - no malfunction

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 93 ADDRESS: 12-a Oak Lane

LOCATION: Corner of Oak & Township Line

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30-40

BASIS OF INVESTIGATION: Density

REPORT: No room for alt. sytem area, no malfunction observed may be disharging grey water to storm water drain - goes across street

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 32

SITE NO: 94 ADDRESS: 260 Oak Lane

LOCATION: 1st house from corner of Oak & Twp. Line on right

TYPE OF SYSTEM: Sand mound ESTIMATED AGE: 4-5

BASIS OF INVESTIGATION: Density

REPORT: Probably area for replacement system - no malfunctions

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 95 ADDRESS: Oak Lane

LOCATION: 2nd house from corner of Oak & Twp. Line on right

TYPE OF SYSTEM: Sand mound ESTIMATED AGE: 3

BASIS OF INVESTIGATION: Density

REPORT: Probably alternate area for system - no malfunctions

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 96 ADDRESS: 220 Oak Lane

LOCATION: 3rd house from corner of Oak & Twp. Line Road

TYPE OF SYSTEM: Sand mound ESTIMATED AGE: 5

BASIS OF INVESTIGATION: Density

REPORT: Probably alternate area available on site - no malfunction

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 33

SITE NO: 97 ADDRESS: 190 Douglass Drive

LOCATION: 1st house toward 422 from Oak Lane

TYPE OF SYSTEM: Sand mound ESTIMATED AGE: 5

BASIS OF INVESTIGATION: Density

REPORT: Enough area on site for replacement - no malfunction

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 98 ADDRESS: Peacefull Kingdom Child Care Douglass Drive

LOCATION: End of lane off Douglass Drive

TYPE OF SYSTEM: Sand mound ESTIMATED AGE: 5-10

BASIS OF INVESTIGATION: Density

REPORT: Probably alternate site available - no malfunction

INVESTIGATED BY: JAW DATE: 6/21/93

SITE NO: 99 ADDRESS: 203 Douglass Drive

LOCATION: House in front of day care

TYPE OF SYSTEM: Sand mound ESTIMATED AGE: 13

BASIS OF INVESTIGATION: Density

REPORT: Probably alt. site available 100 acres +/- to lot - no malfunction

INVESTIGATED BY: JAW DATE: 6/21/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 34

SITE NO: 100 ADDRESS: Douglass Drive

LOCATION: 2nd house from corner of Oak & Douglass on left toward 422

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30

BASIS OF INVESTIGATION: Density

REPORT: May be alt. site available depending on lot size - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 101 ADDRESS: Douglass Drive

LOCATION: 1st house from corner of Oak & Douglass on left toward 422

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40

BASIS OF INVESTIGATION: Density

REPORT: May have enough land for alt. site - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 102 ADDRESS: 166 Douglass Drive

LOCATION: 2nd house from Oak Lane toward 422 on right

TYPE OF SYSTEM: Inground ESTIMATED AGE: 23

BASIS OF INVESTIGATION: Density

REPORT: Alt. site available, discharges washwater separately to surface, grass greener over sytem site - but no surface malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 35

SITE NO: 103 ADDRESS: 160 Douglass Drive

LOCATION: 3rd house from Oak Lane twd. 422 on right (house front & one behind)

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40+/-

BASIS OF INVESTIGATION: Density

REPORT: Appears that there would be enough land for alt. site - no apparent malfunction - house in front may have inground - not able to locate

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 104 ADDRESS: Mountain View Chapel

LOCATION: Douglass Drive

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30

BASIS OF INVESTIGATION: Density

REPORT: Does not appear to have land for alt. system - system must be under parking lot - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 105 ADDRESS: 148 Douglass Drive

LOCATION: 1st house past chapel toward 422 on right

TYPE OF SYSTEM: Inground into Cesspool ESTIMATED AGE: 30

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed owner just had tank pumped

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 36

SITE NO: 106 ADDRESS: 146 Douglass Drive

LOCATION: 2nd house past chapel on right toward 422

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30+/-

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 107 ADDRESS: 140 Douglass Drive

LOCATION: 3rd house past chapel on right toward 422

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30+/-

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 108 ADDRESS: 138 Douglass Drive

LOCATION: 4th house past chapel on right toward 422

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30+/-

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available, no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 37

SITE NO: 109 ADDRESS: 136 Douglass Drive

LOCATION: 5th house past chapel on right toward 422

TYPE OF SYSTEM: Inground ? ESTIMATED AGE: 30

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed - could not locate system area

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 110 ADDRESS: 134 Douglass Drive

LOCATION: 6th house past chapel on right toward 422

TYPE OF SYSTEM: Inground? ESTIMATED AGE: 30

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - at least grey water discharging to surface in back yard - no other malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 111 ADDRESS: 132 Douglass Drive

LOCATION: 7th house past chapel on right toward 422, right before cemetery

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30

BASIS OF INVESTIGATION: Density

REPORT: May have enough area on side lot for alt. site - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 38

SITE NO: 112 ADDRESS: 112 Douglass Drive

LOCATION: 1st house past cemetary toward 422 on right

TYPE OF SYSTEM: Sand mound ESTIMATED AGE: 5-10

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 113 ADDRESS: 106 Douglass Drive

LOCATION: 2nd house past cemetary

TYPE OF SYSTEM: Inground ESTIMATED AGE: 15

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed - grass greener over system lines

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 114 ADDRESS: 104 Douglass Drive

LOCATION: 3rd house from cemetary on right toward 422

TYPE OF SYSTEM: Septic tank & Cesspool & Drain field ESTIMATED AGE: 50 +

BASIS OF INVESTIGATION: Density

REPORT: No malfunction - no alt. site available

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 39

SITE NO: 115 ADDRESS: 181 Mary's Lane

LOCATION: House on corner of Douglass & Mary's Lane across from Site 114

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40+/-

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed - newly seeded area in rear may be system site? - may have had problems

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 116 ADDRESS: 179 Mary's Lane

LOCATION: 2nd house on right from Douglass Dr. (422 side)

TYPE OF SYSTEM: Inground ESTIMATED AGE: 35-40

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 117 ADDRESS: 177 Mary's Lane

LOCATION: 3rd house on right from Douglass Dr. (422 side)

TYPE OF SYSTEM: Inground ESTIMATED AGE: 35-40

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed - cleanout snake laying in yard-may be having problems

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 40

SITE NO: 118 ADDRESS: 172 Mary's Lane

LOCATION: 2nd last house back

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30-35

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 119 ADDRESS: Mary's Lane

LOCATION: Last house on lane

TYPE OF SYSTEM: Inground (term used loosely) ESTIMATED AGE: 20

BASIS OF INVESTIGATION: Density

REPORT: May have enough land for alt. site - system discharge to semi covered pit which has evidence of overflow onto surface - definately illegal system

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 120 ADDRESS: 107 Douglass Drive

LOCATION: 1st house (away from 422) from Mary's Lane

TYPE OF SYSTEM: Inground ESTIMATED AGE: 15+/-

BASIS OF INVESTIGATION: Density

REPORT: May have extra land for alt. site - no malfunction observed - exact system location unclear

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 41

SITE NO: 121 ADDRESS: 131 Douglass Drive

LOCATION: 1st house toward Oak Lane past cemetary on right

TYPE OF SYSTEM: Inground ESTIMATED AGE: 35 +

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfucntions of system observed - tank dug up recently - possible problems - wash machine water goes into roof drain-discharge unknown

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 122 ADDRESS: 133 Douglass Drive

LOCATION: 2nd house toward Oak Lane from cemetary on right

TYPE OF SYSTEM: Inground ESTIMATED AGE: 45-50

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - system may be leaching out front bank into street - water running from property up hill also

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 123 ADDRESS: 137 Douglass Drive

LOCATION: 3rd house toward Oak Lane from cemetary on right

TYPE OF SYSTEM: Cesspool ESTIMATED AGE: 40

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed - owner just checked cesspool-only 18" water in bottom

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 42

SITE NO: 124 ADDRESS: 139 Douglass Drive

LOCATION: 4th house toward Oak Lane past cemetary on right

TYPE OF SYSTEM: Inground ESTIMATED AGE: 35 +

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available, no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 125 ADDRESS: 141 Douglass Drive

LOCATION: 5th house toward Oak Lane past cemetary on right

TYPE OF SYSTEM: Cesspool ESTIMATED AGE: 35

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available, no malfunction seen - must pump out after hard rains 3 to 4 times/year - grey water discharging in driveway to street

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 126 ADDRESS: 393 Squirrel Hollow Road

LOCATION: 1st house on left from Douglass Drive

TYPE OF SYSTEM: Inground tank to surface discharge ESTIMATED AGE: 30

BASIS OF INVESTIGATION: Density

REPORT: May have enough lot for alt. site - system flows to tank then overflow into open trench - trench runs into woods

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 43

SITE NO: 127 ADDRESS: 386 Squirrel Hollow Road

LOCATION: 1st house on right from Douglass Drive

TYPE OF SYSTEM: Inground ESTIMATED AGE: 36

BASIS OF INVESTIGATION: Density

REPORT: Alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 128 ADDRESS: 364 Squirrel Hollow Road

LOCATION: 2nd house on right from Douglass Drive

TYPE OF SYSTEM: Inground to surface dischESTIMATED AGE: 40 +

BASIS OF INVESTIGATION: Density

REPORT: May have enough land for alt. site - system discharges from tank to surface

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 129 ADDRESS: 344 Squirrel Hollow Road

LOCATION: 3rd house on right from Douglass Drive

TYPE OF SYSTEM: Open pit to surface - outhouses ESTIMATED AGE: 50

BASIS OF INVESTIGATION: Density

REPORT: Alt. site probably available

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 44

SITE NO: 130 ADDRESS: 326 Squirrel Hollow Road

LOCATION: 4th house on right from Douglass Dr.

TYPE OF SYSTEM: Inground ESTIMATED AGE: 34

BASIS OF INVESTIGATION: Density

REPORT: May be alt. site on property - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 131 ADDRESS: 314 Squirrel Hollow Road

LOCATION: 5th house on right from Douglass Drive

TYPE OF SYSTEM: Septic tank, drainfield/ cesspool ESTIMATED AGE: 35

BASIS OF INVESTIGATION: Density

REPORT: May be alt. site but would be tight - no malfunction evident - sometimes back-up when really wet

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 132 ADDRESS: 302 Squirrel Hollow Road

LOCATION: 1st house down dirt lane

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30 +/-

BASIS OF INVESTIGATION: Density

REPORT: No alt. site, no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 45

SITE NO: 133 ADDRESS: 304 Squirrel Hollow Road

LOCATION: 2nd house down dirt lane

TYPE OF SYSTEM: Inground Cesspool ESTIMATED AGE: 50 +

BASIS OF INVESTIGATION: Density

REPORT: May have enough land for alt. system site, no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 134 ADDRESS: 306 Squirrel Hollow Road

LOCATION: Last house on dirt lane

TYPE OF SYSTEM: Inground-discharges to surface ESTIMATED AGE: 45

BASIS OF INVESTIGATION: Density

REPORT: Alt. site available - no discharge at inspection

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 135 ADDRESS: 300 Squirrel Hollow Road

LOCATION: Lower corner of dirt lane & Squirrel Hollow Rd.

TYPE OF SYSTEM: Inground ESTIMATED AGE: 32

BASIS OF INVESTIGATION: Density

REPORT: May have alt. system site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 46

SITE NO: 136 ADDRESS: 315 Squirrel Hollow Road

LOCATION: Across from dirt lane

TYPE OF SYSTEM: Sand mound ESTIMATED AGE: 5-10

BASIS OF INVESTIGATION: Density/Slopes

REPORT: May be alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 137 ADDRESS: 317 Squirrel Hollow Road

LOCATION:

TYPE OF SYSTEM: Inground ESTIMATED AGE: 8-10

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available, no malfunction observed
may have discharge along road - can't confirm
but saw pipe

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 138 ADDRESS: 329 Squirrel Hollow Road

LOCATION: House with white rail fence

TYPE OF SYSTEM: Inground to surface ESTIMATED AGE: 33

BASIS OF INVESTIGATION: Density

REPORT: Possible alt. site available - system discharges
into woods

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 47

SITE NO: 139 ADDRESS: 363 Squirrel Hollow Road

LOCATION: 5th house from Douglass Dr. on left

TYPE OF SYSTEM: Inground ESTIMATED AGE: 20-30

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed at time of inspection, but looks like may have problems during wet times at very back of yard

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 140 ADDRESS: 377 Squirrel Hollow Road

LOCATION: 4th house from Douglass Dr. on left

TYPE OF SYSTEM: Inground ESTIMATED AGE: 15-20

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - system malfunctioning big time - surfacing in back yard

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 141 ADDRESS: 383 Squirrel Hollow Road

LOCATION: 3rd house from corner of Squirrel Hollow & Douglass Dr. on left

TYPE OF SYSTEM: Inground ESTIMATED AGE: 25

BASIS OF INVESTIGATION: Density

REPORT: Alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 48

SITE NO: 142 ADDRESS: 389 Squirrel Hollow Road

LOCATION: 2nd house from Douglass Dr. on left

TYPE OF SYSTEM: Inground ESTIMATED AGE: 35

BASIS OF INVESTIGATION: Density

REPORT: May have enough area for alt. site - system not malfunctioning presently but has indications it does from time to time

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 143 ADDRESS: 256 Squirrel Hollow Road

LOCATION: 1st house twd. Rattle Snake Hill Rd. from dirt lane

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30-35

BASIS OF INVESTIGATION: Density/Slopes

REPORT: No alt. site available - slopes, no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 144 ADDRESS: Squirrel Hollow Road

LOCATION: Towards Rattle Snake Hill Rd. catty cornered across from site 143

TYPE OF SYSTEM: Inground system ESTIMATED AGE: 40 +

BASIS OF INVESTIGATION: Density

REPORT: Alt. system site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 49

SITE NO: 145 ADDRESS: 242 Squirrel Hollow Road

LOCATION: 3rd house down from dirt lane on right

TYPE OF SYSTEM: Inground ESTIMATED AGE: 15

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 146 ADDRESS: 236 Squirrel Hollow Road

LOCATION: 4th house down from dirt lane twd Rattle Snake Hill Road on right

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40+

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed

system location not evident

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 147 ADDRESS: 230 Squirrel Hollow Road

LOCATION: 5th house down from dirt lane twd. Rattle Snake Hill Road on right

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed

grass greener over system

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 50

SITE NO: 148 ADDRESS: 231 Squirrel Hollow Road

LOCATION:

TYPE OF SYSTEM: Inground ESTIMATED AGE: 45+/-

BASIS OF INVESTIGATION: Density

REPORT: Alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 149 ADDRESS: 227 Squirrel Hollow Road

LOCATION:

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30

BASIS OF INVESTIGATION: Density

REPORT: No alt. site likely, no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 150 ADDRESS: 228 Squirrel Hollow Road

LOCATION:

TYPE OF SYSTEM: Septic Tank/Cesspool/ Combo/Drainfield ESTIMATED AGE: 50

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available, no malfuntion observed

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 51

SITE NO: 151 ADDRESS: 221 Squirrel Hollow Road

LOCATION:

TYPE OF SYSTEM: Inground ESTIMATED AGE: 51

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available, no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 152 ADDRESS:

LOCATION: Left on dirt lane off Squirrel Hollow Rd. 1st house

TYPE OF SYSTEM: Inground or Cesspool ESTIMATED AGE: 50

BASIS OF INVESTIGATION: Density

REPORT: Alt. site may be available - location of system not determined - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/22/93

SITE NO: 153 ADDRESS:

LOCATION: Left dirt lane off Squirrel Hollow - 2nd house

TYPE OF SYSTEM: Inground ESTIMATED AGE: 35

BASIS OF INVESTIGATION: Density

REPORT: Alt. site available - no malfunction observed - tank has just been dug up recently

INVESTIGATED BY: JAW DATE: 6/22/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 52

SITE NO: 154 ADDRESS: 220 Squirrel Hollow Road

LOCATION:

TYPE OF SYSTEM: Inground ESTIMATED AGE: 25-30

BASIS OF INVESTIGATION: Density

REPORT: May have enough land to place replacement system - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 155 ADDRESS: 218 Squirrel Hollow Road

LOCATION: 2nd on left twd Douglass Dr. from Rattle Snake Hill Road

TYPE OF SYSTEM: Inground ESTIMATED AGE: 25+/-

BASIS OF INVESTIGATION: Density

REPORT: No replacement area available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 156 ADDRESS: 216 Squirrel Hollow Road

LOCATION: 1st house on left twd Douglass Dr. from Rattle Snake Hill Road

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40+/-

BASIS OF INVESTIGATION: Density

REPORT: No alt. area available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 53

SITE NO: 157 ADDRESS: 217 Squirrel Hollow Road

LOCATION: 1st house on right twd Douglass Dr. from Rattle Snake Hill Road

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30 +/-

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 158 ADDRESS: 71 Quarry Road

LOCATION: Corner of Quarry & Constitution Road

TYPE OF SYSTEM: Aerobic Tank/Inground System ESTIMATED AGE: 8-10

BASIS OF INVESTIGATION: Density

REPORT: May have alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 159 ADDRESS: Quarry Road

LOCATION: Concrete truck repair office across from farm house

TYPE OF SYSTEM: Inground ESTIMATED AGE: 10

BASIS OF INVESTIGATION: Density

REPORT: Has enough land for replacement system - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO: 54

SITE NO: 160 ADDRESS: Pottstown Trap Rock - Main Office Quarry Road

LOCATION: Corner of Quarry & Rattle Snake Hill Road

TYPE OF SYSTEM: Inground System ESTIMATED AGE: 30+

BASIS OF INVESTIGATION: Density

REPORT: Alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 161 ADDRESS: F&W Auto Repair

LOCATION: Corner of Rattle Snake Hill Rd. & Squirrel Hollow

TYPE OF SYSTEM: ? No system ESTIMATED AGE:

BASIS OF INVESTIGATION: Density

REPORT: May have enough land for alt. site, no malfunction for this site seen

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 162 ADDRESS: 161 Squirrel Hollow Road

LOCATION: Corner of Squirrel Hollow & Rattle Snake Hill Rds.

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40-50

BASIS OF INVESTIGATION: Density

REPORT: May have acceptable area for replacement system, pipe discharge to surface in back

INVESTIGATED BY: JAW DATE: 6/25/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 55

SITE NO: 163 ADDRESS: 160 Squirrel Hollow Road

LOCATION: 2nd house on right twd 422 from Rattle Snake HillRd

TYPE OF SYSTEM: Inground ESTIMATED AGE: 50 +

BASIS OF INVESTIGATION: Density

REPORT: May have enough area for replacement site, no malfunction observed, grass greener over system

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 164 ADDRESS: 168 Squirrel Hollow Road

LOCATION: 1st house on right twd 422 from Rattle Snake HillRd

TYPE OF SYSTEM: Inground ESTIMATED AGE: 50

BASIS OF INVESTIGATION: Density

REPORT: No alt. area available - malfunction system - leaks out in yard runs down yard and across street

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 165 ADDRESS: 159 Squirrel Hollow Road

LOCATION: 2nd house on left twd 422 from Rattle Snake Hill Rd

TYPE OF SYSTEM: Inground ESTIMATED AGE: 50

BASIS OF INVESTIGATION: Density

REPORT: Should have enough area for alt. site - no malfunction observed, system location questionable

INVESTIGATED BY: JAW DATE: 6/25/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 56

SITE NO: 166 ADDRESS: 157 Squirrel Hollow Road

LOCATION: 3rd house on left twd 422 from Rattle Snake Hill

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40-50

BASIS OF INVESTIGATION: Density

REPORT: Alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 167 ADDRESS: 155 Squirrel Hollow Road

LOCATION: 4th house on left twd 422 from Rattle Snake Hill Rd

TYPE OF SYSTEM: Sand mound ESTIMATED AGE: 5 +/-

BASIS OF INVESTIGATION: Density

REPORT: Alt. site may be available - no malfunction observed, appears to be pipe coming from pump tank vicinity but nothing discharging - no evidence of discharge

INVESTIGATED BY: JAW DATE: 6/25/93

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* Dirt lane numbers are 121,123,125 & 127
which is which is not known

SITE NO: 168 ADDRESS: * Squirrel Hollow Road

LOCATION: Last house on dirt lane off Squirrel Hollow Road

TYPE OF SYSTEM: Inground ? ESTIMATED AGE: 30 +

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed - system location not evident

INVESTIGATED BY: JAW DATE: 6/25/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 57

SITE NO: 169 ADDRESS: Squirrel Hollow Road

LOCATION: 2nd last house on dirt lane

TYPE OF SYSTEM: Inground? ESTIMATED AGE: 35 +/-

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfuntion observed - prop. filled w/ junk - system location not evident

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 170 ADDRESS: 123 A Squirrel Hollow Road

LOCATION: 3rd last house in dirt lane

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40-50

BASIS OF INVESTIGATION: Density

REPORT: No alt. area available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 171 ADDRESS: Squirrel Hollow Road

LOCATION: Behind site 170 - abandoned

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30-40

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available, no malfunction observed high grass and no one inhabiting house

INVESTIGATED BY: JAW DATE: 6/25/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 58

SITE NO: 172 ADDRESS: Squirrel Hollow Road

LOCATION: Corner of Cedar Lane & Squirrel Hollow Road

TYPE OF SYSTEM: _____ ESTIMATED AGE: _____

BASIS OF INVESTIGATION: Density/Slopes

REPORT: May have alt. site available, could not locate existing system - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 173 ADDRESS: 17 Cedar Lane

LOCATION: 2nd house on right up hill

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40

BASIS OF INVESTIGATION: Density/Slopes

REPORT: Alt. site may be available - slopes may prohibit no malfunction observed - oveflow at end of system to surface- owner having backup problems, maybe roots

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 174 ADDRESS: Cedar Lane

LOCATION: 3rd house on right up hill

TYPE OF SYSTEM: Inground ESTIMATED AGE: 35 +

BASIS OF INVESTIGATION: Density

REPORT: Alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 59

SITE NO: 175 ADDRESS: 31 Cedar Lane

LOCATION: 4th house on right up hill

TYPE OF SYSTEM: Inground ESTIMATED AGE: 20

BASIS OF INVESTIGATION: Density

REPORT: Alt. site not available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 176 ADDRESS: 39 Cedar Lane

LOCATION: 5th house on right up hill

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30

BASIS OF INVESTIGATION: Density

REPORT: May be alt. area available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 177 ADDRESS: 40 Cedar Lane

LOCATION: Last house at top of cul-de-sac

TYPE OF SYSTEM: Inground ESTIMATED AGE: 2-3

BASIS OF INVESTIGATION: Density

REPORT: May have enough area for alt. site, no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 60

SITE NO: 178 ADDRESS: 24 Cedar Lane

LOCATION: 1st house down from cul-de-sac on right

TYPE OF SYSTEM: Cesspool ESTIMATED AGE: 50

BASIS OF INVESTIGATION: Density/Slopes

REPORT: May have enough area for alt. system, no malfunction observed, kitchen and bathtub water discharging to surface

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 179 ADDRESS: 16 Cedar Lane

LOCATION: House on corner of Cedar Lane twd. Wylks Lane

TYPE OF SYSTEM: Inground-new tank ESTIMATED AGE: 40 +

BASIS OF INVESTIGATION: Density

REPORT: Alt. site available, malfunction - surface breakout at lower end

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 180 ADDRESS: Wylks Lane

LOCATION: 1st house on left off Cedar Lane

TYPE OF SYSTEM: Inground ESTIMATED AGE: 40

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 61

SITE NO: 181 ADDRESS: 113 Wylks Lane

LOCATION: 2nd house from Cedar Lane on left

TYPE OF SYSTEM: Inground ESTIMATED AGE: 35-40

BASIS OF INVESTIGATION: Density

REPORT: May have room for alt. system - would be tight
no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 182 ADDRESS: 111 Wylks Lane

LOCATION: 3rd house from Cedar Lane on left

TYPE OF SYSTEM: Inground ESTIMATED AGE: 30-35

BASIS OF INVESTIGATION: Density

REPORT: Alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 183 ADDRESS: 110 Wylks Lane

LOCATION: Very end of lane

TYPE OF SYSTEM: Inground ESTIMATED AGE: 25

BASIS OF INVESTIGATION: Density

REPORT: may be enough area for alt site, no malfunction
observed

INVESTIGATED BY: JAW DATE: 6/25/93

DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
ON-LOT SEWAGE DISPOSAL SYSTEM EVALUATION PROGRAM
SURVEY SHEET NO. 62

SITE NO: 184 ADDRESS: 112 Wylks Lane

LOCATION: Last house from Cedar Lane on right

TYPE OF SYSTEM: Inground ESTIMATED AGE:

BASIS OF INVESTIGATION: Density

REPORT: No alt. site available - no malfunction observed

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 185 ADDRESS: 8 Cedar Lane

LOCATION: Corner of Cedar & Wylks Lanes

TYPE OF SYSTEM: Inground ESTIMATED AGE: 45

BASIS OF INVESTIGATION: Density

REPORT: Alt. site may be available - no malfunction observed
washwater discharges to s.w. swale

INVESTIGATED BY: JAW DATE: 6/25/93

SITE NO: 186 ADDRESS: 111 Squirrel Hollow Road

LOCATION: 1st house on right from 422

TYPE OF SYSTEM: Inground ESTIMATED AGE: 50

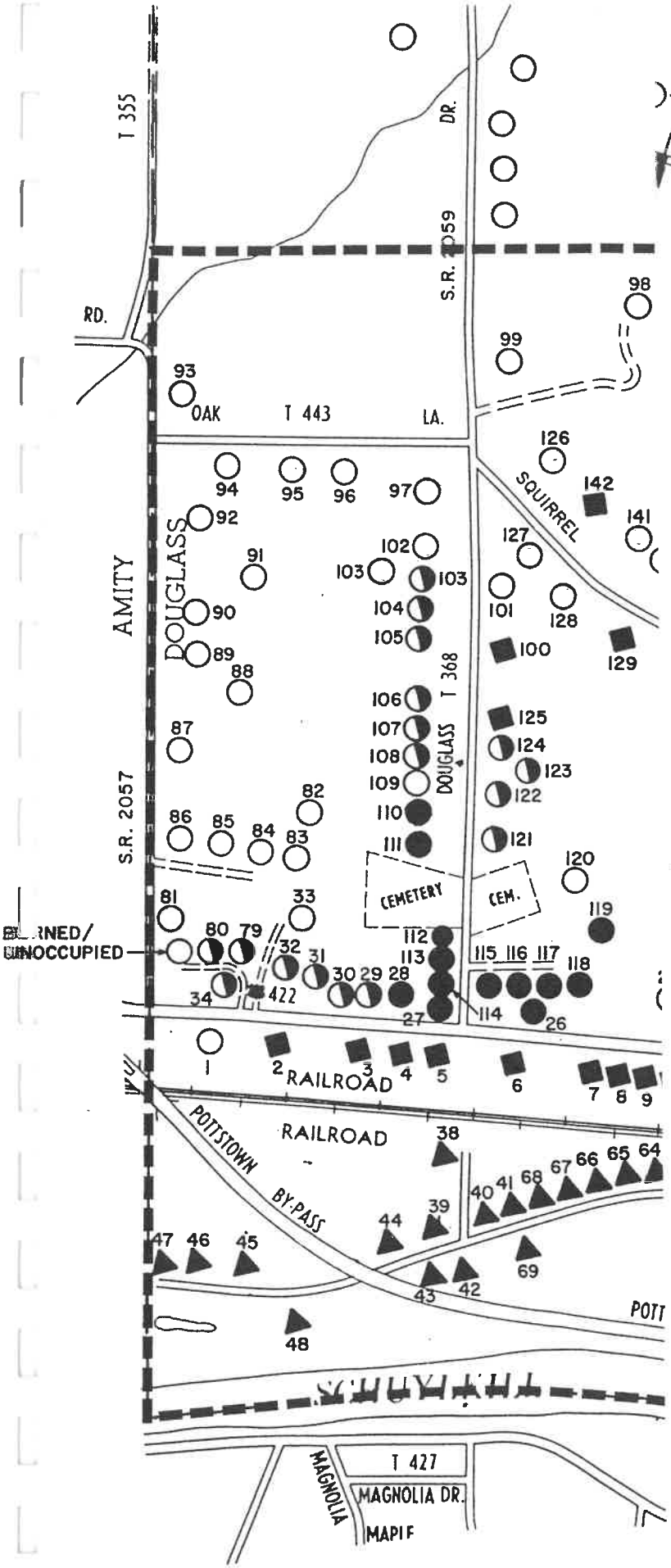
BASIS OF INVESTIGATION: Density/Slopes

REPORT: No alt. site available, pumping out of system into woods through garden hose at inspection, liquid level near top in system pipe to surface

INVESTIGATED BY: JAW DATE: 6/25/93

APPENDIX F
DOUGLASS TOWNSHIP

ON-LOT SEWAGE DISPOSAL SURVEY PHASE I EVALUATION



POSSIBLE MALFUNCTIONING SYSTEM SITE NO.'S
68
69
87
122
140
142
164
179
186

PRE-REGULATORY SYSTEM SITE NO.'S
4
5
14
15
28
30
59
70
93
102
110
119
121
125
126
128
129
134
138
162
173
178
185

NOTE: REFER TO SURVEY SHEETS FOR ADDITIONAL INFORMATION.

APPENDIX G

PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES

BUREAU OF WATER QUALITY MANAGEMENT

CONSUMERS GUIDE TO ON-LOT
SEWAGE DISPOSAL SYSTEM
OPERATION AND MAINTENANCE

Robert P. Casey, *Governor*
Commonwealth of Pennsylvania

Arthur A. Davis, *Secretary*
Department of Environmental Resources

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On-Lot Sewage Disposal Systems

On-lot sewage disposal systems are designed and constructed based on the soil profile and percolation test results. These on-lot systems have three components that treat, distribute and dispose of domestic sewage. Sewage, both human waste and water used for bathing and washing, flows to the ***septic tank*** where primary treatment of the sewage takes place. The treated septic tank effluent then flows to a ***distribution box*** or a ***solid header*** in gravity flow systems, or to a ***dosing tank*** in a pressurized system. In both of these systems, the septic tank effluent is directed to an ***absorption area*** constructed of pipe placed within a layer of gravel. Septic tank effluent flows from the distribution box, or is pumped from the dosing tank, to the absorption area, and flows through the gravel, percolating through the soil for additional treatment. It is important to note that this effluent, although partially treated, still contains substances which can affect the groundwater, such as viruses, pathogens and nitrates. An efficiently running system will treat these substances and protect groundwater resources. A system that is improperly sited, designed, installed, or improperly maintained may degrade the groundwater supply in the area and affect drinking water quality. This being the case, utmost care should be exercised when siting, designing and installing the system. A permit issued by the municipality Sewage Enforcement Officer (SEO) is required before installing a system. A ***Consumers Guide to On-Lot System Permits*** has been developed by the Department which explains the permitting process. The guide is available from the local office of the Department serving your municipality.

System Installation

The construction of the on-lot system may begin after the lot owner has received a permit for the installation of the sewage disposal system from the SEO. The homeowner should protect the system area from vehicle traffic and stripping of top soil in the area of the system by roping off or marking the area of the proposed system. The homeowner should caution the contractor not to begin or continue excavation of the on-lot system area if the soil is wet. Soil moisture is right for heavy equipment operation when a handful of soil can be molded only with considerable pressure. Work in wet conditions will cause compaction of the soil surface and close soil pores necessary for proper operation of the system.

At the time of installation it is possible to make future maintenance easier. The septic tank should be installed with an extension to grade over the inspection ports and septic tank manhole. This will allow easy access to the tank for inspection and pumping with a minimum of digging. On pressurized systems lateral cleanouts as shown in Figure 11 should be installed on each lateral.

Site Protection

1. A system of the best design installed in the best soils may still malfunction if continually subjected to erosion and saturation caused by storm water accumulation. Storm water should be kept away from the absorption area. Keep surface, downspout, footer-drain and sump pump water out of the system. 2. Keep heavy equipment off the completed absorption area. 3. In grading the lot after the system is installed, do not divert surface water or downspouts in the direction of the system. 4. When backfilling a new system, sufficient soil cover should be placed to crown the disposal area surface. 5. Be sure any future settling over the absorption area surface is followed by additional filling to reestablish the crowned effect. 6. Be sure to hire a reputable contractor to install the system.

If you own property with an existing sewage system, check the disposal area to determine if any swales or depressions exist which would hinder proper surface water diversion. Although minor grading is effective for most system locations, some sites may require construction of upslope drainage trenches or pipes to divert all storm waters flowing from neighboring properties.

The permit will provide the location of each system component relative to your house, road and other landmarks. Keep a copy of the permit in a safe place. Maintenance on any of the system components described below will be easier if you can refer to the permit for system component locations. For future reference, keep a list of the individuals responsible for installation of the system, including the absorption area, dosing tank, pump, etc.

Primary Treatment

Septic Tank

Common to both gravity and pressure systems is the ***septic tank.***

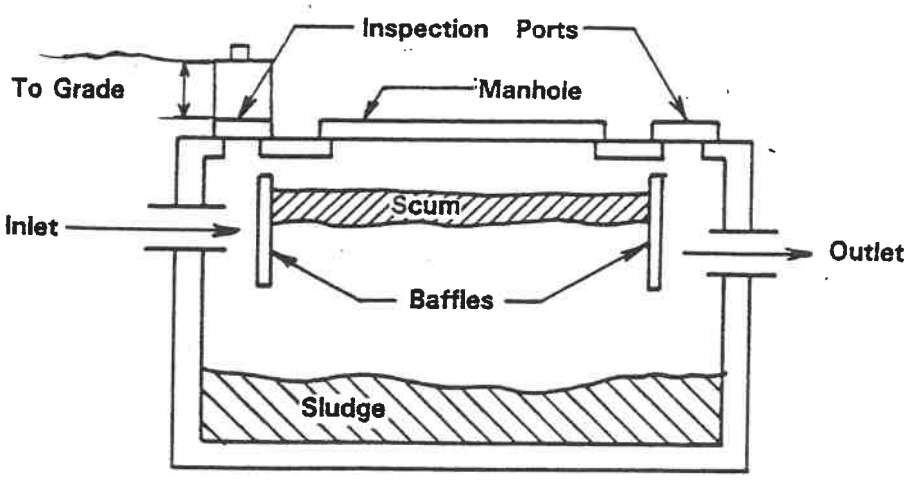
A septic tank is a watertight chamber usually concrete or fiberglass, which separates floating and settleable solids and provides a place for specialized bacteria to decompose sewage. Septic tanks may have one or two compartments. Two compartment tanks or two single tanks in series are not required but do a better job of settling solids.

Another type of treatment tank is aerobic wastewater treatment facilities. These are manufactured by numerous companies. These units require extensive maintenance and the homeowner should consult the manufacturer concerning their use and maintenance.

Among the most important components of a septic tank are the baffles. The inlet baffle forces wastewater down into the tank preventing short-circuiting across the top. The outlet baffle keeps the scum layer from moving into the soil absorption system. This is shown in Figure 1.

Figure 1

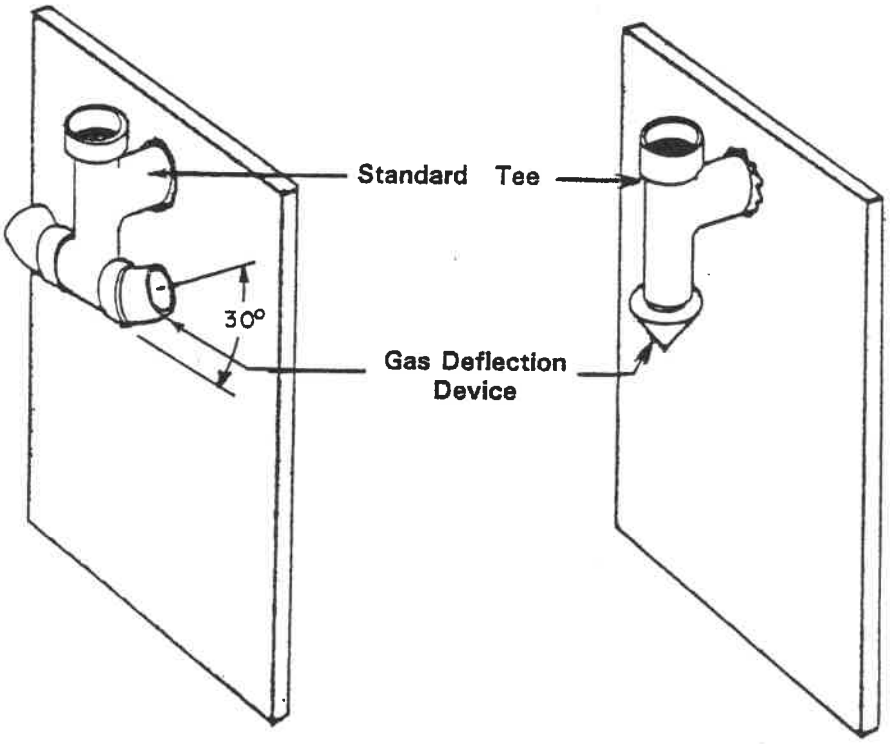
CROSS SECTION OF SEPTIC TANK



Chapter 73 (Sewage Facilities Standards) of the Department's rules and regulations requires that the tank have inlet and outlet baffles, usually a vented tee. As a part of regular maintenance, these baffles should be checked to determine that there is unobstructed flow and they are not broken. To facilitate this activity, inspections ports should be provided for inspection of the baffles. Increased solids retention and therefore longer system life can be accomplished through the use of septic solids retainers (Figure 2). These units not only prevent solids carryover, as baffles would, but also prevent solids from being "burped" out of the tank as a result of gas releases.

Figure 2

SEPTIC SOLID RETAINERS



The size of the tank determines how often maintenance operations should occur. The capacity of the septic tank is based on the size of the house. In Pennsylvania, a 900-gallon tank is the minimum size for a home with three or fewer bedrooms. For each additional bedroom over three, the capacity of the tank must be increased 100 gallons. Septic tanks for other buildings start at 900 gallons and are increased in capacity according to daily sewage flows.

Tank Maintenance

A septic tank accumulates solids and requires periodic cleaning. Septic tank pump and haul contractors can clean your tank. It is a good idea to supervise the cleaning to ensure that it is done properly. To extract all the material from the tank, the scum layer must be broken up and the sludge layer stirred up into the liquid portion of the tank. This is usually done by alternately pumping liquid from the tank and reinjecting it into the bottom of the tank. The septic tank should be pumped out through the large central manhole. **DO NOT USE THE BAFFLE INSPECTION PORTS!**

Before closing the tank, check the condition of the baffles. If they are missing or deteriorated, have them replaced with sanitary tees or septic solid retainers. **IT SHOULD NEVER BE NECESSARY TO ENTER A SEPTIC TANK. THE SEPTIC TANK PRODUCES TOXIC GASES WHICH CAN KILL IN A MATTER OF MINUTES.** Any work to replace the baffles or repair the tank should be made from the outside. When working on a tank make sure the area is well ventilated and someone is standing by. Never go into a septic tank without a self-contained breathing apparatus (SCBA), even to retrieve someone who has fell in and was overcome by toxic gases or the lack of oxygen. If a SCBA is not available, the best thing to do is call for emergency services and put a fan at the top of the tank to blow in fresh air.

To facilitate future cleaning and inspection, install risers from the central manhole and inspection ports to the ground surface before burying the tank. Also mark the location of the tank so it can be easily found.

Recommended pumping frequencies for different size households and tank size are described below in Table 1.

Table 1
Estimated Septic Tank Pumping Frequencies in Years
(For Year-Round Residence)

Tank Size (gal)	Household Size (Number of People)									
	1	2	3	4	5	6	7	8	9	10
500	5.8	2.6	1.5	1.0	0.7	0.4	0.3	0.2	0.1	—
750	9.1	4.2	2.6	1.8	1.3	1.0	0.7	0.6	0.4	0.3
900	11.0	5.2	3.3	2.3	1.7	1.3	1.0	0.8	0.7	0.5
1,000	12.4	5.9	3.7	2.6	2.0	1.5	1.2	1.0	0.8	0.7
1,250	15.6	7.5	4.8	3.4	2.6	2.0	1.7	1.4	1.2	1.0
1,500	18.9	9.1	5.9	4.2	3.3	2.6	2.1	1.8	1.5	1.3
1,750	22.1	10.7	6.9	5.0	3.9	3.1	2.6	2.2	1.9	1.6
2,000	25.4	12.4	8.0	5.9	4.5	3.7	3.1	2.6	2.2	2.0
2,250	28.6	14.0	9.1	6.7	5.2	4.2	3.5	3.0	2.6	2.3
2,500	31.9	15.6	10.2	7.5	5.9	4.8	4.0	4.0	3.0	2.6

For example, if 6 people reside in a 3-bedroom house, a 900 gallon tank should be pumped every 1.3 years. If the same system serves a family of 2, the tank would be ready for pumping every 5.2 years. Systems installed before the current rules and regulations may have septic tanks smaller than 900 gallons. Contact the tank cleaner to determine the size. Some older tanks may need to be pumped as often as once a month. Homes utilizing garbage disposal units will also need more frequent pumping.

Distribution Systems

The distribution system delivers septic tank effluent to the absorption area.

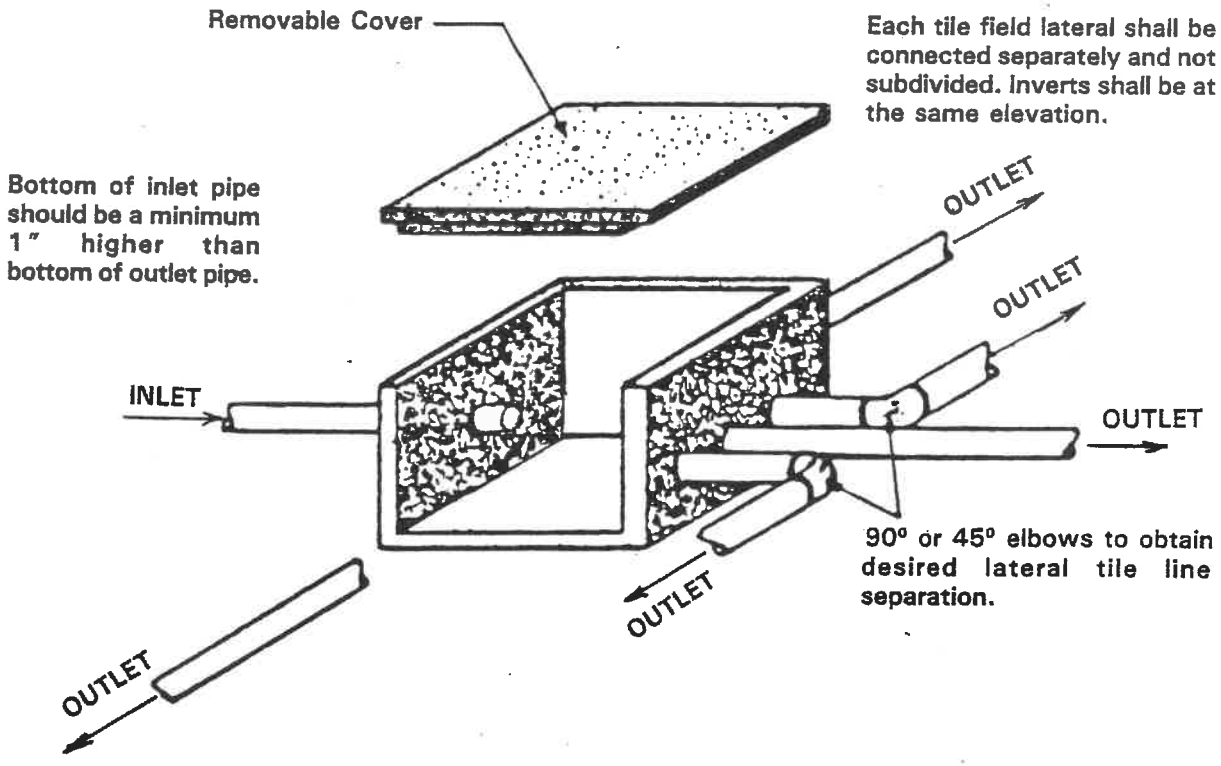
Gravity Distribution

Where limiting zones and percolation test results allow, subsurface systems using ***gravity distribution*** may be permitted. Gravity distribution, as the name implies, relies on the force of gravity to distribute the septic tank effluent to the absorption area.

After the treatment process takes place in the septic tank, the effluent flows into a distribution box, commonly referred to as a ***D-Box*** where the flow is split equally to each lateral pipe. Figure 3 shows a D-box. When installing this type of system it is imperative that the box is level and is tested to assure equal flow to all parts of the subsurface system. D-boxes should be cleaned and checked for level when the septic tank is cleaned.

Figure 3

DISTRIBUTION BOX



Gravity distribution can also be accomplished through the use of a solid header as shown in Figure 7 on page 11.

Pressure Distribution

Where limiting zones or percolation rates do not allow for gravity distribution systems, ***pressurized distribution*** is required.

In a gravity system effluent trickles into the drain field. During this process, a biological layer builds up at the first hole, reducing flow to the soil in that area. This occurs with each successive hole until all the holes are clogged in a particular trench. Creeping failures can also occur as the absorption area is overloaded in one area due to unequal loading.

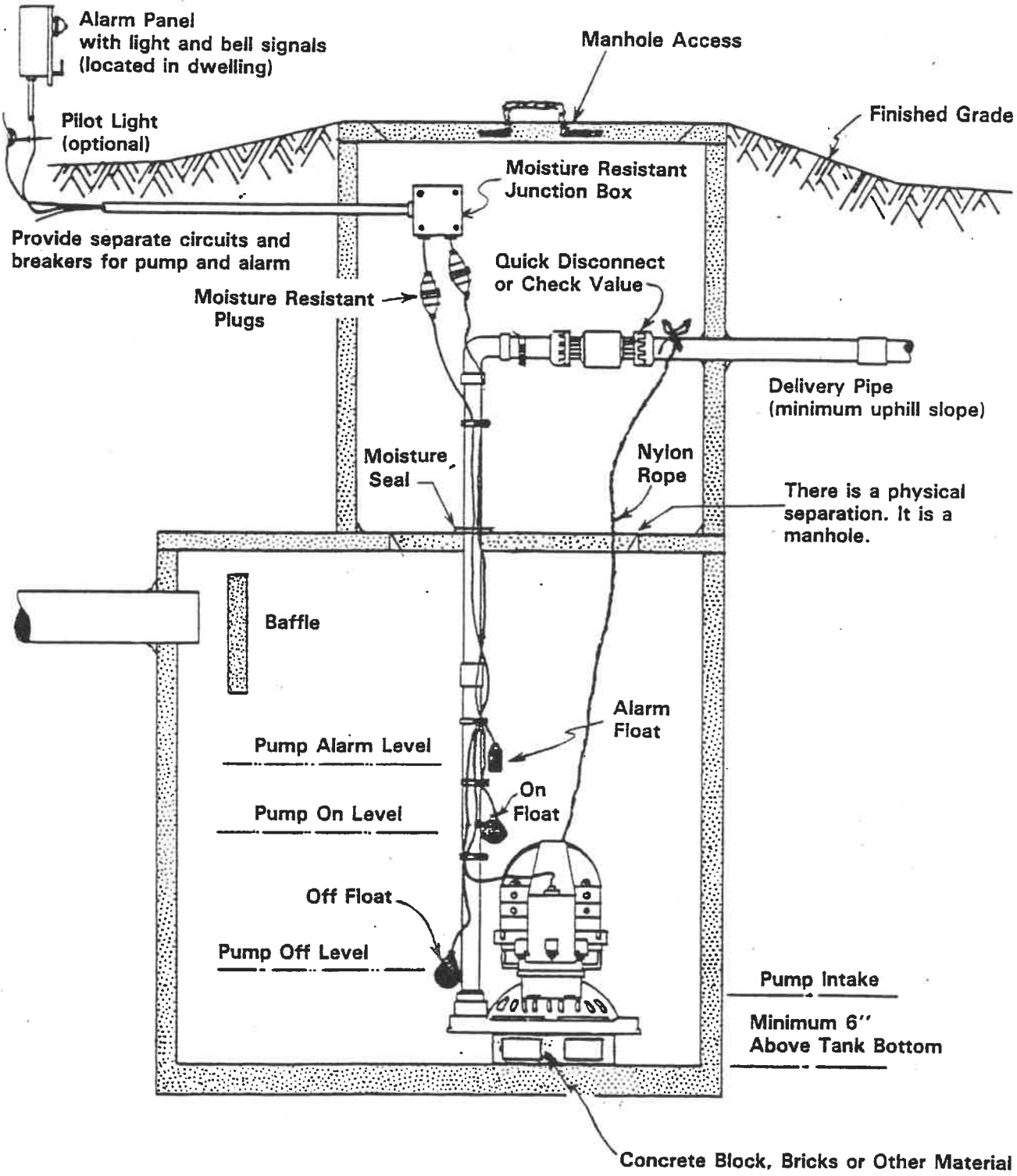
In a **pressurized system** a calculated "dose" is pumped to the absorption area, providing equal distribution to all parts of the absorption area. Clogging of the holes is also reduced due to the suspending of fine material and pressurization of the flow. On-lot systems utilizing pressure distribution also benefit from aerobic (with oxygen) and anaerobic (without oxygen) conditions that result from the dosing and resting periods.

To accomplish this "dosing", a pump or siphon is used to deliver septic tank effluent to the absorption area. This pump is housed in a "**dosing tank.**" (Figure 4). The system must be allowed to drain back to the dosing tank if a pump is used to avoid clogging of the holes in the distribution network. When using a siphon system, the holes in the absorption area piping are larger than those in the pump system to allow for proper draining of the system. Where a pump is used, "float switches" activate or deactivate the pump when the water in the tank reaches a certain level. A switch is also provided which activates an alarm in the house to alert the owner of problems in the dosing tank. The electrical connections for the alarm and switches must be placed at the highest point in the manhole. This will avoid problems due to corrosion and make maintenance easier and safer. Make sure that alarm and on-off switches are tied into separate breakers.

Figure 4

DOSING TANK

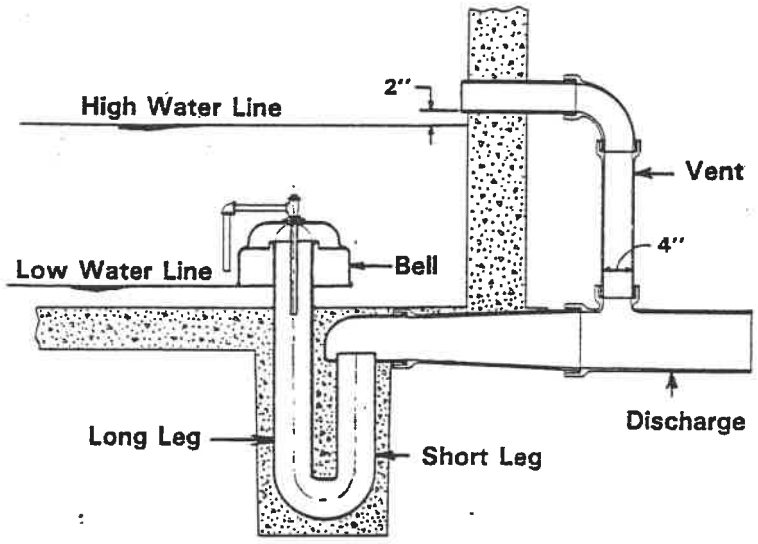
When possible, locate quick disconnect and electrical connections within arm's reach of the surface



A siphon system is used to deliver septic tank effluent to the absorption area in downhill applications (Figure 5). The siphon is purchased in standard sizes. The system and the siphon tank are sized and placed to meet required pressure and delivery rates.

Figure 5

STANDARD DESIGN SINGLE SEWAGE SIPHONS



As sewage flows from the septic tank, the water level in the dosing tank rises and the air under the bell is compressed and forces septic effluent out the long leg into the short leg resulting in the loss of a small amount of effluent out the discharge pipe. When the liquid level reaches the bottom of the trap, any further addition of sewage into the dosing tank creates an imbalance which results in a sudden escape of air out the vent, activating the siphon, and pushing the effluent into the absorption area. The siphon action continues until the liquid level reaches the bottom of the bell, at which time the siphon is broken and effluent stops flowing.

Maintenance

The dosing tank for both siphons and pumps should be cleaned of solids at the same frequency as the septic tank. The pumping system alarm should also be tested semi-annually by simply pulling up the alarm switch with a garden hoe. **DO NOT ENTER THE DOSING TANK.** This should activate the alarm as if high water had activated the alarm. The other switches, wiring and pump should be visually checked to determine their working order including fraying wires, broken pipes, corrosion and wire ties for slippage.

The siphon system should be inspected annually to determine that a full dose is being discharged and that the siphon is not trickling effluent to the absorption area. This requires observing the water level when the siphon starts and stops. If the siphon is trickling, the siphon must be recharged by filling the trap with water and filling the dose tank until the siphon runs. Filling and running the siphon should be conducted until the siphon is operating properly.

Soil Absorption System

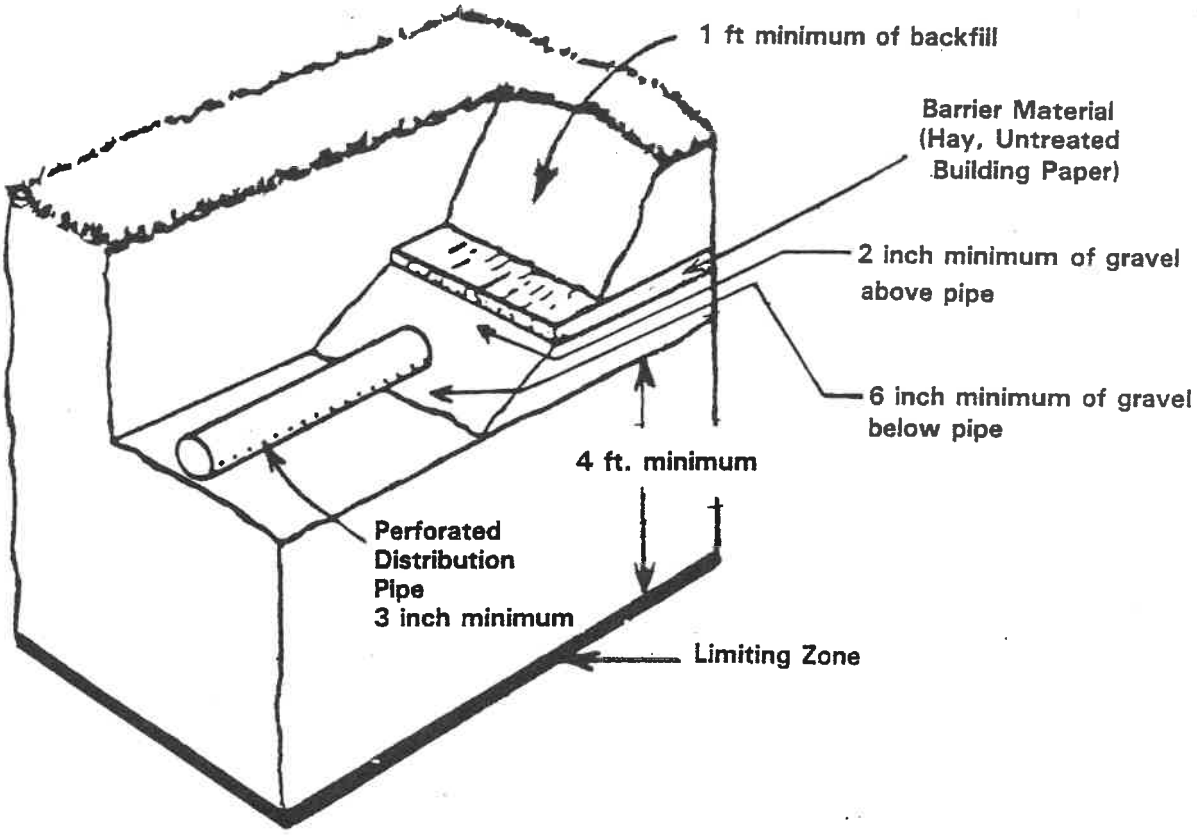
The final component of the on-lot system is the soil absorption system. Septic tank effluent flows to the absorption system from the distribution box or dosing tank to the perforated PVC piping, referred to as laterals, that are placed in the trenches, beds or elevated sand mounds. The soil provides renovation by stripping organic and pathogenic materials from the water. The treated water passes to the groundwater and becomes part of the water cycle. The type of system that is suitable for any particular lot is based on the soil probe examination and the percolation tests. A description of each of these systems and their operation and maintenance requirements are included in this section.

Standard Trenches

The first type of system that is most familiar to homeowners is standard trenches. As the name implies this is a system of trenches which is fed septic tank effluent either through gravity flow or pressure distribution. The trench system is installed by excavating trenches between 12 and 72 inches wide and between 12 to 36 inches deep (Figure 6). The trenches are filled with 6 inches of gravel upon which a minimum 3 inch perforated pipe is layed, in gravity distribution, or a 1 ½ inch perforated pipe if pressure distribution is used. A minimum of 2 inches of gravel is placed over the laterals and a layer of untreated building paper or hay is placed over the gravel. A minimum of 1 foot of backfill is used to cover the trench.

Figure 6

STANDARD TRENCH

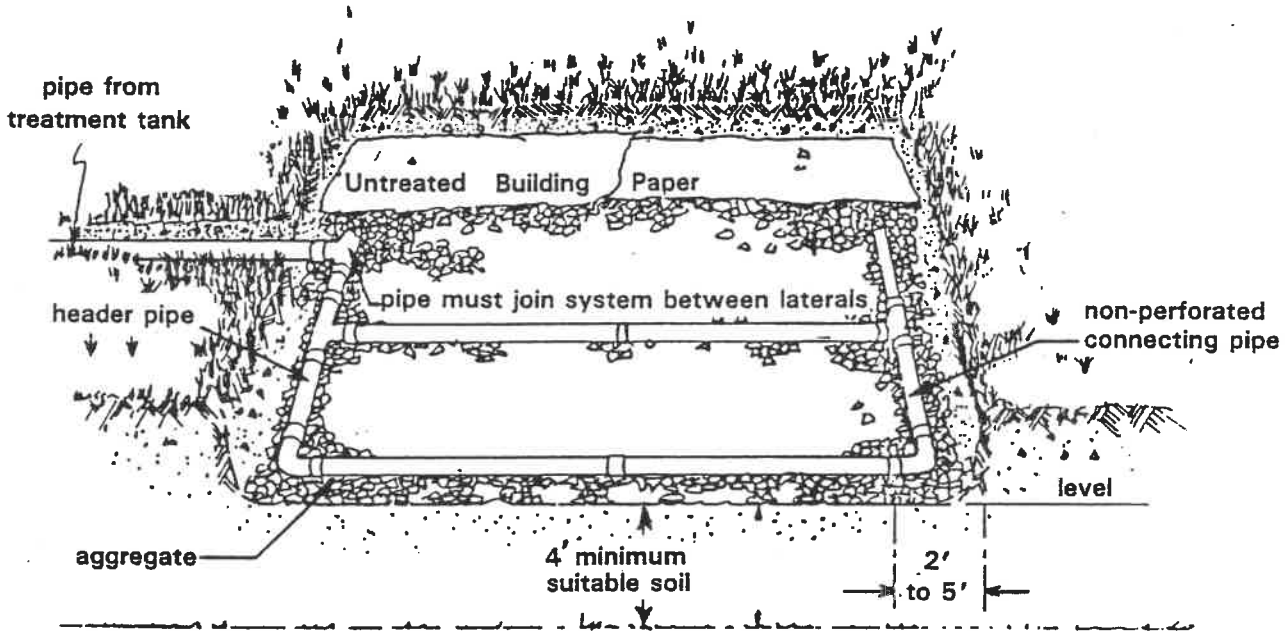


Seepage Beds

In seepage beds (Figure 7) the piping is placed in a bed of gravel as opposed to being in trenches of gravel. Septic tank effluent is fed to the bed either through a D-box, a single header in a closed system or through pressure distribution. These systems may be used when space constraints limit the use of standard trenches. Figure 7 shows a closed header system that can be used instead of a D-box.

Figure 7

SEEPAGE BED SYSTEMS

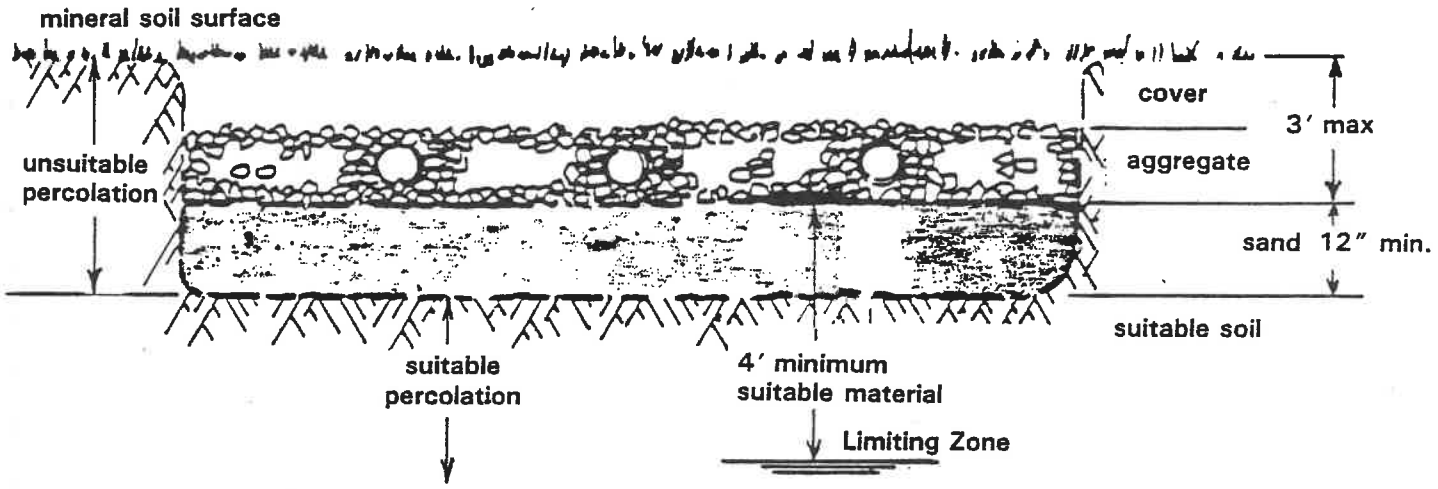


Subsurface Sand Filters

This system is employed on sites where the average percolation rate of the soil between 0 and 36 inches is greater than 90 min./inch and the percolation rate at a depth between 36 and 72 inches from the soil surface is between 3-90 min./inch. This system also requires that the limiting zone must occur at a depth greater than 6 feet from the soil surface. The soil with a percolation rate greater than 90 min./inch is excavated and replaced with sand meeting the standards. The system on top of the sand is constructed following the standards for seepage beds. Figure 8 shows a cross-section of this system.

Figure 8

SUBSURFACE SAND FILTER



Maintenace of Gravity Distribution Systems

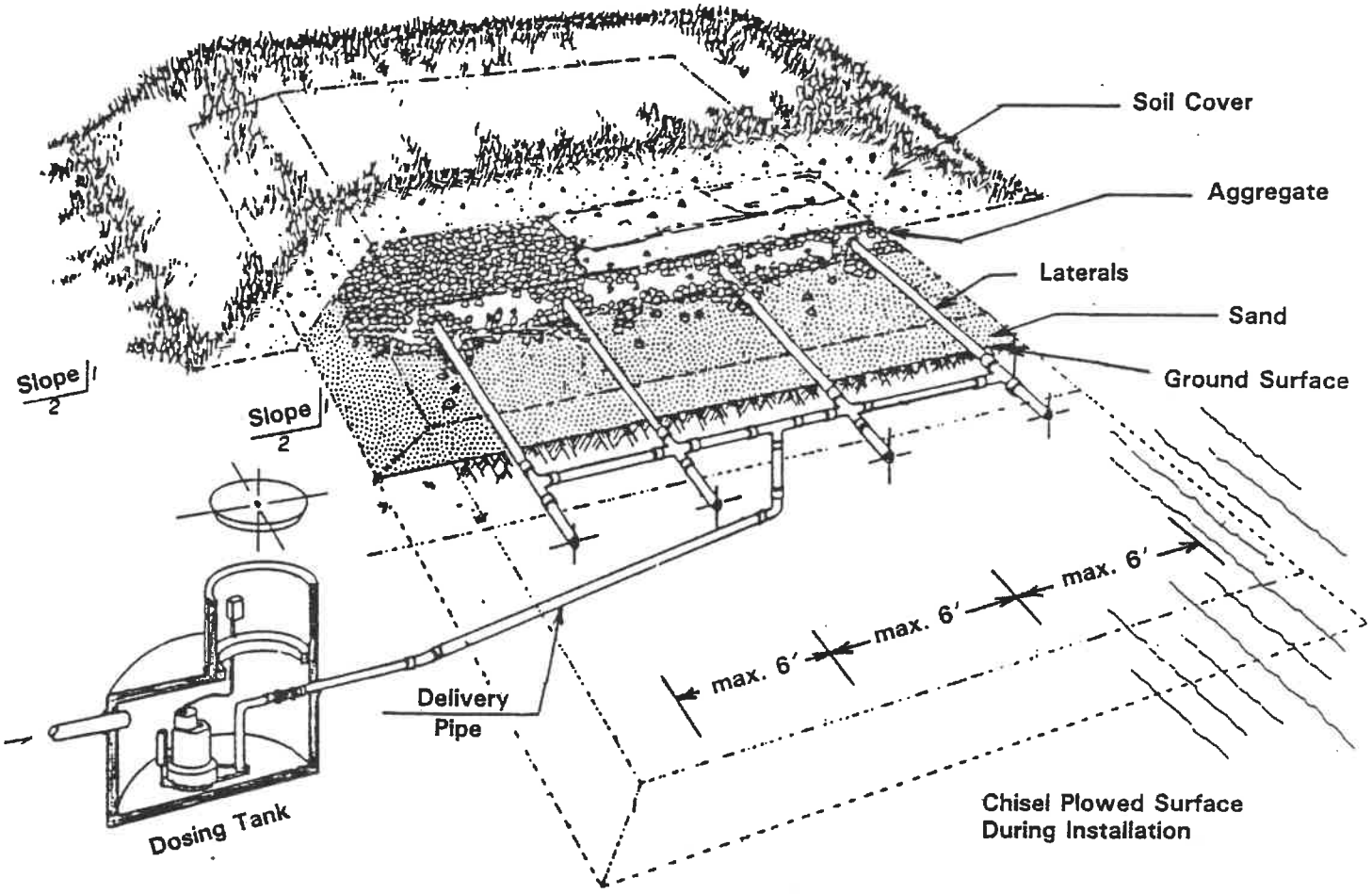
Maintenance on these systems, if gravity distribution is used, is minimal and consists of regular pumping of the septic tank and D-box. A pressurized system should be maintained as described on page 15.

Elevated Sand Mound

This type of system was developed to allow for the use of an on-lot system in situations where the limiting zones occurs at a depth that would preclude the use of the subsurface systems described above. Elevated sand mounds can be used on sites where the percolation rate is between 3 and 120 min./inch and the limiting zone occurs at a depth between 20 and 60 inches from the soil surface. The elevated sand mound system is shown in Figure 9.

Figure 9

ELEVATED SAND MOUND



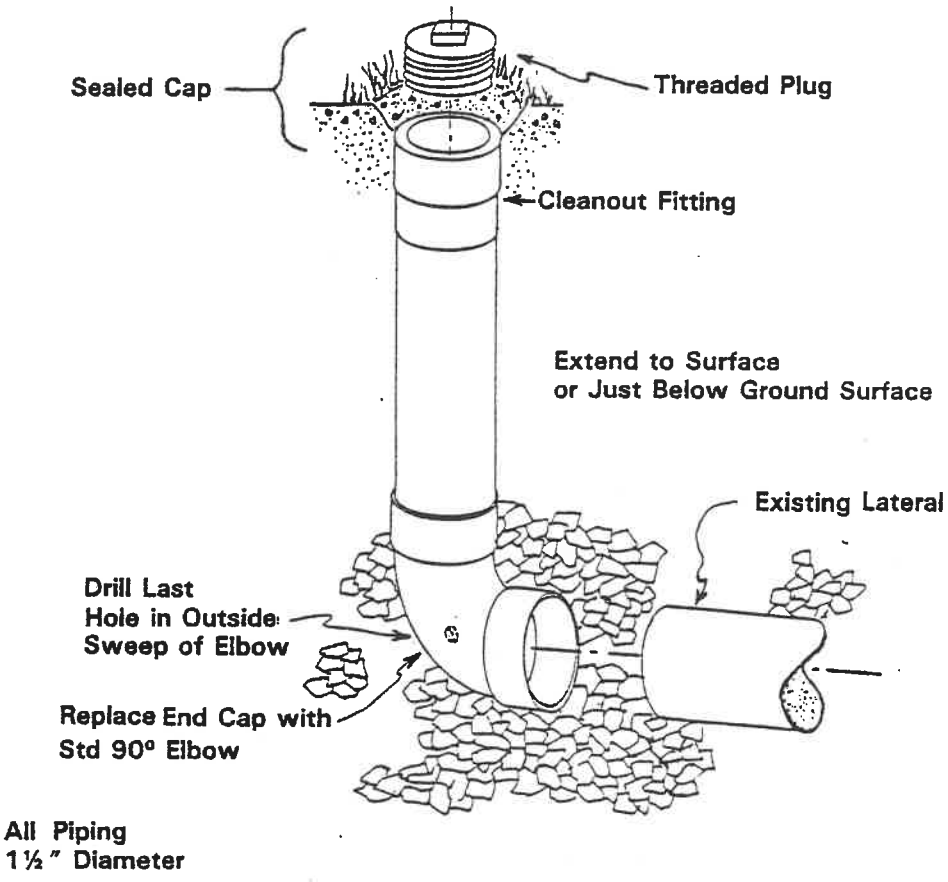
The theory of operation of an elevated sand mound is as follows. In a subsurface system, at least 60 inches of suitable soil is required for on-lot systems as measured from the surface of the ground. This allows 12 inches for installation of the pipe and gravel and a 48 inch soil separation from the bottom of the absorption area to the limiting zone. In an elevated sand mound 20 inches of suitable soil may be acceptable. The additional 28 inches needed to meet the 48 inch separation is made up of sandy fill placed upon the soil surface. Elevated sand mounds rely exclusively on pressurized distribution to evenly distribute septic tank effluent across the absorption area.

Maintenance of Pressure Distribution System

In addition to the pumping of the septic tank and dosing tank, the distribution network may need to be backflushed to the dosing tank, and the pump cycle run to clear to the laterals of scum and grease buildup. **This should be done when inspection of the lines indicates a need to be cleaned or a noticable lengthening of the pump cycle occurs.** The length of the dose cycle should be timed when the system is new and then yearly to determine the cycle time. To facilitate this cleaning operation, pressurized distribution systems should be fitted with lateral cleanouts at the time of installation (Figure 10).

Figure 10

INSTALLATION OF LATERAL CLEANOUT



These cleanouts will have a 1½ inch cleanout plug. The cleanout plugs should be removed and the interior of the lateral checked for accumulations of solids, greases, or other debris, every six months.

Flushing the pressurized system is accomplished in the following manner:

a. Lateral cleanout plugs are removed one at a time starting at the lateral furthest from the dosing tank. A garden hose is inserted into the cleanout. Water from a garden hose is used to flush the lateral through the manifold back to the dosing tank. 3—5 gallons for each lateral should be sufficient.

b. After flushing the lateral, the water is pumped from the dose tank through the lateral, out the lateral cleanout extender (Figure 11) to a 5 gallon bucket. This is done by manually activating the pump by lifting the on-switch. **Do not enter the dosing tank.** A garden hoe can be used to lift the on-switch, which activates the pump. Water from this operation is dumped into the septic tank.

c. Lateral cleanout plugs are replaced on the lateral after the flushing and backflushing operation is completed. The next lateral is flushed using the process described until all laterals are completed.

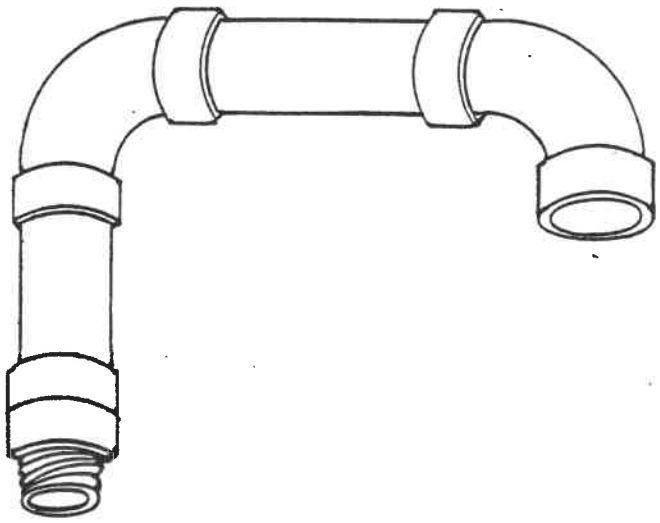
d. Hands and equipment should be thoroughly washed after the cleaning operation is completed.

A septic tank pumping firm can also be retained to flush the system as described above. This is best done during regular septic tank pumping.

Once the system has been flushed, lateral cleanout plugs should be replaced and the system may be used again.

Figure 11

LATERAL CLEANOUT EXTENDER



All piping 1½'' diameter

Water Conservation

To assure that the on-lot system does not become hydraulically overloaded, which can cause a malfunction, the system user should practice basic water conservation. The wastewater flow from the residence should be kept as low as possible. Each and every gallon of water which goes down household drains must pass through the septic tank and be treated by the on-lot system. Discharging excessive wastewater to the system is a common cause of on-lot system failure. You can reduce the hydraulic load on your on-lot system by following the practices described below.

1. Fix all leaky faucets and plumbing fixtures.
2. Use the dishwasher only when it is full. This will save energy as well as water.
3. Use the garbage disposal with discretion. Wastes from these units are not digested easily by bacteria in the septic tank. Such wastes may cause quick buildup of solid matter requiring frequent pumping. Compost the garbage wastes and fertilize your garden.
4. Showers usually take less water than a bath and save energy.
5. Reduce the volume of water discharged by each commode flushing. Buy a low water use commode or place a heavy object such as a brick in a plastic bag in the tank.
6. Springs, sump pumps, spouting, french drains or any other water conveyance not involving waste materials should not be discharged into the system.
7. Try to limit the number of wash loads run each day. Running two or three loads of wash in a single day, particularly during wet periods of the year, may cause severe overloading of the system.

By practicing water conservation, the life of a system can be extended. Below in Table 2 and 3 is an outline of expected water use and savings from different available fixtures.

Table 2
Water Use vs. Fixture

Fixture	Gallons Per Day	% of Total Daily Use
Toilet	100	39
Bathing and Hygiene	88	34
Laundry	35	14
Kitchen	27	11
Housekeeping	5	2
TOTAL	255	100

Table 3
Water Savings vs. Fixture

Fixture	Water Use
Conventional Toilet	4-6 gal./flush
Water Saving Toilet	3.5 gal./flush
Conventional Showerhead	3-15 gal./min.
Water Saving Showerhead	2-3 gal./min.
Top Loading Washer	35-50 gal./load
Front Loading Washer	22-25 gal./load
Regular Faucet Aerator	2.5-6 gal./min.
Flow Regulating Aerator	.5-2.5 gal./min.

Hazards to On-lot Systems

On-lot systems are ''alive'' and a biological mat is constantly decomposing and treating raw sewage. This mat is extremely sensitive to pollutants that it is not able to treat. The homeowner should avoid placing the following down the drain:

1. Oils and grease
2. Harsh drain cleaners
3. Pesticides
4. Paints and thinners
5. Disposable products including sanitary napkins and diapers
6. Paper towels
7. Plastic products (Childrens toys, products wrappers)
8. Septic tanks additives/cleaners. These are not needed and may harm the systems plumbing and/or biological mat.
9. Bones, eggshells, coffee grounds

Eliminating these items from the waste stream will help to increase the life of the on-lot system.

Trouble Shooting

The following table describes problems associated with on-lot systems and their possible remedy.

Trouble Shooting On-Lot Sewage Disposal System Problems

Indication of Problem	Possible Cause	Possible Remedies
Applicable to all systems.		
(1) Raw sewage is backing up into home.	• Line from toilets to septic tank is clogged.	• Contact drain cleaner for investigation and removal of blockage.
	• Septic tank is full and needs pumping.	• Refer to pumping schedule on page 4. Determine location of tank and retain septic tank pumping firm for cleaning operation.
	• Absorption area may be failing.	• Contact local agency Sewage Enforcement Office (SEO) for guidance.
(2) Toilets running sluggish.	• Septic tank is full.	• Contact tank pumper for septic tank cleaning.
	• Absorption area may be failing.	• Contact local agency SEO for guidance.
(3) Sewer odors in house.	• Vent stack may be clogged.	• Contact plumbing professional for removal of blockage.
	• System may be backing into house	• Check septic tank. Pump if needed.
(4) Odor in drinking water.	• Water containing sulfur	• Bacteriological sampling of wells to determine problem
		• Contact local agency SEO for further guidance.
	• Possible system malfunction to ground water and pollution of drinking water supply if individual supply.	• Do not consume water until cause is determined and remedy of problem is completed.
(5) Sponginess or wetness in the following areas: (a) Septic Tank (b) Distribution Box (c) Absorption Area	• Plumbing from or to any of the listed components is broken, crushed, twisted.	• Determine which system component is in the area. Contact system installer to repair problem.
	• Absorption area malfunction.	• Contact local agency SEO for further guidance.
(6) Raw sewage is surfacing within absorption area.	• Absorption area malfunction. Check for increased water use, construction activity around area, improper diversion of surface runoff.	• Contact local agency SEO for repair options.
(7) Raw sewage is surfacing at a point other than within absorption area and other treatment components are known to be operable.	• Poor siting of system has caused sewage to be conveyed to another point without treatment.	• Contact local agency SEO for guidance.

Trouble Shooting On-Lot Sewage Disposal System Problems (Continued)

Indication of Problem	Possible Cause	Possible Remedies
Applicable to pressurized systems. Includes all elevated sand mounds and all other systems designed based on perc. rate between 61-90 min/inch.	• Septic tank effluent is not being lifted by pump.	• Contact pump installer.
(1) Dosing pump runs continuously.	• System may be clogged and pump is pumping same water continually.	• Contact SEO for further guidance.
	• Absorption field failure.	• Flush system as described on page 15.
	• Infiltration of surface water or water from downspouts.	• Reduce infiltration with diversion channels or place downspout away from system.
(2) Dosing pump does not run.	• Power to pump may be off.	• Restore power to pump.
	• Pump is not switching on as a result of faulty on-off switches or mislocated switches.	• Contact pump installer to check on-off switches.
	• Electrical connections corroded.	• Retain qualified professional to replace connections.
(3) Dosing of absorption area is taking long period of time.	• Distribution network may be clogged.	• Flush network as described on page 15 and run dosing cycle.
	• Pump may not be working properly.	• Contact pump installer for guidance.
(4) In systems employing siphons, siphon is trickling, not providing pressurized dose.	• Siphon is operating improperly.	• Recharge siphon bell with air. Run dose cycle. Repeat dose cycle. If system does not pressure dose, contact siphon installer.
	• Siphon system improperly installed.	• Contact siphon installer and SEO for further guidance.
(5) Dosing tank alarm light is on.	• Dosing tank is full.	• Make sure pump is able to run. Consult section above to determine pump trouble shooting.
	• Dosing tank plumbing is clogged resulting in full tank.	• Check plumbing from absorption area to tank.
	• Faulty high water alarm/electrical connections.	• If dosing cycle is operating, and light is still on, contact pump installer for guidance.
(6) Sewage surfacing in dosing tank area	• Pump not running fast enough.	• Have pump installer check pump.
	• Clogging in distribution network.	• Flush distribution network.
	• Extraneous flows downspouts, surface water.	• Divert extraneous flows.

Homeowners should be aware that when remedying problems, a permit is required for any repair or modification of the system. A permit is not required for routine maintenance, such as tank pumping or lateral flushing.

PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES

BUREAU OF WATER QUALITY MANAGEMENT

CONSUMERS GUIDE TO ON-LOT
SEWAGE SYSTEM PERMITS

Robert P. Casey, *Governor*
Commonwealth of Pennsylvania

Arthur A. Davis, *Secretary*
Department of Environmental Resources

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Introduction

The Commonwealth of Pennsylvania relies heavily on on-lot sewage disposal methods for single family residential lots. These systems require extensive up front site testing to determine acceptability of the lot for the use of on-lot systems. This testing is the duty of the Sewage Enforcement Officer (SEO), through the on-lot permitting process. The Department has produced this guide to assist the lot owner in understanding the permitting process.

In Pennsylvania there are four on-lot systems that can be permitted through the local agency for use on residential lots. These include: (1) trenches, (2) seepage beds, (3) subsurface sand filters, and (4) elevated sand mounds (ESM). Trenches, beds and sand filters are referred to as subsurface systems. The type of system permitted is dependent upon soil and site conditions occuring on the lot.

Obtaining The On-lot System Permit

A person desiring to build a home using an on-lot system must obtain an on-lot system permit from the local agency. This local agency employs the SEO and can be a municipality, multi-municipal organization, county or joint county agency. Where a lot is in a subdivision, planning approval must be obtained from the Department before on-lot permits may be issued. Local municipalities may also have planning, zoning or land use requirements that need to be met before on-lot permits may be issued. After these approvals are obtained, the permitting process begins when the applicant applies for a permit at the local agency office.

Permitting Process

Site Investigation

The lot owner or an agent for the owner completes a permit application and arranges with the SEO to perform the required site testing. The first step in the process consists of the SEO conducting a site investigation. This includes determining the slope of the site and isolation distances of certain features from the proposed on-lot system area. Slope, in conjunction with the limiting zone and percolation rate, determine what type of system can be used on the site. Slopes are described as percentages and indicate how many feet the land rises in 100 feet of run. For example, if the land rises 5 feet in 100 feet of run that would be a 5% slope. Systems may not be used on slopes greater than 25%. Table 1 indicates what type of system may be used on a lot as a result of slope.

Table 1
Slope vs. Acceptable System Type

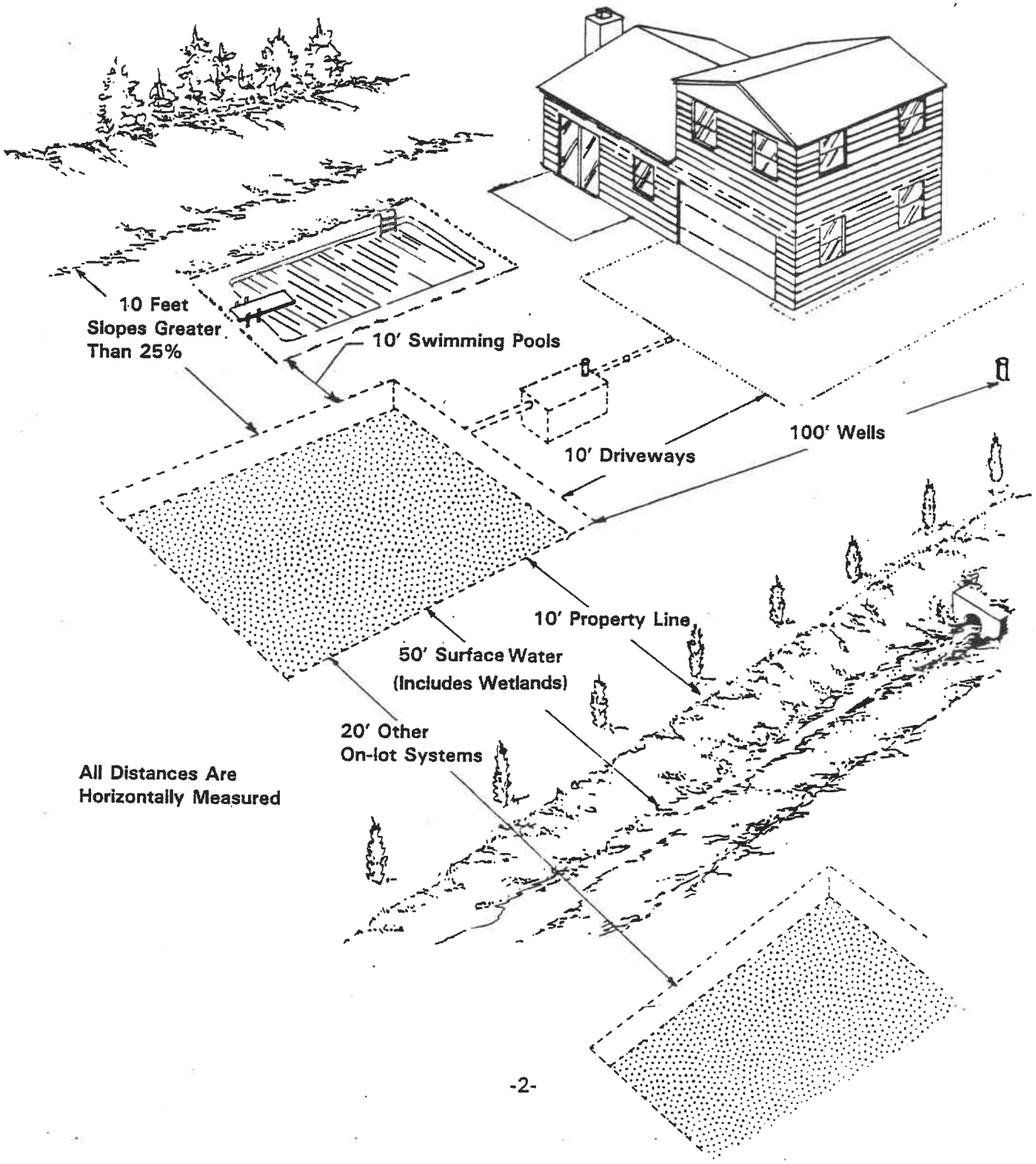
Slope %	Subsurface (Trenches, Beds, Sand Filters)	Elevated Sand Mound Bed
0—8	Suitable	Suitable
8—12	Suitable	Suitable*
12—15	Suitable	Unsuitable
15—25	Suitable	Unsuitable

*ESM trenches only

As part of the site investigation, the SEO will determine if the proposed location of the system will meet isolation distance requirements. The system is required to be certain distances away (isolated) from natural and man made features. This is done to assure long term operation of the system and prevent ground or surface water pollution. To attain a suitable location, the SEO may need to locate the system on a specific part of the lot. These isolation distances are shown in Figure 1. Once the SEO has determined that slope restrictions and isolation distances can be met, soils testing may begin.

Figure 1

MINIMUM ISOLATION DISTANCES

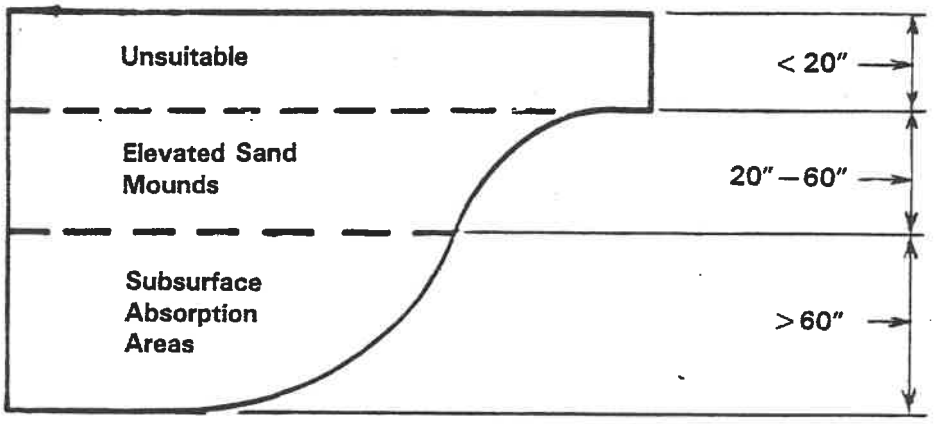


Soil Profile Examination

If the slopes are under 25% and the isolation distances can be met, the SEO will conduct a soil profile examination. This examination requires that a soil probe be excavated. This can be done by the homeowner or contracted to a private firm. The excavations should be done with the SEO present so that several areas of the lot can be tested at the same time. Several probes may be required to find a suitable area. The SEO will examine the soil profile to identify any zone that would limit the treatment of sewage by the soil. This "limiting zone" may be caused by masses of loose rock, bedrock, or seasonal water table that periodically saturates soil layers. Other soil factors that would result in untreated sewage reaching the groundwater or causing the sewage to back up and discharge to the ground surface are also considered limiting zones. In Pennsylvania, there must be at least 20 inches of suitable soil material from the soil surface to the limiting zone to qualify as acceptable for on-lot systems. Figure 2 shows what type of system may be used in relation to the depth of limiting zone. When slope and isolation distances are acceptable and the limiting zone has been determined to be 20 inches or more below the soil surface, a percolation test may be conducted.

Figure 2

SOIL PROFILE EXAMINATION
LIMITING ZONE vs. SYSTEM TYPE



Percolation Test

A percolation test is used to determine the size of the absorption area for an on-lot sewage disposal system.

To conduct the test, at least six holes are dug in the area of the proposed soil absorption field by the applicant, or the local agency for a fee. The SEO will determine the number, location and depth of the holes. The holes should be spaced as shown below over a 1,000 to 1,200 square foot area for single family homes. The Department advises that these tests should not be run when the temperature is under 40°F. Tests performed under these conditions are less accurate. The preparation of the holes is described in Figure 3. The depth of each hole is determined by the depth to the limiting zone and can be found in Table 2. A presoak of the test holes is completed by adding 12 inches of water to the test hole and allowing it to stand for 8 to 24 hours. This allows the soil pores to fill with water. A final presoak is completed by adjusting the water to 6 inches above the gravel every 30 minutes for one hour. The test approximates the worst soil conditions under which the on-site sewage disposal system would operate. Readings are taken for each hole until the rate has stabilized or a maximum of eight readings have been taken. The test measures the rate at which water percolates through saturated soil by measuring how many minutes it takes for an inch of water to move into the saturated soil and is determined by measuring the drop in the water level over a time interval determined during the final presoak. A very fast or very slow rate may result in rejection of an area or will require special system features such as pressure dosing. This percolation rate is expressed as minutes per inch (min./inch). Once the percolation rate in minutes per inch is determined for each test hole, the rates are averaged to determine the percolation rate for the site.

Figure 3

PERCOLATION TEST HOLE PREPARATION

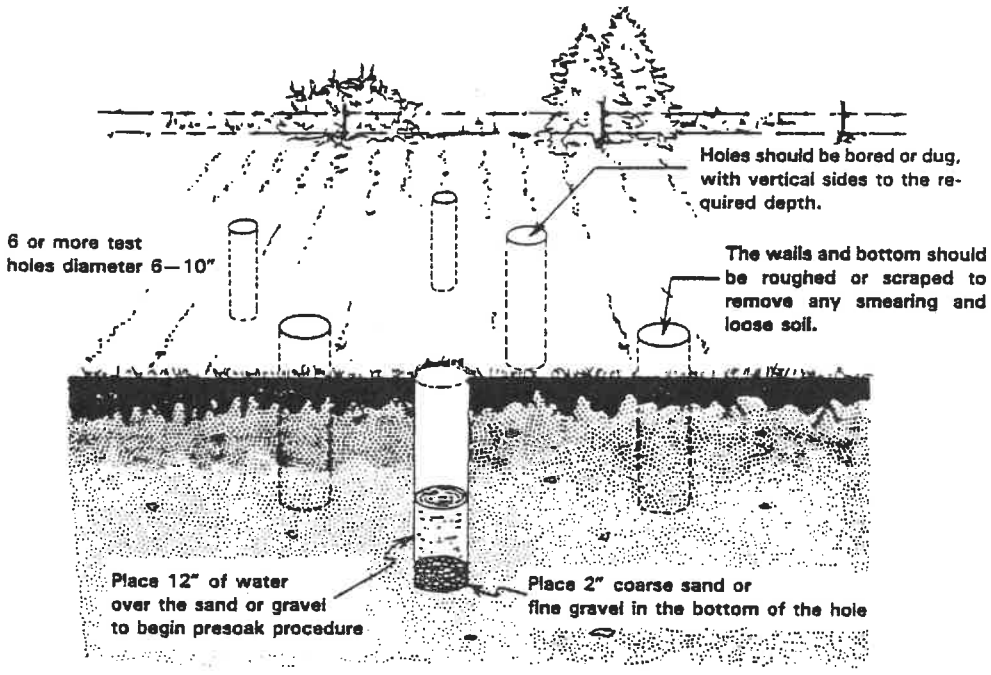


Table 2

Depth of Percolation Test Holes

Depth to Top of Limiting Zone	Limiting Zone Comprised Of Tight Soil Structures, Or Seasonal High Water Table *Depth of Percolation Test Holes*	Limiting Zone Comprised Of Fractured Bedrock, Shale Or Gravel *Depth of Percolation Test Holes*
Deeper than 60 inches	At proposed system depth	At proposed system depth
28 inches to 60 inches	20 inches deep	20 inches deep
20 inches to 27 inches	20 inches deep	8 inches above the top of the limiting zone from soil surface
Less than 20 inches	Unsuitable for on-lot systems	Unsuitable for on-lot systems

Sites having an average percolation rates of less than 3.0 min/inch or greater than 120 min/inch are unacceptable for the use of on-lot sewage disposal systems because sewage would flow to the groundwater too fast (less than 3 min/inch) for acceptable treatment, or too slow (greater than 120 min/inch) causing a sewage backup (Table 3). These percolation rates are used to determine the required square footage of absorption area per gallon per day (ft^2/gpd) for the on-lot system design based on equations found in Chapter 73, (Standards for Sewage Disposal Facilities) of the Department rules and regulations.

Table 3

Percolation Rate Requirements for On-lot Systems

Per Rate Min/In	Subsurface Systems	Elevated Sand Mounds
<3	Unsuitable	Unsuitable
3—5	Unsuitable	Suitable
6—90	Suitable	Suitable
91—120	Unsuitable	Suitable
>120	Unsuitable	Unsuitable

Sites suitable for subsurface systems with a percolation rate between 61 and 90 min./in. will require pressure dosing. **All** elevated sand mounds require pressure dosing.

Design

If the site investigation, soil profile and percolation tests indicate that an acceptable area for the system exists, the SEO will advise the applicant that the site is suitable and that the applicant needs to have a system designed. The system designer must consider the site conditions, limiting zone, percolation test results, and number of bedrooms in the home in designing the system. The SEO who permits the system is prohibited from designing the system. Acceptable designers include SEO's not employed in your municipality, surveyors, or an engineer. Additionally certain sites require detailed engineering design or design by a registered professional engineer.

Permits

Once the applicant has a design and a plot plan of the lot, the permit application package is forwarded to the SEO for review. If the SEO determines that the application is complete and the design meets Chapter 73 standards, the SEO may issue the on-lot system permit. If the package is incomplete or the design does not meet the standards, the SEO will require correction of the information and resubmission by the applicant or the SEO may deny the permit and provide the applicant an opportunity for a hearing.

System Installation

Once a permit is issued, installation of the on-lot system and construction of the home may begin. During the installation process, the SEO may inspect any part or phase of the installation. The SEO is also required to make a final inspection of the system before the system is covered. Once the SEO's final approval is given, the system may be covered and the home may be occupied.

The lot owner should contact several system installers in the area. Installation prices vary widely as does quality and reliability of the installation. Poor system installation can ruin a site with the best soils or system design. The system site should be protected from heavy equipment and excavation, by roping off the system area. Poor installation includes running heavy machinery over the area, installation in wet conditions, running machinery on the down slope side of the system and improper or inadequate diversion of stormwater away from the system. Long term use of the system may also be affected by a poor installation.

On-lot Systems Operation and Maintenance

A consumers guide to on-lot operation and maintenance is available from the Department. The guide describes system installation, system types and their operation and maintenance. Also included is a trouble shooting guide for on-lot system problems. The guide is available by contacting the Bureau of Water Quality Management at 717-787-8184.

Review of Permitting Process

To obtain an on-lot sewage disposal system permit the following steps need to be completed:

1. The lot owner or agent completes a permit application obtained from the local agency office (municipality, joint municipality, county, joint county).
2. The Sewage Enforcement Officer (SEO) conducts a site investigation, soil profile examination and, if applicable, a percolation test.
3. After the SEO has approved the site, the applicant secures a system designer to design an on-lot system based on the test results and Chapter 73 standards.
4. The SEO reviews the complete application package and issues or denies the permit within seven days after receiving a complete application.
5. System installation may begin after receiving a permit from the SEO. The SEO makes final inspection, and if appropriate, allows the applicant to cover the system and occupy the home.

APPENDIX H

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

60 shillington road
sinking spring, pa. 19608
ph. (215) 678-0445

July 11,1989

Douglass Township
Board of Supervisors
R.D.# 2, Box 503
Boyertown, Pa. 19512

RE: Douglass Township
Act 537 Plan proposal

Gentlemen:

As per your request we have prepared an estimate for the preparation of an Act 537 Plan for the Township. Enclosed please find a copy of the plan format which is in accordance with the Pennsylvania Department of Environmental Resources (Pa. DER) Guidelines for preparing Official Sewage Plans.

The estimated cost to prepare an Act 537 Plan that comply's with Pa. DER guidelines is $8,994.00. In addition to the report preparation, the Township will have to conduct a Hydrogeological Analysis of the Groundwater. Motley Engineering Co., Inc., in conjunction with Hydro-Analysis Associates, Inc. of Kutztown, have the capabilities to perform the necessary sampling and laboratory analysis associated with a Hydrogeological Analysis. A preliminary estimate for the sampling procedure is $384.00 and the laboratory analysis is $1,150.00 for 50 samples. In total, the costs to prepare a complete Douglass Township Act 537 Plan is estimated at $10,528.00. Pa. DER provides a 50% match grant for all approved Act 537 Plans. The total reimbursement for Douglass Township is $5,264.00.

Also enclosed with this proposal is a copy of Act 537 Plan and the Pa. DER guidelines associated for the preparation of Official Sewage Plans required by Act 537.

If you should have any questions regarding this proposal, please contact me at 215-678-0445.

Sincerely,

MOTLEY ENGINEERING CO., INC.

J. Jerome Skrincosky
Project Planner

JJS/mlm

Enclosures

cc: Planning Commission
Richard Orwig, Esq.

DOUGLASS TOWNSHIP
ACT 537 PLAN FORMAT

I. INTRODUCTION

A. Purpose and Objective

1. Background

B. Act 537 Planning

II. BACKGROUND INFORMATION

A. Planning Objectives and Needs

1. Wastewater Planning previously undertaken

B. Planning Documents Adopted Pursuant to Act 247
1. Comprehensive Plan
2. Zoning Ordinance
3. Subdivision and Land Development Ordinance
4. Flood Plain/Storm Water Management and Land Use Compatibility
5. Analysis of Land Use Planning Relative to Environmentally Sensitive Areas

C. Analysis of Existing and Proposed Wastewater Treatment Planning

D. Identification of Residential, Commercial and Industrial Growth Areas
1. Population Information
   a. Historical Growth
   b. Population Estimates
   c. Population Projections
2. Subdivision and Land Development Trends
3. Analysis of Population and Subdivision Trends Relating to Sewage Facility Needs

III. PHYSICAL DESCRIPTION OF PLANNING AREA

A. Planning Area Boundaries

B. Planning Area Survey, Map and Soil Analysis
1. Areas Suitable for On-Lot Sewage Disposal
2. Areas Unsuitable for On-Lot Sewage Disposal

C. Planning Area Geological Features
1. Existing and Potential Nitrate-Nitrogen Pollution Areas
2. Factors Affecting Well Yield
3. Designated Special Aquifers

D. Hydrogeological Analysis of Groundwater Quality

IV. EVALUATION OF EXISTING WASTEWATER TREATMENT AND CONVEYANCE SYSTEMS

A. Identification of Wastewater Collection and Conveyance System
   1. Location and Ownership
   2. Operation and Maintenance
   3. Agreements

B. Identification of On-Site Sewage Disposal Systems
   1. Individual On-Site Systems
   2. Community Systems
   3. Retaining Tanks

C. Sludge Handling Methods
   1. Generation
   2. Transportation
   3. Disposal

V. EVALUATION OF WASTEWATER TREATMENT NEEDS

A. Existing Areas Dependent on On-Site Systems
   1. Approximate Total Sewage Flows
   2. Possible Environmental Impact
   3. Nearest Conventional Systems

B. Identification, Analysis and Classification of Malfunctioning On-Site Systems
   1. Identification of Malfunctioning On-Site Systems
   2. Classification and Basis for Malfunctions
      a. Improper Soil Conditions
      b. Slope Limitations
      c. Improper Design and/or Installation
      d. Improper Maintenance
      e. Hydraulic Overload
      f. System has Reached end of Life
      g. Other
   3. Identification of Discharges Associated with Malfunctions
      a. Discharging to Surface
      b. Discharging to Stream or Drainageway
      c. Discharging into Groundwater
   4. Documentation on Public Health Problems
   5. Illegal Sewage Disposal Systems

C. Analysis of Municipal Regulations

VI. PLANNING AND FACILITIES ALTERNATIVES

A. Wastewater Collection and Conveyance

B. Utilization of On-Site Systems

1. Continual and Future Use
2. Repair, Replacement and Upgrade of Existing Malfunctioning Systems
3. Community Subsurface Systems
4. No Action Alternative
   a. Short-term impact
   b. Long-term impact

C. Evaluation of Sewage Management Program

D. Evaluation of Comprehensive Planning

E. Evaluation of Alternatives
   1. Cost/Benefit Analysis

VII. INSTITUTIONAL EVALUATION AND RECOMMENDATIONS

A. Identification and Description of Authorities

B. Performance Analysis
   1. Present Financial Position
   2. Available Resources
   3. Existing Legal Authority

C. Regional Local Agency Program Feasibility

D. Legal and Administrative Activities Required for Plan Implementation

VIII. SELECTED ALTERNATIVES

A. Summary of Recommended Plan
   1. Description of the Plan
   2. Wastewater Treatment Facilities
   3. Financing the Plan
   4. Environmental Impacts

IX. IMPLEMENTATION OF THE PLAN

A. Implementation Schedule

Douglass Township | Berks | Doug[illegible] | [illegible]y 11, 1989

Municipality | County | Proposed Planning Are[illegible] (Att[illegible] Map) | Dat[illegible] | Re[illegible]

Date completed plan will be submitted to DER 12/15/89 **Estimated Cost of Plan** $8,994.00

Use Additional Sheets if Necessary

Sheet 1 of 1

TASK ACTIVITY NUMBER FROM GUIDELINES	PRINCIPAL		PROJ. ENG.		SR. ENG.		ENGINEER		PLANNER		DRAFTSMAN		CLERICAL		LEGAL		SUB TOTAL
	HR/ RATE	---	HR/ RATE	$37	HR/ RATE	---	HR/ RATE	$35	HR/ RATE	$32	HR/ RATE	$20.50	HR/ RATE	$18	HR/ RATE	---	
//////////	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	
I			1	$37.00			1	$35.00	5	$160.00			1	$18.00			
II			1	$37.00			2	$70.00	30	$960.00	14	$287.00	3	$54.00			
III			1	$37.00			10	$350.00	45	1440.00	30	$615.00	3	$54.00			
IV			1	$37.00			2	$70.00	15	$480.00	10	$205.00	2	$36.00			
V			3	$111.00			3	$105.00	30	$960.00	18	$369.00	2	$36.00			
VI			3	$111.00			3	$105.00	25	$800.00	4	$82.00	3	$54.00			
VII			1	$37.00			1	$35.00	15	$480.00			2	$36.00			
VIII			2	$74.00			2	$70.00	5	$160.00	2	$41.00	1	$18.00			
IX			2	$74.00			1	$35.00	5	$160.00	2	$41.00	1	$18.00			
Totals	----	----	15	$555.00	---	----	25	$875.00	175	5600.00	80	1640.00	18	$324.00			

Amended Appendix A-22-b.4

Name of Person Completing Report | Signature | Title | Municipal Secretary [illegible]

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
1875 New Hope Street
Norristown, Pa. 19401
215 270-1975

RECEIVED
DATE APR 03 1990
MOTLEY ENGINEERING CO. INC.
BY

March 30, 1990

J. Jerome Skrincosky
Motley Engineering co., Inc.
60 Shillington Road
Sinking Spring, Pa. 19608

Re: 537 Plan Update
Douglass Township
Berks County

Dear Mr. Skrincosky

The Task/Activity Report, dated October 20, 1989, including items discussed at our meeting of Dec. 11, 1989, has been reviewed and approved with the following comments.

The revisions to Chapter 71, Administration of Sewage Facilities Planning Program, which went into effect June 10, 1989, impact on minimum plan content. Changes include:

1. Wetlands must be identified. This is a conceptual planning task not to be confused with wetlands delineation, a more detailed permitting task.

2. Information about the source of potable water supplies is required. This will identify potential conflicts between sewage facilities planning and water allocation planning.

3. Operation and maintenance of all public and private sewage facilities must be addressed via an evaluation of alternatives. This prior requirement has been expanded so as to provide for the long-term operation and maintenance through sewage management agencies.

4. The consistency section of the regulations was expanded to require that each alternative be evaluated for consistency with the objectives and policies of additional programs such as wetlands protection.

5. Feasibility evaluations in the alternatives analysis phase of plan preparation are required for facilities scheduled within 5 years or less. Dates for future initiation of feasibility evaluations need to be to be included in the implementation schedule for areas proposing completion of sewage facilities for periods in excess of 5 years.

J. Jerome Skrincosky
March 30, 1990

6. Listing of both the primary and contingency funding sources with documentation that the project sponsor meets eligibility requirements, is needed.

Other areas of the Task/Activity Report which lack certain specificity include:

1. the scale of figures will need to be large enough to allow for easy use.

2. Facility alternatives to evaluate must include land application of effluent generated from the various treatment alternatives, both community and individual type facilities.

3. Alternatives to be considered also need to include the use of non-structural land use planning alternatives.

4. the schedule of implementation will need to be specific in regards to milestone dates for design/construction and funding commitments for each area of need.

5. The delineation of community and individual water supplies is essential relative to concentrated areas of on-lot sewage systems. Given the close proximity of wells and on-lot systems, nitrate nitrogen well water analysis from a representative sampling is required.

During plan preparation please consult with this office at the point of evaluation of readily available needs documentation and also at the point of preliminary screening of facility and institutional alternatives.

If you have any questions please do not hesitate to call./

Very truly yours,

Lee Gemmill
Sanitarian Sewage Specialist

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

Main Office:
1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

Branch Office:
30 main street
linfield, pa. 19468
ph. (215) 495-9939

November 12, 1990

Amity Township Municipal Authority
P.O. Box 8
Douglassville, PA 19518

RE: Douglass Township Act 537 Plan

Dear Municipal Official,

This letter represents notification that Douglass Township (Berks County) is in the process of updating its Official Sewage Plan. The Douglass Township Board of Supervisors have authorized Motley Engineering Co., Inc. to prepare this Plan for the Township as required under PA Act 537 and the Pennsylvania Department of Environmental Resources.

As part of the guidelines for preparing an Official Sewage Plan, Douglass Township is required to communicate with all municipalities within the regional Planning Area. The purpose of this requirement is to ascertain all future plans relative to wastewater planning. Since the Amity Township Wastewater Treatment Plant is a regional facility, we would appreciate all information regarding available capacity, inter-connection capabilities, agreements, connection fees and wastewater treatment rates. Enclosed is a Planning Area Map which illustrates the potential service area based on gravity flow within this drainage basin.

Please review this matter at your next municipal meeting. We would appreciate a response on or before December 21, 1990. If you should have any questions regarding this matter or if would like to meet with a representative from our office, please contact me at 215-775-0888.

Sincerely.

MOTLEY ENGINEERING CO., INC.

J. Jerome Skrincosky

J. Jerome Skrincosky
Director of Planning Operations

cc: Douglass Township Board of Supervisors
Amity Township Board of Supervisors

D537

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

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1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

Branch Office:
30 main street
linfield, pa. 19468
ph. (215) 495-9939

November 12, 1990

Berks-Mongomery Municipal Authority
Morysville Wastewater Treatment Plant
Box 147 Municipal Drive
Gilbertsville, PA 19525

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MOTLEY ENGINEERING CO., INC.

J. Jerome Skrincosky

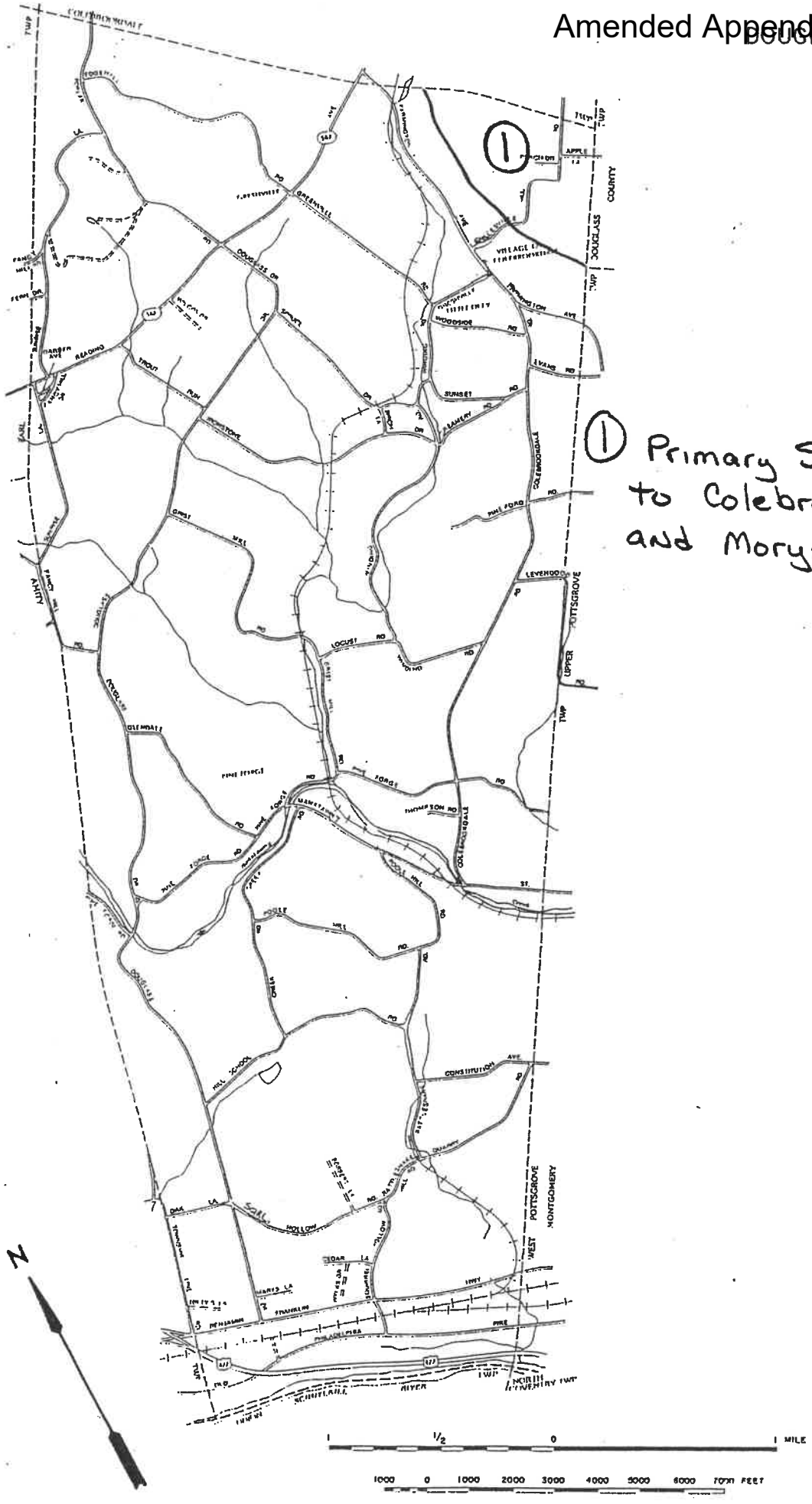
J. Jerome Skrincosky
Director of Planning Operations

cc: Douglass Township Board of Supervisors
Colebrookdale Township Board of Commissioners

D537

Amended Appendix A-22 b 4

DOUGLASS TOWNSHIP



1 Primary Service Area to Colebrookdale Twp and Morysville STP

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

Main Office:
1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

Branch Office:
30 main street
linfield, pa. 19468
ph. (215) 495-9939

November 12, 1990

Pottstown Borough
Sewer and Water Authority
City Hall 241 King Street
Pottstown, PA 19464

RE: Douglass Township Act 537 Plan

Dear Municipal Official,

This letter represents notification that Douglass Township (Berks County) is in the process of updating its Official Sewage Plan. The Douglass Township Board of Supervisors have authorized Motley Engineering Co., Inc. to prepare this Plan for the Township as required under PA Act 537 and the Pennsylvania Department of Environmental Resources.

As part of the guidelines for preparing an Official Sewage Plan, Douglass Township is required to communicate with all municipalities within the regional Planning Area. The purpose of this requirement is to ascertain all future plans relative to wastewater planning. Since the Pottstown Wastewater Treatment Plant is a regional facility, we would appreciate all information regarding available capacity, inter-connection capabilities, agreements, connection fees and wastewater treatment rates. Enclosed is a Planning Area Map which illustrates the potential service area based on gravity flow within this drainage basin.

Please review this matter at your next municipal meeting. We would appreciate a response on or before December 21, 1990. If you should have any questions regarding this matter or if would like to meet with a representative from our office, please contact me at 215-775-0888.

Sincerely.

MOTLEY ENGINEERING CO., INC.

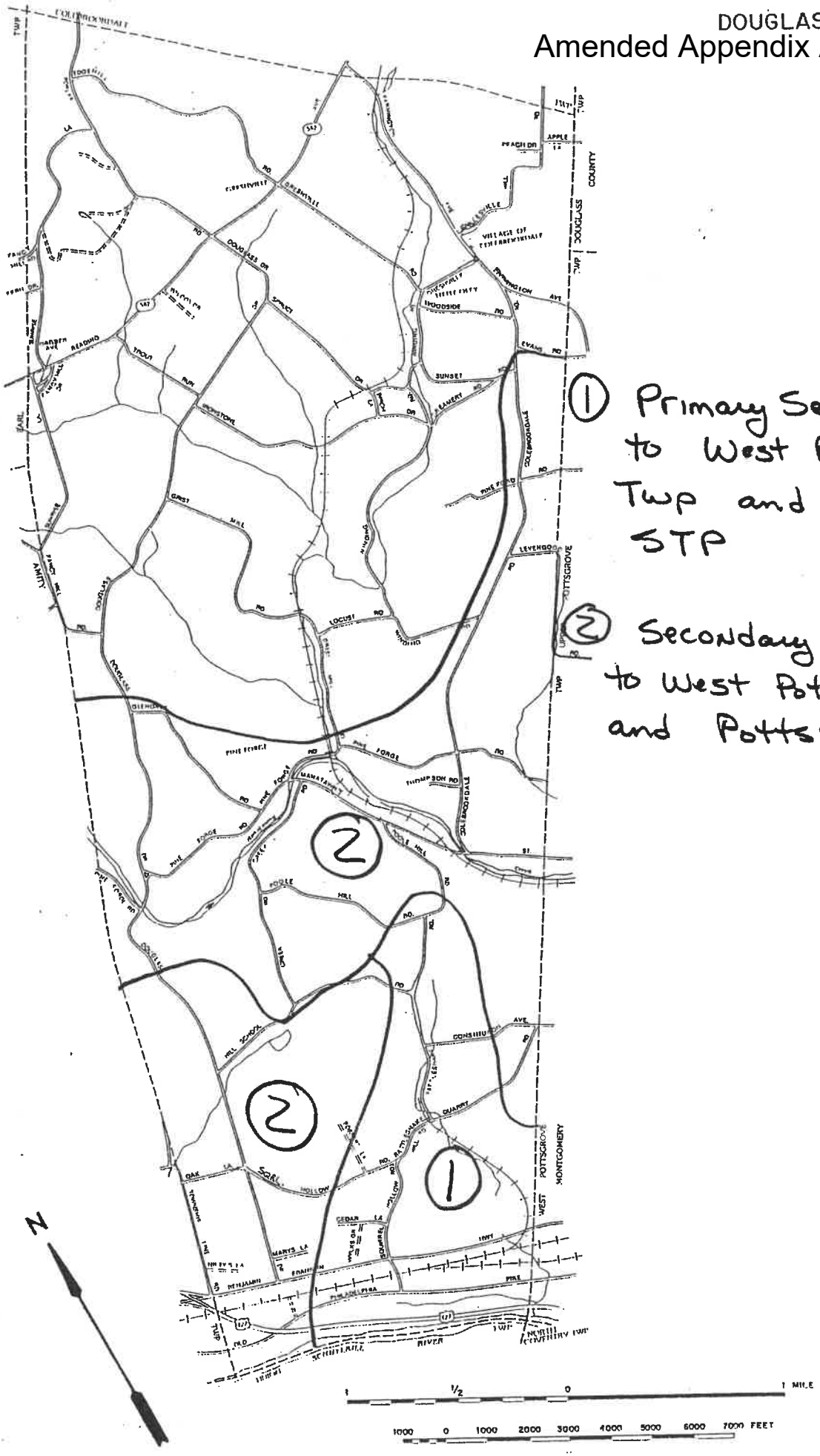
J. Jerome Skrincosky
Director of Planning Operations

cc: Douglass Township Board of Supervisors
Pottstown Borough Council
West Pottsgrove Township Board of Commissioners

D537

DOUGLASS TOWNSHIP

Amended Appendix A-22-b.4



(1) Primary Service Area to West Pottsgrove Twp and Pottstown STP

(2) Secondary Service Area to West Pottsgrove Twp and Pottstown STP

Berks-Montgomery Municipal Authority

Gilbertsville, Pennsylvania 19525

(215) 367-1460

November 28, 1990

RECEIVED
DATE NOV 2 9 1990
MOTLEY ENGINEERING CO. INC.
BY

Mr. J. Jerome Skrincosky
Motley Engineering Co., Inc.
1300 New Holland Road
Kenhorst, Pennsylvania 19607

Re: Douglass Township, Berks County
Act 537 Plan

Dear Mr. Skrincosky:

This is to advise you that the Berks-Montgomery Municipal Authority has no intention of providing sewer service to Douglass Township, Berks County. BMMA currently serves only two properties that border the BMMA lines near the Morysville Treatment Plant.

Very truly yours,

BERKS-MONTGOMERY MUNICIPAL AUTHORITY

Barbara Ann Cepko

Barbara Ann Cepko
Administrator

BAC/pam

MILLER AND MURRAY
ATTORNEYS AT LAW
542 COURT STREET
P. O. BOX 942
READING, PENNSYLVANIA 19603-0942
TELEPHONE (215) 376-6651
TELECOPIER (215) 376-5243

LEON A. MILLER
JAMES H. MURRAY
CHARLES F. FITZPATRICK
GREGORY R. YOUNG
JOHN S. HIBSCHMAN
CHARLES K. SERINE
BARBARA H. BERINGER
WILLIAM F. COLBY, JR.
BRIAN R. OTT

JAMES W. BERTOLET
1932-1982
RICHARD T. WILLIAMSON
1935-1969

December 4, 1990

RECEIVED
DEC 05 1990
DATE
MOTLEY ENGINEERING CO. INC.

J. Jerome Skrincosky
Director of Planning Operations
Motley Engineering Co., Inc.
1300 New Holland Road
Kenhorst, PA 19607

Re: Douglass Township - Act 537 Plan

Dear Jerome:

Your letter dated November 12, 1990 directed to the Amity Township Municipal Authority with respect to the above matter has been referred to me as solicitor for the Authority for reply.

At the present time, there is very little available capacity for additional connections at the Municipal Authority's plant. The Authority, however, is exploring the possibility of expanding the plant to create additional capacity. If Douglass Township is seriously interested in obtaining connection availability to the Amity Municipal Authority's plant, I would suggest that the Township act quickly and contact the Board of Supervisors for Amity Township to let them know of the interest. Currently, the Authority and Township are accepting reservation agreements, which will permit the Township to reserve a capacity in the expanded plant.

As part of the reservation, a reservation agreement, along with a letter of credit will have to be in place, as well as a general agreement between the Douglass Township and the Amity Township Board and Municipal Authority with respect to payment of waste water treatment expenses.

With regard to current rates and connection fees, I would suggest that you contact the Amity Township Board of Supervisors, since the Board is the operator of the system and would be more familiar with the rates and connection fees and expenses.

Should you have any questions concerning this matter, please feel free to give me a call.

Sincerely,

MILLER AND MURRAY

CC

Charles K. Serine

CKS:nlm
cc: Zenovia Jane Lipauf, Secretary
cc: John C. Karst, Manager

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

Main Office:
1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

Branch Office:
30 main street
linfield, pa. 19468
ph. (215) 495-9939

February 11, 1991

Douglass Township
Board of Supervisors
RD 2 Box 503
Boyertown, PA 19512

RE: DOUGLASS TOWNSHIP ACT 537 PLAN

Gentleman:

Pursuant to your request, we have enclosed herewith, a procedural outline for the adoption of the Douglass Township Act 537 Plan Update. This outline has been formulated pursuant to the guidelines established by the Pennsylvania Sewage Facilities Act (Act 537) and by the Pennsylvania Department of Environmental Resources. We are currently at the fourth step of this procedure. Please contact me when you have completed you review of the preliminary draft of the proposed Plan. If you should have any questions, please contact me at 215-775-0888.

Sincerely.

MOTLEY ENGINEERING CO., INC

J. Jerome Skrincosky
Director of Planning Operations

DGLS-1

DOUGLASS TOWNSHIP
ACT 537 PLAN UPDATE

PROCEDURAL OUTLINE

Pursuant to the guidelines of Act 537, the following procedural steps must be executed.

1. The municipality shall submit a Plan of Study to the PA DER.

2. The Plan of Study shall be approved by the PA DER before any work on the project is initiated. Work on the Project shall begin subject to the Proposed Format and any additional conditions the PA DER imposes.

3. Meetings with the Township and adjacent municipalities shall be conducted in order to solicit all municipal wastewater goals and objectives.

4. A preliminary draft of the Plan will be completed and forwarded to the Township for review and comment. The Plan will be revised pursuant to Township review.

5. A final draft of the Plan will be completed and forwarded to the Township, the adjacent municipalities (if applicable) and the Berks County Planning Commission for their individual review and comment. Modifications shall be made to the proposed Plan if necessary.

6. The Plan shall be adopted by resolution by the Township and any adjacent municipalities included within the proposed Plan.

7. The proposed Plan shall be forwarded to the PA DER for their preliminary review and comment. Modifications shall be made to the proposed Plan if necessary.

8. The Plan shall be forwarded to the PA DER for their final review and approval.

9. The Application for Sewage Facilities Planning Assistance shall be executed and forwarded to the PA DER for their approval.

10. The Township and/or any adjacent municipalities included within the proposed Plan will be eligible for a 50 percent grant reimbursement for the total cost of the approved Plan.

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

Main Office:
1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

Branch Office:
30 main street
linfield, pa. 19468
ph. (215) 495-9939

July 17, 1991

Berks County Planning Commission
Suite 203 Exide Building
645 Penn Street
Reading, PA 19601-3509

RE: DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE

Dear Planning Commission Members:

On behalf of the Douglass Township Board of Supervisors, we are pleased to transmit herewith, the final draft of the Douglass Township Act 537 Plan Update for your review and comment. The proposed Plan was prepared in accordance with the Pennsylvania Sewage Facilities Act (Act 537) and the guidelines established by the Pennsylvania Department of Environmental Resources. This Act 537 Plan Update will function as the Official Sewage Plan for the Douglass Township Planning Area for the proposed planning period.

Motley Engineering Co., Inc. would appreciate an expeditious review of this Act 537 Plan Update in order for Douglass Township to proceed with the implementation of the proposed Plan. If you should have any questions regarding this final draft, please contact me at 215-775-0888.

Sincerely,

MOTLEY ENGINEERING CO., INC.

J. Jerome Skrincosky

J. Jerome Skrincosky
Director of Planning Operations

cc. Douglass Township Board of Supervisors
Richard L. Orwig, Esq.

DGLS5372

BERKS COUNTY
PLANNING COMMISSION
(215) 378-8703

Exide Building
645 Penn Street, Suite 203
Reading, PA 19601-3509

Joseph E. DeSantis, Chair
Pamela E. Munroe, Vice-Chair
Joseph E. Williams, Secretary
Elaine M. Berish
Joseph E. Kuzminski
Robert J. Millar
William A. Moore
Harry S. Nelson
Philip D. Rowe, Jr.

Glenn R. Knoblauch, Executive Director
Heidi B. Masano, Solicitor

RECEIVED
DATE AUG 16 1991
MOTLEY ENGINEERING CO. INC.
BY

August 14, 1991

J. Jerome Skrincosky
Director of Planning Operations
Motley Engineering Co., Inc.
1300 New Holland Road
Kenhorst, PA 19607

Dear Jerome:

The Berks County Planning Commission has reviewed a proposed Act 537 Plan for Douglass Township. The Plan calls for the installation of public sewer service in the southern portion of the Township, with treatment at the Amity Township sewage treatment plant.

The Planning Commission does not undertake a technical or engineering review of the project against DER standards since that is the responsibility of the Department of Environmental Resources. The Commission's review does not address compliance with all municipal plans, ordinances or regulations as such issues are the responsibility of local municipal officials.

The Commission offers the following comments for consideration:

The Berks County Master Sewer and Water Plan Update of June 1979 recognized that Amity Township might construct its own sewage treatment plant. This plant was to be considered as a subregional sewage treatment facility, potentially capable of treating sewage from parts of Douglass, Exeter and Union Townships. The proposed Douglass Township Act 537 Plan, which will utilize the Amity Township STP for treatment of its projected service area, is therefore in compliance with the County's Plan Update.

The Commission recommends that Douglass Township reevaluate the zoning of the area being proposed for public sewer service. Higher density development types which may result from sewer installation, such as townhouses, are presently allowed as special exception only (in the R-1 District). Perhaps the regulations of the R-1 District could be revised to include higher density development types as being permitted by right. This would allow for more compact development patterns which are best served by public sewer.

The Commission recommends that since efforts are being made to provide public sewer service to developing areas of Douglass Township, public water service also should be considered. Densities resulting from the installation of public sewer may be difficult to maintain without the addition of public water. Groundwater supplies in the service area may be severely depleted should more dense development take place. Douglass Township should work with neighboring municipalities to secure public water service for this area.

Thank you for the opportunity to review and offer comment concerning this application.

Sincerely,

Joseph E. DeSantis

Joseph E. DeSantis, Esq. (S.M.B.)
Chairman
BERKS COUNTY PLANNING COMMISSION

JED/lf

cc: Douglass Township
Amity Township

Amended Appendix A-22-b.4

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

Main Office:
1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

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30 main street
linfield, pa. 19468
ph. (215) 495-9939

August 15, 1991

Berks County Planning Commission
Suite 203 Exide Building
645 Penn Street
Reading, PA 19601-3509

RE: DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
Berks County Planning Commission Review

Dear Planning Commission Members:

Pursuant to the established guidelines of the Pennsylvania Sewage Facilities Act (Act 537), we have received the review of the Berks County Planning Commission for the proposed Douglass Township Act 537 Plan Update. On behalf of the Douglass Township Board of Supervisors, we have no comments regarding this review. Douglass Township will attempt to incorporate all pertinent comments in a revised draft of the Douglass Township Act 537 Plan.

If you should have any further questions regarding this Act 537 Plan, please contact me at 215-775-0888.

Sincerely,

MOTLEY ENGINEERING CO., INC.

J. Jerome Skrincosky
Director of Planning Operations

cc. Douglass Township Board of Supervisors
Richard L. Orwig, Esq.

DGLS5372

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

Main Office:
1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

Branch Office:
30 main street
llnfield, pa. 19468
ph. (215) 495-9939

August 16, 1991

Douglass Township
Board of Supervisors
RD 2 Box 503
Boyertown, PA 19512

RE: DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
Municipal Adoption Process

Gentleman:

Pursuant to the guidelines of the Pennsylvania Department of Environmental Resources concerning Act 537 Planning, we hereby request that you adopt the proposed Douglass Township Act 537 Plan Update by resolution. The proposed Plan has been reviewed and approved by the Berks County planning Commission. If adopted by Douglass Township, the proposed Plan will be forwarded to the Pennsylvania Department of Environmental Resources for their review and approval. If the Township does not adopt the Plan, the Pennsylvania Department of Environmental Resources will ultimately reject the proposed Plan.

Enclosed with this letter please find a copy of a sample resolution for municipal adoption. The adoption of this proposed Plan should be considered at your next scheduled municipal meeting. In addition, our office has requested Amity Township to adopt the proposed Plan by resolution. It should be noted that this inter-municipal adoption process is also required by the Pennsylvania Department of Environmental Resources. If you should have any questions regarding this municipal adoption process please contact our office at 215-775-0888.

Sincerely,

MOTLEY ENGINEERING CO., INC.

J. Jerome Skrincosky

J. Jerome Skrincosky
Director of Planning Operations

cc: Richard Orwig, Esq.

DGLS5374

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

Main Office:
1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

Branch Office:
30 main street
linfield, pa. 19468
ph. (215) 495-9939

August 16, 1991

Amity Township
Board of Supervisors
P.O. Box 215
Douglassville, PA 19518

RE: DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE

Gentlemen:

Pursuant to the guidelines of the Pennsylvania Department of Environmental Resources concerning Act 537 Planning and on the behalf of the Douglass Township Board of Supervisors, we hereby request that you adopt the Douglass Township Act 537 Plan by resolution. The purpose of this request is to avoid any potential wastewater treatment planning inconsistencies between Douglass and Amity Townships. It should be noted that the proposed Douglass Township Act 537 Plan Update is consistent with the existing Amity Township Act 537 Plan. This inter-municipal adoption process is required by the Pennsylvania Department of Environmental Resources.

The Township should be aware that the Douglass Act 537 Plan has identified certain areas in the southwestern portion of the Planning Area as having the capabilities to connect into the Amity Township Wastewater Treatment Collection System. It should be noted that this project will be economically unfeasible to implement unless the Township obtains a state grant to off-set 50 percent of the project costs.

If the Township does not adopt the Plan, future expansion of sanitary sewage lines from Amity Township into the Douglass Township Planning Area may not be permitted by the authority of the Pennsylvania Department of Environmental Resources. Enclosed, please find a copy of the Douglass Township Act 537 Plan Update and a sample resolution for municipal adoption. If you should have any questions regarding this request, please contact our office at 215-775-0888.

Sincerely,

MOTLEY ENGINEERING CO., INC.

J. Jerome Skrincosky
Director of Planning Operations

cc: Douglass Township Board of Supervisors
Richard Orwig, Esq.
A. Lee Levengood, Esq.

Appendix C

RESOLUTION FOR PLAN REVISION

RESOLUTION OF THE SUPERVISORS OF AMITY TOWNSHIP, BERKS COUNTY, PENNSYLVANIA (hereinafter "the municipality").

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537, known as the "Pennsylvania Sewage Facilities Act," as amended, and the Rules and Regulations of the Department of Environmental Resources (Department) adopted thereunder, Chapter 71 of Title 25 of the Pennsylvania Code, requires the municipality to adopt an Official Sewage Facilities Plan providing for sewage services adequate to prevent contamination of waters and/or environmental health hazards with sewage wastes, and to revise said plan whenever it is necessary to meet the sewage disposal needs of the municipality, and

WHEREAS, the DOUGLASS TOWNSHIP, BERKS COUNTY has prepared an Act 537 Plan Update which provides for sewage facilities in a portion of DOUGLASS Township, and

WHEREAS, AMITY Township finds that the Facility Plan described above conforms to applicable zoning, subdivision, other municipal ordinances and plans and to a comprehensive program of pollution control and water quality management.

NOW, THEREFORE, BE IT RESOLVED that the Supervisors of the Township of AMITY hereby adopt and submit to the Department of Environmental Resources for its approval as a revision to the "Official Plan" of the municipality, the above referenced Facility Plan. The municipality hereby assures the Department of the complete and timely implementation of the said plan as required by law. (Section 5, Pennsylvania Sewage Facilities Act as amended).

I, JOHN C. KARST, Secretary, AMITY TOWNSHIP ~~Township~~ Board of Supervisors, hereby certify that the foregoing is a true copy of the Township's Resolution No. ——, adopted AUGUST 19, 1991.

AUTHORIZED SIGNATURE

John C. Karst
Twp. Mgr./Secy.

TOWNSHIP SEAL

1991-5
RESOLUTION FOR PLAN REVISION

RESOLUTION OF THE SUPERVISORS OF DOUGLASS TOWNSHIP, BERKS COUNTY, PENNSYLVANIA (hereinafter "the municipality").

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537, known as the "Pennsylvania Sewage Facilities Act," as amended, and the Rules and Regulations of the Department of Environmental Resources (Department) adopted thereunder, Chapter 71 of Title 25 of the Pennsylvania Code, requires the municipality to adopt an Official Sewage Facilities Plan providing for sewage services adequate to prevent contamination of waters and/or environmental health hazards with sewage wastes, and to revise said plan whenever it is necessary to meet the sewage disposal needs of the municipality, and

WHEREAS, the Douglass Township, Berks County has prepared an Act 537 Plan Update which provides for sewage facilities in a portion of Douglass Township, and

WHEREAS, Douglass Township finds that the Facility Plan described above conforms to applicable zoning, subdivision, other municipal ordinances and plans and to a comprehensive program of pollution control and water quality management.

NOW, THEREFORE, BE IT RESOLVED that the Supervisors of the Township of Douglass hereby adopt and submit to the Department of Environmental Resources for its approval as a revision to the "Official Plan" of the municipality, the above referenced Facility Plan. The municipality hereby assures the Department of the complete and timely implementation of the said plan as required by law. (Section 5, Pennsylvania Sewage Facilities Act as amended).

I, Joan E. Adams, Secretary, Douglass Township Board of Supervisors, hereby certify that the foregoing is a true copy of the Township's Resolution No. 1991-5, adopted August 28, 1991.

AUTHORIZED SIGNATURE

TOWNSHIP SEAL

Joan E. Adams

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

Main Office:
1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

Branch Office:
30 main street
linfield, pa. 19468
ph. (215) 495-9939

September 4, 1991

Commonwealth of Pennsylvania
Department of Environmental Resources
Water Quality Management Program
Southcentral Region (Harrisburg)
One Ararat Boulevard Room 126
Harrisburg, PA 17110

ATTN: Kevin McLeary

RE: DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE

Dear Mr. McLeary,

On behalf of the Douglass Township Board of Supervisors, we are pleased to officially transmit herewith, two (2) copies of the Douglass Township (Berks County) Act 537 Plan Update for your review and comment. The proposed Plan was prepared in accordance with the Pennsylvania Sewage Facilities Act (Act 537) and the guidelines established by the Pennsylvania Department of Environmental Resources. This Act 537 Plan Update will function as the Official Sewage Plan for the Douglass Township Planning Area for the proposed 20 year planning period.

Motley Engineering Co., Inc. would appreciate an expeditious review of this Act 537 Plan Update in order for Douglass Township to proceed with the implementation of the proposed Plan. If you should have any questions regarding this Act 537 Plan Update, please contact me at 215-775-0888.

Sincerely,

MOTLEY ENGINEERING CO.,INC.

J. Jerome Skrincosky

J. Jerome Skrincosky
Director of Planning Operations

cc: Douglass Township Board of Supervisors
Richard Orwig, Esq.

pader5

CERTIFIED MAIL:
P502577395

SOUTHCENTRAL REGION - FIELD OPERATIONS
Water Quality Management Program
One Ararat Boulevard
Harrisburg, Pennsylvania 17110
(717) 657-4590
December 31, 1991

RECEIVED
DATE JAN 03 1992
MOTLEY ENGINEERING CO. INC.
BY

Douglass Township
R.D. 2, Box 503
Boyertown, PA 19512

Re: 537 Planning
Douglass Township
Berks County

Gentlemen:

Your Act 537 Plan did not contain enough information for us to do an adequate evaluation. Therefore, we are returning your Plan along with a checklist which should be used to final check your Plan for completeness before resubmission. Fill in all blank spaces provided in the left hand column of the checklist and submit the checklist along with your resubmission.

The Department believes that the areas of Douglassville and Colebrookdale need special attention. After completing all items in the checklist we recommend that you do an additional survey of these two areas. The survey should consist of the areas which would include the following:

1. Evaluate the construction, siting and age of existing sewage systems.

2. Check for new malfunctions which were previously unidentified.

3. Evaluate surface waters such as streams, culverts and ditches for traces of sewage.

If needs are discovered as a result of these surveys, then alternatives must be evaluated for meeting these needs. If the selected alternatives should happen to be the extension of sewers from neighboring municipalities then it will be necessary to negotiate intermunicipal agreements which guarantee capacity in the neighboring Sewage Treatment Plants.

If the timing for finalizing agreements is not possible then letters of intent from both municipalities, stating that agreements will be completed, must be submitted and the date that the intermunicipal agreement will be finalized must be established in the implementation schedule.

The 120-day review period does not begin until the Department is in receipt of a completed submission.

Making these changes to the 537 Plan will require a new adoption of the Plan by the municipality. The Department must receive four (4) copies of all 537 Planning submissions.

If you have any questions concerning this letter, please contact me or Mr. Kevin McLeary at the above number.

Sincerely,

Robert S. Edwards
Sanitarian Sewage Specialist
Planning & Finance Section

RSE:kwm

Enclosure

cc: Motley Engineering

Amended Appendix A-22-b.4

MOTLEY ENGINEERING CO., INC.

CONSULTING ENGINEERS

Main Office:
1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

Branch Office:
30 main street
linfield, pa. 19468
ph. (215) 495-9939

March 18, 1992

Pennsylvania Historical and Museum Commission
Bureau of Historic Sites
P.O. Box 1026
Harrisburg, PA 17108

ATTN: Mr. Kurt Carr

RE: DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
Douglass Township, Berks County PA

Dear Mr. Carr,

Pursuant to the guidelines established by the Pennsylvania Department of Environmental Resources for the preparation of Official Sewage Plans, we hereby request that your office review the proposed Douglass Township and determine if there are any archaeological and/or historical site which should be identified within the proposed Douglass Township Act 537 Plan. It should be noted that this information is required under the Pennsylvania Sewage Facilities Act (Act 537). We have enclosed a location map of Douglass Township for your records.

We respectfully that your office provide this information as soon as possible. If you should have any questions regarding this request, please contact our office at 215-775-0888.

Sincerely

MOTLEY ENGINEERING CO., INC.

J. Jerome Skrincosky
Director of Planning Operations

cc: Douglass Township Board of Supervisors

D537-1

Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Post Office Box 1026
Harrisburg, Pennsylvania 17108-1026

RECEIVED
DATE MAY 1 1 1992
MOTLEY ENGINEERING CO. INC.
BY

April 30, 1992

Motley Engineering Co., Inc.
Attn: J. Jerome Skrincosky
1300 New Holland Road
Kenhorst, PA 19607

Re: ER# 92-1921-011-A
DER Act 537 Plan Update
Douglass Township
Berks County

Dear Mr. Skrincosky:

The Bureau for Historic Preservation has reviewed this State funded, assisted or licensed project under the authority of the Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 507 et seq. (1988). This review includes comments on the project's potential effect on both historic and archaeological resources. Our comments are as follows:

To date there are 4 recorded archaeological sites in Douglass Township, Berks County. The Pennsylvania Archaeological Site Survey numbers for these sites are listed below:

P.A.S.S. #'s 36 Bk 127, 128, 129, 635

36 Bk 127, 128, and 129 are prehistoric sites of which virtually nothing else is known at this time. None of these sites have been systematically surveyed by an archaeologist. 36 Bk 635 is a 19th century farmstead site which was identified during an archaeological survey. In addition to these known sites it is extremely likely that other prehistoric resources are present in areas adjacent to either an active or extinct water source, particularly at stream confluences. High probability areas for additional resources include locations along the Schuylkill River, Manatawney Creek and Ironstone Creek as well as areas adjacent to the several smaller unnamed tributaries present in Douglass Township.

In addition to archaeological resources, the historic structure indicated below is listed on the National Register of Historic Places:

Ironstone Bridge, L.R. 284, Farmington Ave. over Ironstone Creek

There is detailed historic and archaeological survey data available for your project area that can be of great assistance in identifying and evaluating cultural resources. This information is available in our office by appointment. Guidelines on how to conduct historic and archaeological surveys are also available from the Bureau for Historic Preservation.

If you need further information concerning historic structures please contact Susan Zacher at (717) 783-9920. If you need further information concerning archaeological resources please contact Mark Shaffer at (717) 783-9900.

Sincerely,

Kurt W. Carr

Kurt W. Carr, Chief
Division of Archaeology &
Protection

KWC/mds

Amended Appendix A-22-b.4

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

Main Office:
1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

Branch Office:
30 main street
linfield, pa. 19468
ph. (215) 495-9939

May 12, 1992

Douglass Township
Board of Supervisors
RD 2 Box 503
Boyertown, PA 19512

RE: DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
Municipal Adoption Process

Gentlemen:

Pursuant to your request, we have prepared an outline for the municipal adoption process for the Douglass Township Act 537 Plan Update. This proposed outline has been prepared in accordance with the guidelines established by the PA DER through Act 537. The following procedural steps must be executed by the Township:

1. The proposed Douglass Township Act 537 Plan Update must be revised in accordance with the initial PA DER review (Correspondence Dated 12-31-91).

2. It is our recommendation that an informal workshop should be held between our office and the Board of Supervisors to discuss all pertinent revisions to the Act 537 Plan.

3. Modifications shall be made to the Act 537 Plan if necessary.

4. A Public Meeting must be held by the Board of Supervisors to listen to comments from the public. It should be noted that this Public Meeting must be advertised.

5. After concluding the Public Hearing, the public will have a 30 day comment period to respond to the contents of the propose Act 537 Plan.

6. After the 30 day comment period, the proposed Act 537 Plan should be adopted by resolution by the Douglass Township Board of Supervisors and the Amity Township Board of Supervisors.

7. The proposed Act 537 Plan shall be forwarded to the PA DER for their final review and comment.

8. Upon approval of the Act 537 Plan, the Application for Sewage Facilities Planning Assistance should be completed by the Township and forwarded to the PA DER for their review. The Township will be reimbursed 50 percent of the total cost for preparing the approved Act 537 Plan Update.

If you should have any questions regarding this municipal adoption process for the Douglass Township Act 537 Plan, please contact our office at 215-775-0888.

Sincerely,

MOTLEY ENGINEERING CO., INC.

J. Jerome Skrincosky
Director of Planning Operations

cc: Richard Orwig, Esq.

DGLS5374

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

Main Office:
1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

Branch Office:
30 main street
linfield, pa. 19468
ph. (215) 495-9939

June 1, 1992

Pennsylvania Historical and Museum Commission
Bureau of Historic Sites
P.O. Box 1026
Harrisburg, PA 17108

ATTN: Mr. Kurt Carr

RE: DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
Douglass Township, Berks County PA
PA DER 537 Program ER 92-1921-011-A

Dear Mr. Carr,

Pursuant to the guidelines established by the Pennsylvania Department of Environmental Resources for the preparation of Official Sewage Plans, we are providing your office with a response to your review of the Douglass Township Planning Area. This review (Correspondence Dated 04-30-92) determined that there are four (4) known archaeological sites located within Douglass Township. It should be noted that three (3) of these recorded archaeological sites are prehistoric sites (PASS Nos. 36 BK 127, 128 and 129) of which virtually nothing else is known at this time. The other recorded archaeological site (PASS No. 36 BK 635) is a 19th century farmstead which was identified during an archaeological survey.

As a result of this determination, the Pennsylvania Historical and Museum Commission recommended that a Phase I survey should be conducted to precisely locate the archaeological site(s) in relationship to any proposed construction impacts. Based on all pertinent information, there will be no municipal wastewater treatment facilities proposed within the Township over the 20 year planning period, unless the Township obtains a grant to finance a minimum of 50 percent of the project costs. Should a 50 percent grant is obtained by the Township, there will be no construction impacts or encroachments on undisturbed land areas within the Douglass Township Planning Area. All proposed construction impacts and encroachments will be on previously disturbed areas of the Township. Therefore, since there are no proposed construction impacts, there will be no need to conduct a Phase I survey. It should be further noted that this assumption has been confirmed through telephone conversations between Motley Engineering Company and the Pennsylvania Historical and Museum Commission.

The Pennsylvania Historical and Museum Commission, has also determined that there are significant historical sites within Douglass Township. It should be noted that this information is described within the Douglass Township Comprehensive Plan Update. There are no municipal or community wastewater treatment facilities proposed within the Township over the 20 year planning period that will create a disturbance on existing and/or potential historical structures. Since there will be no construction impacts, the historical sites will not be disturbed.

In conclusion, there will be no construction impacts on any known archaeological resources or historical sites. The Township anticipates that most of the proposed subdivision and land development activity over the 20 year planning period will utilize on-lot sewage disposal technology. Therefore, any potential impacts to an archaeological resource or historical site will be discovered by completing a Planning Module for Subdivision and Land Development Activity.

If you should have any questions regarding the contents of this letter, please contact our office at 215-775-0888.

Sincerely

MOTLEY ENGINEERING CO., INC.

J. Jerome Skrincosky

J. Jerome Skrincosky
Director of Planning Operations

cc: Douglass Township Board of Supervisors

DGLS5375

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

Main Office:
1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

Branch Office:
30 main street
linfield, pa. 19468
ph. (215) 495-9939

July 22, 1992

Douglass Township
Board of Supervisors
RD 2 Box 503
Boyertown, PA 19512

RE: DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
Proposed Revisions, Additions and Modifications

Gentlemen:

Pursuant to your request, we have prepared an outline of the proposed revisions, additions and/or modifications to the Douglass Township Act 537 Plan Update (July 1992). These proposed revisions have been prepared in accordance with the guidelines established by the Pennsylvania Department of Environmental Resources through PA Act 537. The following Sections of the Plan have been substantially revised, added and/or modified:

Section 2.26	Pennsylvania Natural Diversity Inventory
Section 2.27	Archaeological and Historical Sites
Section 3.60	Hydrogeological Analysis
Section 4.50	Evaluation of On-Lot Sewage Disposal Systems Designed and Installed Prior to 1967
Section 5.00	Evaluation of Wastewater Treatment Needs
Section 6.30	Sewage Management Alternatives Field Testing Policy Physical Site Analysis Educational and Conservation Measures Septic Tank Maintenance
Section 6.40	Comprehensive Planning Alternatives Zoning Ordinance Update Subdivision/Land Development Ord. Update
Section 8.00	Selected Alternative Sewage Management Program Comprehensive Planning
Section 9.10	Implementation Schedule

It should be noted that the Township has conducted a Public Meeting in order to discuss the proposed Act 537 Plan Update. The residence of the Township have had 30 days to respond to the contents of the proposed Plan. It should also be noted that the proposed Plan has been reviewed by the Berks County Planning Commission, the municipalities effected by the proposed Plan, the Pennsylvania Historical and Museum Commission, and the Pennsylvania Department of Environmental Resources. Therefore, the Douglass Township Board of Supervisors have the option to adopt the proposed Plan by resolution. The adopted Plan should be forwarded to the Pennsylvania Department of Environmental Resources for final review, comment and approval. Upon the approval of the Act 537 Plan, the Application for Sewage Facilities Planning Assistance should be completed by the Township and forwarded to the PA DER for their review. Douglass Township will be reimbursed 50 percent of the total cost for preparing the approved Act 537 Plan Update.

If you should have any questions regarding this municipal adoption process for the Douglass Township Act 537 Plan, please contact our office at 215-775-0888.

Sincerely,

MOTLEY ENGINEERING CO., INC.

J. Jerome Skrincosky
Director of Planning Operations

DGLS5374

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

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30 main street
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ph. (215) 495-9939

August 3, 1992

Amity Township
Board of Supervisors
P.O. Box 215
Douglassville, PA 19518

RE: DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE

Gentlemen:

Pursuant to the guidelines of the Pennsylvania Department of Environmental Resources concerning Act 537 Planning and on the behalf of the Douglass Township Board of Supervisors, we hereby request that you adopt the Douglass Township Act 537 Plan by resolution. The purpose of this request is to avoid any potential wastewater treatment planning inconsistencies between Douglass and Amity Townships. It should be noted that the proposed Douglass Township Act 537 Plan Update is consistent with the existing Amity Township Act 537 Plan. This inter-municipal adoption process is required by the Pennsylvania Department of Environmental Resources.

The Township should be aware that the Douglass Act 537 Plan has identified certain areas in the southwestern portion of the Planning Area as having the capabilities to connect into the Amity Township Wastewater Treatment Collection System. It should be noted that this project will be economically unfeasible to implement unless the Township obtains a state grant to off-set 50 percent of the project costs.

If the Township does not adopt the Plan, future expansion of sanitary sewage lines from Amity Township into the Douglass Township Planning Area may not be permitted by the authority of the Pennsylvania Department of Environmental Resources. Enclosed, please find a sample resolution for municipal adoption. If you should have any questions regarding this request, please contact our office at 215-775-0888.

Sincerely,

MOTLEY ENGINEERING CO., INC.

J. Jerome Skrincosky
Director of Planning Operations

cc: Douglass Township Board of Supervisors
Richard Orwig, Esq.
A. Lee Levengood, Esq.

RECEIVED
DATE AUG 13 1992
MOTLEY ENGINEERING CO. INC.
BY

IN RE: : DOUGLASS TOWNSHIP
ACT 537 SEWAGE PLAN UPDATE : BERKS COUNTY
: BOARD OF SUPERVISORS

- - -

Stenographic Report of Hearing
Held on June 10, 1992
At the Douglass Township Municipal Building
Douglass Drive, R.D. 2
Boyertown, Pennsylvania

- - -

6:30 p.m.
June 10, 1992

- - -

BOARD MEMBERS PRESENT:

Steven J. Boettger, Acting Chairman
G. Jeffery Bealer, Member

- - -

ALSO PRESENT:

J. Jerome Skrincosky

APPEARANCES:

Thomas G. Parisi, Esquire — Township Solicitor
1815 Bernville Road
Reading, Pennsylvania

- - -

ACT 537 - SEWAGE PLAN UPDATE

MR. BOETTGER: We will call this public hearing, term it open, for the Douglass Township Act 537 Plan Update. And it's my understanding that this public hearing is to receive comments --

MR. SKRINCOSKI: That is correct.

MR. BOETTGER: -- from any interested party. And then after this evening, there will be a 30-day --

MR. SKRINCOSKI: There will be a 30-day comment period from the public.

MR. BOETTGER: I will turn the meeting over to Jerome.

MR. SKRINCOSKI: The Douglass Township Board of Supervisors in late 1989 hired our office to prepare an Act 537 Plan for Douglass Township. Douglass Township did not have an updated Act 537 Plan at the time.

What an Act 537 Plan technically is, is an official sewage plan for the township. It's how it's going to manage its waste water for a certain time period. The time period that was selected for this plan was 20 years.

ACT 537 - SEWAGE PLAN UPDATE

And it's to encompass the entire plan area which will be the limits of Douglass Township, Berks. The plan itself is divided into several sections. The first section is an introduction section.

The second section is a background and information section basically with the planning objectives and needs of the township; what documents were adopted by the township recently that would coincide with this document; and then also an identification of the growth areas by looking at the population and subdivision trends of the township.

The third section is a physical description of the planning area where we did a comprehensive analysis of soils, geology, topographical and drainage features. We looked at the boundaries of the one-hundred-year flood plan, the limits of the wetlands and also where high water table soils are located.

In addition to that, the township had conducted a detailed hydrogeological analysis of the ground water of the township. The township I believe surveyed 45 wells,

geographically spaced based on density.

The fourth section is an evaluation of existing waste water treatment facilities; where on-lot sewage facilities are located in the township; where holding tanks are located; where community facilities are located in the township or municipal facilities are located somewhere within the township.

This section also evaluated the existing regulations that the township abides by; which ordinances they adopted; and also looked at malfunctions that may have occurred in the last five years.

There's also an evaluation of on-lot sewage disposal systems that were designed and installed prior to 1967; where those systems were located; and if they were sited on certain physical limitations for development, such as the 100-year flood plan, wet lands, hazardous soils, which would be limestone or on steep slopes. So this section comprehensively analyzed that.

The fifth section dealt with the evaluation of waste water treatment needs. Basically the planning area was divided into seven

sections, and the seven sections were comprehensively analyzed based on their existing land use, their future land use potentials, what growth had occurred.

We did a better detailed evaluation of its physical development limitation in that particular section and also its capabilities for future waste water treatment.

The sixth section, after we knew all of the background information for the first five sections, the sixth section took a little planning in facilities alternatives.

For example, could municipal waste water collection lines be brought into the township? Could a mutual waste water treatment facility be located within the township? Could it be supported by a given density? Is there enough growth to support it?

We also looked at sewage management programs, and also non-structural comprehensive planning alternatives.

In addition to those subsections, we also analyzed the funding alternatives that might be needed to implement this

plan. So those are the alternatives that were looked at. We looked at quite a variety.

The seventh was an institutional evaluation. Basically, what type of township this is. As far as the sewage enforcement, how that's controlled and if there's any legal administrative activities that are required to implement this particular plan.

The eighth section was selective alternatives. That's where we looked at all the alternatives, and we selected what was best based on the needs of the township.

And the ninth section dealt with an implementation schedule of how the township was going to go about implementing the proposed plan.

So that's a brief explanation of the plan. The plan will be on file during the 30-day period, and it can be reviewed by the township residents.

What we do is we are going to ask the township residents to inspect it, and if they wish to comment, they provide those comments in writing to Douglass Township of its concerns or

objections to the plan or endorsement of plan.

There's still three minor issues that are to be resolved which need to be explained.

The first one deals with a possible rezoning of the R-1 District. The R-1 District would basically stay the same; however, instead of having one acre of minimum lots for on-lot water and sewer, the plan is proposing at this point a two-acre minimum.

The basis for that is explained throughout the plan. The Pennsylvania Department of Environmental Resources had indicated that based on what we had submitted to them prior to that, certain areas of the township, in particular the Colebrookdale area, the Douglassville area and the Pine Forge area could not support one-acre lots.

You can't get municipal waste water collection lines to those areas that would be economically feasible to the township, then you have to look at alternatives such as rezoning those areas.

Also the township's geological

features really do not support one-acre lots due to the yield of ground water.

The second issue would be the township at its workshop meeting that was advertised I guess about three or four weeks ago.

I had brought up a point that the township may want to consider a volunteer pumping program to ask the residents -- to try to attempt to educate the residents on the necessity to pump and clean their on-lot sewage disposal system.

That would be on a volunteer effort. The plan also looked at a mandatory type of pumping schedule also. But this was just brought to the township's attention.

They are going to be considering it through the course of this 30-day comment period. So that's another item that the public may want to keep in mind.

The third issue that's still open for debate is implementation schedule. We had brought up some points that are to be completed or attempted to be completed by certain dates.

For example, the rezoning of

the R-1 District should be conducted within an 18-month period. That's just one example. So there's several points and goals that the township has outlined in this plan.

At this point, the supervisors are still not dead set on those particular dates. So those dates may have some adjustment to them. That shouldn't interfere with the public's comments.

So at this point, first off, before we open it up to the public, I'd like to see if there's any question from the supervisors.

MR. BOETTGER: Personally, Jerome, I have none at this time. I think what you have gone over tonight is basically what we covered at the workshop. Pretty well it's an overview of what happened at the last workshop.

MR. BEALER: That's basically what I got out of everyone tonight, the same thing we have already covered.

I think something we might say, so we don't get people too fired up now, is that now we are not looking at this point to start ripping sewage disposal systems through the

township.

That's not what this plan is. It indirectly covers that in the future, but it's not saying right now that that's where we are going.

MR. SKRINCOSKI: Municipal waste water collection was evaluated, especially in the Douglassville area. However, it was determined that it was economically unfeasible unless the township obtained a 50 percent grant.

Based on the existing conditions or grants that are available from either the states or federal governments, it's just not available at this time.

This plan however, will be in effect for a 20-year period. If those grants ever become available, the township may be able to take advantage of them.

A lot of sewage treatment plants were started via that route. For example, Exeter Township, Robinson Township, Bernville. There's many plants that were started in the '60's and '70's based on grant availability.

And this plant, the township

would not be able to start today and proceed with it. That's a long-range plan. And at this point, it cannot be achieved without assistance.

So that's basically that. Now I guess what we can do right now is open the questions up to the public and also for comments for the record.

However, I just want to make it clear that there is a 30-day comment period. The planning commission is going to be meeting in July, and they will hopefully make a recommendation to the Board of Supervisors to adopt the plan or adopt a plan with conditions or reject the plan or defer it to their next meeting.

And the Board of Supervisors will meet in July, either second or fourth workshop meeting. I believe it will be advertised. And the board would adopt the plan by resolution.

So with all that in mind, I guess we can open the floor up at this point. You might want to state your name and your address for the record so the stenographer has it.

MR. BOETTGER: This is for public comments.

ACT 537 - SEWAGE PLAN UPDATE

MR. SKRINCOSKI: This is public comment for the record.

MS. CHOLT: My name is Gladys Cholt, C-h-o-l-t, Colebrookdale Road, 755? I'm so near the boarder there. It's wrong in the phone book. So anyway.

Are you waiting for me for a question?

MR. SKRINCOSKI: Yes.

MS. CHOLT: I had one and it flew out of my head. Well, you did answer the one, 20-year period. Well, that was to collect the grant. You must have a -- what did you mention about the --

MR. SKRINCOSKI: This will be a 20-year planning period, whereby the township is looking between 1992 and the year 2012 to implement the total scope of this plan.

If it's not implemented in 2012, then what the township does is it updates the plan again. It kind of works like a comprehensive plan for the municipality. Not everything works.

MS. CHOLT: Nothing's perfect. There is something. This has to do with

advertising. Not many people read that where you advertise your public notice for meetings and that. I'm sure of that.

Could that be done in a different way, more prominent somewhere in the paper?

MR. PARISI: It can, but the question there is the cost. Some notices are put in large block notices not in the legal notices section of classified. But if you are talking about a difference between -- I don't know what the cost would have been for this, but the cost for this probably was $30 to $50 for the ad.

To put in a large ad would cost $150, $200, $250, okay? So you are talking a cost question.

And legal notices, where they get put is in the legal notices classified section, so people who normally check that -- that's one thing that some people will always go and check the legal notices section.

If it's in a block ad, it depends if people read that section or not. For instance, if it's in the fashion section, I'm not

going to see it, because I'm going to skip over it. Some people, business, they are just going to skip over that section.

So you don't really know where to put it. With the legal classified, that's where any advertising with regard to government goes. So people do know to look there, but certainly a lot of people skip it.

MS. CHOLT: After all of this data has been collected and studied, when, in your opinion, would you say the DER would say enforce -- for the sake of a different word -- the sewage plan?

MR. SKRINCOSKI: That's a good question. The Department of Environmental Resources does not technically enforce this plan. They oversee the enforcement of the plan.

The township and the township's sewage enforcement officer attempts to regulate and enforce this plan.

DER, however, will evaluate the township's institutional methodology of implementing the plan. DER will receive this plan probably, I'm guessing, in early August, maybe late

July.

They have already had an initial look at the plan last year, and they technically have 120 days to review the plan. Usually on secondary submissions, they are a little faster with their time period.

They took the entire 120-day period at the previous one. However, we will meet with them directly and then submit it to them firsthand and note the changes, and hopefully, it will be a little bit faster.

MS. CHOLT: I think that's all I have then.

MR. BOETTGER: Any other comments, questions on the Act 537?

MR. STOUDT: Richard Stoudt, RD-2, Boyertown. This 537 plan, is this something that DER initiated?

MR. SKRINCOSKI: DER did not initiate it, but I might want to add that the township adopted Berks County Master Water and Sewer Plan in the early '70's.

Since that time, the county conducted two updates, the last being in 1979. The

ACT 537 - SEWAGE PLAN UPDATE

Pennsylvania Sewage Facilities Act requires each municipality to update and review it's Act 537 Plan in a five-year period.

DER has been cracking down on a lot of municipalities, not only to prepare an Act 537 Plan, but to initiate municipal waste water treatment facilities.

This bought the township a lot of time to evaluate the alternatives it would take to look at municipal waste water collection alternatives. If DER approves it, then DER is going to go by this timeframe that's set up within this plan.

So in essence, the township was complying with the requirements of Act 537.

MR. STOUDT: So in essence, they are following something that DER has set up?

MR. SKRINCOSKI: It's state law.

MR. STOUDT: DER is part of the state government?

MR. SKRINCOSKI: They regulate the --

MR. STOUDT: Then what we are

talking about now here is -- basically we are trying to implement a plan here that somebody has said that they have to meet their requirements. So it's still only a proposal at this time?

MR. SKRINCOSKI: At this time until it's adopted by DER, until it's approved by DER, I should say.

MR. PARISI: I can probably clarify that a little bit. The Act 537, which is called the Sewage Facilities Act was passed back in 1968 by the state. And Act 537 says that every municipality should have a plan like this, and it should be updated.

That's what requires us to have this plan. DER did not send us any letter, but they might have in the near future saying you haven't updated your plan like you are supposed to.

Therefore, we have prepared this draft of an updated plan. At this point, it's a draft. If it's passed by the Board of Supervisors after the period for public comment, which is the next day 30 days, in all probability, they will probably be looking at it three meetings from now after the planning commission also

reviewed it and has their comments.

If the Board of Supervisors approves it by resolution, it goes down to DER. If DER approves it, it then becomes officially the township's Act 537 Plan.

Now, DER has already seen the initial draft and had their comments with regard to that. And some of the things that are in this draft are based upon what DER told Jerome. Things that they think ought to be in there and things that were in that they thought should be different.

So this has been going on for the past two years.

MR. SKRINCOSKI: Another way of answering your question is, yes, they can mandate that. They did it next door at Amity Township. Amity Township's plan is at capacity. They did not have an updated Act 537 Plan.

Their first directive was to upgrade and expand their treatment plant and concurrently prepare an Act 537 Plan that's going to size the plant for a certain period of time.

So they prepared a plan similar to this in a hurry. They were under a

mandate.

MR. STOUDT: So we are talking about nothing more than a proposal now. Once it gets approved by the township, who's going to implement this plan? Who regulates; who enforces it?

MR. SKRINCOSKI: It will be the Township Board of Supervisors and the township through their directives to the sewage enforcement officer, through the planning commission, through its engineer.

There's a lot of role players in here. Probably the most vital person is the sewage enforcement office of the township.

MR. PARISI: I will point out, that has been occurring for as long as we have had a sewage enforcement officer.

His job is to make sure that all of the township ordinances with regard to sewage are enforced, which includes this plan, and portions of the comprehensive plan addresses that to some degree. The subdivision ordinance all address sewage.

He's been doing that. So

that's not going to change. Some of the things that he may do will change because of this plan.

And other things that have to be done to implement is there are requirements based upon the land in the township to amend the zoning ordinance and, I believe, the subdivision ordinance to reflect what actually could be done with regard to sewage in the township.

So those will be done by the township as far as the changes. Then the enforcement will basically be the same as it has been for the last 30 years.

MR. STOUDT: If the township doesn't enforce it, then DER does?

MR. PARISI: It will be enforced the same way it has been for the last 30 years.

MR. STOUDT: That's not what I asked. If the township doesn't, DER does?

MR. PARISI: DER oversees that the township is properly following.

MR. SKRINCOSKI: If they are not, then some type of citation, I'm sure, would be issued especially to the township sewage

enforcement officer.

MR. STOUDT: The plan that is presented now, will that be approved intact, or will there be modifications or deletions or anything?

MR. SKRINCOSKI: That's based on the public comment period and the three issues I stated that are still up in the air.

So the public comment period may or may not affect the plan that goes to the Department of Environmental Resources.

When the plan is adopted by resolution, if there were changes that were made to the plan that was on file at the township in the 30-day comment period, they will be identified.

MR. STOUDT: I think in your proposal you said that it's not really viable to have a municipal sewage system in the township unless they got at least 50 percent funding, outside funding.

MR. SKRINCOSKI: Right. That's correct.

MR. BOETTGER: Weren't you speaking about down by the areas that are outlined

in the plan, Douglassville --

MR. SKRINCOSKI: Yes, Douglassville, Colebrookdale, the Pine Forge area were all evaluated based on their abilities to extend municipal collection lines into the township.

We also contacted the adjacent municipalities, the Berks Montgomery system. They had no capacity, and they do not plan to expand. They wanted no parts of it.

Same thing with when we contacted West Pottsgrove and Pottstown Regional Waste Water Treatment Plant. Amity was cooperative. And that was -- put it this way. It was the most environmentally sound and economically and engineering wise possible to complete that plan.

We looked at going in more or less bucking grade and going into the Amity plant. However, when the costs were all added up, the project costs, to implement the project, it was not economically feasible unless the township obtained a grant of at least 50 percent to offset the project cost.

ACT 537 - SEWAGE PLAN UPDATE

MR. STOUDT: Now, let me back up a little bit. You said the plan wasn't feasible unless they got at least 50 percent assistance from somewhere. Does that mean only for those three specific areas?

MR. SKRINCOSKI: Just for that Douglassville area. The other areas would need grants also to offset it, but probably much more substantial grants, maybe 75 percent.

But you are looking at areas that cannot be sewer based on the topography. So it can't be really done on an engineering standpoint, nor do you have any cooperation from the adjacent municipalities.

MR. STOUDT: Maybe my next question may be directed at Tom. Can DER, if we approve this plan force you into a municipal sewage system without the 50 -- or what he wants to say now for the rest of the township -- 75 percent funding if they don't provide it?

MR. PARISI: Not currently. Under current law they couldn't force any type of municipal waste water treatment plants or connection to another plant without the funding,

and the funds are not currently available.

MR. STOUDT: They would have to provide the funding?

MR. PARISI: Presumably the funding would come from the state. It could be from DER or it could be from somewhere else as far as the state, as far as grants.

Traditionally, with most of the existing sewer systems, there was a lot of funding in the late '60's and early '70's that were grants that came actually from the federal government to the state government, and the state government then distributed them to municipalities.

That disappeared in the '80's, so there isn't any funding available, but no, they cannot force the township to do some type of waste water treatment without providing appropriate funding.

MR. STOUDT: Now, let's go a little deeper.

MR. SKRINCOSKI: I believe you had about fifteen minutes so far. Let's just go back to see if anyone has any other comments, and we will come back to you. The meeting is supposed

to start at 7:00 o'clock.

Does anyone else have any comments? Okay, you have it back. I just wanted to give everybody a chance.

MR. STOUDT: I want to give everybody else a chance, too. I wish somebody would ask more questions. Maybe if I ask some dumb ones, I will stimulate somebody.

MS. CHOLT: No question is dumb. Remember that.

MR. STOUDT: We are talking about municipal sewers now. Can DER force an individual on-site sewage system if we pass this thing with a minimum of 50 percent outside funding? Can they force you, an individual lot owner, with an on-site system to correct or update yours?

MR. SKRINCOSKI: If it's malfunctioning?

MR. STOUDT: What, hell, we are talking about malfunctioning systems all over, aren't we? I mean that's the reason we are into this plan because of malfunctions.

MR. SKRINCOSKI: If the system is malfunctioning, the sewage enforcement officer

goes out and investigates the problem.

If it is determined that it is a malfunction, the sewage enforcement officer files a report not only with the township, and DER, but also the property owner and tells them to correct the problem. So that doesn't change.

MR. STOUDT: If you got a system that can't be corrected, what do you do?

MR. SKRINCOSKI: There's all sorts of alternatives the sewage enforcement officer goes over with the property owner. I believe your question is then would the sewage enforcement officer of the township -- you might want to ask him that question because there's a variety of alternatives.

MR. STOUDT: If the alternative is municipal sewers, if it's accessible to that particular site, yes, and that's happened in the township.

MR. BOETTGER: We had that incident, if you remember, Dick, over in West Pottsgrove. The people were, from myself to you, from the manhole luckily, and we had to pull teeth to get West Pottsgrove to agree to hook that one

property up because of a malfunctioning system.

MR. SKRINCOSKI: I can safely say that the rest of the residents in this township are not so lucky.

MR. STOUDT: I realize that. That's why I'm asking these questions.

MR. SKRINCOSKI: If you are not located that close, DER would have never stepped in at the junction and forced West Pottsgrove into requiring them to hook them in.

MR. STOUDT: What I'm worrying about is whether or not the DER is going to come in here and force the township to go municipal sewers as the only recourse if the funding is not there.

MR. SKRINCOSKI: On an individual basis, no.

MR. STOUDT: If an individual has a problem and the only solution to the individual problem is to put municipal sewers in -- do you understand where I'm coming from?

MR. PARISI: This plan is not going to change what DER can or cannot do with regard to individual systems. I think, one, we are getting way outside of this plan.

But, yes, DER basically, if you have a malfunctioning system, DER can order and make an individual have a functioning system, or you cannot produce any waste water on the property.

Now, worst case scenarios is if you cannot put a functioning system on that property is that you have a holding tank, and it's taken away. That's a worst case scenario, and nobody wants to see that. Economically no one that I'm aware of does that.

That is a possibility. Okay, but usually there's a solution that can be found. Often though, it's not uncommon that a system has to be either fixed or replaced.

MR. STOUDT: I can understand that.

MR. SKRINCOSKI: This plan goes to DER, and they are going to evaluate, and they are either going to concur or not concur with our findings on that particular topic.

That's as far as that scope goes. You can't foresee everything in a crystal ball at this time what's going to happen.

MR. PARISI: Are there any

other comments at this time? So that everyone knows, you can make written comment which should be sent here to the township building any time within the next 30 days.

And the supervisors have to look at those comments and consider them as far as any revisions before acting on this plan.

MR. BOETTGER: If there's no other questions then I'll close the public hearing on the Act 537, and we will take a brief recess and then we will start the public meeting.

(At 7:00 p.m. proceedings were concluded.)

ACT 537 - SEWAGE PLAN UPDATE

C E R T I F I C A T E

I hereby certify that the proceedings and evidence are contained fully and accurately in the notes taken by me in the above cause and that this is a correct transcript of the same.

_____
KATHLEEN M. ROVITO
Official Court Reporter

RESOLUTION FOR PLAN REVISION

RESOLUTION OF THE SUPERVISORS OF AMITY TOWNSHIP, BERKS COUNTY, PENNSYLVANIA (hereinafter "the municipality").

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537, known as the "Pennsylvania Sewage Facilities Act," as amended, and the Rules and Regulations of the Department of Environmental Resources (Department) adopted thereunder, Chapter 71 of Title 25 of the Pennsylvania Code, requires the municipality to adopt an Official Sewage Facilities Plan providing for sewage services adequate to prevent contamination of waters and/or environmental health hazards with sewage wastes, and to revise said plan whenever it is necessary to meet the sewage disposal needs of the municipality, and

WHEREAS, the DOUGLASS TOWNSHIP, BERKS COUNTY has prepared a ACT 537 PLAN UPDATE which provides for sewage facilities in a portion of DOUGLASS Township, and

WHEREAS, AMITY Township finds that the Facility Plan described above conforms to applicable zoning, subdivision, other municipal ordinances and plans and to a comprehensive program of pollution control and water quality management.

NOW, THEREFORE, BE IT RESOLVED that the Supervisors of the Township of AMITY hereby adopt and submit to the Department of Environmental Resources for its approval as a revision to the "Official Plan" of the municipality, the above referenced Facility Plan. The municipality hereby assures the Department of the complete and timely implementation of the said plan as required by law. (Section 5, Pennsylvania Sewage Facilities Act as amended).

I, JOHN C. KARST, Secretary, of the AMITY Township Board of Supervisors, hereby certify that the foregoing is a true copy of the Township's Resolution No. 80392, adopted AUGUST 3, 1992.

AUTHORIZED SIGNATURE

D. Gene Weller

TOWNSHIP SEAL

RESOLUTION NO. 18 -1992

ACT 537 (PENNSYLVANIA SEWAGE FACILITIES ACT) PLAN REVISION

RESOLUTION OF THE SUPERVISORS OF DOUGLASS TOWNSHIP, BERKS COUNTY, PENNSYLVANIA ("THE MUNICIPALITY").

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537, known as the "Pennsylvania Sewage Facilities Act", as amended, and the Rules and Regulations of the Department of Environmental Resources (Department) adopted thereunder at Chapter 71 of Title 25 of the Pennsylvania Code, requires the municipality to adopt an Official Sewage Facilities Plan providing for sewage services adequate to prevent contamination of waters and/or environmental health hazards with sewage wastes, and to revise said plan whenever it is necessary to meet the sewage disposal needs in the municipality, and

WHEREAS, Douglass Township, Berks County, has prepared an Act 537 plan which provides for sewage facilities in a portion of Douglass Township, Berks County, and

WHEREAS, Douglass Township, Berks County, finds that the Facility Plan described above conforms to applicable zoning, subdivision, other municipal ordinance and plans, and to a comprehensive program of pollution control and water quality management;

NOW, THEREFORE, BE IT RESOLVED, that the Supervisors of the Township of Douglass, Berks County, hereby adopt and submit to the Department of Environmental Resources for its approval as a revision to the "Official Plan" of the municipality, the above-

LAW OFFICES O'PAKE, MALSNEE & ORWIG, P.C.

referenced Facility Plan. The municipality hereby assures the Department of the complete and timely implementation of the said plan as required by law.

BOARD OF SUPERVISORS OF DOUGLASS TOWNSHIP, BERKS COUNTY, PENNSYLVANIA

Mark C. Scott, Chairman

Stephen Boettger, Supervisor

G. Jeffrey Bealer, Supervisor

I, Joan Adams, Secretary of Douglass Township, Berks County, do hereby certify that the foregoing is a true copy of the Township's resolution No. 1992-18, adopted July 22, 1992.

Joan D. Adams
Secretary

Township Seal

LAW OFFICES O'PAKE, MALSNEE & ORWIG, P.C.

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

Main Office:
1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

Branch Office:
30 main street
linfield, pa. 19468
ph. (215) 495-9939

August 10, 1992

Commonwealth of Pennsylvania
Department of Environmental Resources
Water Quality Management Program
Southcentral Region (Harrisburg)
One Ararat Boulevard Room 126
Harrisburg, PA 17110

ATTN: Robert S. Edwards

RE: DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
Plan Resubmission (PA DER Correspondence 12-31-91)

Dear Mr. Edwards,

On behalf of the Douglass Township Board of Supervisors, we are pleased to officially transmit herewith, four (4) copies of the Douglass Township (Berks County) Act 537 Plan Update for your review and comment. The proposed Plan was prepared in accordance with the Pennsylvania Sewage Facilities Act (Act 537) and the guidelines established by the Pennsylvania Department of Environmental Resources. This Act 537 Plan Update will function as the Official Sewage Plan for the Township for the proposed 20 year planning period. Please note that the Act 537 Plan is being resubmitted pursuant to your original review (Correspondence Dated 12-21-91). All Exhibits have been previously submitted.

Motley Engineering Co., Inc. would appreciate an expeditious review of this Act 537 Plan Update in order for Douglass Township to proceed with the implementation of the proposed Plan. If you should have any questions regarding this Act 537 Plan Update, please contact me at 215-775-0888.

Sincerely,

MOTLEY ENGINEERING CO.,INC.

J. Jerome Skrincosky
Director of Planning Operations

cc: Douglass Township Board of Supervisors
Amity Township Board of Supervisors
Richard Orwig, Esq.

pader5

CERTIFIED MAIL:

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

Main Office:
1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

Branch Office:
30 main street
linfield, pa. 19468
ph. (215) 495-9939

August 26, 1992

Commonwealth of Pennsylvania
Department of Environmental Resources
Water Quality Management Program
Southcentral Region (Harrisburg)
One Ararat Boulevard Room 126
Harrisburg, PA 17110

ATTN: Robert S. Edwards

RE: DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
Plan Resubmission (PA DER Correspondence 12-31-91)

Dear Mr. Edwards,

It has recently come to our attention that the Douglass Township Act 537 Plan Update (July 1992) is missing the following items:

1. The "Needs Analysis Chart" from Appendix D

2. The original resolution adopted by the Douglass Township Board of Supervisors.

Please note that the complete Douglass Towship Act 537 Plan was submitted to the Department of Environmental Resouces for review and comment on August 10, 1992. On behalf of Motley Engineering Company, please excuse this submission error. If you should have any questions regarding this Act 537 Plan Update, please contact me at 215-775-0888.

Sincerely,

MOTLEY ENGINEERING CO.,INC.

J. Jerome Skrincosky
Director of Planning Operations

cc: Douglass Township Board of Supervisors
Richard Orwig, Esq.

pader5

SOUTHCENTRAL REGION - FIELD OPERATIONS
Water Management Program
One Ararat Boulevard
Harrisburg, Pennsylvania 17110
(717) 657-4590
November 2, 1992

Douglas Township
c/o Ms. Joan E. Adams
R.D. #2, Box 503
Boyertown, PA 19512

Re: 537 Planning
Douglas Township, Berks County

Ladies and Gentlemen:

The DER has reviewed your Act 537 Plan dated July 1992 and has found it to be incomplete for the following reasons:

1. It appears that your needs analysis was based primarily on a desk top review and not on a detailed field verified survey analysis. Your consultant utilized mapping that did not specify individual houses and problems which is insufficient detail to prepare a proper needs analysis. While the mapping may be sufficient to identify general problem areas, a field survey will be necessary to confirm the problems and arrive at a workable solution. Maps showing houses should be plotted on a 1"-1,000' scale and should be based on needs areas and not stream basin areas. The areas along the Philadelphia Pike and Franklin Highway are additional needs areas as evidenced by the display of on-lot constraints and the attached water survey conducted by the Department. This area exhibits severe public health concerns and should be sewered immediately.

2. Your Plan has identified needs areas and must have a solution for dealing with these needs. Your implementation schedule must reflect the solution of these problems and not be contingent upon outside funding sources or grants.

3. Once you have completed a proper needs analysis, it will be necessary to revise all other items in your Act 537 Plan to reflect any changes. This will include an analysis of alternatives and a chosen solution for each immediate and five (5) year sewer service area.

4. Any sewer extensions agreed upon by adjoining municipalities will require that intermunicipal agreements be completed and submitted as part of this planning action.

The 120-day review period for your plan does not begin until we are in receipt of a complete submission.

If we do not receive a response to this letter within 60 days the Department will take action on your current submission.

Please submit four (4) copies of your submission in order to expedite the review process.

If there are any questions concerning this letter, please contact me or Mr. Kevin McLeary at the above number.

Sincerely,

RSE

Robert S. Edwards
Sanitarian Sewage Specialist

RSE:vlb

cc: Motley Engineering Company, Inc.

Kevin McLeary thru Edward Corriveau
Timothy Finnegan
Reading District Office
File
T —

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

Main Office:
1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

Branch Office:
30 main street
linfield, pa. 19468
ph. (215) 495-9939

February 9, 1993

Commonwealth of Pennsylvania
Department of Environmental Resources
Water Quality Management Program
Southcentral Region (Harrisburg)
One Ararat Boulevard Room 126
Harrisburg, PA 17110

ATTN: Jim Novinger

RE: DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
DOUGLASS TOWNSHIP, BERKS COUNTY

Dear Mr. Novinger,

This letter is in response to the Pennsylvania Department of Environmental Resources (PA DER) review of the Douglass Township Act 537 Plan Update (July 1992). It should be noted that this review was issued by the DER on November 2, 1992. Based on the contents of this review letter, we offer the following comments for your consideration:

In regards to Comment No. 1, Sections 4.50, 5.10, 5.20, 5.30 and Appendix D of the Act 537 Plan provides an analysis of the wastewater treatment needs of Douglass Township. This "needs analysis" was conducted by our office as follows:

1. Maps depicting the physical features (soils, geology, topography, drainage basins and floodplains) of the Township were reviewed in order to identify areas which may have certain limitations for on-lot sewage development.
2. A hydrogeological analysis of the Township was conducted in order to evaluate groundwater quality and determine the presence of groundwater contamination.
3. Maps depicting land use characteristics (zoning designations, subdivision/land development activity, existing land use patterns and aerial photographs) were reviewed in order to identify any potential impacts associated with future land development activity.
4. Records pertaining to sewage enforcement activity (permits issued by type and on-lot sewage malfunctions) were evaluated in order to determine areas which may have limitations for on-lot sewage development.
5. On-lot sewage disposal systems designed and installed prior to 1967 were identified and evaluated in order to determine their functional operation.
6. Based on the information collected and analyzed through procedural steps 1-5, eleven (11) potential problem areas for on-lot sewage disposal technology were identified within the Township.

7. A windshield survey of the 11 potential problem areas was conducted in order to determine the size and severity of the identified problem area.
8. Based on the information collected from the windshield survey, it was concluded that the following unincorporated areas of the Township should be examined in further detail:

Village of Little Oley
Village of Greshville
Village of Pine Forge
Village of Douglassville

9. A random on-site inspection of the on-lot sewage disposal systems was conducted in order to determine the functional operation of systems within the four (4) identified problem areas of the Township. It should be noted that the random on-site inspection of the problem areas consisted of a visual analysis and survey of 10 percent of the systems within the zones.
10. A detailed analysis and inspection was conducted on five (5) on-lot sewage disposal systems within each of the four (4) identified problem areas of the Township. In total, twenty (20) on-lot sewage disposal systems were selected and analyzed. It should be noted that the systems were randomly selected based on their estimated age, proximity and physical site conditions.
11. The Township was then divided into seven (7) Study Areas by delineating boundaries according to drainage basins, physical barriers and/or municipal borders. Each of the Study Areas were analyzed in terms of its geographic location, size (acres), zoning, land use, growth potential, soils, geology, topography, drainage basins, hydrogeology, and the functional and economical feasibility to provide municipal wastewater treatment. This breakdown has enabled the Township to determine which drainage basins have the highest needs for wastewater treatment and management.
12 In order to document the wastewater treatment needs within Douglass Township, a "Needs Analysis Chart" (Appendix D) was completed by the Township. The Needs Analysis Chart was completed through a review of the Sewage Enforcement Officers records, sewage permits, tax records, building permits, approved subdivision plans, land use maps and aerial photographs.
13. Based on the information collected and analyzed through procedural steps 6-12, it was determined that the unincorporated area of Douglassville had the highest needs and capabilities for municipal wastewater treatment.
14. Sections 6.10, 8.11 and 9.10 of the Plan outlines and examines the feasibility of extending municipal wastewater collection lines from Amity Township to the unincorporated area of Douglassville.

Based on a review of procedural steps 1 through 14, we feel that the analysis of the wastewater treatment needs of Douglass Township was based on much more than a "desk top review". Although the mapping within the Plan is at a reduced scale, it does contain sufficient detail in order to identify individual problem areas within the Township. Since the unincorporated area of Douglassville appears to have the highest needs and capabilities for municipal wastewater treatment, our office will plot the individual houses and business operations within this area on a map with a scale of 1"=800'.

The PA DER should be aware that our office has recently (February 25, 1993) received a copy of the water study conducted by the PA DER in January of 1992. Our office will attempt to explore additional wastewater treatment alternatives in an attempt resolve the public health concerns expressed by the PA DER.

In regards to Comment No. 2, Sections 6.10, 6.20, 6.30, 6.40, 6.50 and 6.60 of the Plan evaluates all pertinent wastewater planning and facility alternatives. These Sections examine alternatives relative to wastewater collection and conveyance, on-lot sewage disposal technology, sewage management programs, comprehensive planning and funding options. The identified alternatives within these Sections of the Plan are based on the wastewater treatment needs of Douglass Township. Section 8.10 of the Plan provides a comprehensive summary of the recommended plan and Section 9.10 of the Plan outlines the implementation schedule. As noted within the Plan, it is economically unfeasible to to implement a portion of the Plan unless outside funding sources and grants are available. However, many of the solutions identified within the Plan are not contingent upon the availability of outside funding sources and grants. This issue will be examined by our office in further detail.

In regards to Comment No. 3, it is our contention that a proper analysis of the wastewater treatment needs of Douglass Township was conducted by our office. As noted in our response to Comment Nos. 1 and 2, we will attempt to explore additional wastewater treatment alternatives in the unincorporated area of Douglassville.

4. In regards to Comment No. 4, Section 9.10 of the Plan outlines the implementation schedule to be followed by the Township. It should be noted that the requirements for intermunicipal agreements are discussed within this Section of the Plan.

It is our intention to resolve these issues in a timely fashion. As you are aware, we have scheduled a meeting with the PA DER on Wednesday, March 17, 1993 in order to discuss the contents of the Plan in further detail. If you should have any questions regarding this response, please contact me at 215-775-0888.

Sincerely,

MOTLEY ENGINEERING CO.,INC.

J. Jerome Skrincosky
Director of Planning Operations

cc: Douglass Township Board of Supervisors
Thomas Parisi, Esq.

PADER9

CERTIFIED MAIL: P 342 698 424

The Mercury

PROOF OF PUBLICATION OF NOTICE

Under Act No. 587, Approved May 6, 1929

STATE OF PENNSYLVANIA
COUNTY OF MONTGOMERY SS:

Mary Ann Edleman, of The Mercury, of the County and State aforesaid, being duly sworn, deposes and says that The MERCURY, a newspaper of general circulation published at Hanover and King Streets, Borough of Pottstown, County and State aforesaid, was established September 29, 1931 since which time The Mercury has been regularly issued in said County, and that the printed notice of publication attached hereto is exactly the same as printed and published in the regular editions and issues of the said MERCURY on the following dates, viz.

October 2, 9, 1993

Affiant further deposes that he/she is duly authorized by Barry Hopwood, Publisher of said MERCURY, a newspaper of general circulation, to verify the foregoing statement under oath, and affiant is not interested in the subject matter of the aforesaid notice of advertisement, and that all allegations in the foregoing statements as to time, place and character of publication are true.

Mary Ann Edleman

Mary Ann Edleman, Asst. CAM

Sworn to and subscribed before me this 14th day of October 1993

Cindy L Eisenhauer

Notary Public

My Commission Expires: _____

COPY OF NOTICE OF PUBLICATION

NOTICE TO DOUGLASS, BERKS RESIDENTS

Douglass Township, Berks County will hold a public hearing for the purpose of soliciting public comment regarding the Douglass Township Act 537 Plan Update of September, 1993. The Act 537 Plan Update has been prepared to comply with the Pennsylvania Department of Environmental Resources requirements regarding sewage facilities planning. The selected alternatives will become the foundation for the Official Sewage Plan for Douglass Township that will function as a Regulatory Plan for resolving wastewater treatment needs and management problems. The public hearing is scheduled for Thursday, October 14, 1993, at 7:00 PM in the Pine Forge Elementary School. Copies of the plan are available for review at the township building located on Douglass Drive between the office hours of 9:00 AM to 1:00 PM Monday through Friday.

Joan E. Adams

Notarial Seal
Cindy L. Eisenhauer, Notary Public
Pottstown Boro, Montgomery County
My Commission Expires Feb. 1, 1997
Member, Pennsylvania Association of Notaries

JAN-27-'94 THU 15:43 ID:DOUGLASS TWP TEL NO:215 367 0360 #259 P07

No._____ Term, 19 _____

Proof of Publication of Notice in the Boyertown Area TIMES

Under Act No. 587, Approved May 16, 1929
(Amended April 24, 1931 P.L. 67 No. 51)

STATE OF PENNSYLVANIA }
COUNTY OF BERKS } ss:

Copy of Notice of Publication

NOTICE TO DOUGLASS, BERKS RESIDENTS

Douglass Township, Berks County will hold a public hearing for the purpose of soliciting public comment regarding the Douglass Township Act 537 Plan Update of September, 1993. The Act 537 Plan Update has been prepared to comply with the Pennsylvania Department of Environmental Resources requirements regarding sewage facilities planning. The selected alternatives will become the foundation for the Official Sewage Plan for Douglass Township that will function as a Regulatory Plan for resolving wastewater treatment needs and management problems. The public hearing is scheduled for Thursday, October 14, 1993, at 7:00 p.m. in the Pine Forge Elementary School.

Copies of the plan are available for review at the township building located on Douglass Drive between the office hours of 9:00 a.m. to 1:00 p.m., Monday through Friday.

Joan E. Adams
Secretary/Treasurer

JAMES C. WEBB, of the County and State aforesaid, having been duly sworn, deposes and says: That he is PUBLISHER of the Boyertown Area TIMES, a newspaper of general circulation, published at Boyertown, County and State aforesaid, established June 15, 1857; and that the printed notice or publication attached hereto is exactly as printed in the regular issues of the Boyertown Area TIMES on the following dates:

September 30th and

October 7th, A.D. 19 93

Affiant further deposes that he is not interested in the subject matter of the aforesaid notice or advertisement, and that all of the allegations of the foregoing statements as to time, place and character of publication are true.

James C. Webb, Publisher

Sworn to and subscribed before me this 8th

day of October, 19 93

Ramona C. Peifer

My commission expires: Notary Public

Notarial Seal
Ramona C. Peifer, Notary Public
Earl Twp., Berks County
My Commission Expires Jan. 29, 1994

-2035
l/p 92
ajl

IN RE: Act 537 HEARING ON PROPOSED SEWER : DOUGLASS TOWNSHIP-BERKS COUNTY : BOARD OF SUPERVISORS

Stenographic Report of Hearing
Held on October 14, 1993,
at Pine Forge Elementary School,
Pine Forge Road, Pine Forge
Berks County, Pennsylvania.

- - - - -

7:10 p.m.
Thursday,
October 14, 1993

BOARD MEMBERS PRESENT:

Mark C. Scott, Chairman
G. Jeffrey Bealer, Member

ALSO PRESENT:

Thomas J. Motley, Jr.
Jerome Skrincosky
Pamela J.S. Hertneky

Audry J. Leister, Court Reporter
1689 NORTH CHARLOTTE STREET
POTTSTOWN, PENNSYLVANIA 19464
PHONE
(215) 323-2478

ORIGINAL

understanding as a Board of Supervisors that the proposed project is a mandatory one under DER guidelines, and therefore I ask you to pay very special attention to the presentation you are about to hear.

Again, welcome to the meeting, and now I'll turn the mike over to Motley Engineering. Thank you.

MR. SKRINCOSKY: Thank you, Mark. My name is Jerome Skrincosky, and I'm with Motley Engineering. And on behalf of the Board of Supervisors and our office, I would like to thank you for coming out tonight to listen to the presentation.

The purpose of the Public Hearing is to consider the adoption of the, what's called an official Sewage Plan, which is required under Pennsylvania Act 537. And on the first page of the Plan, I'd just like to spend a moment just to read what the purpose and objective of the Act 537 Plan is.

The purpose of this Act 537 Plan update is to comply with the Pennsylvania Department of Environmental Resources, Act 537 Planning Requirements, regarding sewage facilities planning. The planning objectives will analyze and identify potential waste water treatment alternatives based on existing and future waste water treatment needs for the Douglass Township planning area.

The selected alternatives will become the

foundation for the official sewage plan for Douglass Township, and will function as a regulatory plan for resolving waste water management problems associated with development; and will provide guidance for a new procedures and ordinances incorporated by the Township.

The length of the planning period for this Act 537 Plan update will be 20 years.

Now, a lot of you are saying, well, what goes into an Act 537 Plan to judge on what the Township should provide as far as waste water treatment. What you have to do is identify the waste water treatment needs of the municipality, and then review the alternatives to solve those needs.

So in essence, the Plan itself consists of many sections. The first section really is oriented towards an introduction section on what the purpose of and objective of the Plan is, the background, and in general, what Act 537 planning is.

The second section is a background information section. This analyzes the objectives and needs. The planning documents that were adopted under Pennsylvania Act 247, such as the Comprehensive Plan, Zoning Ordinance, and Subdivision Ordinance, and identification of where the growth areas are in the Township.

The third section is a physical description of

the planning area, in essence a complete inventory of the physical makeup of the Township. So, comprehensive review of the soils, the geology, the topography, the drainage basins, the floodway controls, and also the Township had conducted a hydrogeological analysis to examine ground water contamination.

The next section is evaluation of existing waste water treatment facilities. What the Township has in place as far as its existing facilities.

Whether it be a collection system for municipal sewage or on-lot systems, where the holding tanks are located, and also where, say, community facilities are located.

This section also takes an analysis of malfunctioning systems, an analysis of municipal regulations, and an evaluation of on-lot sewage systems that were designed and constructed and installed prior to 1967. These are termed preregulatory systems.

The fifth section is a comprehensive evaluation of waste water treatment needs. What the Township did was broke the entire planning area into individual study areas to take a closer examination of the areas.

What was developed then was a needs analysis chart, which is required by Penn Vest; an evaluation of the existing on-lot systems was then conducted. And a

summary of waste water treatment needs was provided in that section.

Based on this information, it was then possible to evaluate the planning and facility alternatives. What was done was, the Municipality took a look at municipal waste water collection and treatment alternatives, alternatives relative to on-lot sewage -- alternatives relevant to sewage management programs, alternatives relevant to nonstructural comprehensive planning.

The Township also looked at a no action policy; and also an analysis of funding alternatives, in order to implement whatever alternatives were identified prior.

The seventh section is an institutional evaluation. Basically, how the Municipality would have to implement certain alternatives.

The eighth section is a selected alternative. Based on all the previous facts, what would be the best plan to resolve the waste water treatment needs, and problems, within Douglass Township.

And the ninth section is an implementation schedule, how the Plan is to be implemented over the 20-year time period.

The planning for this Act 537 Plan has been very lengthy. The last review that was conducted by the Pennsylvania Department of Environmental Resources was on

November 2nd, 1992. This review is included within the Plan.

And what the Pennsylvania Department of Environmental Resources had directed Douglass Township was to evaluate specific alternatives relevant to municipal sewage in the Douglassville area.

This was based on a surface water investigation that was conducted by the Reading District Office of the Pennsylvania Department of Environmental Resources in January of 1992, which revealed significant ground water contamination in the Douglassville area.

What the Department had instructed our office to do at that time was to conduct an on-lot sewage disposal survey, which is what we termed a Phase One evaluation of the Douglassville area. This is where our Sewage Enforcement Officers went out and did a detailed on-lot investigation of all the on-lot systems in the Douglassville area.

186 sites were evaluated. Based on the results of that, there were 9 possible sites that could be a possible malfunction. And there are also 23 definite preregulatory designs.

After we conducted the Phase One evaluation, we met with the Department of Environmental Resources and the Board of Supervisors to discuss these results.

The Department of Environmental Resources had then again instructed the Township to look at all alternatives for municipal sewage for the Douglassville area based on the previous results.

So, what we did was, we had to examine the waste water treatment and collection alternatives, what the Township would be left with as the only viable alternative that DER would accept under this Act 537 planning process.

I'd like now to turn the podium over to Pamela Hertneky from our office, who assisted in the development of the alternatives.

MS. HERTNEKY: Thank you, Jerome.

Hello. For those of you who didn't hear, it was Pamela Hertneky. I'm a Professional Engineer, and I work at Motley Engineering. And what I did was basically concentrate on the two study areas. It's called study area one and study area two.

And for those of you who have looked at the map, it involves a region, Douglass Drive, Mary Lane, Cedar Lane, Squirrel Hollow Road, Old Philadelphia Pike, and the Ben Franklin Highway, or Old 422.

And that was the basic portion of study areas one and two. And there were two specific alternatives that I investigated. And I'll go into a little

background to explain before I get into the details of the alternatives.

There are several types of sewage treatment systems that Municipalities have in place or will look into for designing purposes. One of them is called a standard gravity system. And what that involves is somewhat of a deep line, basically standard 8 feet. And that helps to service your basement.

So, if you have a toilet down there or a shower, etc., you can get your sewage flow out. So, standard gravity then takes your sewage flow, and by gravity, which means from point A to point B, it just flows regularly. Under no pressure, under no pumps or anything of the sort.

That is a very common system. It has very low maintenance and minimal headaches on the Municipalities' part.

Another alternative type collection system is called small diameter gravity. And what that is, it's a very shallow small pipie, it's usually three feet, four feet, right around where your water line would be. But it saves on costs, on excavation. Functions the same as your standard gravity, it's just not as deep.

And in the situations where you might have a lot of rock in your roadways or situations like that,

it's very cost effective. Part of the problem, though, with small diameter is, you don't necessarily guarantee basement service. But it's a very cost effective collection system.

It's also not a headache end. In other words, it's a very minimal maintenance as well. Then you get into the systems that are called pressure systems; force mains, pump stations, and low pressure.

A forced main is a section of pipe that's connected on one end to a pump station. And this pump station, with the pumps, puts the sewage flow under pressure and forces it to the treatment plant, or to the manhole, or to some portion of the system.

A low pressure system has miniature pumps at each of the, you could say business or home. And each of these miniature pumps puts pressure on the sewage flow.

It's not one big pumping station. It's many mini pumping stations. And then the regular pump station that you would have in a situation for a force main is a large pump station, either submersible pumps, where they're below grade in the sewage flow, or aboveground pumps.

So, that's a little background, because I'm going to be discussing all of those different types of systems. So, if there's any questions, you can pick my

brain then later about those, if you didn't quite understand it.

I tried to do it in somewhat layman's terms, but I sometimes can't quite do that very easily.

Alternative one is the one that involved a lot of the low pressure. We had a situation where in the original 537 Plan, before the November I believe issue, there was not what's called a topographic survey done.

And what that does is, you send your surveyors out, and you get a good idea of the lay of the land, whether you have hills and valleys. Gravity system is dependent on those hills and valleys. If you have too many valleys, you can't necessarily have a gravity system work or else it becomes very deep.

So, if you have a lot of this (Indicating), the gravity won't work. So, we had to do a significant amount of surveying to find out where the gravity would work and where it wouldn't. Because that is really the optimum choice, is a standard gravity system.

For Old Philadelphia Pike, we had a lot of topographic hills and valleys there. So, in alternative one, we looked at having a low pressure system the whole run. And that meant that each of the homes and businesses along Old Philadelphia, and then Ben Franklin Highway, if you can -- I don't know if you can see the

pink too well from where you people are. The pink on this alternative one meant the low pressure system.

But in the long run that, even though that's a, it was more cost effective to a certain extent in the initial costs, in the long run, the operation and maintenance of all these mini pumps could be a headache for you people, as well as the municipality.

So, this alternative we decided not to go with. We went with alternative two as our optimum choice in the 537 Plan. And this is the one that deals more with the gravity system, your standard gravity.

A VOICE: Can you put it up on stage?

MS. HERTNEKY: Can you hear me if I talk like this?

A VOICE: Yes.

MS. HERTNEKY: I do have a loud voice, but yell if you can't hear me.

Yes? Okay. Pink again is low pressure. Those are the areas where you would have a mini grinder pump it's called. It would be connected to your septic tank.

Green is your small diameter gravity. That is the shallow gravity system. It's sort of a, I don't know if you really can pick up, it's a brown. This is the standard gravity. This is the one of the regular depth. There's a lot of it in this option. You can see.

(Indicating.)

But unfortunately, with standard gravity, since you have to go so deep, because of the location of the treatment plant and this low lying area, we had to have a pumping station. And there's the pumping station near the Douglass Township/Amity Township line.

I think I heard somebody a little concerned that it was on their house. It's not on your house. It's sort of schematically located in that vicinity. It's not -- I think it was you right there. It's okay.

We have to look into those kind of things, purchasing right of way, different things like that. So, it's a playing game of where it actually is best to be located. So, we're not going to tell you to move out of your house and put the pumping station there. So, don't be concerned.

But it just works out best that you can get the gravity system all the way to the Township line, put the pumping station there.

And then it would continue by forced main, that's the sewer under pressure, to the Township Treatment Plant. This is the Amity Township Treatment Plant.

Now, for the low pressure and the small diameter gravity, we, there's a couple little small

sections that what happened is, you go back down the hill, or this one goes back down towards 422.

So, there was no way for those people to be connected, as the gravity type system.

There was a little, I don't -- there wasn't really a name, it's more of an alleyway, and then Township Line Road, and another small section. I believe there were like four or fives homes on each of those legs. They, unfortunately, were not easily accessible with gravity either.

With this option, we tried to limit the amount of the true low pressure system because of the pumps. But with the small diameter gravity, unfortunately, you have homes that are up here, and the road is here (Indicating).

Now, your sewer from your house can get to the road just fine. But you also have homes down here where your road's here. And where your septic tanks are is fine, because your sewage flow from your house to your septic tank goes downhill. (Indicating.)

But you now can't get from your sewage up to the road where your collection line would be.

So, in some instances, those people in the small diameter gravity system, the green, for those of you that are down below the road level or down below the

sewer level, may have a pump. But it's not the grinder type pump. It's called a centrifugal pump.

And all's it's doing is, your septic tank is still on line collecting your solids. The centrifugal pump is just to pump your clear like gray water. You would still be looking at cleaning your septic tank every few years; and in other words, getting all those solids out. The pump is just there to get your regular sewage flow into the system.

The people in the pink, the true grinder pumps, there is no septic tank. You would either abandon your septic tank, or in other words, that pump pumps solids. So there's very few, though, in this situation, very few pumps. Very few headaches for the municipality.

And so, this is the alternative that we felt was best in choosing for ease of maintenance, and contractors are used for constructing it, etc.

Am I allowed to take questions now, or should I wait?

(Whereupon, a brief discussion was held off the record.)

MS. HERTNEKY: Could I wait? Keep on looking at that.

Now, when we were going through the cost analysis of these two alternatives, alternative one, the

mainly low pressure, the total construction cost was over 1.1 million.

Where the alternative two, the gravity system, the construction cost was just over one million. So, you're talking a little bit of a difference in the initial cost.

It is less for the gravity. It's a common system. Contractors are used to constructing it, and they don't beef up their prices because they're not used to putting in the pumps, etc.

When it boiled down to them adding in for engineering, design, construction, and inspection, printing, legal, and all the other items that are required to be included in a project cost analysis, with a Penn Vest loan, this is an institution that will loan money to Municipalities of a very reasonable rate; it was a total of 2.14 million dollars, with everything.

Over 20 years, this Penn Vest loan would then cost, per an EDU, which is an Equivalent Dwelling Unit, that's like a typical household. So, if you have a residence, that's an Equivalent Dwelling Unit.

If it's a business, you might have more than one Equivalent Dwelling Unit, because it's based on so many gallons. The cost for an Equivalent Dwelling Unit per year would be $683.

Now, that's with a $3200 initial fee being paid. And that $3200 is what is the standard, you call it the hookup. Like if you were to build a new house, in order to hook up to a sewer system, you would pay $3200 for your one EDU. So, it becomes 683 with $3200, initially.

Now, for a bond issue, which is a little bit higher percentage, the bond issue, the total project cost, because there's different legal and financial costs involved, it was 2.23 million dollars for this alternative.

For a 20-year bond issue loan, the cost per EDU was $846, also with the $3200 down.

So, those were the costs, the estimated project costs, and then the fees for the alternatives.

And at this point, I'm going to turn it back to Jerome for further discussion on some financial issues.

MR. SKRINCOSKY: Okay. So in essence, I just want to give you a summary of the recommended plan. As Pam had just indicated, the waste water collection and conveyance system that would be provided for the Douglassville area, and it's associated project costs. There are also several sewage management programs that are identified within the Plan for the balance of the planning area.

So, if you are not in the Douglassville area, there are other alternatives that were recommended in the Plan that were endorsed by the Pennsylvania Department of Environmental Resources. There are also nonstructural comprehensive planning alternatives that have been recommended in the Plan.

The financing of the Plan, as Pam had indicated, there is the Penn Vest, which is the most viable option. There's also a conventional bond that the Township could undertake.

The Township does not qualify for the best available grant source, which is Farmers' Home. The Farmers' Home Administration, which is part of the United States Department of Agriculture, would finance up to 55 percent of the project costs, provided that the Township's medium household income would be less than 31,000, based on the 1990 census.

Douglass Township is in the neighborhood of, I believe, around 40,000, so the Township is not close to a Farmer's Home Grant option.

Also the Plan has the implementation schedule which all the alternatives that are recommended, and how they are to be undertaken by the municipality and the time schedule, the only thing that this plan lacks, and it was our recommendation to the Board of Supervisors,

was to hold off on an implementtation schedule for the waste water collection and treatment system. We wanted to have the Public Hearing first to get public input.

What we're recommending to the Board of Supervisors at this point is to have, upon DER approval of this plan, have the design work completed within a 12-month period, and the construction would be completed within a 24-month period.

So, that just gives you an idea what we're recommending, prior to the adoption of the Plan by the Board of Supervisors. The Board of Supervisors felt it best to get all public input before putting that into the Plan.

The 30-day public comment period has started on September 10th, 1993, and was to run through October 14th, 1993.

Unfortunately, the Township Secretary and Clerk had both resigned effective October 1st. This cut off two weeks of available time to go into the Township and review the Plan.

The municipality has not hired a secretary at this moment. But what the Board of Supervisors had instructed me to state was that the public comment period will be extended to the Board of Supervisors' meeting on Wednesday, October 27th. What we are we're going to do,

since the Township is really not accessible as far as it's being open as far as regular office hours, the Plan will be available at our office. Our office is in Kenhorst. We're in the phone book.

What you could do is, you can call ahead, and we could make it convenient for you to sit down and review the Plan in our conference room. That's about the only alternative we have. I checked with the Department, and they felt that that would be acceptable.

As far as the Public Hearing, this is the Public Hearing that's scheduled for tonight. The Board of Supervisors could approve the Plan as is. They could reject the Plan, or they can approve the Plan subject to certain conditions. Or they have the option of deferring to another date in which, since the review period is being extended, they'll more than likely defer until their Board of Supervisors' meeting on Wednesday, October 27th.

Many of you, I don't know if you have followed this issue in the paper. The Department of Environmental Resources is taking a stance where they are requiring the Municipalities in the Commonwealth to evaluate the waste water treatment needs through the Act 537 planning process. Many Municipalities are under mandates to perform such tasks.

This township was, quote, unquote, close to a mandate, based on our meetings. The surface water investigation that was conducted by the Department really put a halt to the Plan that was on the table for, for the Department.

Therefore, there is no other alternative that the Department will recognize. If the municipality fails not to do anything, the Department will mandate this municipality to provide public sewers for the Douglassville area.

This bought the Township some time to carefully evaluate the alternatives instead of haphazardly plan and engineer the entire project.

Some of the more recent articles that have been in the newspaper for Berks County, you might have seen Bern Township, Perry Township, Centre Township, Bethel Township, Washington Township; they're looking at connection fees between 5 and $9,000.

This municipality is slightly less. We're using the connection fee, or that is on the table right now as a connection fee to Amity Township.

At this moment, I think what we're going to do is, we're going to open the floor to questions. As Mark had indicated earlier, what we would like to do is get your name for the record and also your address. These

comments will go to DER as far as the transcript, so they can evaluate what had occurred at the Public Hearing.

So, with that in mind, I would like to open the floor.

MS. MAUGER: I'd like to ask something. I didn't get this straight. My name is Tina Mauger. It's 176 Old Philadelphia Pike.

What you're saying is, we don't really have a choice, we have to get public sewer?

MR. SKRINCOSKY: The Department had indicated that is the only viable alternative to handle your waste water treatment needs and problems.

MS. MAUGER: And from what I understand, you said, you came and you evaluated the individual dwellings on 176 Old Philadelphia Pike as well as the others?

MR. SKRINCOSKY: Yes, an inspection was conducted.

MS. MAUGER: So then, we could come and we could see the inspection? Because I just had bought my house and I just had it evaluated about three months ago. So, what I'd like to see is the record of my water and stuff.

MR. SKRINCOSKY: That is included within the Plan, and I can be very specific for you. That was conducted, all 186 sites are referenced on a map. That's

included in the Plan. And it's also referenced on survey sheets.

Those survey sheets are in Appendix F of the Plan. So you could figure out where your site and number is located, based on the map. And then refer it to the survey sheet, so then you could determine whether or not what, how your system was evaluated.

MS. MAUGER: If you just say, for example, if our system was evaluated, as like this past system, if you're going to insist on putting this sewer system in, why can't you run it by our house without actually having us to have to hook up to it? If it gets bad later, why can we not pay the $3200. Because I don't know where you expect us to get $3200. I can't just, you know, oop, here you go.

MR. SKRINCOSKY: The Act 537 Plan requirements would indicate, if the collection line runs by a certain property, and it's within 150 feet of the collection line, under the Pennsylvania guidelines for sewage facilities planning, Chapter 73 I believe it is, you would be forced to connect. That's not a Township option. That is a State Law.

MS. MAUGER: So then, if I'm also in one of those systems that have my sewage run to my sump pump, I have to pay your 683 or 846, plus my every two or three

years my hundred or whatever it is to have my septic tank pumped out? Is that correct, you said in some parts you have to also have your septic tank pumped out?

MR. MOTLEY: Yes, in some areas you would need to have your septic system pumped out. It depends on --

MS. MAUGER: So then, you're paying twice?

MS. HERTNEKY: Ma'am, you said you're on Old Philadelphia?

MS. MAUGER: Yeah.

MS. HERTNEKY: That's the standard gravity for this alternative.

MS. MAUGER: I'm just saying, what about for the other people?

MS. HERTNEKY: Right. That's unfortunate with those situations. We had to try to limit what homes, in other words, almost a double dip to a certain extent. And we're sort of under the gun, too. Having to create municipal sewer system to service you people.

And as Jerome had explained, in this situation, fortunately we're not, the Township is not under the gun yet from DER. But if they don't do something, as Jerome had stated, there might be a mandate. So, that's the situation.

We tried to look at a scenario that was most cost effective and effected the least amount of people.

For the gravity type system, your septic tank would be abandoned, because you can go directly into the sewer system with your solids. There's no need for your septic tank anymore.

The only situation, the only type of sewer system that a septic tank would be kept on line would be the small diameter gravity. And that is because of the pumps. And then because it's a small pipe, it can't necessarily handle the solids. Your solids could clog. I mean, we're talking tampons and things like that, that could clog a pipe, and then the people have to go out and maintain it.

MS. HERTNEKY: So, you're saying it's going to take 20 years to hook; what does this mean, 20 years?

MR. SKRINCOSKY: The Plan is scheduled for a 20-year planning period. The waste water collection system is scheduled to be in place, right now as a recommended, to the Board of Supervisors, in two years.

MS. MAUGER: All right. And along with this, just say 683 because that one makes me a little happier. Along with the $683, are our taxes also going to go up? Because you're going to have to pay for labor to rip the roads up along with everything else?

MR. MOTLEY: No. That, all the cost to put this in place are included in that $683. The $3200

connection fee, and then an annual operation and maintenance cost, that takes in all the operation of the system, the maintenance of the system, if you have to get in and tear a line up or something like that; that's included in there. Okay?

MS. MAUGER: Like, so when do we have to pay this initial $3200? Do you expect us just to -- what is this, like a, are we going to have like a deadline we have to pay it by?

MR. SKRINCOSKY: That's the purpose of tonight. It's to inform you. It's not going to be with the Township, all of a sudden asks you to pay the connection fee right now. We're giving you time to plan financially, also.

Do you want to give them an idea of time?

MR. MOTLEY: Yes. There's several ways that this could be handled. One alternative would be not to charge a connection fee, okay. And the idea behind charging a connection fee or a tap-in fee or something like that, is to try to lower your annual payments, the annual O & M costs.

Because part of that is debt service. The Township is going out, the total connection fees for that area is, would be $681,000, okay. Out of a total project cost of 2,138,000, okay.

So, that's used in part to offset what your annual fees are going to be. Setting that fee would be at the Supervisors' option. Setting the amount of that fee.

Like Jerome said, that is quite reasonable in light of where they, where they are standing right now in a lot of areas, ranging from 5 to $9,000.

MR. SKRINCOSKY: The Township is fortunate to have Amity Township, the waste water treatment plant, and its collection system where it is. It's not that far away for the Township.

Therefore, also the Township does not have to put in its own treatment plant, which would really drive the cost up.

MS. MAUGER: Oh, speaking of plants, you were going to put that little pumping system right around past that little bridge on Old Philadelphia Pike. Do I have that right?

MS. HERTNEKY: It's before the bridge.

A VOICE: East or west?

MS. HERTNEKY: It's toward Pottstown.

MR. MOTLEY: It would be east.

MS. MAUGER: What is the address that it's on? What I'm trying to understand, if it's going to be aboveground, I'd like to know how much noise it's going

to make, too. I mean, if it's going to be running all day, every day.

MR. MOTLEY: Oh, no, it's below ground.

MS. HERTNEKY: The only thing, if you've seen those little brick buildings that around, sometimes there's a little brick building that's maybe 10 feet by 10 feet. It's a tiny brick building. The reason why the brick building is there is to house the generator in case the electric goes off, so that sewer service continues.

There's a generator inside the building so that the generator is weatherproof. And that generator turns on, and you continue to have the sewage pumped and flowing.

The pumps are below ground. You don't have the pump noise.

MS. MAUGER: All right. And then if, if you approve this, just say next Wednesday, I'm just picking a date here, when exactly are you going to start asking for the money and all the digging and building and everything?

MR. MOTLEY: Okay. We're looking at considering -- the Township is looking at a schedule, be looking at construction within 24 months, from the time of adoption of the Plan by DER. That's the time frame you're looking at. It's going to take, this would have

to, you would have to go through the design period, you would have to go through right of way acquisition, a bond issue, Penn Vest financing, all that takes quite a bit of time.

This is not something that's going to happen next week, by any stretch of the imagination. A two-year, a two-year period for this is, that might even be pushing it a little bit.

MR. SKRINCOSKY: I know you're on a roll --

MS. MAUGER: I'm finished.

MR. SKRINCOSKY: Let's give someone else a shot. Yes.

MR. BERKEIHISER: My name is Ken Berkeihiser. I live at 249 Old Philadelphia Pike.

I'd just like to back up here a moment. I know the issue is cost and how it's going to effect everybody. But I'd like to find out basically what the root cause or the source of the contamination was, and the evaluated 186 presites, of which 23 were preregulatory, 9 were positive, just a roundabout figure, that comes up to about 20 percent came up positive, or somewhere in that neighborhood. What was the root cause of that, and where does it come from?

MR. SKRINCOSKY: The Pennsylvania Department of Environmental Resources Surface Water Investigation has

been included within this, with this plan. That's, to give you an idea, it's Appendix C of the Plan.

Based on their, their investigation, they were drawn to the conclusion that most of the wells are polluted by septic system malfunctions. There's total coliform counts and fecal coliform counts, where they were able to draw conclusions that, in essence, the Douglassville area is a problem.

MR. BERKEIHISER: And the reason for this problem is due to the systems were malfunctioning?

MR. SKRINCOSKY: In more likelihood, yes, based on the fecal coliform counts.

MR. BERKEIHISER: And you say the thing that dictates the need for this mandate is Act 537; is that correct?

MR. SKRINCOSKY: That's correct.

MR. BERKEIHISER: You also mentioned the status of the, I believe the term is hydrogeology?

MR. SKRINCOSKY: Hydrogeological analysis was conducted in the Township. That's included within the Plan. That's the entire Township. I believe 45 sites were evaluated. Of those 45 sites, probably I'd say about 6 or 7 were in the immediate Douglassville area.

DER did a much more in-depth evaluation. I believe they did over 20 some sites. Like I said,

they're in the Plan as far as those locations. And I believe they use addresses also of where they obtained the samples.

MR. BERKEIHISER: Okay. So basically, what we're doing here is, we're saying that there are a few sites which are contaminating the whole; and rather than do something with those few sites which are contaminating everything else, we're going to exclude that and we're going to make everybody basically adhere to the sewage treatment plant?

MR. SKRINCOSKY: Based on all the results, it's more than a few. It's more than a few that are not malfunctioning.

MR. BERKEIHISER: I mean, just from the information you gave me.

MR. SKRINCOSKY: Obvious malfunctions.

MR. BERKEIHISER: It's 20 percent.

MR. SKRINCOSKY: Obvious malfunctions.

MR. MOTLEY: I need to point out that those in the survey that we conducted, okay, that was a, a visual survey. We went out and looked at the systems. And these were systems that we found with soggy areas in the system, things like that.

A VOICE: We're in the flood plain.

MR. SKRINCOSKY: That's another reason why

you're preregulatory.

MR. MOTLEY: And now that's just a visual malfunction. You can still, you can have a ground water malfunction. You can have a malfunction where your septic is getting into the ground water. And you're not going to be able to find that very easily at all. Okay?

It's going to require dye tests and things like that. You know, it's really outside of the scope of anything that was done in here. There's really no way of really saying that, yes, your system is malfunctioning or isn't malfunctioning.

All you can say is, on the surface, there's a surface malfunction. We really have no idea what's happening underneath. And that's where, generally, if it's coming up on the surface, that's not what's contaminating the water.

MR. BERKEIHISER: But in essence, what we're doing is, we're saying that we have a problem, we're identifying the problem, but we're not able to identify the actual root cause of the problem, where is it exactly coming from? Is that correct or incorrect?

MR. MOTLEY: The best alternative, okay, for long term, and that's what we're dealing with here is a 20-year long-term sewage facilities.

MR. BERKEIHISER: Exactly. Based on that, the

Township is going to expand, and there will be more houses, more impact on the environment?

MR. MOTLEY: Even if it stays right the way it is, in that area down there, even if there is no more, nothing else, no more growth down there, okay?

MR. BERKEIHISER: Okay.

MR. MOTLEY: There is no more growth. The ideal, the best way to treat sewage, okay, is with a sewage treatment plant. It is a far better alternative than on-lot septic.

MR. SKRINCOSKY: Now, going back to the investigation program, just to also answer your question, the 9 potential malfunctions that we cited were obvious. They were based on an observation.

As Jamie had just indicated, there were not any type of detailed test. But they were, it was more obvious than the others. The 23 preregulatory were, as noted in the field.

If you want to examine that area as a whole, and pull Building Permits and Sewage Permits, probably more than likely you're going to have about 80 percent of the systems in that area as preregulatory, meaning designed and installed before 1967.

Also, you had mentioned about the flood plain, we had plotted all the systems in the Douglassville area.

We identified them and how they were located as a result of the, in relationship to the 100-year flood plain, hydric soils, hazardous soils, severe soils, and steep slopes.

So, we had an idea and percentage based on that. That's also in the Plan. So, to answer your question, DER determines that those systems are designed, they are unacceptable designs. So, it's all documented within the Plan. Yes?

MS. WENGERT: Marianne Wengert, 177 Old Reading Pike, Douglassville, Old Philadelphia Pike, whatever, W-E-N-G-E-R-T.

If we're going to have sewer systems installed there, are we going to be able to build in the flood plain? That's my one part, and I have a second.

MR. SKRINCOSKY: That's governed by the FEMA Regulations. Are you talking about subdividing your property for another home?

MS. WENGERT: Yes. We want to do it.

MR. SKRINCOSKY: No, that wouldn't be permitted.

MS. WENGERT: If we can't come up with this cash now, what are we going to do? Does everybody here forget you're in a recession? People have been out of work, they have all the bills they can stand now. Where

are they going to come up with $3200 down money, let alone money for every month?

MR. SKRINCOSKY: That's the purpose of tonight's Hearing is to solicit --

MS. WENGERT: I'm telling you, I don't have it.

MR. SKRINCOSKY: -- is to solicit from the public how to finance the Plan to accommodate the service area.

MS. WENGERT: I'd like to ask, I wanted to make this right, did you's do samples from every house on Old Reading Pike --

MR. SKRINCOSKY: Hydrogeology could have --

MS. WENGERT: -- where you checked the sewage systems?

MR. SKRINCOSKY: All the homes on Old Philadelphia Pike are --

MS. WENGERT: You didn't do mine.

MR. SKRINCOSKY: Are you home 24 hours a day?

MS. WENGERT: Yes, I am. I run a business from my home.

Who gave you permission to start with?

MR. SKRINCOSKY: Excuse me, the data, the evaluation was coded was on the evaluation. There again, you can reference your number on the evaluation sheet and locate when it was.

(Whereupon, a brief discussion was held off the record.)

MR. SKRINCOSKY: The permission was granted through the Act 537 planning process, where the Sewage Enforcement Officer has the ability to go out and evaluate problem areas of the Township. This was required by the Pennsylvania Department of Environmental Resources on the basis of their surface water investigation.

Yes, sir?

MR. HUBER: Randall Huber, 148 Old Philadelphia Pike.

I don't know when this survey was done. And since we only moved into our home in May, I'm just getting to know about this lovely little amount of money we're going to have to spend.

I'm one of several on our side of the street who have long road frontage. 12 acres, perhaps. And on top of this $3200 initial fee, and hopefully 683, since this is mandatory for a year, and I assume that's over a 20-year period, that's the amount of time that that -- and then it stops; is that right?

MR. MOTLEY: No.

MR. HUBER: No?

MR. MOTLEY: No.

MR. HUBER: And it's financed for 20 years, and we have to pay for everything?

MR. MOTLEY: Well, you're going to have an operational and maintenance cost for ever. That never dies. That could possibly conceivably come down. It could come down before the 20 years is up, if you can retire the debt. The major portion of that, it's more than, you're about 100,000 a year in debt service on that.

When that gets retired, you would conceivably be able to reduce your annual costs, yeah.

MR. HUBER: That should be mandatory also. But anyway, back to the footage --

MR. SKRINCOSKY: First, let me answer your very first question, and also the other question that was asked previously.

The survey was conducted between June 18th, 1993, and I believe June 25th, 1993. It wasn't, like it took a day. It took several hours at the Township's expense, as directed by the Pennsylvania Department of Environmental Resources. Okay?

MR. HUBER: Back to the front footage, I'm not the only one who has about 850 feet of road frontage. And I'm interested to know if there's extra charge for per footage, or since you're doing this issue through the

Penn Vest, that means the cost for everybody is the same? Is that the way it is?

So, my front footage and several other people's, like the gentlemen behind me, we're all, we're not going to go penalized for having large properties?

MR. MOTLEY: It was not looked at, using the front foot assessment method, no. It was a flat fee per EDU.

MR. HUBER: You're saying that's not going to happen; is that what you're saying?

MR. MOTLEY: It hasn't been, no, we have not looked at that.

MR. HUBER: Okay.

MR. SKRINCOSKY: We can come back to you. Yes, Ma'am.

MS. ARCADIA: Yes, my name is Gwen, G-W-E-N, Arcadia, A-R-C-A-D-I-A. Address is 251 Township Line Road.

My question is, on this plan, are there going to be any additions? It looks like the low level pressure that you have coming up Township and going off, it's Leidy Road, where you were saying there were those five homes, are you going up above that point, or just taking it to that Leidy Road over?

MS. HERTNEKY: It's conceivable that we could

continue the low pressure system. That's an area that could continue up Township Line Road.

MS. ARCADIA: But at this point it's not?

MS. HERTNEKY: At this point, it's not. There apparently was no --

MS. ARCADIA: There's newer homes in there --

MS. HERTNEKY: Yes, there was no need to continue further up the road, at this time.

MS. ARCADIA: At this point. So stay tuned?

MR. MOTLEY: Well, what we looked at, we did look at going up that way. What you're getting into is, you're putting in a lot of sewer line, and you're only picking up very few houses. So, what you're doing is, you're really increasing the cost of the project without offsetting it by a feasible number.

MS. ARCADIA: With them being newer, within the past four years, all those homes were basically up with the DER requirements?

MR. MOTLEY: Well, that really --

A VOICE: With sand mound.

MR. SKRINCOSKY: That service area is not being considered as far as this 20-year planning period. However, the Township has the ability to amend the Plan as it sees fit, based on the needs for the Township.

Yes, Ma'am.

MS. MIERZEJEWSKI: M.M. Mierzejewski, M-I-E-R-Z-E-J-E-W-S-K-I, 102 Old Philadelphia Pike.

First of all, to the Supervisors, why in the devil must we go up to Kenhorst to review something when we have a Township Building over there that we're paying for, and you don't give us a damn thing out of it?

(Applause.)

MS. MIERZEJEWSKI: Why can't somebody there be at the Township?

THE CHAIRMAN: Ma'am, we would have to hire someone to replace the two secretaries who resigned two weeks ago.

MS. MIERZEJEWSKI: What about you, or one of the other Supervisors, you get paid for it?

THE CHAIRMAN: The Supervisors have full-time jobs as well.

MS. MIERZEJEWSKI: I know. But you have nights.

THE CHAIRMAN: We also have come to the Building many nights. We're often there as volunteers during the day, during this difficult period. We've signed out some books for people who wanted to take the books home and review them.

If you would like to access the Plan, you can call me, and I'll see to it that you get it. And you can

read through the two volumes involved.

MS. MIERZEJEWSKI: I don't think it's right to tell people that they live down at one end of the Township and they have to go up to Kenhorst to view something.

And another thing, this here, the guy that come around to examine the properties, he didn't take no samples from my --

MR. SKRINCOSKY: No, he did not, that is --

MS. MIERZEJEWSKI: All I did was, I looked out the window, there he is, he's looking in my window out the back. I go out and ask him what in the devil he's doing out there. He didn't even ask permission to come on my yard. The least he could have done was knock on my door, and say hey, I'm here looking at your sewers. I wouldn't have cared. But that scared me.

MR. SKRINCOSKY: I apologize on behalf of our office that he did not knock.

MS. MIERZEJEWSKI: Was it you that was there?

MR. SKRINCOSKY: No, it was not.

MS. MIERZEJEWSKI: You look like him.

MR. SKRINCOSKY: He's much taller than me. We send someone much bigger.

A VOICE: All he did was look, I was there.

MR. SKRINCOSKY: He observed the area and

investigated for possible signs of a malfunction or a preregulatory system.

As I said, it took a great deal of time to do this. He might have spent more than an hour at one site, he might have spent more than 15 minutes at a site.

But it was all on foot, all house by house. I apologize again on behalf of our company and the Township that we did not show maybe as much consideration as we should have and knocked on the door. But we were under the requirements of the Pennsylvania Department of Environmental Resources to conduct this phase one evaluation.

MS. MIERZEJEWSKI: And one other thing, what can you show me to prove that Amity Township can take our sewage? Because they, right now, they stink up everybody's air down through our way. And I don't think that sewage company handles what they have. And they keep continuing to build and build.

Are you going to use our $3,200 to build an extra sewage so that they can keep expanding theirs?

MR. SKRINCOSKY: No, Ma'am. What you're being charged the $3200 is what the typical --

MS. MIERZEJEWSKI: It's for that little space.

MR. SKRINCOSKY: -- is the typical Amity Township what the resident would have to pay for their

connection. So, you're not being treated any differently.

MS. MIERZEJEWSKI: Where you going to have to put this up --

MR. SKRINCOSKY: Excuse me, excuse me. Their waste water treatment plant was designed for 1.6 million gallons per day. Presently, I believe they're in the neighborhood of 800,000 gallons per day. Meaning, they have quite a bit of capacity.

This Township has not approached Amity Township yet as far as reserving capacity. Because they want to go through the Public Hearing process.

MS. MIERZEJEWSKI: We did go through a Public Hearing process a couple years back. And they told us what it would cost and everything else. Did you know that?

MR. SKRINCOSKY: Yes, I did.

MS. MIERZEJEWSKI: And the ones that needed the sewerage was 422, because the businesses were all clogged up, and they couldn't get rid of it.

MR. SKRINCOSKY: Since that time, Amity Township has expanded their treatment plant so it can accommodate 1.6 million gallons per day of waste water.

MS. MIERZEJEWSKI: You think you could show something like that on paper? I mean, actually show it

that it's doing its job? Because I don't think that sewage plant is.

MR. SKRINCOSKY: Under the Chapter 94 requirements, the Township submits records of its performance. It's also under inspection by the Pennsylvania Department of Environmental Resources. If you do not believe it's functioning, it's operating functionally, it's functional operation --

MS. MIERZEJEWSKI: It's going to get like Reading's. And you know how Reading smells if you're up there in Kenhorst.

MR. SKRINCOSKY: Then you are more than welcome to voice your opinion to the Pennsylvania Department of Environmental Resources.

MS. MIERZEJEWSKI: Thank you.

MR. SKRINCOSKY: You're welcome.

MS. WENGERT: I want to just add a little bit on what you said to that lady. I was there the day that that man came around between June and July. He didn't look at any of our sewers. He was back sitting, while I was on my hammock, and my neighbor was on a hammock just talking, asking us questions.

He never looked at anything at my yard or my neighbor's yard. Never took any samples, nothing.

MR. SKRINCOSKY: Again, they were not taking

samples. Let's get that cleared. The investigation was not a sampling where they were getting ground water or they were getting soils. That was not the purpose.

The purpose was to gather facts as to areas that could be possible malfunctions or preregulatory systems. He might have gotten the answer on the questions that he asked you directly. He might have asked you --

MS. WENGERT: How does he know we're having problems? I told him I don't have any problem with mine.

MR. SKRINCOSKY: Like I said, you must examine the Plan to see what he has on your report.

MS. WENGERT: I'd like to also go on record to say that I don't want the septic sewer system through our area at all, on Old Reading Pike or Old Philadelphia Pike, same area.

MR. SKRINCOSKY: Thank you.

MS. MAUGER: It's Tina again, 176 Old Philadelphia Pike. You're going to, okay -- if we live within the required 150 feet from the highway or from the road, you say we're required, we'll be forced to hook it up?

MR. SKRINCOSKY: If your property is located within that distance.

MS. MAUGER: Yeah. So, if it's cheaper for us

to hire someone to hook it up, could we do it that way and then get it approved by the DER later instead of paying your $3200?

MR. MOTLEY: No. Okay. You would need to run a line, you would need to run a sewer line from your house, I doubt that you could do it for $3200.

MS. MAUGER: I'm not saying I could do it. But I have a friend that owns a plumbing business. I know he would do it probably for next to nothing except for the price of the piping.

MR. MOTLEY: You would need to run a pipe from your house down the road, all the way down the road to the Amity Township Treatment Plant.

MS. MAUGER: No, I'm asking about from the front of my -- how are you going to run this? Are you going to run this right along the road?

MR. MOTLEY: Yes, yes. You're talking about the lateral connection. That's a lateral connection, from your house to the, to the transmission line. That's not what the, that's not what the 3200 is. There would still be a $3200 connection fee.

MR. SKRINCOSKY: That's the treatment cost.

MS. MAUGER: Excuse me, is it extra then to run it from the house to the line that's on the road?

MR. MOTLEY: We included the laterals right in

there, didn't we? Not, no, that's in there.

MS. MAUGER: That's all I wanted to know.

MR. HUBER: We can hook up directly to our house for that price?

MR. MOTLEY: Yes.

MR. SKRINCOSKY: Yes, Ma'am.

MS. BERKEIHISER: Kim Berkeihiser, 249 Old Philadelphia Pike.

THE CHAIRMAN: Can we have a little quiet so the woman can speak, and her comments can be recorded, please? Go ahead.

MS. BERKEIHISER: I would like to know as far as abandoning our present septic system, what does that entail? Do we need to pull out our tank? Do we need to fill that up? What kind of cost are we looking at there as far as satisfying abandonment of our septic system?

MR. MOTLEY: Abandonment of your system? What we would be looking at there would be, I don't believe we'd be requiring anybody to fill them in, okay. Depending on where you are, you may still be using your septic tank, okay.

It would most likely be capping the ends of, the ends of the pipe. You'd need to sever the pipes in and out and cap those so that it's not being --

MS. BERKEIHISER: Also, I wanted to know the

annual cost of running this. In other words, how much, I'm assuming we'll be billed monthly for having this service?

MR. MOTLEY: It's generally done quarterly.

MS. BERKEIHISER: Quarterly, okay. What kind of figures are we looking at there along with our yearly fee, our down payment, and everything else? Our quarterly fee of operation, I assume, is what we're paying.

MR. MOTLEY: That was the $683 a year, annually. Divide it by four.

MS. BERKEIHISER: Okay.

MR. SKRINCOSKY: Yes?

MS. ARCADIA: Gwen Arcadia again.

Am I understanding, if your home sits back where this gentleman said, he sits back over 800 feet from the road, he's still required to hook in, or he doesn't have to? You have to be 150 feet? Is that what the requirement is, if you're within that, if your dwelling is within that distance, then you're required to?

MR. SKRINCOSKY: Well, there are certain guidelines where exceptions and waivers can be amended. And that's in the guidelines. We would have to research that for you specifically.

MR. MOTLEY: We would need to look at that.

MS. ARCADIA: For a specific site?

MR. MOTLEY: Yes.

MR. SKRINCOSKY: I don't have the exact distance that your home is located away from the road. Yes, sir?

MR. WELLS: I'm Stewart Wells, 207 Old Philadelphia Pike.

And I can see on the Plan, there's two sections here that are marked as the forced main. And I don't think you really said much about how that effects the houses that are along the sections that are forced main. You talked about the standard gravity, and you talked about the small diameter.

MS. HERTNEKY: This (Indicating)?

MR. WELLS: Here, and also there's another one at the other end.

MS. HERTNEKY: This is the one. Right around in here you start having a situation where that, remember I was talking about hills and valleys. There's almost a big breaking point ridge here. And it starts -- can you see?

A VOICE: Can you put numbers on the street there? We can see nothing from here. You're saying from here to there, do you have numbers on that street?

MS. HERTNEKY: Squirrel Hollow. Squirrel Hollow, Douglass Drive. (Indicating.)

A VOICE: Okay.

MS. HERTNEKY: Does that give you a better idea where I am?

A VOICE: From here, would that be gravity or would that be --

MS. HERTNEKY: Brown, can you see the brown? This color? I'll just walk back and talk. The brown, the brown is a gravity. The red is a forced main.

MR. MOTLEY: The way the force main works, that's what --

MR. SKRINCOSKY: This, I might want to add that this is just being provided for illustration purposes. There are aerial photographs, whereby you can have a better idea where your property is located. The Plan includes specifics as far as the mapping and descriptions of the collection line. This is just for illustration purposes, really.

MR. SKRINCOSKY: Yes, Ma'am?

MS. CRAMER: It's Susan Cramer, 85 Old Philadelphia Pike.

I have just a question. It may seem selfish to some of you, but on our property, to aid in draining during heavy rains, we have two pipes that drain to the

other side of the road.

I'd like to know from you if you're going to leave the pipes under the road so our property doesn't flood?

MR. SKRINCOSKY: Are the pipes there for drainage purposes?

MS. CRAMER: Yes, they are.

MR. SKRINCOSKY: That's something different. That's a complaint you could raise with the Board of Supervisors separately.

MR. MOTLEY: No, no.

THE CHAIRMAN: She's saying, are you going to disturb those pipes or leave them intact. And I think the answer is they're going to be left intact, correct?

MR. SKRINCOSKY: Yes.

MS. CRAMER: They will be left there?

MR. MOTLEY: Yes.

MR. SKRINCOSKY: If you do not like that, again, you could raise that issue with the Board of Supervisors separately.

MS. CRAMER: No, we need the drainage, because we're in the flood plain.

MR. SKRINCOSKY: I'm sorry, I may have misled you there.

MR. MOTLEY: No, when the system is put in, it

will be put in either in the right of way or in the road somewhere. And everything will be restored back the way it was. There may be a chance that we're going to have to tear those pipes up. But they will be put back the way they are now.

MR. SKRINCOSKY: Yes, sir.

MR. SANDS: Name is Douglass Sands, 39 Cedar Lane.

We have a lot of springs on our hill. Every time it rains, the water runs into the cellar.

THE CHAIRMAN: Could we be quiet, please, so that the gentlemen can be heard and his comments can be transcribed for DER?

MR. DIENER: Hold on a second. Excuse me, my name is Keith Diener. I live in Lower Pottsgrove, and I'm representing my mother-in-law who owns a large six parcel property in this area, and we can't get any questions answered.

MR. SKRINCOSKY: Excuse me, gentlemen, this man has the floor. You can have the next question.

MR. DIENER: I had the question before and you interrupted me when I was speaking to the lady.

MR. SKRINCOSKY: Go ahead, sir.

MR. SANDS: A lot of springs on the property, and every time it rains, the water comes into the cellar.

The cellar is trenched and drained out down to the road. Can I hook this into the sewer?

MR. MOTLEY: No.

MR. SKRINCOSKY: That would be infiltration.

MR. MOTLEY: No, that's --

MR. SANDS: What do I do with it? Leave it run out onto the road?

MS. SANDS: That's where it's going now.

MR. SANDS: That's where it's going now.

MR. MOTLEY: You're not talking about sewage, right?

MR. SKRINCOSKY: Are you talking about sewer?

MR. SANDS: No, spring water going into the house and out.

MR. SKRINCOSKY: That's a separate issue. That's a drainage problem, that's not a sewage problem. Which this plan indicates. Okay, sir.

MR. DIENER: Now again, I'll reiterate, my name is Keith Diener. I live in Lower Pottsgrove. I'm representing my mother-in-law here, who is Patricia Saylor, who owns best I can calculate about 60 acres in this area you're talking about. We have several questions of which I can't seem to get a direct answer here.

This green comes down at Squirrel Hollow, and

am I correct to assume this, that according to this map that is not marked, this green is Squirrel Hollow Road, and it meets Old Philadelphia, it stops right there.

MR. SKRINCOSKY: That's not Old Philadelphia, that's Ben Franklin.

MR. DIENER: She just told me that was Old Philadelphia.

MR. SKRINCOSKY: I'm sorry, that's Ben Franklin.

MR. DIENER: This is 422.

MR. SKRINCOSKY: That's correct.

MR. DIENER: What is this?

MR. SKRINCOSKY: That's the low point of the area --

MR. DIENER: My question is, where does Squirrel Hollow cross over to Old --

MR. SKRINCOSKY: Right where you're pointing.

MR. DIENER: This is Old Philadelphia Pike here. Squirrel Hollow crosses here, you don't have that marked.

MR. SKRINCOSKY: There are no residential dwelling units located along there.

MR. DIENER: They'll be facing -- the sewer lines will go out to Old Philadelphia Pike. And just to reiterate another gentlemen's question over there,

there's no frontage fees, it's strictly per house, per dwelling, you called it an EDU?

MR. MOTLEY: That's the connection.

MR. DIENER: No footage per property that is not a dwelling property; am I correct?

MR. MOTLEY: That method of financing, this has not even been looked at here.

MR. DIENER: So, you're essentially saying that these numbers are not accurate because you haven't looked at a footage price?

MR. MOTLEY: No, no.

MR. SKRINCOSKY: That's a different financing mechanism.

(Whereupon, a brief discussion was held off the record.)

MR. MOTLEY: We can look at that, if you'd like.

MR. DIENER: No. That is my question. You are proposing -- see, you have a gentleman at the podium who is answering some questions, and you're answering some others. I'm thoroughly confused. I'm not a moron, I can completely understand what you're telling me, if you can tell me in laymen's terms.

My thoughts are, you're proposing a way of financing this per house, as opposed to by footage; am I

correct in assuming that? Is that what you're saying?

MR. MOTLEY: Per connection, yes, yes. Per house, rather than per footage.

MR. DIENER: Per house as opposed to per foot?

MR. MOTLEY: Yes.

MR. DIENER: Thank you.

A VOICE: But that's not definite?

MR. DIENER: That's your proposal, though, right?

MR. SKRINCOSKY: That's the recommended plan.

MR. MOTLEY: That's what we have recommended. That is what we have recommended.

MR. DIENER: But can you rule that out as opposed -- if the option is voted on -- and who will ultimately decide this?

MR. MOTLEY: The Board of Supervisors.

MR. DIENER: The same gentlemen that can't be available for people to look at the book? Is that correct?

THE CHAIRMAN: No one said that the Supervisors can't be available for people to look at the book. In fact, we've gone to great lengths to advertise this problem. We've asked the newspaper on numerous occasions to publicize it. It has been available at the Township prior to October 1 for inspection.

And if you need to see it, we'll do everything in our power. We can't control, and we can't staff the Township with enormous numbers of people. And unfortunately, we lost both office staff at the same time. It was an unfortunate circumstance. We tried to fill in as best we can.

We, having jobs too, to make livings for our families. And we're more than willing to accommodate you if we possibly can. If you want to leave your name and phone number after the meeting, we'll see to it you're put on a list to receive the Plan, and you can look at it. I brought it with me. You can inspect it tonight if you like, if that would be sufficient for you. But that's just the reality --

If you have a big staff in a Township, you have higher taxes. We have low taxes, we try to keep them low. And there's some inconvenience associated with that. I'm sorry, it's a tradeoff.

MR. DIENER: But would it be an inconvenience to ask that you have a minimum waged employee there on a Saturday all day, between now and the next meeting, that you could have people come to the Township Building on a Saturday afternoon, with a temporary help for $4.25 an hour, to look at that? Is that unreasonable? That's a question I ask.

That's not involving this gentleman, I'm sorry to take up his time. But as a Township Commissioner, that should be something you --

THE CHAIRMAN: I don't find that unreasonable if we can find someone that will perform that function, that's reasonable by me.

MR. SKRINCOSKY: I think what we can do is, if you have a recommendation, that's a very good recommendation, let's get the recommendations to the Board of Supervisors tonight, and maybe we could come up with a solution where it would be better. That was just really our recommendation to the Board. Because their, the facility is closed, in essence.

MR. DIENER: I don't feel that's -- you guys done your job. I don't feel that's your responsibility. But the Township people ought to be able to see this locally. And I'm not pointing any finger at any one of you two. I don't quite understand why there's only two of you guys here tonight. Don't you have more than two Commissioners?

THE CHAIRMAN: We have three.

MR. DIENER: I'm sorry, I thought you had more, but.

MR. SKRINCOSKY: If you would like to recommend an area or a site for the Plan to be left for review,

such as that gentlemen's recommendation, the Board will consider it, and maybe we can get a better answer to you tonight for the location and availability.

THE CHAIRMAN: Jerome, let me interrupt this a second. How long can we extend this comment period before we incur the wrath of DER? In other words, we've indicated that we would prolong it until at least the 27th of October. That's our next meeting date. But there's nothing written in stone that it can't go for another couple of weeks or even a month; is that correct?

MR. SKRINCOSKY: I would need to write an extension letter on behalf of the Municipality to DER. And to indicate to them what the problems are.

THE CHAIRMAN: Well, I think under the circumstances, that would make sense. Apparently a lot of people want to take a look at the actual documenttation. Frankly, I am not an Engineer, and I think many people will find it confusing and difficult to read. But I think they need the opportunity, so.

MR. SKRINCOSKY: I could request that. But I cannot speak for the Department. But I will --

THE CHAIRMAN: I know you can't, but.

MR. SKRINCOSKY: I will make that request to extend it another 60 days.

THE CHAIRMAN: Thank you.

MR. SKRINCOSKY: That does not mean that the comment period will extend 60 days. It just means I'm going to ask the Department 60 days prior to the submission date.

(Whereupon, a brief discussion was held off the record.)

MR. SKRINCOSKY: Excuse me, let's call the Hearing to order now. If you all could return to your seats, and we can start taking questions again.

Tonight, we needed this facility to accommodate the attendance that was expected, and we're glad we did. We're going to try to wrap this up within a half hour as far as question and answer period. But that does not conclude your questions that you could ask at this time.

We would encourage you to provide whatever comments you have in writing to the Municipality, where it can be included as part of the record. So, your comments are not going to be cut off just tonight. So, just so you know that.

Yes, sir.

MR. WELLS; I started to ask a question earlier. On the forced main, how -- can you hook up to that as you would with the other ones, or is it something different? It's under pressure, so do the houses hook up the same way then or not?

MR. MOTLEY: No. A forced main works a little bit different. That's the bigger pump we were talking about. Pam had talked about the big pump.

What happens is, forced main works in conjunction with gravity. What you do is, say your hill is coming down this way. And you want to get up over the hill to the other side is where the treatment plant is.

MR. WELLS: I understand.

MR. MOTLEY: What you're going to do is, this side of the hill flows by gravity down to the low point into the forced main. And then up and over. And that force main goes into another, into a gravity manhole at the top of the hill, where it goes --

MR. WELLS: You don't hook to a force main?

MR. MOTLEY: No, there's a gravity that's in conjunction with it.

MR. WELLS: So, we're just over the line in Amity. Does that mean, do we have to hook up, or are we required to hook up?

MR. MOTLEY: You're in Amity Township?

MR. WELLS: Just across the line. And it runs right across the front of our -- We're on Old Philadelphia Pike, and the line runs right through our front. Are we required to hook up then or?

MR. SKRINCOSKY: Yes, you would. First of all,

you are located within a proposed service area of Amity Township. Amity Township, in 1989, had adopted its Act 537 Plan, and has identified that area as a proposed area which should be sewered within a five- to ten-year time period.

MR. WELLS: But it's shown there as a forced main, and you don't hook up to a forced main; so then how does that work? There is no gravity there.

MR. SKRINCOSKY: The pumping station can be shifted.

MR. WELLS: This is marked as a forced main right here. There is no gravity there.

MS. HERTNEKY: The pumping station location, where it was placed, was placed at the Township line to service as much of Douglass Township as possible. In conjunction with the Amity Township, the pumping station could be pushed further to service those particular homes.

MR. WELLS: Then are these houses required to hook up then or not?

MR. SKRINCOSKY: That would have to be discussed between Douglass Township and Amity Township at that time. We are not prepared to speak on behalf of Amity Township tonight.

MS. HERTNEKY: But it's something that could be

done.

MR. MEASE: Mr. Mease, M-E-A-S-E, 241 Willow Drive.

I have a question on the pump. You say on the low pressure, we're going to put a pump in to force our gray water into the pipe. Now, the pump fails. Do I get everybody else's gray water, or won't I get it?

MS. HERTNEKY: There's what is called a check valve. And a check valve is like a valve that only allows flow in one direction. So therefore, your flow from the rest of the sewer system cannot be forced back into your tank or home.

MR. MEASE: And I'm going to have to purchase that pump and maintain it?

MS. HERTNEKY: That's included in this cost.

MR. MEASE: It's under the 680?

MS. HERTNEKY: Yes.

MR. MOTLEY: It's under the O & M cost there.

MR. MEASE: You're saying 20 years, we're still going to be paying after 20 years, right?

MR. MOTLEY: Yes, sir.

MR. BERKEIHISER: Ken Berkeihiser, 249 Old Philadelphia Pike. On the subject of cost, in your projected cost there, did you also allow for a cost to override and inflation cost factor for the next 20 years,

plus? Was that included in your --

MR. MOTLEY: No, this is all present value.

MR. BERKEIHISER: In other words, your estimate was going on present day cost and inflation, it isn't even projected three years in which the Plan will actually take effect?

MR. MOTLEY: These cost would be good within three years.

MR. BERKEIHISER: Within three years?

MR. MOTLEY: Yes. For the estimate purposes here, that would be about what you'd be looking at in three years, yes.

MR. BERKEIHISER: What percentage would you allow for cost override in --

MR. MOTLEY: There is a 10 percent contingency included in there, yes.

MR. BERKEIHISER: 10 percent?

MR. MOTLEY: Yes.

MR. BERKEIHISER: Thank you.

MR. SKRINCOSKY: Yes, sir?

MR. TRAINER: I'm Robert Trainer, from Glendale Road, in Pine Forge.

Just to shed a little light on some of the questions; somebody said they wouldn't be allowed to build on all this frontage on the Old Reading Pike. I'm

under the impression if you raise your building high enough, that FEMA will authorize you to be allowed to build on it, on that property. Is that true?

MR. SKRINCOSKY: That's correct, one foot above flood plain elevation.

MR. TRAINER: I think somebody said you wouldn't be allowed to build. This man here, I think he said 800 some feet frontage.

MR. SKRINCOSKY: I can't speak specifically for everyone's property, but in general, if they are below the 100-year flood plain level, they would have to petition FEMA to make that request. It's not totally an option that you cannot build in there.

More than likelihood, you cannot. But you would have to petition FEMA.

MR. TRAINER: There was a house built on the Old Reading Pike, since the flood in '72. And that's raised. It's up near the Amity Township line. I don't think FEMA gave them a problem, so.

MS. MIERZEJEWSKI: But the only reason they were allowed to do that, was because there was a house there before the flood.

MR. TRAINER: There was?

MS. MIERZEJEWSKI: That's right, and they rebuilt what was there.

MR. TRAINER: The other question, somebody said something about 800 feet back you don't have to hook up?

MR. SKRINCOSKY: We need to check that based on --

MR. TRAINER: Amity Township, according to a resident up there, told me 200 feet in Amity. Now, that's some years ago. Has the Law changed?

MR. SKRINCOSKY: What you're saying is hearsay, you're hearing it from one person to another. We would have to research that issue with our Sewage Enforcement Officer to determine what length off the road DER would consider a waiver?

MR. TRAINER: You don't know for sure?

MR. SKRINCOSKY: I don't know off the top of my head, sir. I would be happy to relay that information to the Board of Supervisors at their next meeting. Yes, Ma'am.

MS. WELLS: I'm Christa Wells, and I reside at 207 Old Philadelphia Pike.

And my question is, several people have already asked about the EDU, and whether it is a basic cost per dwelling. And there seems to be some kind of uncertainty whether at some later date, or another proposal, or whatever, could make it very difficult for those of us who have quite a bit of frontage along Old Philadelphia

Pike.

At what time, exactly, will you know which plan you're going to follow, or how this is going to be implemented? When will we know for sure that an EDU, and that it is, that there isn't any added footage cost or anything like that? How does that work?

MR. MOTLEY: All right. We were looking at perhaps making, while we're extending the review period, at the end of the review period, this plan here, what we just talked about here tonight, and using a per dwelling unit per connection, not a, no front footage assessment, no special assessment, based on front footage, is what is being recommended, okay?

And that is what would be, it may perhaps be modified, based on some of the comments. I don't believe that is an area that was looking at being modified at all, in the Plan. But that's what, this is what would be, what would be recommended.

THE CHAIRMAN: Jamie, maybe if I may speak to that. We never, at least I'm speaking for myself, but I don't think Jeff or Steve would disagree with me, we've never looked at the idea of a per foot assessment.

I'll go on record right now, from my experience seeing farmers have to sell their farms, or people have to subdivide property they don't want to subdivide just

to pay for the cost of a sewer coming in; I don't think the Board wants to see people pay a per foot assessment. That's my personal opinion.

If you want to be totally frank about it, the counter argument can be, well, if you have a big lot, you may be benefitted by this, because when this comes through, you don't have to worry about percing anymore.

And a person with a large lot might be able to make more money off of his lot. And he might, in fact, be benefitted. This is a political and economical question.

My personal feeling is, I don't want to take any action, and I don't think the Board does, that is going to cause a tremendous financial burden on somebody just because they happen to own a lot of frontage. So, I don't think that's a major concern, and at this point I would pretty much lay it to rest. At least from my perspective, as a Supervisor.

And I don't think Jeff disagrees with that, so perhaps we can address the other questions.

MR. SKRINCOSKY: Also to clear up another issue, an EDU is really based upon the person's per household. In Douglass Township, in 1990 Census, it was 2.98 persons per household.

Now, you can't really compare a residential

dwelling unit with say, for example, a commercial entity such as Jay Lanes. Therefore, you have to use the EDU figures to compare the two.

Okay.

MS. WELLS: Another question. And I guess there are not too many other people effected by that, but those of us who are it's pretty important. We are that last little tail end of Old Philadelphia Pike that is in Amity Township. Which is weird when you look at it, just three houses.

And when, exactly, are you people getting together with Amity, and when are you discussing all these things? What happens to us who are sort of falling in between two chairs?

MR. SKRINCOSKY: Again, to reiterate the schedule, it was important to get the public opinion of the effected area. The Board of Supervisors have this Hearing for that purpose. Their next, upon adoption of the Plan, I should say, would be to meet preliminarily with Amity Township to discuss these options.

MS. WELLS: That's a private meeting, right?

MR. SKRINCOSKY: It will be a public meeting, the Sunshine Law is very particular about that.

THE CHAIRMAN: Jerome, as long as Mrs. Wells is here, maybe she can speak, maybe not on behalf of other

people, but herself. Since she resides in Amity, we probably won't see you at our meetings. What is your opinion, do you want to be involved in this septic project, or you prefer to be exempted out of it if you can be, based on the technicality that you're across the line?

MR. WELLS: And is there an option?

THE CHAIRMAN: Apparently there may be.

MS. WELLS: Other options? And I really, at this point, feel that I don't know quite enough about this. And I would have to investigate it. I also would defer to my family here to give their opinions. But I think, at least for me, I would like to investigate this further. I'd like to see what Amity does, and so forth.

MR. SKRINCOSKY: That's a good idea. Excuse me, Ma'am, you may want to choose to review this plan and also concurrently review Amity Township's Act 537 Plan, which was adopted in 1989. That's on file at the Township Office of Amity Township.

So, you might want to look at that to compare the two. As I stated earlier, your area is projected as a service area within the next five to ten years anyway in Amity Township. And the Amity Township Board of Supervisors will use their plan to compare the Douglass plan.

Yes, sir.

MR. CALLAHAN: My name is Callahan. I live on Colebrookdale Road.

What's the future look like for the rest of the Township?

MR. SKRINCOSKY: That's a good question. Based on our scheduling with DER, we are scheduled to complete, are you in the little Oley/Colebrookdale area?

MR. CALLAHAN: Yeah.

MR. SKRINCOSKY: Depending on where you are located on Colebrookdale Road, that is the Phase Two evaluation which is to be conducted by the Township within the next year.

Phase Three evaluation, which is to investigate the systems in the village of Pine Forge, is to be conducted by the year 1995.

And lastly, the problem areas in the village of Greshville would be the fourth and final area, which is to be conducted by 1996. This is recommended to us by DER. It was a way to offset some of the initial costs of the investigation.

Yes, Ma'am.

MS. SANDS: I'm Catherine Sands. As a former Township Secretary. And according to what Mr. Trainer said, the building on the Old Philadelphia Pike, you

could not build on the Old Philadelphia Pike because you could not get a Sewage Permit. You could not get a Sewage Permit because it was in a flood zone.

But if we go to be sewered, you can then build in the area, subdivide and build, provided you build above the flood level. When I was Secretary, this is the way it came out.

MR. SKRINCOSKY: Provided you are one foot above the flood plain elevation. Yes, sir.

MR. DIENER: I'd like to thank that lady for clearing that up. Because that was one of the questions that I was going to ask.

Secondly, the question that I have for you engineering people, as opposed to the Township people; did you factor in at all the ability, and I'm sorry, I can't read that map very clearly from here, but the ability to subdivide properties after the sewer is through, and then add that additional income?

Is there any -- is there any calculation or any percentage of possible building that will occur because of the sewage that would offset some of the cost of this initial cost, not that necessarily the $3200 per home, but the $683 per year?

Is there -- what I'm saying is, I can't clearly see the map from here. And I'm sure you did a nice job

of presenting this tonight. But my thoughts are, if you're going to take more houses in that same area, you should reduce the cost.

MR. MOTLEY: Well, that would happen. Let me explain, let me explain the way you come up, the way we came up with that $683, okay?

What we did was, we took the debt service, okay, the debt service, no matter how many, it costs X amount of dollars to build the project, no matter how many connections you have.

If you have more people come in now, they're going to have pay to either expand the line or pay for their own lateral, etc. So, your debt service is pretty much fixed.

The operation and maintenance of the system is $50,000 a year, approximately, $50,890. That includes treatment costs at Amity Township. That includes electric for the pump stations. That includes socking a little bit away every month for the, for the maintenance of the system, maintenance of the lines and things like that.

Now, that will increase a little bit as you add people to it. But not, not by $600 a unit. So, the more people you get in it, the lower per unit that is.

MR. DIENER: That's my question.

MR. MOTLEY: Absolutely.

MR. DIENER: What this lady is telling us, that you can take, which for example, my mother-in-law, who I'm here speaking for, has a lot of acreage in the flood plain. Which would be able to be subdivided, and then would be also divided into those numbers.

MR. MOTLEY: Yes, that would happen. That has not been presented here. And here is why. Okay. What happens if the system gets built and now nobody builds down there? We've misrepresented you. We could come to you and say, well, there's going to be another 500 units come in down there, your cost is going to be $100 a year, and everybody would say okey-dokey.

MR. DIENER: My thoughts are that could go down.

MR. MOTLEY: That is very feasible. That is very feasible, yes.

MR. DIENER: That was my question. Thank you.

MR. SKRINCOSKY: We're going to have three more questions, because we're dealing with time. Yes, sir.

MR. GAUL: My name is Joe Gaul, G-A-U-L. My mother has a property, 204 Old Philadelphia Pike. And she does not work, she hasn't worked for years. There's really no possible way that she could afford this property. And I just wonder how they plan on helping

people out like that to be able to afford the property.

MR. SKRINCOSKY: I apologize for you for that, sir. But these are the costs that we came up with as the most viable alternative as far as costs to the Township. I might -- you can contact your State Senator, the Department of Environmental Resources, whomever to state your problems. I mean, I apologize for that. There's nothing we can do about it.

But these are the facts. And these are the alternatives that the Township has.

MR. GAUL: Is there a possible way to get any grants to help us pay for it?

MR. SKRINCOSKY: As I stated, the only viable grant alternative at this time is the Farmers' Home Grant Administration. The Township does not qualify, based on its medium household income. Which is in the neighborhood of $40,000.

Unfortunately, there are some people that are way below that.

MR. GAUL: Way below that.

MR. SKRINCOSKY: And fortunately, there's people way above that. But they take the medium. That's the basis of that. Yes, Ma'am.

MS. BERKEIHISER: Kim Berkeihiser, again, 249 Old Philadelphia Pike. I wouldn't count on other people

building and having them help out with this process. We do live right on the line, and we've been fighting Amity Township for a man who wants to build on a 500-year flood plain. They will not let him do it.

You're taking up ground saturation space. It has nothing to do with the sewer. You still have water lying on everybody's property on Old Philadelphia Pike. The more buildings that you build, parking lots, etc., that take up the drainage, you have more of a water problem.

That sewer is not going to help anybody build anything, at least on Old Philadelphia Pike. I have no idea about the rest, but. And that's a 500-year flood plain. Most of us are on 100-year flood plain. It's a different story. It's a totally different story.

MR. SKRINCOSKY: Thank you, Ma'am.

MS. BERKEIHISER: And if somebody tries to, then you're going to end up with everybody else there too, because you have a lot of water problems. That has nothing to do with the sewer.

MR. SKRINCOSKY: One final question. Yes, sir,

MR. FAITHFUL: Paul Faithful, 139 Douglass Drive.

Some people will not be hooked up with their septic system to this new system. It will just be more

or less water from your house. Will they have the option to hooking up their septic to that? Or will DER make the decision?

MR. SKRINCOSKY: You're looking at choosing to have your sewage treated by your on-lot system, but your waste water --

MR. FAITHFUL: No, you said some of the houses in maybe low lying areas will use their existing septic systems, all right, their septic tank, their holding tank.

MR. WELLS: He's talking about small diameter.

MR. FAITHFUL: What I'm asking is, will they have the option of tying into this system? You're paying $600 a year for using this system, and you're going to have to have your tank pumped out a year?

MR. MOTLEY: The tank pump is part of the maintenance. Pumping the tank is part of the maintenance. That's included in the $683.

MR. FAITHFUL: They're going to come once a year and pump the tank?

MR. MOTLEY: The whole system is treated on the maintenance.

A VOICE: Will on-lot septic systems --

MR. MOTLEY: I know what you're talking about is the small diameter gravity system.

MR. FAITHFUL: No, your own tank that you have in your house now, your septic tank that they're saying they're having problems, DER is getting bad ground samples.

We'll use my house for example. They come over, and they do his place. They tell this man here you have to have hooked up to the sewer because your septic system. They come and tell me, no, you don't have to have it.

This man has a new system, I have an old system. What if I have a crack in my tank and it don't have to tie into it --

MR. MOTLEY: You would have to tie into it.

MR. FAITHFUL: -- with my septic tank?

MR. SKRINCOSKY: Yes.

MR. FAITHFUL: Because you had said earlier they were going to come and pump this tank up. Seal it up.

(Whereupon, a brief discussion was held off the record.)

MR. FAITHFUL: All right. Then, are you's going to come around and pump our tanks out?

MR. MOTLEY: Yes.

MR. FAITHFUL: The holding tank?

MR. MOTLEY: Yes, that's part of the

maintenance.

THE CHAIRMAN: That sounds fair.

MR. MOTLEY: Yeah, you have to run the whole system.

MS. HERTNEKY: What we were talking about was that a honey-dipper, in other words, a truck would go around, and on a regular basis, there would be a system-wide, township-wide pumping.

And what happens is, this honey-dipper, this company gets the municipality a very reasonable rate, because it's doing a mass quantity pump of the tanks in one shot. In comparison of you going, hey, I need mine done every few years. You know, they're going to charge a lot more.

MR. MOTLEY: And in order to ensure the integrity of the system, it's a lot easier for the Township to take care of all that than it is to worry about, you know, what if for some reason your neighbor can't get his pumped or something like that, you can't, I'm in the hospital, I'm away or something, and you have a problem there?

It's much better if the Township handles it and takes care of everybody all at the same time. That cost is spread out over everybody. It's much easier, it's much cheaper to have it that way than it is to have you

do it individually.

THE CHAIRMAN: Jerome, before we close the meeting, let me ask you a few questions I think the public may have missed.

One, there was a lot of controvery about these visual inspections of the systems. When you access this plan, members of the public, there are two volumes. And one of the Exhibits, one of the Exhibits contains addresses, no names, but it has all the addresses, and what the person saw when he inspected your particular lot or site.

In many of these cases, he observed no visual violations. But is it possible that this aboveground visual inspection is not sufficient to detect other malfunctions that would be subsurface? In other words, just because this says there's not a malfunction doesn't give that system a clean bill of health; isn't that true?

MR. SKRINCOSKY: That's correct. There's no signs of a visual malfunction, meaning aboveground.

THE CHAIRMAN: Is there anyone who gets a clean bill of health, who according to this, isn't necessarily out of the woods?

MR. SKRINCOSKY: That's correct.

THE CHAIRMAN: Because there may be an unperceived problem under the ground?

MR. SKRINCOSKY: That's correct.

THE CHAIRMAN: So, they'll be misled by this just visual inspection.

One thing I've been interested in is the recharge of water. We have a sewage system, we're pulling ground water out with our well pumps, and then we're discharging it into a main and it's going down into a septic system and then it's going out into the river after it's been treated.

There's no opportunity for that water to recharge back into the acquifer that supplies water for the system, the wells. Will this result in, in a worst case scenario, a drought year, will there be more dry wells because there's no recharge, or does recharge contribute very little to the ground water in this area?

MR. SKRINCOSKY: Generally speaking, the geology of the makeup, which takes up the ground water, is a vast area. Unfortunately, the Township is not on a very good water bearing geological formation. Potentially, Mark, it could be a ground water problem down the line.

Immediately, I would say no. It's not going to dry up all the wells in the Douglassville area. The Township should, and it's been recommended by DER, to, when you evaluate waste water treatment, to also evaluate

municipal water. That's their ongoing recommendation.

But as far as an immediate problem, I don't see it.

THE CHAIRMAN: Okay. There's been a lot of concern among the public about cost. Your firm has had a lot of experience with these systems, County wide, and in other Counties; is that correct?

MR. SKRINCOSKY: That's correct.

THE CHAIRMAN: Could you give us a range of the average costs, what's the cheapest and the highest you've experienced in terms of this EDU hookup, initial hookup cost, so they get a comparative idea of how badly or how well they're being treated in this particular project?

MR. SKRINCOSKY: Okay. Some of the Municipalities we are working with qualify for the Farmers' Home Grant, which is able to offset the cost.

In Upper Bern Township, the Shartlesville area in which we are working on, which has a significant problem, just as the Douglassville area does; their connection fees are going to be substantially low. They're looking at $1500 connection, and I believe somewhere in the neighborhood of like $370 per year. That's because it's offset by the 55 percent Grant that's offered by Farmers' Home.

Some of the other Municipalities that we are

working with are not afforded with that luxury. I've stated some of the more recent ones that have appeared in the paper. Some projects in which we are not, these projects we are not representing. Bern Township is approximately $8,000, they're looking, last I viewed that in the paper.

Perry Township was in the neighborhood of 7,000. Centre was 5,000. Bethel, they were looking at 6,000. Washington Township, 6,000. And similar annual fees, which were in the neighborhood of $600.

Douglass Township is fortunate, based on the location of the Amity Township waste water treatment system. That's where your costs are substantially reduced compared to the Municipalities I just stated.

For example, Bern Township, they're going to be looking at connecting into the City of Reading. Perry Township has got to go to Shoemakersville. Centre Township has got to go to Shoemakersville. Bethel Township, they have to install their own plants. Washington Township, they're looking at a huge system to go into Montgomery, or the Montgomery Township system.

So, this Township is fortunate, based on its locality.

THE CHAIRMAN: Jerome, thanks for that. I'd like to close out with a couple comments and leave it

open to Jeff.

I know the public is very concerned about what the position of the Board will be. And just let me share some of my thoughts with you. And I've been jotting them down as the meeting went on, and I'm a little concerned that they're not organized.

But first thing, that this whole project brings to my mind is the importance of planning and Zoning. Many people resent Zoning limitations and the planning and the red tape and the bureaucracy associated with Zoning and planning.

But frankly, it seems to me that had there been Zoning and planning in effect, many of the problems we're facing now, we wouldn't be facing. We would have lots that would be big enough to have an alternate system. If you had alternate systems available, which you'll see when you read this, this probably wouldn't be happening. The small lots, in some cases, precipitated this problem.

Another thing, the Board has known about this problem for a long time. And frankly, I don't want to, I don't know if I should use the word drag our feet, but we haven't been real excited and enthusiastic about subjecting everybody to this expense.

I can tell you in all sincerity, and this may sound self-serving, but we have tried our darnedest to

prevail available upon our Engineer to think of a way we wouldn't have to go through this. And as soon as it came to our attention that it was a problem, came forward, and I said at the public meeting a couple months ago, it's time to start planning on a personal basis for the cost of this installation.

So I would suggest, and I know some people can't do it, but start escrowing some money aside. And in two years, when you have to pay the 3,000, the $3200, it won't be such a shock to you. In other words, save for it instead of having to borrow for it later and pay the bank a fee.

The other thing is, some people, it seems to me, will be benefitted by this because they will be able to subdivide and possibly profit from the availability of sewer.

Another real interesting factor is, our cost is made cheap in fact by the very low interest rates we're currently experiencing. Interest rates have never been lower. The Penn Vest interest rate that was cited to us was something in the area of 2 and a half percent. That's unheard of in the last 20 years, if you've been around.

So, you're very fortunate on that level. I'm not saying this is going to be a pleasant experience, but

I'm trying to let you see that it's not as bad as it could have been. And the Township has done everything it can to avoid going through this.

Another thing, one of the problems that precipitated this, too, was the failure of people to maintain systems. When you don't maintain your system, and it starts to malfunction, you create the fecal coliform levels that then show up for DER. And then DER responds, well, now we have to do something drastic.

So, I'm a bit of a hypocrite too, because sometimes I forget to pump out my system every year. But it's important for everybody to remember that pumping your systems helps to prevent this from happening in your neighborhoods.

There's a lot of equitable issues that are going to be raised, and the Board will try to address them. One is, what's the best way to allocate the cost? Some people say, well, if I just have a new system, I shouldn't have to sign up.

If you don't have to sign up, then you may have 50 percent of the people would have to foot the expense, and theirs would be much larger. Plus eventually, your system will wear out, and you have to come onboard.

And long range, one final thought is that, if the sewage system goes through, and it remediates the

problem of the fecal coliform, you're going to benefit in maybe in an unseen way, because you're not theoretically going to have as many health problems that are associated with dirty drinking water.

You may not realize that cost overtly, but it's probably there, and we just don't realize that some people get sick every year because of the water, or will get sick if it isn't addressed.

Lastly, I think the Boyertown Library might be a good alternative site that we can get a copy of this plan to, while we research whether or not we can provide additional office staff on the weekend to open the doors of the building. I think it would be good for everyone to visit the Boyertown Library anyway.

So, what I'll do is, I'll take it upon myself to get a copy of this plan to them as soon as they're open. I'm not sure what their hours are. I know it's not every day. I suggest you contact them, and I'll put a copy of it there as soon as I can.

That concludes my remarks.

MR. SKRINCOSKY: Jeff?

MR. BEALER: Basically, our major concern has been, in the whole review of this plan, has been the cost to the residents. We've made that clear to the Engineers. We've worked on that. And that's why a lot

of these costs are included in, such as the maintenance and pumping the tanks, the maintenance of the pumps, the cost of the pumps. Those kind of things were put in there.

They did set the overall cost higher, but then again, it's not fair for the person who has the direct hookup with everything going in, no maintenance, to the person who has the tank and has to maintain the tank. We tried to do this overall across the board, fair to all individuals involved. And to keep the cost down at the same time.

As far as the concern of the front footage that was coming up over and over. If you look at front footage on the way it's done, you're basically going to tag the homeowner with the front footage right now. And you're going to get them.

But that's, you know, what value that adds to the overall system, you know, it's really not going to change numbers a whole lot. And the way you had to look at it is, again like Jerome said with the commercial, you can't basically front for the commercial operation.

If you front for the commercial operation, for the amount of usage they're going to put on that system, and the amount they're going to dump in there, they're really getting a bargain.

So basically, you got to go with the EDU because of the use. Front footage will come back and will come back to you that are paying now, you might feel, you might leave here feeling I'm paying for the guy with a lot of property. And maybe you are up front.

But what you got to look at is, if they do subdivide, that EDU is going to come in for the house that goes in there. And that EDU will probably work on knocking down your annual cost. So, it will come back if they do subdivide.

But again, we can't project that somebody is going to subdivide and say, there will be ten houses here, and that will cut your cost by X amount of dollars. If we do that, and they don't do that, we all lose.

Because in the end, if the Township comes up short, you're basically the Township. And basically what happens is, taxes have to go up somehow, or you'd have to cover it somewhere.

You can't say, just pull the money out of the air. It just doesn't work that way. So, I think the Engineers have worked out probably the best viable plan. More, you know, it's fair to everybody the way it's set down, and I think it will be fair in the future the way it works out.

As far as also being available, I have cards up

here. My home number is on there. Feel free to call me. If I can get a hold of the Plan, I will see to get it to you also. So, it will be available. Thank you.

MR. SKRINCOSKY: As the Board has indicated, the time frame or the 30-day comment period will be extended to Wednesday, October 27th, the next Board Meeting.

In the meantime, we will be requesting in writing the Department to extend their review period or our allotted time to conform to their requirements. And at that time, at the next, at the Supervisor's Meeting on October 27th, I think the Board can extend the review period again, if it so does choose.

The Board does have the option tonight, and if I'm reading you correctly, you are going to extend it to October 27th?

THE CHAIRMAN: Yes.

MR. SKRINCOSKY: So, as far as this Hearing is concerned, tonight it was for to solicit your public comments. The effected areas in particular. Your comments are on the record. You are not being cut off at this point as far as commenting.

Once again, if you would like to comment, your best method would be to provide it in writing to the Township. It would be included with the record.

Also, the Board will informally take comments, but probably will not answer many questions, unless our office is requested to be there, to answer questions. So that, if you chose to make additional comments, the Board will take them informally at that time.

THE CHAIRMAN: At the meeting, 7:00 o'clock, the 27th.

MR. SKRINCOSKY: And as you know, the Plan availability will try to be researched with the Boyertown Library. If that does not work out with the Boyertown Library, the Board may choose or research other sites in the meantime. And they could inform you at the next Supervisors' Meeting of those sites.

So I'd like to conclude tonight's Public Hearing. I'd like to thank the Board of Supervisors for allowing us this time to present it to the public. And I'd like to thank the public for your attention. Thank you.

(Whereupon, a brief discussion was held off the record.)

(Whereupon, the Hearing was concluded at 9:07 o'clock p.m.)

CERTIFICATE

I hereby certify that the proceedings and evidence are contained fully and accurately in the notes taken by me on the Hearing of the foregoing cause to the best of my ability, and that this copy is a correct transcript of the same.

Audry J. Leister

Audry J. Leister, RPR
Notary Public

1689 North Charlotte Street
Pottstown, PA 19464

Phone: (215) 323-2478

My Commission expires:
July 25, 1994.

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

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November 5, 1993

Douglass Township
Board of Supervisors
RD 2 Box 503
Boyertown, PA 19512

RE: DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
Implementation Schedule Modifications

Dear Board Members:

Pursuant to your request, we have prepared the necessary revisions to the Douglass Township Act 537 Plan Update. These proposed revisions involve the Implementation Schedule (Section 9.10 of the Plan). These proposed revisions were discussed at the Public Hearing on October 14, 1993.

The Township has conducted a Public Meeting in order to discuss the proposed Act 537 Plan Update. The residence of the Township have had 30 days to respond to the contents of the proposed Plan. It should also be noted that the proposed Plan has been reviewed by the Berks County Planning Commission, the municipalities affected by the proposed Plan, the Pennsylvania Historical and Museum Commission, and the Pennsylvania Department of Environmental Resources. Therefore, the Douglass Township Board of Supervisors have the option to adopt the proposed Plan by resolution. The adopted Plan should be forwarded to the Pennsylvania Department of Environmental Resources for final review, comment and approval. Upon the approval of the Plan, the Application for Sewage Facilities Planning Assistance should be completed and forwarded to the PA DER for their review. Douglass Township will be reimbursed 50 percent of the total cost for preparing the approved Act 537 Plan Update.

If you should have any questions regarding this municipal adoption process for the Douglass Township Act 537 Plan, please contact our office at 215-775-0888.

Sincerely,

MOTLEY ENGINEERING CO., INC.

J. Jerome Skrincosky

J. Jerome Skrincosky
Director of Planning Operations

cc: Thomas Parisi, Esq.

DGLS 537 4

9.00 IMPLEMENTATION OF THE PLAN

The legal and administrative actions required for the implementation of the Douglass Township Act 537 plan are outlined below:

The proposed Act 537 Plan Update shall be reviewed by the Berks County Planning Commission and/or applicable County agencies. Revisions to the proposed Act 537 Plan Update shall be executed based on all County and Municipal regulations, comments and concerns.

The proposed Act 537 Plan Update shall be adopted by all applicable municipal agencies by resolution. The adopted Act 537 Plan Update shall be submitted to the Pennsylvania Department of Environmental Resources for review and approval.

Douglass Township shall implement the Act 537 Plan Update in accordance with the implementation schedule (Section 9.10).

9.10 IMPLEMENTATION SCHEDULE

Upon approval of the proposed Act 537 Plan by the Pennsylvania Department of Environmental Resources, the Township shall implement the Plan in accordance with the following schedule:

1. The Township shall consult with the Amity Township Board of Supervisors and/or the Amity Township Sewer Authority regarding potential municipal wastewater treatment capabilities, capacity availability, financial obligations and reservation agreements. This preliminary consultation should be held prior to the Plan being approved by the PA DER.

2. The Township shall review all grant options that may be available in order to implement the proposed Plan. This should be conducted within three (3) months after the Act 537 Plan has been approved by the PA DER.

3. If the Township should not qualify for any grants the Township shall pursue a low interest loan from either PENNVEST and/or a conventional bond issue. This shall be completed within six (6) months after the Act 537 Plan has been approved by the PA DER.

4. If the Township initially fails to qualify for a grant which covers a minimum of 50 percent of the total project cost, the Township should continue to reapply for such grants on an annual basis to off-set future construction and/or maintenance costs.

5. The Township shall consult with the Amity Township Board of Supervisors and/or the Amity Township Sewer Authority in an effort to finalize any pertinent agreements. This shall be completed within six (6) months after the Act 537 Plan has been approved by the PA DER.

6. The Township shall conduct a detailed engineering feasibility study and design of the proposed wastewater collection system. This study and design should evaluate in detail on how engineering, planning and financing of this project will be further implemented. This shall be completed within twelve (12) months after the Act 537 Plan has been approved by the PA DER.

7. The Township shall complete the design and bidding for all phases of the Douglass Township wastewater collection and conveyance system within eighteen (18) months after the Act 537 Plan has been approved by the PA DER.

8. The Township shall undertake and complete the necessary financing that is required to fund the Douglass Township wastewater collection and conveyance system within twenty-four (24) months after the Act 537 Plan has been approved by the PA DER.

9. The Township shall complete the construction and installation of the Douglass Township wastewater collection and conveyance system within twenty-four (24) months after the Act 537 Plan has been approved by the PA DER.

10. The Douglass Township wastewater collection shall be connected into the Amity Township Wastewater Treatment System within twenty-four (24) months after the Act 537 Plan has been approved by the PA DER.

11. The Township shall adopt the "Field Testing Policy" identified under Section 8.131 of this Act 537 Plan. The basis for this particular testing policy is due to the existing physical limitations (soil, geologic, topographic and hydrogeological) for development and to prevent on-lot sewage malfunctions within the Planning Area. The Township should incorporate this sewage management policy as an amendment to the Douglass Township Subdivision and Land Development Ordinance. This should be conducted within twelve (12) months after the Act 537 Plan has been approved.

12. The Township shall adopt the standards and provisions for the "Physical Site Analysis" as identified under Section 8.132 of this Act 537 Plan. The basis for this particular testing policy is due to the existing physical limitations (soil, geologic, topographic and hydrogeologic) for development within the Planning Area. The Township shall incorporate this analytical procedure as an amendment to the Township Subdivision Ordinance. This should be conducted within twelve (12) months after the Act 537 Plan has been approved.

13. The Township should undertake a program to improve public awareness of the causes of on-lot sewage malfunctions and how the probability of a malfunction can be reduced. The PA DER has recommended a pumping schedule based on household size and tank size. This pumping schedule has been included within this Plan as TABLE K. This pumping schedule should be made available to all domestic households and a volunteer pumping program should be initiated by the Township. This should be conducted within eighteen (18) months after the Act 537 Plan has been approved.

14. The Township shall attempt to educate the residents of the Township regarding the operation and maintenance of on-lot sewage disposal systems. The PA DER (Bureau Water Quality Management) has published consumer guides which provide basic information relative to on-lot sewage disposal and management. The residents should be aware of the contents of these publications of which have been included within this Plan as APPENDIX G of this Act 537 Plan. These publications shall be kept at the Township Office for the resident to review. This shall be conducted within eighteen (18) months after the Act 537 Plan has been approved.

15. Douglass Township shall amend the minimum lot size for residential land uses within the R-1 (Rural Suburban Residential) Zoning District. Section 424 (Area, Yard and Height Regulations) of the Douglass Township Zoning Ordinance currently reveals that the lot size for residential land uses within the R-1 Zoning District shall be a minimum of one (1) acre per dwelling unit. Through the evaluation of wastewater treatment needs within the Township, it is apparent that the areas zoned R-1 have the highest needs for wastewater treatment and management. Based on the information contained within Sections 4.50, 5.10, 5.20, 6.10, 6.30, 6.42 and 8.142, the Township should amend Section 424 of the Zoning Ordinance. The minimum lot size for all residential land uses, within the R-1 Zoning District, which utilize individual on-lot sewage disposal systems and on-lot wells, should be a minimum of two (2) acres per dwelling unit. In addition, all other subsequent yard requirements should be modified accordingly. The Zoning Ordinance shall be properly amended within eighteen (18) months after the Act 537 Plan has been approved.

16. Douglass Township shall adopt a Dry Sewer Ordinance. This Ordinance would require proposed developments, located within certain areas of the Douglass Township Planning Area, to provide dry or capped sewers for future connection into a municipal wastewater treatment system. Through the evaluation of wastewater treatment needs, it is apparent that the R-1, C-1, C-2, I-1 and I-2 Zoning Districts have high needs for wastewater treatment and management. Therefore, the proposed developments within these Zoning Districts should comply with all pertinent design standards and construction specifications as outlined within this Dry Sewer Ordinance. The Douglass Township Subdivision Ordinance should also be amended to reflect this improvement requirement. This shall be conducted within eighteen (18) months after the Act 537 Plan has been approved.

Amended Appendix A-22-b.4

Minutes of Douglass Township Supervisors
Meeting of November 10, 1993

The Board of Supervisors convened their regularly scheduled meeting of November 10, 1993, at 7:08 p.m. in the Douglass Township Municipal Building. All Supervisors were in attendance.

By motion of Mr. Boettger and seconded by Mr. Bealer, the meeting minutes of October 13 and emergency meeting minutes of October 4, 1993, were approved as presented.

Chairman Scott reviewed correspondence, which included notification from DER that an extension of time had been granted for submission of the township's Act 537 Plan Update. (Due December 19, 1993).

Chairman Scott then reviewed an annual report submitted by Amity Fire Company, the Boyertown Communication Center minutes, and the third landfill inspection report prepared by John Ravert.

Mr. Bealer reviewed the October, 1993, road inspection report and related road projects proposed for 1994.

By motion of Mr. Bealer and seconded by Mr. Boettger, the Board updated the Cooperative Purchases Agreement with the Department of General Services, per Resolution #1993-7. The motion unanimously carried.

The Board then reviewed the latest Ironstone Park water testing results submitted by DER.

The Board also reviewed a revised implementation schedule for the Act 537 Plan Update. The Board instructed the Solicitor to prepare a resolution for submission of the Plan Update to DER. Chairman Scott motioned that Motley Engineering be contacted to verify the plan update will provide for utilizing all grinder pumps (deleting the use of grey water pumps) and that Motley also be instructed to provide a complete amended copy of the plan to the township. Mr. Bealer seconded the motion and roll call found all in favor.

The Board received and accepted the Berks County Conservation District's review of the William Brady and Paul Smith Erosion and Sedimentation Pollution Control Plans.

Mr. Lynn Dunning was present to discuss his plans for annexing a portion of land, including road frontage to neighboring property. As no subdivision is involved and the proposed annexation will result in improved road frontage, the Solicitor advised Mr. Dunning to proceed with submission of a formal plan.

The Board then reviewed the Heath and Lessig Annexation Plans. The Solicitor noted that as preliminary approval was given the plans by Planning Commission contingent upon certain conditions being met, the plans required no action by the Board of Supervisors at this

time.

The Board received a notice of a code enforcement violation at the Douglass Crossing property. It was noted the owner, Specht Realty, was informed of the violation.

Chairman Scott reviewed correspondence received from Chem-Nuclear Systems, in which they detailed their qualifications and guidelines in their endeavor to locate a suitable low-level radio active waste disposal facility site within the sate of Pennsylvania. It was further noted that only municipalities can volunteer land for consideration for this purpose (not private landowners).

The Board reviewed and discussed billing options offered by Conestoga Mobile systems regarding the pagers. The Board unanimously agreed to quarterly billing.

The Solicitor requested a brief executive session to be held immediately following the meeting.

The Board reviewed the November 10th bill list and by motion of Mr. Boettger, seconded by Chairman Scott, the bills were approved as presented. Roll call found Mr. Bealer in negative vote referencing check #1980, legal fees involving the appeal of the Auditors' surcharge. The Solicitor stated he believed actual signing of the check was a ministerial duty and would not conflict with Mr. Bealer's negative vote.

By motion of Mr. Scott, seconded by Mr. Boettger, permission was granted to advertise a budget workshop for Monday, November 22, at 7:30 p.m. Mr. Boettger suggested newly-elected Supervisor Aulenbach attend.

Chairman Scott praised Mr. Aulenbach and Ms. Horstmeier for their candidacy in the recent election.

Mr. Aulenbach thanked the Board for asking him to attend the budget workshop. Mr. Aulenbach then inquired into the status of the vacated office positions. A discussion then ensued, which resulted in the Board's agreement to contact Joan Adams and invite her back. It was further agreed if her response was negative, interviews would immediately commence.

By motion of Chairman Scott, seconded by Mr. Bealer, the meeting was adjourned at 8:42 p.m.

Respectfully submitted,

Mark C. Scott
Acting Secretary

Minutes of Douglass Township Supervisors
October 27, 1993

The Board of Supervisors of Douglass Township convened the regularly scheduled meeting of the above date at 7:00 p.m. in the Township Municipal Building. Supervisors Mark Scott and Jeff Bealer were in attendance. Supervisor Stephen Boettger was unable to attend.

Calling the meeting to order, Chairman Scott received and reviewed correspondence and reports.

Mr. Scott reported that a public hearing regarding the sewering of a southern portion of the township was conducted on October 14, 1993, at the Pine Forge Elementary School. He opened the meeting to any further public comment on the subject of this project as provided by the approved Act 537 Plan. In response, three residents addressed the Board. Public Sewer

Victor Mease of 241 Willow Drive expressed reservations concerning the continued use of septic tanks in conjunction with grey water pumps, suggesting that grinder pumps be used as an alternative.

Mr. Marable of Douglass Drive complained that continued use of septic tanks would pose a risk of contamination and pump failure. He too suggested the use of grinder pumps without septic tanks.

Mr. Paul Faithful also endorsed the use of grinder pumps instead of a combination of septic tanks and grey water pumps.

The Board agreed to discuss substitution of grinder pumps as requested with the Township Engineer and to amend the 537 Plan accordingly, if possible.

Upon motion of Mr. Bealer, seconded by Mr. Scott the Board unanimously approved a service agreement offered by the Berks Animal Rescue League. Animal Rescue

Upon motion of Mr. Bealer, seconded by Mr. Scott, the Board unanimously approved Resolution 1993-6, thereby establishing the Moyer Subdivision Escrow Account pertaining to maintenance of a spray irrigation septic system, as the escrow fee had now been remitted and deposited. Moyer Escrow

The Board reviewed and voiced no objection to a proposed Communications Center budget. BACC Budget

Solicitor Tom Parisi reported that it was unnecessary to respond to the Pennsylvania Municipal Retirement System due to the impending transfer of funds which would close out the Township's fund. PMRS

Solicitor Parisi also reported that the Township must pay school taxes relating to lands acquired from Waste Management. Upon motion of Mr. Bealer, seconded by Mr. Scott, the Board unanimously R.E.Ta.. Leven- good R

authorized Mr. Scott and Solicitor Parisi to pursue appeal hearings for diminution of assessment and exemption as to this parcel in 1994.

Minotto Subdiv.

Upon motion of Mr. Scott, seconded by Mr. Bealer, the Board unanimously voted to reject the Minotto subdivision plan unless an extension letter is received by the Township Planning Commission no later than 7:00 p.m. November 1, 1993.

Bulk Drop-of:

Upon motion of Mr. Scott, seconded by Mr. Bealer, the Board unanimously authorized Joan Adams to advertise bulk drop off week after establishing a date suitable to Waste Management.

Recyclir Fund

Mr. Scott explained that due to the sale of recycling trailers to the Borough of West Reading, the Recycling Fund should be terminated, with residual funds transferred to the General Fund. His motion to this effect was seconded by Mr. Bealer and found unanimous support.

Bills

Upon motion of Mr. Bealer, seconded by Mr. Scott, the Board unanimously approved an expenditure of $28,674.36 for total bills payable.

Brandt Complair

Opening the meeting to public comment, the Board first heard from Kathy Brandt of Colebrookdale Road who complained of the placing of garbage upon her property by a neighbor. Mr. Scott pointed out that the Township had coextensive power to enforce DER regulations and offered to work with DER to abate the problem.

Calahan Complair

Mr. Calahan, also of Colebrookdale Road joined Ms. Brandt in complaining as to the conduct of the same neighbor, citing numerous barking dogs as well as accumulating trash. The Board, upon motion of Mr. Bealer seconded by Mr. Scott, authorized the Solicitor to correspond with the offending party and to initiate all necessary legal action to abate any nuisances.

Adjourn

Upon motion of Mr. Bealer, seconded by Mr. Scott, the Board adjourned the meeting at 8:20 p.m.

Respectfully submitted,

Mark C. Scott
Acting Secretary

RECEIVED
DEC 0 2 1993
By

RESOLUTION NO. 8 -1993

ACT 537 (PENNSYLVANIA SEWAGE FACILITIES ACT) PLAN REVISION

RESOLUTION OF THE SUPERVISORS OF DOUGLASS TOWNSHIP, BERKS COUNTY, PENNSYLVANIA ("THE MUNICIPALITY").

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537, known as the "Pennsylvania Sewage Facilities Act", as amended, and the Rules and Regulations of the Department of Environmental Resources (Department) adopted thereunder at Chapter 71 of Title 25 of the Pennsylvania Code, requires the municipality to adopt an Official Sewage Facilities Plan providing for sewage services adequate to prevent contamination of waters and/or environmental health hazards with sewage wastes, and to revise said plan whenever it is necessary to meet the sewage disposal needs in the municipality, and

WHEREAS, Douglass Township, Berks County, has prepared an Act 537 plan which provides for sewage facilities in a portion of Douglass Township, Berks County, and

WHEREAS, Douglass Township, Berks County, finds that the Facility Plan described above conforms to applicable zoning, subdivision, other municipal ordinance and plans, and to a comprehensive program of pollution control and water quality management;

NOW, THEREFORE, BE IT RESOLVED, that the Supervisors of the Township of Douglass, Berks County, hereby adopt and submit to the Department of Environmental Resources for its approval as a

LAW OFFICES O'PAKE, MALSNEE & ORWIG, P.C.

revision to the "Official Plan" of the municipality, the above-referenced Facility Plan. The municipality hereby assures the Department of the complete and timely implementation of the said plan as required by law.

BOARD OF SUPERVISORS OF DOUGLASS TOWNSHIP, BERKS COUNTY, PENNSYLVANIA

Mark C. Scott, Chairman

Stephen Boettger, Supervisor

G. Jeffrey Bealer, Supervisor

I, Joan E. Adams, acting Secretary of Douglass Township, Berks County, do hereby certify that the foregoing is a true copy of the Township's resolution No. 8, adopted November 22, 1993.

Secretary

Township Seal

LAW OFFICES O'PAKE, MALSNEE & ORWIG, P.C.

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

Main Office:
1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

Branch Office:
30 main street
linfield, pa. 19468
ph. (215) 495-9939

January 31, 1994

Commonwealth of Pennsylvania
Department of Environmental Resources
Water Quality Management Program
Southcentral Region (Harrisburg)
One Ararat Boulevard Room 126
Harrisburg, PA 17110

ATTN: James M. Novinger, Water Quality Specialist

RE: DOUGLASS TOWNSHIP ACT 537 PLAN UPDATE
September 1993/Plan Resubmission

Dear Mr. Novinger,

On behalf of the Douglass Township Board of Supervisors, we are pleased to officially transit herewith, four (4) copies of the Douglass Township (Berks County) Act 537 Plan Update for your review and comment. The proposed Plan was prepared in accordance with the Pennsylvania Sewage Facilities Act (Act 537) and the guidelines established by the Pennsylvania Department of Environmental Resources. This Act 537 Plan Update will function as the Official Sewage Plan for Douglass Township for the proposed 20-year planning period. Please note that the Act 537 Plan is being resubmitted pursuant to your previous review (Correspondence Dated November 2, 1992). All Exhibits not included with this submission have been previously submitted.

If you should have any questions regarding this Act 537 Update, please contact me at 610-775-0888.

Sincerely,

MOTLEY ENGINEERING CO.,INC.

J. Jerome Skrincosky
Director of Planning Operations

cc: Douglass Township Board of Supervisors

pader5

MOTLEY ENGINEERING CO., INC.
CONSULTING ENGINEERS

Main Office:
1300 new holland road
kenhorst, pa. 19607
ph. (215) 775-0888

Branch Office:
30 main street
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January 31, 1994

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Sincerely,

MOTLEY ENGINEERING CO.,INC.

J. Jerome Skrincosky
Director of Planning Operations

cc: Douglass Township Board of Supervisors

pader5

since 1719 First in Berks

AMITY TOWNSHIP • BERKS COUNTY
BOARD OF SUPERVISORS

POST OFFICE BOX 215 • DOUGLASSVILLE, PA 19518
PHONE: (610) 689-6000 • FAX: (610) 689-9870
BARRY J. GROSS • MYRON S. WHEELER • D. GENE HAFER
W. SCOTT OXENFORD • THOMAS F. KIRCHNER

January 22, 1994

Board of Supervisors
DOUGLASS TOWNSHIP
R.D. #2
Boyertown, PA 19512

RE: Amity Township Sewer/Waste Water
Treatment Plant Capacity

Gentlemen:

On behalf of the Amity Township Board of Supervisors I have been asked to communicate with you regarding your request to connect the proposed Douglass Township Sewer Collection and Transportation System into the Amity Township Sewer/Waste Water Treatment Plant. As of this date, Amity Township does have available sewer and waste water treatment capacity in its treatment facility sufficient to receive up to 65,000 gallons per day of sewage and waste water effluent. Amity Township is prepared to enter into an agreement with Douglass Township reserving and setting aside that capacity subject to reaching an understanding as to the cost and expenses of such treatment and the amount and time for payment of the connection fees which agreement we anticipate would be finalized and placed into written form within six to nine months of the date of this letter.

We trust this letter will be sufficient to allow you to proceed with your application before the Department of Environmental Resources. We would remind you that sewer treatment capacity in the Amity Township system is subject to a first come first serve basis and we would encourage you to make appropriate arrangements through your Township offices and the respective offices of the two Township Solicitors at your earliest convenience. Should you have any questions regarding this matter or if we can be of further assistance, please feel free to contact us at your convenience.

Sincerely,

W. Scott Oxenford
Chairman

WSO/

T O W N S H I P *of* D O U G L A S S

Berks County, Pennsylvania

1997 AMENDMENT
of the
ACT 537 PLAN
for Sewage Facilities

APRIL 1997

Prepared for the

DOUGLASS TOWNSHIP BOARD of SUPERVISORS

By

SYSTEMS DESIGN ENGINEERING, INC.

4 Park Plaza
Wyomissing, Pennsylvania
19610

Pennsylvania Department of Environmental Protection

One Ararat Boulevard
Harrisburg, PA 17110-9333

June 20, 1997

Southcentral Regional Office

717-657-4590
FAX - 717-657-4446

Douglass Township
c/o Joan E. Adams, Secretary
R.D. 2, Box 503
Boyertown, PA 19512

Re: Act 537 Planning
Douglass Township, Berks County
DEP Code No. B1-06930-ACT

Ladies and Gentlemen:

The Department of Environmental Protection (Department) has reviewed your April 1997 Act 537 Plan Amendment, submitted June 6, 1997. The submission is consistent with the planning requirements given in Chapter 71 of the Rules and Regulations of the Department and is therefore approved with the following condition:

- All conditions found in the Department's May 10, 1994 letter approving your 1993 Act 537 Plan remain valid.

It is now Douglass Township's responsibility to implement the 537 Plan in accordance with the schedules contained within the Plan.

Since your Plan has been approved by the Department, you are now eligible to receive a 50 percent planning cost reimbursement as provided under Section 6 of the Sewage Facilities Act (Act 537). A copy of the reimbursement application is enclosed. You are reminded that reimbursement applications must show detailed cost breakdowns of tasks completed or you will place your reimbursement in jeopardy.

Any person aggrieved by this action may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. Section 7514, and the Administrative Agency Law, 2 Pa. C.S. Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, P.O. Box 8457, Harrisburg, PA 17105-8457, 717-787-3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800-654-5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in Braille or on audiotape from the Secretary to the Board at 717-787-3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

If you have any questions, please contact Mr. James Novinger at the above telephone number.

Sincerely,

Leon M. Oberdick
Program Manager
Water Management Program

Enclosure

cc: Systems Design Engineering, Inc.
Berks County Planning Commission

TOWNSHIP of DOUGLASS

Berks County, Pennsylvania

1997 AMENDMENT of the ACT 537 PLAN for Sewage Facilities

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Attachment #2: Construction Cost Estimates and Present Worth Analyses

Attachment #3: Correspondence to Bureau of Historic Preservation and Pennsylvania Natural Diversity Inventory

Established in 1736

DOUGLASS TOWNSHIP - BERKS COUNTY

1068 Douglass Drive
Boyertown, Pennsylvania 19512-9440

Phone: (610) 367-8500
Fax: (610) 367-0360

April 9, 1997

Mr. James M. Novinger, Sanitarian Sewage Specialist
Water Management Program
Pennsylvania Department of Environmental Protection, South-Central Region
1 Ararat Blvd.
Harrisburg, PA 17110

in re: *Act 537 Planning*
Task-Activity Report
Douglass Township, Berks County

Dear Mr. Novinger:

Please find enclosed the Task-Activity Report (TAR) and descriptive narrative for a proposed revision to the Act 537 Sewage Facilities Plan for Douglass Township, Berks County. You will recall having met with Michael Pohronezny, our Township Engineer, on March 4, 1997 to discuss this project. Our current Act 537 Plan, which was approved in 1993, provided for a phased approach. Phase 1, which includes the most densely developed portion of the Township, was to be provided with a sewage collection system immediately. Unfortunately, this original plan has proved unworkable from a financial perspective. We do not question the conclusions of our original consultant regarding the best, most cost effective design for the system. However, the cost of the initial phase, as proposed, is beyond the financial resources of the Township. We do not wish to select a alternative or design different from those identified by the 1993 Plan, but we need a strategy to make the selected alternative affordable.

The plan amendment proposed by the enclosed TAR is intended to demonstrate how division of the Phase 1 strategy into three (3) sub-phases in combination with utilization of PennVEST funding, which was not proposed by the current plan, will result in a financially feasible strategy that will allow for the Township to begin construction of a sewage collection system where it is most urgently needed. The proposed revision is explained in detail in the narrative portion of the TAR. As per your direction, the following items are included in the TAR document.

- Narrative description of the project area and the purpose of the proposed amendment.
- Description of the elements from the "General Plan Content Checklist" that will be included in the plan amendment, along with explanatory notes for their inclusion, where necessary for clarity.
- A map, copied from the USGS quadrangle maps, showing the Phase 1 area as already approved and the sub-phases being proposed.
- Checklists for administrative completeness and general plan content, preceded by a brief statement describing the areas in which they differ from those of the 1993 Plan. We emphasize that what we are proposing here is an *amendment* of the current plan. We do not wish to replace or re-do the plan document in its entirety, only to make

those revisions and additions that are necessary to create the sub-phases already described and to assure the inclusion of all information needed for our application to PennVEST.

- A chart showing the consultant's estimated time and costs by task number.

As a final note, please recall that there was a verbal agreement between you and Mr. Pohronezny that we could begin preliminary work on the Plan prior to approval of this TAR and still be eligible for reimbursement for such work. This was necessary in order for us to be able to complete and adopt the amendment prior to the deadline for application to PENNVEST on May 21, 1997. Because of this assurance, well testing and some text revisions have already been completed.

Thank you for your attention in this matter. We are looking forward to your reply. If you require additional information of any kind, please do not hesitate to call Mr. Pohronezny at Systems Design Engineering, Inc., telephone (610) 372-5490.

Very Truly Yours,
DOUGLASS TOWNSHIP

Robert J. Auerbach

Chairman
Board of Supervisors

encl.

cc: SDE file #7428-103

MGP/JRW/

C:\DGL\537TAR.XMT

T O W N S H I P *of* D O U G L A S S

Berks County, Pennsylvania

TASK - ACTIVITY REPORT
Proposed Revision of Municipal Act 537 Plan for Sewage Facilities

Prepared for the

DOUGLASS TOWNSHIP BOARD of SUPERVISORS

By

SYSTEMS DESIGN ENGINEERING, INC.

4 Park Plaza
Wyomissing, Pennsylvania
19610

ACT 537 PLAN REVISION

MUNICIPAL PLAN FOR SEWAGE FACILITIES

Douglass Township (Phase 1), Berks County

TASK - ACTIVITY REPORT

Douglass Township is located at the eastern edge of Berks County, approximately twelve miles east of the City of Reading. The Township's southern boundary is the Schuylkill River, and its eastern boundary is the Montgomery County line. U.S. Route 422, the principal highway connecting Reading and Philadelphia, passes along the southern edge of the Township. Development in Douglass Township is concentrated along Route 422 and two nearby parallel roads: Old Philadelphia Pike and the Benjamin Franklin Highway. Smaller concentrations of development are found in a handful of tiny villages scattered across the Township. At this time, there are no public or community sewage treatment facilities in the Township, and public sewerage is not generally available.

The Douglass Township Board of Supervisors adopted a Municipal Sewage Facilities Plan pursuant to Act 537 on November 22, 1993; this plan is currently in effect. The plan divides the Township into four (4) phases, with each phase scheduled for evaluation of sanitary sewerage feasibility in a different year. Phase 1, which includes the southern, most densely developed part of the Township was evaluated in 1993 as part of the initial plan. The plan determined that the entirety of Phase 1 was to be provided with public sanitary sewerage, with treatment provided by an existing facility along Old Philadelphia Pike in Amity Township. The original cost estimate of the selected alternative was 2.2 million dollars. The plan documents noted a variety of funding sources. The recommended funding strategy did not include the pursuit of any state or federal funding, but recommended a municipal bond issue.

By 1997, the collection system was still unbuilt. When the selected alternative was re-evaluated at that time by Systems Design Engineering, Inc. (SDE), the newly appointed Township Engineer, it was determined that the complete cost of the project was over 4.3 million dollars. SDE further determined that the total cost could be reduces to about 4.1 million dollars by using state funding through the PENNVEST program. A reduction of the proposed service area (along with a commensurate reduction in the future capacity reserves to be purchased from the Amity plant) was found to further reduce the project cost to 2.8 million dollars. This revision involves dividing the Phase 1 area defined in the approved 1993 Plan into three sub-phases. Re-defining the project to include, initially, only the first of these three sub-phases reduces the number of proposed sewer connections by only thirty-one (31) dwellings. As a result, the plant capacity that must be purchased from Amity Township is reduced, as well as the number of units served and the amount of sewer line that must be installed. The Engineer further noted that it would be in the best interest of the Township to begin the application process for PENNVEST funding.

On March 4, 1997, the Township Engineer met with representatives of the Pennsylvania Department of Environmental Protection (DEP) and PENNVEST regarding amendment of the 1993 Act 537 Plan. The amendment was to achieve two (2) goals. First, the engineer wanted to review this revision of the initially proposed sewage collection system for Phase 1 to create a more affordable system by dividing it into three (3) sub-phases, which we refer to hereafter as

Phases 1a, 1b, and 1c. In support of this request, the engineer observed that two portions of the collection system proposed for Phase 1 were in relatively low-density areas and their topography required the use of pump stations. These factors resulted in a sewer service cost of about $30,000/EDU for these areas. While the engineer did not dispute that this was the most cost effective method of sewering these properties, referred to hereafter as Phases 1b and 1c, he noted that their inclusion raised the total project cost to a prohibitive level. The proposed revision delays the installation of the collection systems for Phases 1b and 1c until such time that the Township can more readily afford it. Secondly, the amendment would add the information necessary to satisfy PENNVEST application requirements, thereby allowing the municipality to pursue state assistance with funding. DEP was represented at this meeting by Project Manager Kevin McLeary and Sanitarian Sewage Specialist James Novinger; PENNVEST was represented by Project Specialist Vickie Johnson. During the course of the meeting, all of these individuals reviewed the current plan and considered the plan content checklist. It was noted that many of the required elements as included in the 1993 Plan were still current. This being the case, it was determined that a comprehensive amendment was not required. The checklist was revised accordingly to eliminate redundant tasks and to focus solely upon the items that required either updating or additional detail. At the conclusion of this meeting, it was tentatively agreed that completion of the elements described herebelow would be sufficient to satisfy the Township, DEP, and PENNVEST application requirements. It was further agreed upon by all parties that, in order to complete the document as quickly as possible, work on the outstanding tasks could begin prior to the official approval of the TAR; such work would still be deemed eligible for DEP reimbursement. It is the intention of Douglass Township and the Township Engineer to address these elements in a timely and efficient manner; to develop an amended Act 537 Plan for the Township that is satisfactory to the Township, the DEP, and PENNVEST; and to apply for PENNVEST funding prior to the May 1997 application deadline.

I. The Engineer and the Township will survey an additional forty (40) individual on-site water supplies to identify possible contamination by malfunctioning on-lot sewage disposal systems. This survey will be consistent with the DEP Sewage Disposal Needs Identification Guidance manual.

Prior to the March 4, 1997 meeting, seven (7) wells had been surveyed as required by the Manual. Four (4) of theses wells, or 57%, were found to be contaminated. However, this was not considered a representative sample. The Engineer was directed to test at least twenty-five (25) percent of the connections in the proposed service area. With 186 proposed connections, this comes out to a minimum of forty-seven (47) total well tests. These forty (40) additional tests, along with the seven (7) completed, will result in a twenty-five (25) percent sample of the on-site systems within the Phase 1 area. If the contamination rate of fifty-seven (57) percent remains consistent, it was stated that this could add fifteen (15) points to the assessment of the PENNVEST application; a ten (10) percent contamination rate could add six (6) points to the assessment.

The issue of malfunctioning on-site disposal systems was also discussed. The 1993 Plan documented a malfunction rate of 27%. It was later determined that this figure may not be accurate, due to the way that non-residential properties were tallied. A system malfunction rate of at least fifty (50) percent would be required for the PENNVEST application to receive additional points. Mr. Novinger recommended that the Engineer perform a brief visual inspection of the non-residential properties in question to determine if there were any visible signs of malfunctioning systems. If such signs were present, the Engineer would perform a proper malfunction survey in an attempt to document a higher malfunction rate. A licensed SEO from the Engineer's office performed the visual survey as recommended and, based upon the lack of visual evidence of system mal-

functions, determined that a formal malfunction survey would not raise the documented malfunction rate enough to garner additional points on the PENNVEST application. For this reason, no additional malfunction survey was performed, nor is any such survey is proposed as part of this amendment.

II. The checklist, pursuant to §71.21.a.4.i of Title 25, requires that Act 537 plans include an assessment of the potential for extension of existing municipal or non-municipal sewage facilities to areas in need of new or improved sewage facilities. The 1993 plan called for sewerage of the entire Phase 1 area by connection to the existing Amity Township treatment facility. The amendment proposes reducing the area to be initially connected to public sewerage. The properties eliminated from the collection system by the amendment will continue to rely upon on-lot disposal systems. If necessary, an on-lot system management district will be temporarily established as an interim measure to assure the proper functioning of these systems until such time that it becomes financially feasible to connect these properties to the collection system.

It was agreed that this element of the checklist should be addressed by a statement explaining why the proposed service area is being revised, since the feasibility of sewering these properties had been thoroughly discussed from an engineering perspective in the 1993 Plan. In fact, the 1993 Plan considered the practicality of extending several nearby public systems, not just the Amity Township system that was eventually selected. Any re-evaluation of the structural feasibility of extending any of the nearby public systems would be redundant.

III. Evaluation of alternatives.

A. The Engineer will provide cost estimates using present worth analysis for construction, financing, on-going administration, operation and maintenance, and user fees for alternatives identified in Section V of this checklist. Estimates shall be limited to areas identified in the plan as needing improved sewage facilities within five (5) years from the date of plan submission.

B. The Engineer will provide an analysis of the funding methods available to finance the proposed alternatives. The Engineer will also provide documentation to demonstrate which alternative and financing scheme combination is the most cost-effective, and a contingency financial plan to be used if the preferred method of financing cannot be implemented. The funding analysis shall be limited to areas identified in the plan as needing improved sewage facilities within five (5) years from the date of the plan submission.

C. The Engineer will compare the need for immediate or phased implementation of the selected alternative. The 1993 Plan proposed a phased strategy for sewering the Township. This amendment will divide Phase 1, the initial phase, to create three (3) sub-phases. As required, the justification for the proposed phasing will include the following considerations.

1. The Engineer will provide a description of activities necessary to abate any critical public health hazards pending completion of sewage facilities or implementation of sewage management programs.

2. The Engineer will describe the advantages of the revision to the phasing of the construction of the facilities and will justify time schedules for each sub-phase.

IV. Cost effectiveness.

There is no argument with the conclusion of the 1993 Plan stating that connection to the Amity Township treatment facility is the most cost-effective way to provide off-site sewage disposal for the Phase 1 portion of the Township. For this reason, the amendment will neither discuss nor propose alternative methods of collection or treatment. Although cost-effective, the alternative identified by the 1993 Plan is simply not affordable for the Township at this time.

The sole purpose of this amendment is to divide the original Phase 1 portion of the Township into three (3) sub-phases: Phase 1a, Phase 1b, and Phase 1c. Phase 1a will be immediately provided with a collection system feeding into the Amity Township treatment facility. Phases 1b and 1c will eventually be connected to the same facility. Until that time, an on-lot system management program could be temporarily implemented as an interim measure, if found necessary, for those sub-phases.

V. PENNVEST Program Required Actions

Elements #1 through #6 are classified by DEP as part of the planning process. Some of these elements were addressed by the 1993 Act 537 Plan; no additional effort will be expended on these elements. On the following list, these items are indicated as having been addressed. The remaining elements will be addressed by the Township and the Engineer as part of this amendment process.

1. Best Practicable Waste Treatment Technology.

   Best practicable waste treatment technology effectively meets the required quality of effluents. This is met in the evaluation of alternatives in 71.21(a)(4).

   This item was addressed on pages 70 and 93 of the 1993 Plan.

2. Innovative / Alternative Technology

   Alternative and innovative sewage collection and treatment technologies must be included as alternatives analyzed as required by 71.21(a)(4).

   This item was addressed on pages 70, 71, 79, 93, and 95 of the 1993 Plan.

3. Non-Excessive Infiltration / Inflow

   Sewer collection systems cannot be subject to excessive infiltration and inflow. This item is met in the evaluation of alternatives in 71.21(a)(4).

4. Recreation and Open Space

   Recreation and open space opportunities must be analyzed.

5. Environmental Impact Assessment

   An environmental impact assessment must be prepared which describes the project's positive and negative consequences. The mitigative steps to be taken for unavoidable negative consequences must also be described. The specific

environmental concerns are listed below. Items a, b, c, e, and g are part of sewage planning and are eligible for Act 537 grant participation to the extent of identification of a potential impact.

a. Historical and archaeological sites

b. Wetlands

c. Endangered and protected species

d. Air quality

e. Floodplains

f. Fish and wildlife

g. Agricultural lands

h. Wild and scenic rivers

i. Coastal zone management

j. Socio-economic impacts

k. Water supplies

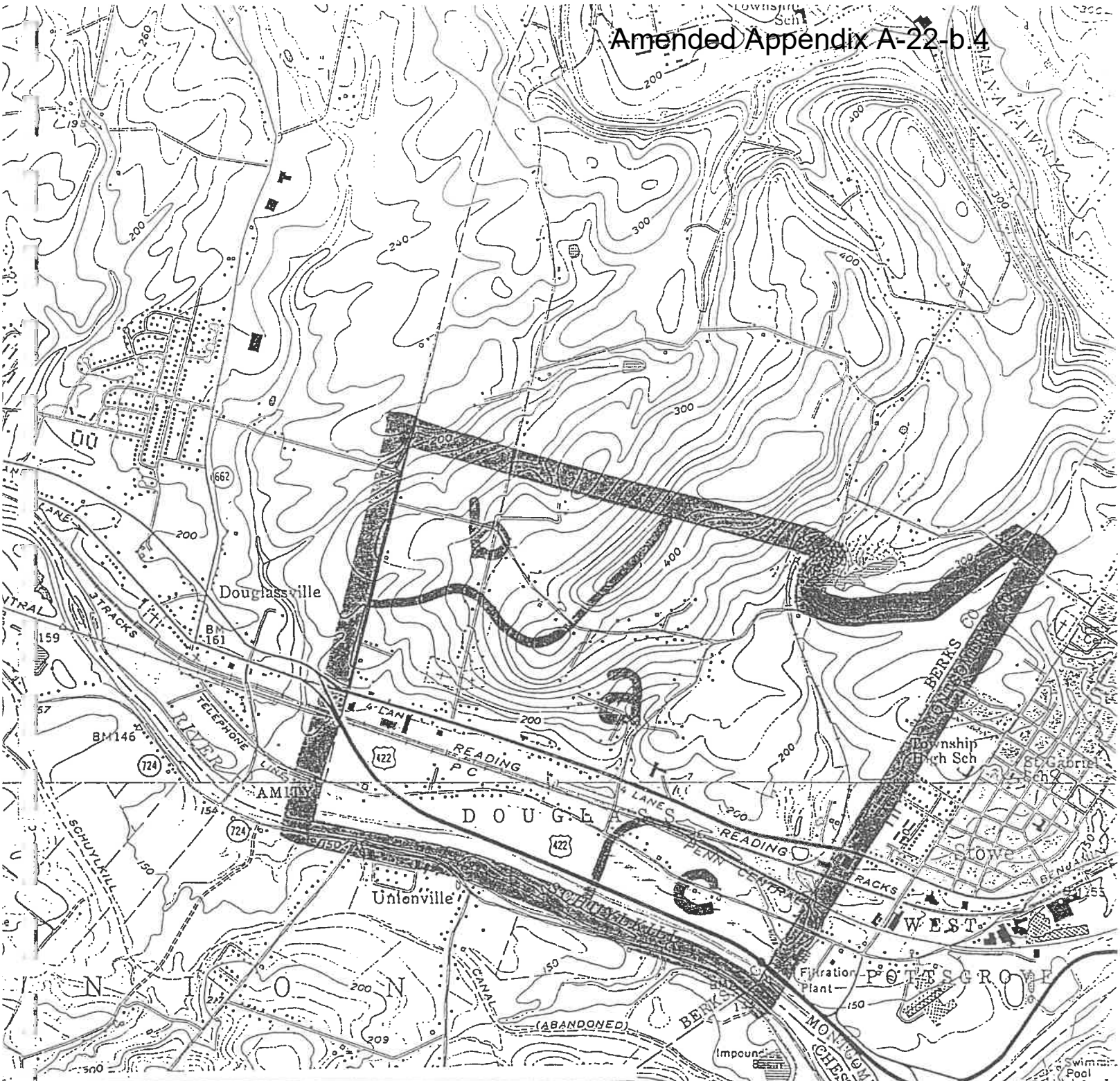
l. Other environmentally sensitive areas

6. Cost Effectiveness

Costs of principal alternatives must be compared, using present worth or annualized costs, and user rates estimated.

This element was addressed on pages 72 - 77, 90, 91, and 102 of the 1993 Plan. The costs of the system as revised by the amendment will be computed and compared with the system as originally proposed by the 1993 Plan.

Amended Appendix A-22-b.4



DOUGLASS TOWNSHIP

Berks County

PHASE 1 SEWER SERVICE AREA

Phase 1 includes the area within the heavy outline on this map and was approved as part of the 1993 Act 537 Plan. This proposed amendment separates this phase into three sub-phases, labelled here as "a," "b," and "c."

SCALE: 1" = 2,000'

USGS QUADRANGLE MAPPING:
BOYERTOWN and POTTSTOWN

ADMINISTRATIVE COMPLETENESS CHECKLIST

In most cases, the page numbers indicated for the various portions of the plan on the following pages refer to the approved 1993 Act 537 Plan for Douglass Township, Berks County. The pages indicated are the same as those indicated by Motley Engineering Co. on the checklist that was submitted to the Department with the plan document in 1993, and have been repeated herein for reference with the following exceptions.

- Where the word "AMENDMENT" appears, the item will be revised by the proposed plan amendment.
- For some items on the PENNVEST portion of the checklist, the page numbers provided by Motley were deemed too imprecise. We have provided specific page numbers in these cases and marked those numbers with an asterisk (*).
- Items #7 through #13 on the PENNVEST checklist will be addressed at the design phase of the loan.

ADMINISTRATIVE COMPLETENESS CHECKLIST

DEP Use Only	Indicate Page #(s) in Plan	In addition to the main body of the Plan, the Plan must include items 1 through 8 listed below to be accepted for formal review by the Department. Incomplete Plans will be returned unless the municipality is clearly requesting an advisory review, only.
_____	T/C	1. Table of Contents
_____	1993 Plan 54-69, 93-101	2. Plan Summary A. Identify the proposed service areas and major problems evaluated in the Plan. (Reference - Title 25, §71.21.a.7.i)
_____	1993 Plan 93-108 Appendix H	B. Identify the alternative(s) chosen to solve the problems and serve the areas of need identified in the plan. Also, include any institutional arrangements necessary to implement the chosen alternative(s). (Reference Title 25 §71.21.a.7.ii)
_____	1993 Plan 70-77, 93-108 Appendix H	C. Present the estimated cost of implementing the proposed alternative (including the user fees) and the proposed funding method to be used. (Reference Title 25, §71.21.a.7.ii)
_____	1993 Plan 70-77, 93-108 Appendix H	D. Identify the municipal commitments necessary to implement the Plan. (Reference Title 25, §71.21.a.7.iii)
_____	1993 Plan 103-108	E. Provide a schedule of implementation for the project which identifies the MAJOR milestones with dates necessary to accomplish the project to the point of operational status. (Reference Title 25, § 71.21.a.7.iv)
_____	1993 Plan Appendix H	3. Original, signed and sealed Resolution of Adoption by the Municipality which contains, at a minimum, alternatives chosen and a commitment to implement the Plan in accordance with the implementation schedule. (Reference Title 25, §71.31.f) Section V.F. of the Planning Guide.
_____	1993 Plan Appendix H	4. Evidence that the municipality has requested, reviewed, and considered comments by appropriate official planning agencies of the municipality, planning agencies of the county, planning agencies with areawide jurisdiction (where applicable), and any existing county or joint county departments of health. (Reference-Title 25, §71.31.b) Section V.E.1 of the Planning Guide.
_____	1993 Plan Appendix H	5. Proof of Public Notice which documents the proposed plan adoption, plan summary, and the establishment and uncontested conduct of a 30 day comment period. (Reference-Title 25, §71.31.c) Section V.E.2 of the Planning Guide.
_____	1993 Plan Appendix H	6. Copies of ALL written comments received and municipal response to EACH comment in relation to the proposed plan. (Reference-Title 25, §71.31.c) Section V.E.2 of the Planning Guide.
_____	1993 Plan 103-108	7. A complete project implementation schedule with milestone dates specific for each existing and future area of need. Other activities in the project implementation schedule should be indicated as occurring a finite number of days from a major milestone. (Reference-Title 25, §71.31.d) Section F of the Planning Guide. Include dates for the future initiation of feasibility evaluations in the project's implementation schedule for areas proposing completion of sewage facilities for planning periods in excess of five years. (Reference Title 25, §71.21.b)

DEP Use Only	Indicate Page #(s) in Plan	In addition to the main body of the Plan, the Plan must include items 1 through 8 listed below to be accepted for formal review by the Department. Incomplete Plans will be returned unless the municipality is clearly requesting an advisory review, only.
_____ 1993 Plan	Appendix H	8. Documentation indicating that the appropriate agencies have received, reviewed and concurred with the method proposed to resolve identified inconsistencies within the proposed alternative and consistency requirements in 71.21.(a)(5)(i-iii). (Reference-Title 25, §71.31.e) Appendix B of the Planning Guide.

GENERAL PLAN CONTENT CHECKLIST

DEP Use Only	Indicate Page#(s) In Plan	Item Required
		I. Previous Wastewater Planning
		A. Identify and briefly analyze all existing wastewater planning that:
_____	1993 Plan 1-5	1. Has been previously undertaken under the Sewage Facilities Act (Act 537). (Reference-Act 537, Section 5 §d.1).
_____	1993 Plan 1-5	2. Has not been carried out according to an approved implementation schedule contained in the plans. (Reference-Title 25, §71.21.a.5.i.A-D) Section V.F of the Planning Guide.
_____	1993 Plan 1-5	3. Is anticipated or planned by applicable sewer authorities. (Reference-Title 25, §71.21.a.5.i.A) Section V.D. of the Planning Guide.
_____	1993 Plan 1-5	4. Has been done through planning modules for new land development, planning "exemptions" and addenda. (Reference-Title 25, §71.21.a.5.i.A).
		B. Identify and briefly summariezes all municipal and county planning documents adopted pursuant to the Pennsylvania Municipalities Planning Code (Act 247) including:
_____	1993 Plan 6-9	1. All land use plans and zoning maps which identify residential, commercial, industrial, agricultural, recreational, and open space areas. (Reference-Title 25, §71.21.a.3.iv).
_____	1993 Plan 6-9	2. Zoning or subdivision regulations that establish lot sizes predicated on sewage disposal methods. (Reference-Title 25 §71.21.a.3.iv).
_____	1993 Plan 6-9	3. All limitations and plans related to floodplain and stormwater management and special protection (Ch. 93) areas. (Reference-Title 25 §71.21.a.3.iv) Appendix B, Section II.F of the Planning Guide.
		II. Physical and Demographic Analysis utilizing written description and mapping (All items listed below require MAPS, and all maps should show all current lots and structures and be of appropriate scale to clearly show significant information).
_____	1993 Plan 17, 54-65 70-77	A. Identification of planning area(s), municipal boundaries, Sewer Authority/Management Agency service area boundaries. (Reference-Title 25, §71.21.a.1.i).
_____	1993 Plan 38-42	B. Identification of physical characteristics (streams, lakes, impoundments, natural conveyance, channels, drainage basins in the planning area). (Reference-Title 25, §71.21.a.1.ii).
_____	1993 Plan 17-34	C. Soils - Analysis with description by soil type and soils mapping. Show areas suitable for in-ground on-lot systems, elevated sand mounds, individual residential spray irrigation systems, and areas unsuitable for soil dependent systems. (Reference-Title 25, §71.21.a.1.iii). Show Prime Agricultural Soils and any locally protected agricultural soils. (Reference-Title 25, §71.21.a.1.iii).

DEP Use Only	Indicate Page #(s) In Plan	Item Required
_____	1993 Plan 35-38	D. Geologic Features - Identification through analysis, mapping and their relation to existing or potential nitrate-nitrogen pollution and drinking water sources. Include areas where existing nitrate-nitrogen levels are in excess of 5 mg/l. (Reference-Title 25, §71.21.a.1.iii).
_____	1993 Plan 38, 39	E. Topography - Depict slopes that are suitable for conventional systems; slopes that are suitable for elevated sand mounds; slopes that are unsuitable for on-lot systems. (Reference-Title 25, §71.21.a.1.ii).
_____	1993 Plan 43-47	F. Potable Water Supplies - Identification through mapping, description and analysis to include available public water supply capacity and aquifer yield for groundwater supplies. (Reference-Title 25 §71.21.a.1.vi) Section V.C. of the Planning Guide.
_____	1993 Plan 40-42	G. Wetlands-Identify wetlands as defined in Title 25, Chapter 105 by description, analysis and mapping. Include National Wetland Inventory mapping and potential wetland areas per USDA, SCS mapped hydric soils. Proposed collection, conveyance and treatment facilities and lines must be located and labeled, along with the identified wetlands, on the map. (Reference-Title 25,§71.21.a.1.v) Appendix B, Section II.I of the Planning Guide.
		III. Existing Sewage Facilities in the Planning Area - Identifying the Existing Needs
		A. Identify, map and describe municipal and nonmunicipal, individual and community sewerage systems in the planning area including:
_____	1993 Plan 48-53	1. Location, size and ownership of treatment facilities, main intercepting lines, pumping stations and force mains including their size, capacity, point of discharge. Also include the name of the receiving stream, drainage basin, and the facility's effluent discharge requirements. (Reference-Title 25, §71.21a.2.i.A)
_____	1993 Plan 48-53	2. A narrative and schematic diagram of the facility's basic treatment processes including the facility's NPDES permitted capacity, and the Clean Streams Law permit number. (Reference-Title 25, §71.21.a.2.i)
_____	1993 Plan 48-69	3. A description of problems with existing facilities (collection, conveyance and/or treatment), including existing or projected overload under Title 25, Chapter 94 (relating to municipal wasteload management) or violations of the NPDES permit, Clean Streams Law permit, or other permit, rule or regulation of the Department. (Reference-Title 25, §71.21.a.2.i.B)
_____	1993 Plan 48-69	4. Details of scheduled or in-progress upgrading or expansion of treatment facilities and the anticipated completion date of the improvements. Discuss any remaining reserve capacity and the policy concerning the allocation of reserve capacity. Also discuss the compatibility of the rate of growth to existing and proposed wastewater treatment facilities. (Reference-Title 25,§71.21.a.4.i & ii)
_____	1993 Plan 48-69 80-85	5. A detailed description of operation and maintenance requirements of the municipality for on-lot systems and the status of past and present compliance with these requirements and any other requirements relating to sewage management programs. (Reference-Title 25, §71.21.a.2.i.C)

DEP Use Only	Indicate Page #(s) In Plan	Item Required
	43-47	
_____	1993 Plan 48-69	6. Disposal areas, if other than stream discharge, and any applicable groundwater limitations. (Reference-Title 25, §71.21.a.4.i & ii)
		B. Using DEP's manual titled "Sewage Disposal Needs Identification Guidance," identify, map and describe areas that utilize individual and community on-lot sewage disposal and, unpermitted collection and disposal systems ("wildcat" sewers, borehole disposal, etc.) and retaining tank systems in the planning area including:
_____	1993 Plan 48-69	1. The types of systems in use. (Reference-Title 25, §71.21.a.2.ii.A).
_____	1993 Plan 48-69	2. A sanitary survey complete with a description of documented and potential public health pollution, and operational problems (including malfunctioning systems) with the systems, including violations of local ordinances, the Sewage Facilities Act, the Clean Stream Law or regulations promulgated thereunder. (Reference-Title 25, §71.21.a.2.ii.B).
_____	1993 Plan 48-69	3. A comparison of the types of on-lot sewage systems installed in an area with the types of systems which are appropriate for the area according to soil, geologic conditions, topographic limitations sewage flows, and Title 25 Chapter 73 (relating to standards for sewage disposal facilities). (Reference-Title 25, §71.21.a.2.ii.C).
_____	1997 Plan Amendment, p.1	4. An individual water supply survey to identify possible contamination by malfunctioning on-lot sewage disposal systems consistent with the DEP Sewage Disposal Needs Identification Guidance manual. (Reference-Title 25 §71.21.a.2.ii.B)
		C. Identify wastewater sludge and septage generation, transport, and disposal methods. Include this information in the sewage facilities alternative analysis including:
_____	1993 Plan 48-69	1. Location of sources of wastewater sludge or septage (Septic tanks, holding tanks, wastewater treatment facilities). (Reference-Title 25 §71.71)
_____	1993 Plan 48-69	2. Quantities of the types of sludges or septage generated. (Reference-Title 25 §71.71).
_____	1993 Plan 48-69	3. Present disposal methods, locations, capacities, and transportation methods. (Reference-Title 25 §71.71).
		IV. Future Growth and Land Development
		A. Delineate and describe the following through map, text and analysis:
	9-16	
_____	1993 Plan 99-102	1. Areas with existing development or plotted subdivisions. Include the name, location, description, total number of EDU's in development, total number of EDU's currently developed, and total number of EDUs remaining to be developed (include time schedule for EDU's remaining to be developed). (Reference-Title 25, §71.21.a.3.i).
_____	1993 Plan 6-9	2. Land use designations established under the Pennsylvania Municipalities Planning Code (35 P.S. 10101-11202), including residential, commercial and industrial areas. (Reference-Title 25,§71.21.a.3.ii). Include a comparison of proposed land use as allowed by zoning and existing sewage facility planning (Reference-Title 25, §71.21.a.3.iv).

DEP Use Only	Indicate Page #(s) In Plan	Item Required
_____	1993 Plan 6-16	3. Future growth areas with population and EDU projections for these areas using historical, current and future population figures and projections of the municipality. Discuss and evaluate discrepancies between local, county, state and federal projections as they relate to sewage facilities. (Reference-Title 25, §71.21.a.1.iv). (Reference-Title 25, §71.21.a.3.iii).
_____	1993 Plan 6-9	4. Zoning, and/or subdivision regulations; local, county or regional omprehensive plans; and existing plans of a Commonwealth agency relating to the development, use and protection of land and water resources with special attention to: (Reference-Title 25, §71.21.a.3.iv) –public ground/surface water supplies –recreational water use areas –groundwater recharge areas –industrial water use –wetlands
_____	48-69 1993 Plan 93-102	5. Sewage planning to provide adequate wastewater treatment for the municipality. This planning must be related to both the five and ten year future planning periods and be based on growth impacts on existing and proposed wastewater collection and treatment facilities. (Reference-Title 25, §71.21.a.3.v)
		V. Identify Alternatives to Provide New or Improved Wastewater Disposal Facilities
		A. Conventional collection, conveyance, treatment, and discharge alternatives including:
_____	70-90 1993 Plan 93-102	1. The potential for regional wastewater treatment. (Reference-Title 25, §71.21.a.4).
_____	1997 Plan Amendment, p.2	(2.) The potential for extension of existing municipal or non-municipal sewage facilities to areas in need of new or improved sewage facilities. (Reference-Title 25, §71.21.a.4.i)
_____	1993 Plan 70-90	3. The potential for the continued use of existing municipal or non-municipal sewage facilities through one or more of the following: (Reference-Title 25, §71.21.a.4.ii).
_____	1993 Plan 70-90	a. Repair. (Reference-Title 25, §71.21.a.4.ii.A)
_____	1993 Plan 70-90 70-90	b. Upgrading. (Reference-Title 25, §71.21.a.4.ii.B)
_____	1993 Plan 93-102	c. Reduction of hydraulic or organic loading to existing facilities. (Reference-Title 25, §71.71)
_____	1993 Plan 70-90	d. Improved operation and maintenance. (Reference-Title 25, §71.21.a.4.ii.C)
_____	1993 Plan 70-90	e. Other applicable actions that will resolve or abate the identified problems. (Reference-Title 25, §71.21.a.4.ii.D).
_____	1993 Plan 70-90	4. The need for construction of new community sewage systems including sewer systems and/or treatment facilities. (Reference-Title 25, §71.21.a.4.iii).

DEP Use Only	Indicate Page #(s) In Plan	Item Required
	70-90	
_____ 1993 Plan	93-102	5. Repair or replacement of collection and conveyance system components. (Reference-Title 25, §71.21.a.4.ii.A).
	70-90	
_____ 1993 Plan	93-102	6. Use of innovative/alternative methods of collection/conveyance to serve needs areas using existing wastewater treatment facilities. (Reference-Title 25, §71.21.a.4.ii.B).
		B. The use of individual sewage disposal systems including individual residential spray irrigation systems based on:
_____ 1993 Plan	70-90 43-47	1. Soil and slope suitability. (Reference-Title 25, 71.21.a.2.ii.C)
_____ 1993 Plan	95-97	2. Preliminary hydrogeologic evaluation. (Reference-Title 25, §71.21.a.2.ii.C)
	70-90	
_____ 1993 Plan	93-102	3. The establishment of a sewage management program. (Reference-Title 25, §71.21.a.4.iv). See also Part "F" below.
_____ 1993 Plan	48-90	4. The repair, replacement or upgrading of existing malfunctioning systems in areas suitable for on-lot disposal considering: (Reference-Title 25, §71.21.a.4).
_____ 1993 Plan	48-90	a. Existing technology and sizing requirements of Title 25 Chapter 73. (Reference-Title 25,§73.31-73.72).
_____ 1993 Plan	48-90	b. Use of expanded absorption areas or alternating absorption areas. (Reference-Title 25,§73.16.
_____ 1993 Plan	70-90	c. Use of water conservation devices. (Reference-Title 25, §71.73.b.2.iii).
		C. The use of small flow sewage treatment facilities or package treatment facilities to serve individual homes or clusters of homes based on: (Reference-Title 25, §71.64.d).
_____ 1993 Plan	70-90	1. Treatment and discharge requirements. (Reference-Title 25, §71.64.d).
_____ 1993 Plan	70-90 43-47	2. Soil suitability. (Reference-Title 25, §71.64.c.l).
_____ 1993 Plan	95-97	3. Preliminary hydrogeologic evaluation. (Reference-Title 25, §71.64.c.3).
_____ 1993 Plan	70-90	4. Agency or other controls over operation and maintenance requirements. (Reference-Title 25, §71.64.d). See Part "F" below.
		D. The use of community land disposal alternatives including:
_____	_____	1. Soil and site suitability. (Reference-Title 25, 71.21.a.2.ii.C)
_____	_____	2. Preliminary hydrogeologic evaluation. (Reference-Title 25, 71.21.a.2.ii.C)
_____	_____	3. Controls over operation and maintenance requirements through a Sewage Management Program (Reference-Title 25, 71.21.a.2.ii.C). See Part "F" below.
_____	_____	4. The rehabilitation or replacement of existing malfunctioning community land disposal systems. (See Part V, B, 4, a, b, c above). See also Part "F" below.

Not Required by Original Checklist

DEP Use Only	Indicate Page #(s) In Plan	Item Required
	48-53	E. The use of retaining tank alternatives on a temporary or permanent basis including: (Reference- Title 25, §71.21.a.4).
_____1993 Plan	70-90	
		1. Commercial, residential and industrial use. (Reference-Title 25, §71.63.e).
_____1993 Plan	70-90	2 Designated conveyance facilities (pumper trucks). (Reference-Title 25, §71.63.b.2).
_____1993 Plan	70-90	3. Designated treatment facilities or disposal site. (Reference-Title 25, 71.63.b.2).
	48-53	
_____1993 Plan	70-90	4. Implementation of a retaining tank ordinance by the municipality. (Reference-Title 25, §71.63.b.2). See Part "F" below
	48-53	
_____1993 Plan	70-90	5. Financial guarantees when retaining tanks are used as an interim sewage disposal measure.(Reference-Title 25, §71.63.c.2).
		F. Sewage management programs to assure the future operation and maintenance of existing and proposed sewage facilities through:
1993 Plan	70-90	1. Municipal ownership or control over the operation and maintenance of individual on-lot sewage disposal systems, small flow treatment facilities, or other traditionally non-municipal treatment facilities. (Reference-Title 25, §71.21.a.4.iv)
	70-90	
_____1993 Plan	93-102	2. Requiried inspection of sewage disposal systems on a schedule established by the municipality. (Reference-Title 25, §71.73.b.1.)
	70-90	
_____1993 Plan	93-102	3. Required maintenance of sewage disposal systems including septic and aerobic treatment tanks and other system components on a schedule established by the municipality. (Reference-Title 25, §71.73.b.2)
	70-90	
_____1993 Plan	93-102	4. Repair, replacement or upgrading of malfunctioning on-lot sewage systems. (Reference-Title 25, §71.21.a.4.iv) through:
		a. Aggressive pro-active enforcement of ordinances which require operation and maintenance and prohibit malfunctioning systems. (Reference-Title 25, §71.73.b.5)
		b. Public education programs to encourage proper operation and maintenance and repair of sewage disposal systems.
	70-90	
_____1993 Plan	93-102	6. Establishment of joint municipal sewage management programs. (Reference-Title 25, §71.73.b.8)
	70-90	
_____1993 Plan	93-102	7. Requirements for bonding, escrow accounts, management agencies or associations to assure operation and maintenance for non-municipal facilities. (Reference-Title 25, §71.71)

DEP Use Only	Indicate Page #(s) In Plan	Item Required
		G. Non-structural comprehensive planning alternatives that can be undertaken to assist in meeting existing and future sewage disposal needs including: (Reference-Title 25, §71.21.a.4)
	86-90	
_____ 1993 Plan	93-102	1. Modification of existing comprehensive plans involving:
_____ 1993 Plan	93-102	a. Land use designations. (Reference-Title 25, §71.21.a.4)
_____ 1993 Plan	93-102	b. Densities. (Reference-Title 25, §71.21.a.4)
	70-90	c. Municipal ordinances and regulations. (Reference-Title 25, §71.21.a.4)
_____ 1993 Plan	93-102	d. Improved enforcement. (Reference-Title 25, §71.21.a.4)
_____ 70-90	93-102	e. Protection of drinking water sources. (Reference-Title 25, §71.21.a.4)
	86-90	
_____ 1993 Plan	93-102	2. Consideration of a local comprehensive plan to assist in producing sound economic and consistent land development. (Reference-Title 25, §71.21.a.4)
	86-90	
_____ 1993 Plan	93-102	3. Alternatives for creating or changing municipal subdivision regulations to assure long-term use of on-site sewage disposal which consider lot sizes and protection of replacement areas. (Reference-Title 25, §71.21.a.4)
	80-90	
_____ 1993 Plan	93-102	4. Evaluation of existing local agency programs and the need for technical or administrative training. (Reference-Title 25, §71.21.a.4)
		H. A no-action alternative which includes discussion of both short-term and long-term impacts on: (Reference-Title 25, §71.21.a.4).
_____ 1993 Plan	89	1. Water Quality/Public Health. (Reference-Title 25, §71.21.a.4).
_____ 1993 Plan	70-90	2. Growth potential (residential, commercial, industrial). (Reference-Title 25, 71.21.a.4).
_____ 1993 Plan	70-90	3. Community economic conditions. (Reference-Title 25, 71.21.a.4)
_____ 1993 Plan	70-90	4. Recreational opportunities. (Reference-Title 25, §71.21.a.4)
_____ 1993 Plan	70-90	5. Drinking water sources. (Reference-Title 25, §71.21.a.4)
_____ 1993 Plan	70-90	6. Other environmental concerns. (Reference-Title 25, 71.21.a.4)
		VI. Evaluation of Alternatives
		A Technically feasible alternatives identified in Section V of this checklist must be evaluated for consistency with respect to the following: (Reference-Title 25, §71.21.a.5.i.A)
1993 Plan	4-9 70-90	1. Applicable plans developed and approved under Sections 4 and 5 of the Clean Streams Law or Section 208 of the Clean Water Act (33 U.S.C.A. 1288). (Reference-Title 25, §71.21.a.5.i.A) Appendix B, Section II.A of the Planning Guide.
_____ 1993 Plan	4-9 70-90	2. Municipal wasteload management plans developed under PA Code, Title 25, Chapter 94. Reference-Title 25, §71.21.a.5.i.B) The municipality's recent Wasteload Management (Chapter 94) Reports should be examined to determine if the proposed alternative is consistent with the recommendations and findings of the report. Appendix B, Section II.B of the Planning Guide.

DEP Use Only		Indicate Page #(s) In Plan	Item Required
		4-9	
_____	1993 Plan	70-90	3. Plans developed under Title II of the Clean Water Act (33 U.S.C.A. 1281-1299) or Title II and Titles II and VI of the Water Quality Act of 1987 (33 U.S.C.A 1251-1376). (Reference-Title 25, §71.21.a.5.i.C) Appendix B, Section II.E of the Planning Guide.
		4-9	
_____	1993 Plan	70-90	4. Comprehensive plans developed under the Pennsylvania Municipalities Planning Code. (Reference-Title 25, §71.21.a.5.i.D) The municipality's comprehensive plan must be examined to assure that the proposed wastewater disposal alternative is consistent with land use and all other requirements stated in the comprehensive plan. Appendix B, Section II.D of the Planning Guide.
		4-9	
_____	1993 Plan	70-90	5. Antidegradation requirements as contained in PA Code, Title 25, Chapters 93, 95 and 102 (relating to water quality standards, wastewater treatment requirements and erosion control) and the Clean Water Act. (Reference-Title 25, §71.21.a.5.i.E) Appendix B, Section II.F of the Planning Guide.
		4-9	
_____	1993 Plan	70-90	6. State Water Plans developed under the Water Resources Planning Act (42 U.S.C.A. 1962-1962 d-18). (Reference-Title 25, §71.21.a.5.i.F) Appendix B, Section II.C of the Planning Guide.
		17-34	
_____	1993 Plan	70-90	7. Pennsylvania Prime Agricultural Land Policy contained in Title 4 of the Pennsylvania Code, Chapter 7, Subchapter W. Provide narrative on local municipal policy and an overlay map on prime agricultural soils. (Reference-Title 25, §71.21.a.5.i.G) Appendix B Section II.G of the Planning Guide.
		4-9	
_____	1993 Plan	70-90	8. County Stormwater Management Plans approved by the Department under the Storm Water Management Act (32 P.S. 680.1-680.17). (Reference-Title 25, §71.21.a.5.i.H) Conflicts created by the implementation of the proposed wastewater alternative and the existing recommendations for the management of stormwater in the County Stormwater Management Plan must be evaluated and mitigated. If no plan exists, no conflict exists. Appendix B, Section II.H of the Planning Guide.
		4-9	
		40-43	
_____	1993 Plan	70-90	9. Using wetland mapping developed under Section II.A.7, identify and discuss mitigative measures including the need to obtain permits for any encroachments on wetlands from the construction or operation of any proposed wastewater facilities. Appendix B, Section II.I of the Planning Guide.
		4-9	
_____	1993 Plan	70-90	10. Protection of rare, endangered or threatened plant and animal species as identified by the Pennsylvania Natural Diversity Inventory (PNDI). (Reference-Title 25, §71.21.a.5.i.J) Provide the Department with a copy of the completed Request For PNDI Search document. Also provide a copy of the response letter from the Department of Conservation and Natural Resources' Bureau of Forestry regarding the findings of the PNDI search. Appendix II.J.
		4-9	
_____	1993 Plan	70-90	11. Historical and archaeological resource protection under P.C.S. Title 37, Section 507 relating to cooperation by public officials with the Pennsylvania Historical and Museum Commission. (Reference-Title 25, §71.21.a.5.i.K) Provide the Department with a completed copy of a Cultural Resource Notice request to the Bureau of Historic Preservation (BHP) to provide a listing of known historical sites and potential impacts on known

DEP Use Only	Indicate Page #(s) In Plan	Item Required
		archaeological and historical sites. Also provide a copy of the response letter from the BHP. Appendix B, Section II.K of the Planning Guide.
1993 Plan	4-9 70-90	B. Provide for the resolution of any inconsistencies in any of the points identified in Section VI.A. of this checklist by submitting a letter from the appropriate agency stating that the agency has received, reviewed, and concurred with the resolution of identified inconsistencies. (Reference-Title 25, §71.21.a.5.ii) Appendix B of the Planning Guide.
1993 Plan	4-9 70-90	C. Evaluate alternatives identified in Section V of this checklist with respect to applicable water quality standards, effluent limitations or other technical, legislative or legal requirements. (Reference-Title 25, §71.21.a.5.iii).
1997 Plan Amendment, p.2		D. Provide cost estimates using present worth analysis for construction, financing, on going administration, operation and maintenance and user fees for alternatives identified in Section V of this checklist. Estimates shall be limited to areas identified in the plan as needing improved sewage facilities within five (5) years from the date of plan submission. (Reference-Title 25, §71.21.a.5.iv).
1997 Plan Amendment, p.3		E. Provide an analysis of the funding methods available to finance the proposed alternatives evaluated in Section V of this checklist. Also provide documentation to demonstrate which alternative and financing scheme combination is the most cost-effective; and a contingency financial plan to be used if the preferred method of financing cannot be implemented. The funding analysis shall be limited to areas identified in the plan as needing improved sewage facilities within five years from the date of the plan submission. (Reference-Title 25, §71.21.a.5.v).
		F. Analyze the need for immediate or phased implementation of each alternative proposed in Section V of this checklist including: (Reference-Title 25, §71.21.a.5.vi).
1997 Plan Amendment, p.4		1. A description of any activities necessary to abate critical public health hazards pending completion of sewage facilities or implementation of sewage management programs. (Reference-Title 25, §71.21.a.5.vi.A)
1997 Plan Amendment, p.4		2. A description of the advantages, if any, in phasing construction of the facilities or implementation of a sewage management program justifying time schedules for each phase. (Reference-Title 25, §71.21.a.5.vi.B)
		G. Evaluate administrative organizations and legal authority necessary for Plan implementation. (Reference - Title 25, §71.21.a,5,vi,D.)
		VII. Institutional Evaluation
		A. Provide an analysis of all existing wastewater treatment authorities, their past actions and present performance including:
1993 Plan	91-108	1. Financial and debt status. (Reference-Title 25, §71.61.d.2)
1993 Plan	91-108	2. Available staff and administrative resources. (Reference-Title 25, §71.61.d.2)

DEP Use Only	Indicate Page #(s) In Plan	Item Required
		3. Existing legal authority to:
_____	1993 Plan 91-108	a. Implement wastewater planning recommendations. (Reference-Title 25, §71.61.d.2)
_____	1993 Plan 91-108	b. Implement system-wide operation and maintenance activities. (Reference-Title 25, §71.61.d.2)
_____	1993 Plan 91-108	c. Set user fees and take purchasing actions. (Referernce-Title 25, §71.61.d.2)
_____	1993 Plan 91-108	d. Take enforcement actions against ordinance violators. (Reference-Title 25, §71.61.d.2)
_____	1993 Plan 91-108	e. Negotiate agreements with other parties. (Reference-Title 25, §71.61.d.2)
_____	1993 Plan 91-108	f. Raise capital for construction and operation and maintenance of facilities. (Reference-Title 25,§71.61.d.2)
		B. Provide an analysis and description of the various institutional alternatives necessary to implement the proposed technical alternatives including:
_____	1993 Plan 91-108	1. Need for new municipal departments or municipal authorities. (Reference-Title 25, §71.61.d.2)
_____	1993 Plan 91-108	2. Functions of existing and proposed organizations (sewer authorities, on-lot maintenance agencies, etc.). (Reference-Title 25, §71.61.d.2)
_____	1993 Plan 91-108	3. Cost of administration, implementability, and the capability of the authority/agency to react to future needs. (Reference-Title 25, §71.61.d.2)
		C. Describe all necessary administrative and legal activities to be completed and adopted to ensure the implementation of the recommended alternative including:
_____	1993 Plan 91-108	1. Incorporation of authorities or agencies. (Reference-Title 25, §71.61.d.2)
_____	1993 Plan 91-108	2. Development of all required ordinances, regulations, standards, and inter-municipal agreements. (Reference-Title 25, §71.61.d.2)
_____	1993 Plan 91-108	3. Description of activities to provide rights-of-way, easements, and land transfers. (Reference-Title 25,§71.61.d.2)
_____	1993 Plan 91-108	4. Adoption of other municipal sewage facilities plans. (Reference-Title 25, §71.61.d.2)
_____	1993 Plan 91-108	5. Any other legal documents. (Reference-Title 25, §71.61.d.2)
_____	_____	6. Dates or timeframes for items 1-5 above on the project's implementation schedule.

DEP Use Only	Indicate Page #(s) In Plan	Item Required
	1993 Plan 91-108	D. Identify the chosen institutional alternative for implementing the chosen technical wastewater disposal alternative. Provide justification for choosing the specific institutional alternative considering administrative issues, organizational needs and enabling legal authority. (Reference-Title 25, §71.61.d.2)
		VIII. Justification for Selected Technical & Institutional Alternatives
		A. Identify the technical wastewater disposal alternative which best meets the wastewater treatment needs of each study area of the municipality. Justify the choice by providing documentation which shows that it is the best alternative based on:
	1993 Plan 48-90	1. Existing wastewater disposal needs. (Reference-Title 25, §71.21.a.6)
	1993 Plan 48-90	2. Future wastewater disposal needs. (5 and 10 years growth areas). (Reference-Title 25, §71.21.a.6)
	1993 Plan 48-90	3. Operation and maintenance considerations. (Reference-Title 25, §71.21.a.6)
	1997 Plan Amendment, p.4	4. Cost-effectiveness. (Reference-Title 25, §71.21.a.6)
	1993 Plan 48-90	5. Available management and administrative systems. (Reference-Title 25, §71.21.a.6)
	1993 Plan 48-90	6. Available financing methods. (Reference-Title 25, §71.21.a.6)
	1993 Plan 48-90	7. Environmental soundness and compliance with natural resource planning and preservation programs. (Reference-Title 25, §71.21.a.6)
	1993 Plan 93-108	B. Designate and describe the capital financing plan chosen to implement the selected alternative(s). Designate and describe the chosen back-up financing plan.

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PENNVEST I.D. No. _____

PENNVEST WATER POLLUTION CONTROL REVOLVING FUND PROJECTS
PROGRAM REQUIRED ACTIONS
MINIMUM COMMITMENTS FOR FUNDING QUALIFICATION

The Federal Water Quality Act of 1987 (Reference - Federal Clean Water - Title II and Title VI) provides for the capitalization of the Water Pollution Control Revolving Fund component of the PENNVEST program in Pennsylvania. Communities that propose to implement their official sewage plan updates with these funds must meet specific requirements in order to receive funding. While many of these requirements may be met through the normal plan content of the Act 537 planning process, others are outside the scope of Act 537, and must be completed independently. Requirements may be part of the planning, design, construction or post-construction phases.

Planning Phase

These must be met in the planning phase of the project, in order to apply for funding. Note that some are met in satisfying Chapter 71 sewage planning requirements, and are eligible for Act 537 grant reimbursement.

DEP Use Only	Indicate Page #(s) In Plan		Item Required
_____	1993 Plan 70, 93*	1.	Best Practicable Waste Treatment Technology.
	1997 Plan Amendment, p.4		(Title II, Section 201(b), 40 CFR 35.2005(b)(7), 40 CFR 35.2030(b)(2)). Best practicable waste treatment technology effectively meets the required quality of effluents. This is met in the evaluation of alternatives in 71.21(a)(4). This item is eligible for Act 537 grant participation. (This is not to be confused with BPT or BAT as used in the NPDES process).
	1993 Plan 70, 71, 79*		
_____	1993 Plan 93, 95	2.	Innovative/Alternative Technology.
	1997 Plan Amendment, p. 5		(Title II, Section 201(g),(2), 40 CFR 35.2030, Section 201(g)(5), 40 CFR 35.2222030). Alternative and innovative sewage collection and treatment technologies must be included as alternatives analyzed as required by 71.21(a)(4). This item may be eligible for 537 grant reimbursement. See Appendix N of the Planning Guide and the list on page I-30.
_____	1997 Plan Amendment, p.6	3.	Non-Excessive Infiltration/Inflow. (Title II, Section 201(g)(3), 40 CFR 35.2030(b)(4), 35.2120). Sewer collection systems cannot be subject to excessive infiltration and inflow. This item is met in the evaluation of alternatives in 71.21(a)(4). This item may be eligible for limited Act 537 grant reimbursement.
_____	1997 Plan Amendment, p.6	4.	Recreation and Open Space. (Title II, Section 201(g)(6), 40 CFR 35.2030(b)(5)). Recreation and open space opportunities must be analyzed. This is not included in Chapter 71 planning, and is not eligible for Act 537 grant participation. See Appendix N of the Planning Guide .

DEP Use Only	Indicate Page #(s) In Plan	Item Required
	1997 Plan Amendment, p.7	5. Environmental Impact Assessment. (Title II, Section 511(c)(1), 40 CFR 35.2113). An environmental impact assessment must be prepared which describes the project's positive and negative consequences. The mitigative steps to be taken for unavoidable negative consequences must also be described. The specific environmental concerns are listed below. Items a, b, c, e, and g are part of sewage planning, and are eligible for Act 537 grant participation to the extent of identification of a potential impact. Studies required to determine the extent of impact, to mitigate impact, and to obtain permits are not eligible for Act 537 funding. Items d, f, h, i, j, k and l are not required by Chapter 71, but may be eligible for Act 537 grant participation.
	1997 Plan Amendment, p.7	a. Historical and Archaeological Sites
	1997 Plan Amendment, p.7	b. Wetlands
	1997 Plan Amendment, p.8	c. Endangered and Protected Species
	1997 Plan Amendment, p.8	d. Air Quality
	1997 Plan Amendment, p.8	e. Floodplains
	1997 Plan Amendment, p.8	f. Fish and Wildlife
	1997 Plan Amendment, p.9	g. Agricultural Lands
	1997 Plan Amendment, p.9	h. Wild and Scenic Rivers
	1997 Plan Amendment, p.9	i. Coastal Zone Management
	1997 Plan Amendment, p.9	j. Socio-Economic Impacts
	1997 Plan Amendment, p.10	k. Water Supplies
	1997 Plan Amendment, p.10	l. Other Environmentally Sensitive Areas
	1997 Plan Amendment, p.10	6. Cost Effectiveness (Title II, Section 218, 40 CFR 35.2030(b)(3)). Costs of principal alternatives must be compared, using present worth or annualized costs, and user rates estimated. This part of the evaluation is conducted under Chapter 71.21(a)(5) and (6) and is eligible for Act 537 grant participation.

Design/Construction/Post-Construction Phases

Items 7 through 12 must be met in the design phase of the project, in order to close a PENNVEST loan for construction. Tasks described should be considered in project costs estimates. Costs incurred are not eligible for Act 537 grant reimbursement.

_____	_____	7. Capital Finance Plan (Title II, Section 201(o), 40 CFR 35.2030(b)(8)). The project cost estimates and financing information required in Chapter 71.21 (a)(5)(iv) and (v) must be supplemented with the 10 year treatment facility cost and financing information required by this Federal regulation. This is not eligible for an Act 537 grant. See Appendix N of the Planning Guide.

PENNVEST I.D. No. _____

DEP Use Only	Indicate Page #(s) In Plan	Item Required
_____	_____	8. Value Engineering (Title II, Section 218, 40 CFR 35.2114 and PA Code Chapter 963). Sponsors of projects with estimated total project costs in excess of $10 million must contact PENNVEST to determine if value engineering will be required. See Appendix N of the Planning Guide.
_____	_____	9. Civil Rights (Title XI, Section 13, 40 CFR, Part 7). Projects must provide that no person shall be subject to discrimination. See Appendix N of the Planning Guide.
_____	_____	10. User Charge System/Sewer Use ordinance (Title II, Section 204(b)(1), 40 CFR 35.2208, 35.2130, 35.2140, 35.2122, 35.2110, 35.2206(a)). A user charge system and sewer use ordinance must be developed and meet federal requirements. See Appendix N of the Planning Guide.
_____	_____	11. Minority Business Enterprise/Women's Business Enterprise (Federal executive orders 11625 and 12138) Minority and Women's Business Enterprises must be solicited. See Appendix N of the Planning Guide.
_____	_____	12. Davis-Bacon Wage Rate (Title II, Section 513, 29 CFR, Part 5). Federal wage rates must be used. See Appendix N of the Planning Guide.
_____	_____	13. Initiation of Operation/Performance Certification (Title II, Section 204(d)(2), 40 CFR 35.2218) The project facilities must be certified to function properly. See Appendix N of the Planning Guide.

RESOLUTION NO. _____-1997

ACT 537 (PENNSYLVANIA SEWAGE FACILITIES ACT) PLAN REVISION

RESOLUTION OF THE SUPERVISORS OF DOUGLASS TOWNSHIP, BERKS COUNTY, PENNSYLVANIA ("THE MUNICIPALITY").

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537, known as the "Pennsylvania Sewage Facilities Act", as amended, and the Rules and regulations of the Department of Environmental Protection (Department) adopted thereunder at Chapter 71 of Title 25 of the Pennsylvania Code, requires the municipality to adopt an Official Sewage Facilities Plan providing for sewage services adequate to prevent contamination of waters and/or environmental health hazards with sewage wastes, and to revise said plan whenever it is necessary to meet the sewage disposal needs in the municipality, and,

WHEREAS, Douglass Township, Berks County, has prepared an Act 537 Plan which provides for sewage facilities in a portion of Douglass Township, Berks County, and,

WHEREAS, Douglass Township, Berks County, finds that the Facility Plan described above conforms to applicable zoning, subdivision, other municipal ordinance and plans, and to a comprehensive program of pollution control and water quality management, and,

WHEREAS, this plan revision amends the Douglass Township Act 537 Plan Update of 1993. The 1993 Plan in hereby repealed only to the extent that it is in conflict with this amendment. All other elements of the 1993 Plan are hereby affirmed and re-enacted;

NOW, THEREFORE, BE IT RESOLVED, that the Supervisors of the Township of Douglass, Berks County, hereby adopt and submit to the Department of Environmental Protection for its approval as a revision to the "Official Plan" of the municipality, the above-referenced Facility Plan. The municipality hereby assures the Department of the complete and timely implementation of the said plan as required by law.

BOARD OF SUPERVISORS DOUGLASS TOWNSHIP,
BERKS COUNTY, PENNSYLVANIA

_____

_____

_____

I, Eileen Pinder, Secretary of Douglass Township, Berks County, do hereby certify that the foregoing is a true copy of the Township's Resolution No. _____-1997, adopted 14 May 1997.

_____
Secretary

Township Seal

1997 AMENDMENT
of the Act 537 Plan Update for Sewage Facilities

The following sections of the Douglass Township, Berks County, Act 537 Plan Update of September 1993, prepared by Motley Engineering Co., Inc. of Kenhorst, Pennsylvania is hereby amended as shown below.

3.60 HYDROGEOLOGICAL ANALYSIS OF GROUNDWATER *(amended)*

Checklist item #III(B)4 - The Pennsylvania Department of Environmental Protection (DEP) requires a preliminary hydrogeological analysis of groundwater for the planning area being analyzed. This analysis must include a sampling of drinking water from properly constructed wells and must determine the quality of that water by an analysis of nitrate levels, total coliform, fecal coliform, and fecal streptococcus.

The 1993 Act 537 Plan states that telephone discussion with DEP resulted in a determination that forty-five (45) groundwater samples, with an appropriate geographic distribution, would constitute an adequate sample size for the Township. Residents were solicited by means of a newspaper advertisement to see if a sufficient number would be willing to volunteer their wells for testing. Response was adequate for the purpose, and the required forty-five (45) wells were sampled by representatives of Motley Engineering Co. and then analyzed by Hydro-Analysis Associates, Inc., of Kutztown. The test results were presented in the original plan document.

The cost of sewering the originally proposed Phase 1 area was largely responsible for delays to the construction of the system. In early 1997, a new Township Engineer, Systems Design Engineering, Inc. (SDE), recommended dividing the Phase 1 service area into three (3) "sub-phases", in order to provide sewage to the most critical areas at a reduced project cost. It was noted that this strategy would require amendment of the 1993 Plan. In March 1997, representatives of SDE, DEP, and PENNVEST met to discuss this amendment. During the course of this meeting, it was noted that of the forty-five (45) wells surveyed, only seven (7) were within the Phase 1 area. Four (4) of these -- or fifty-seven (57) percent -- were found to be contaminated. The DEP representative determined that this was not a sufficient sample size, and directed the Township Engineer to test the wells of at least twenty-five (25) percent of the properties that were proposed for connection as part of the initial portion of the Phase 1 service area. The first sub-phase, which we call Phase 1a, provides for sewerage of 186 properties, so a twenty-five (25) percent sample requires sampling of forty-seven (47) wells. Since seven (7) analyses had been satisfactorily completed, an additional forty (40) tests were required.

The first seven (7) well tests were conducted by Motley Engineering Co. on November 4, 1989. An additional forty (40) wells were tested between March 18, 1997 and March 25, 1997 by Systems Design Engineering, Inc. and M.J. Reider Associates, Inc. Of the forty-seven (47) total wells tested within the Phase 1a area, twelve (12) were found to supply water that is unsafe for drinking purposes. This gives a contamination rate of 25.5%. Documentation of these findings is provided in this document as Attachment #1.

5.10 EVALUATION OF INDIVIDUAL NEED AREAS *(amended)*

Checklist item #V(A)2 - The original 1993 Plan document divided the Township into seven (7) "study areas." Study areas #1 and #2 occupied the area later referred to -- and referred to in this amendment -- as "Phase 1." This was a convenient and appropriate grouping, since both study areas had higher overall densities of development than the rest of the Township, both are poorly suited for on-site disposal systems, and both were identified as in need of some kind of public or community sewerage. The plan stated that the most practical way to provide sewerage to study area #1 would be via connection to the existing Amity Township treatment facility. Study area #2 was also targeted for connection to an existing system: it was determined that both the Amity plant and the West Pottsgrove Township wastewater treatment facility were suitably located. However, further analysis revealed that the cost of connection to West Pottsgrove would be prohibitive due to the distance from the facility, despite the fact that a pure gravity collection system was possible. The plan concluded that the most cost effective way to provide sanitary sewerage to both study areas was by connection to the Amity Township wastewater treatment plant. For this reason, they were merged to form the Phase 1 service area as originally proposed.

This amendment of the 1993 Plan supports the conclusion of the original plan regarding the use of the Amity Township facility as the most cost-effective way to provide sanitary sewerage service to the Phase 1 portion of Douglass Township. The purpose of this amendment is *not* to suggest some other treatment alternative, but to provide for a more affordable system by separating Phase 1 into three (3) sub-phases, which we will refer to as Phase 1a, Phase 1b, and Phase 1c. The area occupied by each sub-phase is shown on the map that accompanies this amendment.

Phase 1a is the most densely developed portion of Phase 1. This amendment proposes that this sub-phase be connected to the Amity facility as soon as possible. Phase 1b and Phase 1c are less densely developed. The local topography also dictates that pump stations and force mains are required to provide sewerage to these sub-phases. Together, these factors create a high construction cost for this portion of the proposed system: we estimate approximately $30,000 per EDU. By postponing construction of the collection systems for Phases 1b and 1c until a later date, we achieve a significantly lower total cost *and* a significantly lower cost per EDU for the initial phase of the project.

6.00 PLANNING AND FACILITIES ALTERNATIVES *(amended)*

6.10 COLLECTION AND CONVEYANCE ALTERNATIVES *(amended)*

Checklist item #VI(D) - The alternative selected by the 1993 Plan had a total project cost of 2.2 million dollars, according to the original estimate. By 1997, the Township Engineer estimated that the total project cost was actually $4,306,500, or over $20,000 per EDU. By dividing the Phase 1 area into three (3) sub-phases, we can begin by sewering the most critical areas with a smaller system for a total project cost of $2,773,800. While this cost is distributed over fewer EDU's, the cost per EDU is still substantially reduced, to $15,240.

Attachment #2 of this document includes details on estimated project costs, including a present worth analysis, comparing the original Phase 1 project with the cost of sewering Phase 1a only. The estimated project cost calculations include not only actual construction costs, but other costs, such as engineering, legal fees, operation and maintenance, and debt service. The present worth analysis is an estimate of the sum of money which, if invested now at current interest rates, would equal the amount needed to pay for construction, operation, maintenance, and all other future costs of the system over a given period of time. The present worth analysis in Attachment #2 uses a twenty-year period. The reason for the two

methods is this: while the project cost estimate reveals which alternative is cheaper, present worth indicates which is more cost effective. Both estimates -- project cost and present worth -- are calculated for the project as a whole and per EDU. These analyses reveal that the revision we are proposing in this amendment is both cheaper and more cost-effective, whether measured in total or per EDU. The conclusions of the analyses in Attachment #2 are summarized below.

	Phase 1 (1993 Plan)	**Phase 1a (1997 Amendment)**
TOTAL PROJECT COST:	$4,306,500.00	**$2,773,800.00**
per EDU:	$ 20,218.31	**$ 15,000.00**
PRESENT WORTH:	$7,141,574.00	**$3,914,243.00**
per EDU:	$ 33,529.00	**$ 21,507.00**

Checklist item #VI(E) - There are a variety of funding options available, as described below. The Township realizes that competition for public funds is fierce and that the likelihood of a successful application is not equal among the programs. The following funding sources are most appropriate for this project.

- The ***Community Facilities Program*** of the Pennsylvania Department of Community Affairs provides a maximum of $50,000 to municipalities with populations of less than 12,000 for the construction, rehabilitation, alteration, expansion, or improvement of water facilities or sanitary sewage disposal, excluding costs related to treatment facilities.

- The ***Site Development Program*** of the State Department of Commerce is available to all municipalities, municipal authorities, non-profit industrial development agencies, and state agencies for the construction of infrastructure elements -- including sewage collection lines and other facilities -- that will facilitate industrial development. Grants are generally limited to $50,000 or 50% of the project cost, whichever is less. Since this initial phase will provide for sewerage of areas of existing development (and mostly residential development at that), Douglass Township is not likely to fare successfully in competition for these funds.

- The ***Farmers Home Administration*** (FmHA) administers a grant and loan program targeted at small communities to provide financial assistance for water supply and waste disposal systems. It has already been determined that the Township is not eligible for financing from this source.

- The ***Pennsylvania Infrastructure Investment Authority (PENNVEST)*** is a State program that offers grants and low-interest loans to municipalities for improvements to water supply and sewage disposal systems. It is possible to obtain substantial funding from this source, but competition is fierce. The program is designed to assist with those municipal projects demonstrating the greatest urgency from the perspective of positive environmental impact and the financial need of the community. It has been determined that the Township will apply for both a PENNVEST grant and a PENNVEST loan to finance this project.

- Finally, we have considered the viability of conventional commercial financing by means of a ***municipal bond*** issue. While the Township is virtually guaranteed of receiving sufficient funds in this way, it is by far the most expensive way to raise the money and will be used only as a last resort.

Our preferred means of funding is by means of both a grant and a loan from PENNVEST with the local contribution from connection fees. With a $250,000 PENNVEST grant and an additional $900,000 from connection fees (at $5,000/EDU), the required PENNVEST loan amount would be $1,623,800. Details on funding, including a comparison with the funding proposed by the 1993 plan for the original Phase 1 service area, are found in Attachment #2 of this document. If the Township fails to secure PENNVEST funding, then the necessary amount will be secured through a conventional bond issue. Obviously, this alternative would significantly raise the cost of debt service, and of the project generally.

Checklist item #VI(F)1 - By postponing the construction of a collection system for Phases 1b and 1c, thirty-one (31) single family homes originally proposed for connection to the Amity Township treatment facility will continue to rely upon on-site systems. If found necessary, the Township is prepared to implement an on-lot system management program in order to assure public health and safety.

Checklist item #VI(F)2 - The benefit of this "sub-phasing" approach is dramatic: it is the difference between a collection system that is affordable to the Township and one that is not. As shown in the cost estimates above, there is a dramatic reduction in the cost per EDU by separating the construction of Phase 1a from Phases 1b and 1c.

8.00 SELECTED ALTERNATIVE *(amended)*

8.10 SUMMARY OF RECOMMENDED PLAN *(amended)*

Checklist item #VIII(A)4 - This amendment does not alter the conclusion of the 1993 Act 537 Plan in that connection of the proposed Phase 1 service area to the Amity Township wastewater treatment plant is still the most cost-effective way to provide public sewerage to the area. The sole purpose of this amendment is to break the Phase 1 area into three (3) sub-phases and to propose that the initial construction project be to serve only the most densely developed of the three -- what we have called Phase 1a -- thereby realizing a substantial reduction in the initial project cost and the cost per EDU. The remaining sub-phases, Phase 1b and Phase 1c, will continue to rely on on-site disposal systems for the time being. The Township is prepared to institute an on-lot management program for these properties, if necessary, until such time that sewerage may be extended to these areas.

❑

10.00 PENNVEST PROGRAM REQUIRED ACTIONS: MINIMUM COMMITMENTS FOR FUNDING QUALIFICATION

10.10 BEST PRACTICABLE WASTE TREATMENT TECHNOLOGY

All of Phase 1 is currently dependent upon individual on-lot sewage disposal systems for the treatment of wastewater. Some residential and commercial properties along US Route 422 utilize holding tanks for wastewater management.

Based upon the data contained in §4.50 of the original 1993 Plan, it was possible to determine the location of potential problem areas for on-lot sewage disposal. Within Phase 1, the village of Douglassville was identified as an area in need of attention. Based on a field survey and an on-site inspection of the existing systems within this identified problem area, no consistent pattern of malfunctions could be identified. There has been only one (1) reported on-lot sewage malfunction in this area since 1985, and it has been corrected.

Based upon factors such as soil conditions, proximity of floodplains, and the age and density of the development, the 1993 Plan concluded that most of this area is not compatible for on-lot sewage disposal systems. The area would best be serviced by a municipal or community system for wastewater treatment. Furthermore, the *Amity* Township Act 537 Plan identifies this part of Douglass Township as a potential service area for their wastewater treatment plant.

In conclusion, an analysis of best practicable waste treatment technology is not relevant to this project as no treatment facilities are proposed. Instead, we intend to utilize the existing treatment facilities in Amity Township.

10.20 INNOVATIVE / ALTERNATIVE (I/A) TECHNOLOGY

As noted above, any discussion of I/A technology relevant to treatment facilities for the Phase 1 area is superfluous since treatment is to be provided by an existing facility. For this reason, this portion of the Plan is limited to collection systems.

Due to the topographic conditions in the Phase 1 area, the 1993 Plan proposed a combination of sewer collection systems. Two (2) different alternatives were described. Alternative 1 proposed a combination of low pressure and small diameter gravity sewer systems and pump stations. Alternative 2 utilized low pressure, small diameter gravity, and standard gravity sewer systems and pump stations. These alternatives are depicted on Figures 16-A and 16-B of the 1993 document.

Alternative 1 had the higher estimated construction cost and the higher estimated maintenance cost. The operation-and-maintenance (O&M) costs of Alternative 1 are estimated from information contained in an EPA manual entitled "Alternative Wastewater Collection Systems." These costs may vary significantly. Alternative 2 had the lower estimated construction cost and lower estimated maintenance cost, due largely to heavier use of gravity sewer systems which are quite common and relatively easy to maintain.

It is economically and environmentally infeasible to extend municipal wastewater collection lines into any other part of the Township at this time. A small flow sewage treatment facility may be a feasible alternative in areas that regularly experience surface discharge due to the inability of the soils to accept the volume of wastewater. Such facilities are generally designed to treat less than two thousand gallons of wastewater per day. These facilities can take a variety of forms, as may be required to deal with a given disposal situation. A flow of two thousand gallons per day would be approximately equivalent to five (5) residential units and would not require a DEP-certified operator. Depending upon the type of land use, development density, and physical characteristics of the site, a small treatment facility of this type may be appropriate. Such a facility may consist of a central septic tank, a sand filter, and a chlorinator with stream discharge. The stream discharge eliminates the use of any absorption field. DEP may require spray irrigation in lieu of stream discharge, as may be dictated by local conditions.

Any small flow system would be designed and installed in accordance with all pertinent guidelines and regulations established by DEP and Douglass Township. These treatment systems would not be considered unless they are certified operational by the appropriate agencies. In addition, the owner(s) or developer would be responsible for inspecting the functional operation of the system. The results of this inspection shall be forwarded to the Township on a quarterly basis. A plan shall be developed by the owner for the perpetual operation and maintenance of the proposed small flow treatment system. Any agreement executed between the developer and the Township must reflect the conditions of this plan.

The areas of the Township that are not affected by critical physical limitations and have minimal potential for groundwater contamination will consider the feasibility of community treatment systems or a package treatment system as options for on-lot sewage disposal. Prior to the permitting of any community or package treatment system, the developer shall conduct a topographic analysis, soil analysis, hydrological analysis, hydrogeological analysis, geological analysis, and/or geotechnical analysis and shall forward such analyses to the Township and to DEP for review and approval. All proposed community or package treatment systems shall be designed in order to meet or exceed the guidelines and regulations established by the DEP and Douglass Township. These treatment systems shall not be considered unless they are certified operational by the appropriate agencies. In addition, the owner shall develop a plan for the perpetual operation and maintenance of the proposed package or community treatment system. Any agreement executed between the developer and the Township must reflect the conditions of this plan.

Sections 4.50, 5,10, 5.20, 5.30, and 6.10 of the 1993 document analyzed all practical alternatives relative to wastewater collection and conveyance. The Plan concluded that Phase 1 (also referred to as Study Areas 1 and 2, and illustrated on Figure 14) had the highest need and highest level of feasibility for municipal wastewater treatment. The existing Amity Township Wastewater Treatment Plant was identified as the preferred treatment provider. Alternative 2 was ultimately recommended since it was the most economical. This alternative consists of low pressure, small diameter and standard gravity sewer systems, and three (3) pump stations with force mains. The majority of the collection and conveyance system in this alternative involves standard and small diameter gravity sewer lines, which are easy to maintain and are the most common variety of public sewerage.

The system proposed by this amendment is an edited version of this Alternative 2. The initial service area, our Phase 1a, includes only one (1) of the pump stations and substantially less force main and conventional pipe. This accounts for both the reduced project cost and the reduced O&M cost.

10.30 NON-EXCESSIVE INFILTRATION/INFLOW

Issues of infiltration and inflow are most pertinent where old sewer mains are utilized. Deteriorating pipe (especially where terra cotta pipe has been used) and deteriorating joins between pipe segments result in the infiltration of groundwater into sewer mains, especially where mains are in wet soils. Inflow is similar to infiltration, but also includes stormwater runoff that may be conveyed into the sanitary system. This is not due to any deterioration of the sanitary system, but the fact that many older sewer systems were *designed* as "combined" sewers, carrying domestic waste along with the outfall from street storm sewers. All sewerage infrastructure proposed by this plan involves the installation of new mains. There are no existing sewer mains to be utilized. The new sanitary mains will not be connected to any stormwater management system. Joins will be made as secure as possible to prevent groundwater infiltration.

10.40 RECREATION AND OPEN SPACE

New infrastructure will follow existing roads and railroad tracks. No treatment facility is proposed as part of this plan. Implementation of this plan will not present any new opportunities for recreation or open space preservation; conversely, such implementation will not adversely impact any existing open space or recreation facilities.

10.50 ENVIRONMENTAL IMPACT ASSESSMENT

10.51 HISTORICAL AND ARCHAEOLOGICAL SITES

The Bureau of Historic Preservation (BHP) within the Pennsylvania Historical and Museum Commission has reviewed this amended plan under the authority of the Environmental Rights Amendment of the Pennsylvania Constitution and the Pennsylvania History Code.

A copy of the BHP review is included in Attachment #3 of this report. Their response, dated March 27, 1997, states that "...there are no National Register eligible or listed historic or archaeological properties in the area of this proposed project." No archaeological survey is required prior to commencement of construction on this project.

10.52 WETLANDS

Wetlands perform several important functions in maintaining a healthy environment. In the first place, they provide a habitat for numerous species of plant and animal wildlife, contributing to natural diversity and sustaining the local ecosystem. Wetlands also serve an important role in flood protection by diminishing peak flood flow and extending the discharge time, acting as a natural stormwater retention facility. Finally, wetlands are a natural filter, removing silt and sediment from storm water run-off.

The existence of wetlands in any given area is determined according to a three-step process developed by the U.S. Army Corps of Engineers. This process involves an analysis of the soil type, the type of vegetation found in that location, and whether or not one can physically observe saturated soil conditions. Wetland areas, once their presence is confirmed, are then classified according to type: palustrine, lacustrine, riverine, estuarine, or marine, depending upon whether they are associated with a marsh, lake, river, estuary, or the ocean, respectively. Precise identification of wetland areas requires an analysis utilizing these criteria; however, the process is prohibitively expensive for evaluation of large areas. In order to give some direction to entities -- such as municipal governments -- that must evaluate areas too large for delineation, the National Wetlands Inventory (NWI) was developed. Maps prepared by the NWI indicate areas where there is a high likelihood of wetland environment. This mapping utilizes the quadrangle maps of the U.S. Geological Survey (USGS) at a scale of one inch equals two thousand feet as a base. Although consulting an NWI map does not replace a proper analysis and delineation, the identification of some area on an NWI map is a good indication that a formal delineation should be performed if development of some kind is planned for that location.

The proposed service area is found on the USGS quadrangles for Boyertown and Pottstown. NWI mapping on these quadrangles indicates the presence of palustrine wetlands along the portions of Old Philadelphia Pike identified as the location of a new sanitary sewer main. The area proposed to be occupied by the main connecting the segments along the Benjamin Franklin Highway and Old Philadelphia Pike may also be the site of a palustrine wetland.

This will be investigated further and any necessary permits will be obtained prior to construction of any sewerage infrastructure in this area. It appears that the presence of wetlands in these areas highlights the critical need for a properly functioning

sanitary sewerage system. The wet soils characteristic of wetland areas impede the proper functioning of individual sub-surface disposal systems. Furthermore, if such a system should malfunction, the proximity of wet soils heightens the potential for contamination of groundwater and nearby surface waters. Based upon these observations, we conclude that the implementation of this plan will have a beneficial effect on any local wetlands.

10.53 ENDANGERED AND PROTECTED SPECIES

The Berks County Natural Areas Inventory of 1991 includes data from the Pennsylvania Natural Diversity Inventory as well as recommendations from the Pennsylvania office of The Nature Conservancy. According to the Inventory, there *no* natural communities, special plants, special animals, or geologic features requiring special consideration anywhere in Douglass Township.

To confirm the findings of the in-house research, the Township Engineer sent a request to the Bureau of Forestry of the Pennsylvania Department of Environmental Protection on March 19, 1997 to conduct a search of the Pennsylvania Natural Diversity Inventory.

10.54 AIR QUALITY

Impacts upon air quality will be negligible. The impact of any given sewage disposal method upon air quality is typically limited to odors. Odors have not been cited as a problem in the case of Douglass Township. For this reason, we assume that any odors from malfunctioning systems are highly localized and are not a concern generally. The provision of public sewerage will eliminate any and all odors, providing a beneficial impact upon air quality.

10.55 FLOODPLAINS

Floodplains were mapped on Figure 10 of the 1993 Plan. This map showed that almost all of the Township south of the Benjamin Franklin Highway is within the 100-year floodplain. Furthermore, much of Squirrel Hollow Road on the north side of the Franklin Highway is characterized by hydric soils. Much of the proposed sewerage infrastructure will be located within these areas.

Within Douglass Township, all of the new sewerage infrastructure will be sub-surface. Implementation of this plan will not result in any new impediment to or obstruction of flood waters. By replacing existing individual sub-surface systems, implementation of this plan will eliminate the potential of surface water contamination that may result in the event of flood waters temporarily raising the water table such that it intrudes into sub-surface drainage areas.

10.56 FISH AND WILDLIFE

Implementation of this plan will have a generally beneficial impact upon fish and wildlife, attributable to the elimination of possibly malfunctioning on-site sewage disposal systems in favor of a properly operating public collection and treatment system. We note that there is no documentation indicating adverse impacts upon fish and wildlife attributable to the current systems. Our assertion of a "generally beneficial" impact is a non-specific observation based upon the anticipated results of public sewerage in this area.

10.57 AGRICULTURAL LANDS

The proposed system is designed to serve existing homes and businesses; no extensions are proposed into undeveloped areas. Implementation of this plan will not result in the loss of active farmland, nor will it encourage the development of prime agricultural soils for non-farm use.

10.58 WILD AND SCENIC RIVERS

The segment of the Schuylkill River that flows along the southern border of Douglass Township has been designated a scenic river. Since the plan proposes no new above-ground facilities (such as a new treatment facility), implementation will not adversely affect the scenic quality of the river. As has already been noted, the abandonment of possibly malfunctioning on-site systems may actually enhance the scenic quality of the river corridor.

10.59 COASTAL ZONE MANAGEMENT

Douglass Township is not in a coastal zone. Implementation of this plan will have no adverse impact on any coastal areas.

10.60 SOCIO-ECONOMIC IMPACTS

The construction of new sanitary sewerage has the potential for both positive and negative impacts upon the social and economic conditions of the area to be served.

Negative impacts are typically related to the portion of the system costs that must be borne by property owners. There are three types of cost: construction, connection, and operation/maintenance. The portion of the construction cost borne by the municipality may be paid for out of general revenues or by a debt instrument, such as a bond. In both cases, the costs are spread among all the taxpayers in the municipality. In some cases, property owners may be assessed a portion of this cost based upon the length of new main that will be located along the frontage of their property. This has the advantage of placing the financial burden upon those who will benefit from the system. The cost of connection, sometimes referred to as the "tapping fee," is charged to users as they are connected to the system. This includes both those connections that are part of the original design as well as future connections made as a result of new construction activity. This impact is also limited to the individuals who will be served by the system. Finally, operation and maintenance costs are the basis for the calculation of sewer use charges. This charge is typically either a monthly or quarterly bill paid by the owners of the properties that are served by the system. Like the connection cost, this charge is limited to those who directly benefit from the sewer service.

Public sewerage has positive socio-economic impacts as well. From the perspective of the property owner, access to public sewers is likely to enhance the value of their property. A more general benefit is that public sewerage will enhance the development potential of the area served. With access to public sewage treatment, a higher, more efficient density of development is possible than would be feasible if a developer had to rely upon on-site disposal systems. In areas of relatively high demand for development, this may relieve development pressure in areas that do *not* have access to sanitary sewerage, resulting in a preservation of open space and a reduced chance of development adversely impacting sensitive environments.

The availability of public sewers may also encourage commercial and light industrial development. Development of these types is important in order to assure a varied tax base and larger municipal revenue. While some of this additional revenue will be needed to support additional services, revenue generated by non-residential development typically exceeds the cost of the services provided by the municipality to that development. In this way, the residents may benefit from new services or a higher quality in their existing services.

We have already noted the environmental benefits to be gained by the provision of public sewers to replace on-lot systems. Strictly speaking, this is not a socio-economic benefit, but it does result in a higher quality of life which may translate into a higher property value.

10.61 WATER SUPPLIES

Implementation of this Plan will affect two (2) sources of domestic water supply.

- First, the introduction of public sewerage will eliminate the potential for contamination of groundwater sources by malfunctioning on-site sub-surface disposal systems. We have already noted that over a quarter of the domestic wells in the Phase 1 area are contaminated to the point that they are unsafe for human consumption. The type of contamination -- coliform and fecal coliform bacteria -- indicates that these wells are being polluted by human waste, with malfunctioning septic systems being the most likely source of such contamination. The provision of public sewers and the associated abandonment of individual systems will almost certainly result in improvement of the water quality, most likely rendering it safe for human consumption. This is important since all of the properties in the proposed service area rely upon individual on-lot wells for water supply.

- Second, we note that the Schuylkill River will be affected as well, since the sewage from this service area will be conveyed to the Amity Township treatment facility, which discharges into the Schuylkill. No local residents rely upon the Schuylkill for domestic supply, but downstream areas do, the City of Philadelphia most prominently. Properly treated effluent will not significantly degrade the quality of the stream.

All in all, impact upon water supplies of all kinds will be minimal. It appears that the positive impacts upon groundwater, although minor, will still be more significant than any potential negative impact upon surface water, the Schuylkill River most particularly.

10.62 OTHER ENVIRONMENTALLY SENSITIVE AREAS

The Township is not aware of any other type of environmentally sensitive area or habitat that has the potential to be affected by the implementation (or delay in implementation) of this plan.

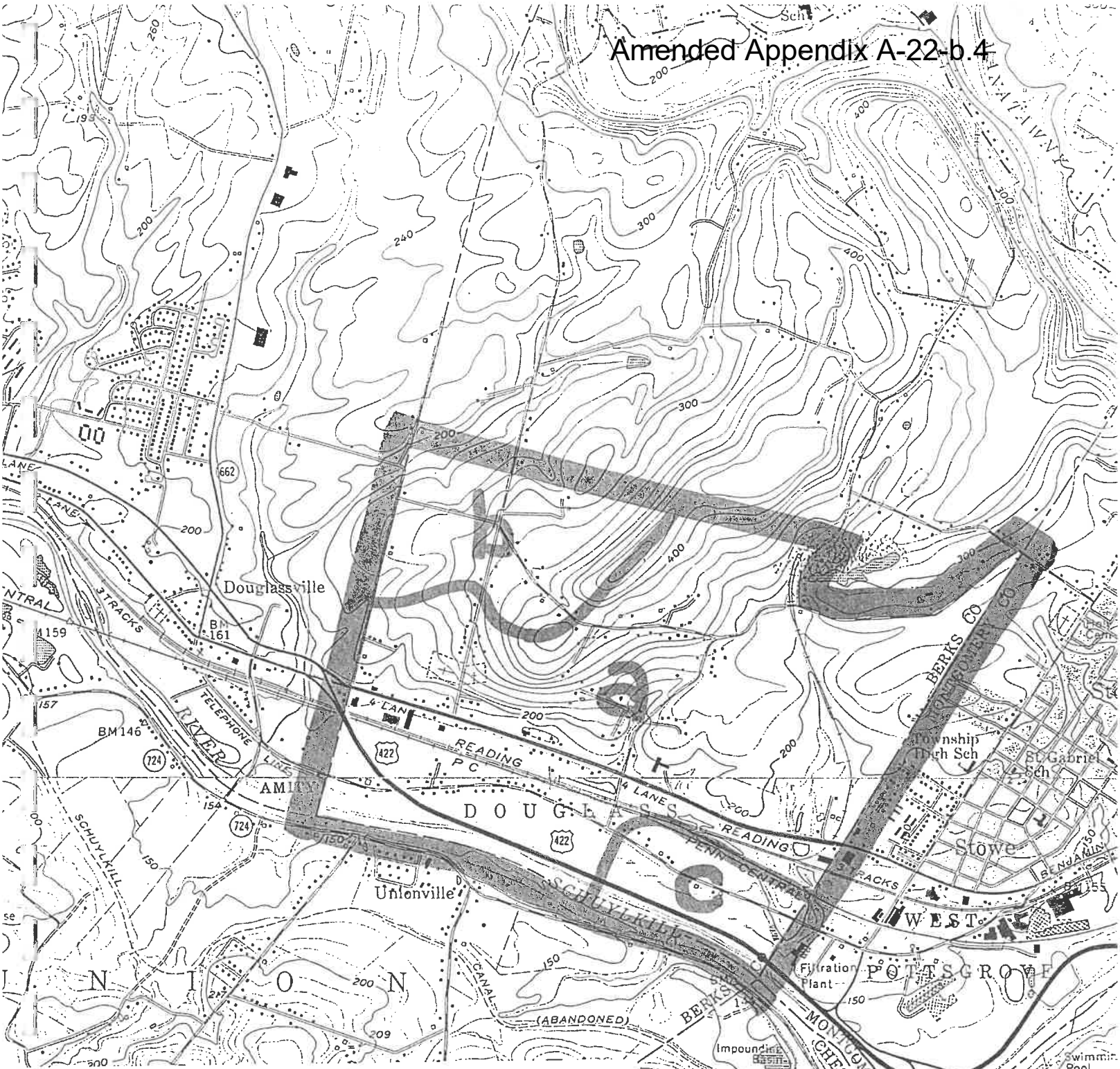
10.70 COST EFFECTIVENESS

The previously approved 1993 Update of the Douglass Township Act 537 Plan already demonstrated that the basic design of this collection system, with treatment provided by the Amity Wastewater facility, was the most cost effective alternative. We have no reason to

amend this conclusion, only to amend the initial service area, such that the original Phase 1 portion will be divided into three (3) sub-phases. If cost effectiveness is judged according to cost per EDU, then the strategy proposed here to connect the Phase 1a service area with the Amity facility has an advantage over the design proposed in 1993. With the construction costs adjusted to 1997 levels, the total project cost of the 1993 design -- serving all of Phase 1 -- would be $4,121,500, or $19,349.77 per EDU. By amending the design to include the sub-phases and limiting the initial construction to Phase 1a, the total project costs drop to $2,773,800. Although fewer EDU's are served (182 instead of 213), the drop in construction cost is so large that there is still a drop in the cost per EDU, to $15,240.66.

In conclusion, by dividing the originally approved Phase 1, we are able to realize a drop in the cost per EDU of a design that has already been deemed most cost effective.

Amended Appendix A-22-b.4



DOUGLASS TOWNSHIP
Berks County

PHASE 1 SEWER SERVICE AREA

Phase 1 includes the area within the heavy outline on this map and was approved as part of the 1993 Act 537 Plan. This proposed amendment separates this phase into three sub-phases, labelled here as "a," "b," and "c."

SCALE: 1" = 2,000'

USGS QUADRANGLE MAPPING:
BOYERTOWN and POTTSTOWN

ATTACHMENT #1

❑

Well Test Analysis Data

SUMMARY OF WELL TESTING

DOUGLASS TOWNSHIP, BERKS COUNTY

A total of forty-seven (47) wells were tested within the Phase I section of the Douglass Township Act 537 Plan. Forty (40) wells were tested between March 18, 1997 and March 25, 1997 by Systems Design Engineering, Inc. Seven (7) wells were tested on November 4, 1989 by Motley Engineering. Of the forty-seven (47) wells tested, twelve (12) wells tested unsafe for drinking. This represents 25.5 percent of the wells tested.

Well Testing

Numbers correspond to map. Entries in **bold face type** indicate failure for at least one parameter. Total coliform and fecal coliform are measured per 100 milliliters. The detection of any coliforms are sufficient to deem the water unsafe for human consumption.

#	LOCATION	COLLECT DATE	TOTAL COLIFORM	FECAL COLIFORM
4*	**210 Ben Franklin Highway**	**11-4-89**	**1**	**0**
6*	84 Lumber Ben Franklin Highway	11-4-89	0	0
14	**128 Ben Franklin Highway**	**3-18-97**	**30**	**8**
15	**126 Ben Franklin Highway**	**3-18-97**	**1**	**0**
20	**102 Squirrel Hollow Rd.**	**3-18-97**	**20**	**0**
25*	**Douglass Auto Body** **Ben Franklin Highway**	**11-4-89**	**2**	**0**
28	205 Ben Franklin Highway	3-18-97	0	0
34*	Ice City Pools Ben Franklin Highway	11-4-89	0	0
36	P.O. Box 3091 Pottstown, PA	3-18-97	0	0
44	**213 Old Philadelphia Pike**	**3-18-97**	**4**	**0**
46	**243 Old Philadelphia Pike**	**3-18-97**	**3**	**0**
61*	**135 Old Philadelphia Pike**	**11-4-89**	**1**	**0**
64	143 Old Philadelphia Pike	3-19-97	0	0
66	147 Old Philadelphia Pike	3-25-97	0	0
68	157 Old Philadelphia Pike	3-18-97	0	0
69	**166 Old Philadelphia Pike**	**3-18-97**	**7**	**0**
70	156 Old Philadelphia Pike	3-18-97	0	0
85	103 Hilty Lane	3-25-97	0	0
87	221 Township Line Rd.	3-20-97	0	0
90	251 Township Line Rd.	3-19-97	0	0
91	315 Township Line Rd.	3-25-97	0	0
93	12A Township Line Rd.	3-20-97	0	0
106	54 Old Douglass Dr.	3-25-97	0	0
108*	**138 Old Douglass Dr.**	**11-4-89**	**97**	**0**
110	142 Old Douglass Dr.	3-20-97	0	0
119	166 Mary's Lane	3-19-97	0	0
121	135 Old Douglass Dr.	3-20-97	0	0
122	39 Old Douglass Dr.	3-20-97	0	0
125	49 Old Douglass Dr.	3-19-97	0	0
133	304 Squirrel Hollow Rd.	3-20-97	0	0

#	LOCATION	COLLECT DATE	TOTAL COLIFORM	FECAL COLIFORM
135	300 Squirrel Hollow Rd.	3-25-97	0	0
139*	363 Squirrel Hollow Rd.	11-8-89	0	0
144	247 Squirrel Hollow Rd.	3-25-97	0	0
148	231 Squirrel Hollow Rd.	3-19-97	0	0
154	200 Squirrel Hollow Rd.	3-24-97	0	0
157	217 Squirrel Hollow Rd.	3-19-97	0	0
162	161 Squirrel Hollow Rd.	3-20-97	0	0
164	**168 Squirrel Hollow Rd.**	**3-19-97**	**8**	**0**
167	155 Squirrel Hollow Rd.	3-19-97	0	0
169	121 Squirrel Hollow Rd.	3-19-97	0	0
170	**123 Squirrel Hollow Rd.**	**3-19-97**	**38**	**16**
173	17 Cedar Lane	3-24-97	0	0
175	31 Cedar Lane	3-24-97	0	0
177	40 Cedar Lane	3-24-97	0	0
178	24 Cedar Lane	3-19-97	0	0
185	8 Cedar Lane	3-18-97	0	0
186	111 Squirrel Hollow Rd.	3-20-97	0	0
47	Well Tests		12	2

NOTE: * Indicates well tests performed by Hydro-Analysis in 1989 for Motley Engineering. All other well tests were performed by M. J. Reider Associates in 1997 for Systems Design Engineering, Inc.

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APPENDIX F
DOUGLASS TOWNSHIP

ON-LOT SEWAGE DISPOSAL SURVEY PHASE I EVALUATION

WELL WATER TESTED SAFE FOR DRINKING

WELL WATER TESTED UNSAFE FOR DRINKING

POSSIBLE MALFUNCTIONING SYSTEM SITE NO.'S	PRE-REGULATORY SYSTEM SITE NO.'S
68	4
69	5
87	14
122	15
140	28
142	30
164	59
179	70
186	93
	102
	110
	119
	121
	125
	126
	128
	129
	134
	138
	162
	173
	178
	185

NOTE: REFER TO SURVEY SHEETS FOR ADDITIONAL INFORMATION.

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   ✓ Drilled ____Dug 1946 Year

2. How deep is your well?
   75 Feet ____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   ✓ Less than 100 Feet ____More than 100 Feet

4. Is your water treated by any method:
   ____Chlorinator
   ____Ultraviolet light
   ____Water Softener
   ____Other, please specify? NO

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   ✓ Yes ____No

6. If yes, what were the results? OK

7. Is your well protected from surface contaminants?
   ✓ Yes ____No

8. Name: ALAN BRIGHTBILL
   Address: 128 BEN FRANKLIN HWY DOUGLASSVILLE PA
   Telephone Number: 610 326 4331

9. Sample Number: 14 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/25/97
Project Number: 9705769
Lab ID: 0145-97-0100885
Account Rep: Barbara Coyle
Date Received: 03/18/97
Date Collected: 03/18/97
Time Collected: 10:15
Collected By: CLIENT

Sample Description: #14 128 Benjamin Franklin Highway Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	4*	/100ml	03/19	303	LJF
Total Coliform Bacteria	30*	/100ml	03/20	303	LJF

This water does not comply with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ▫ NEW JERSEY DEP #77903 ▫ FDA #42146
107 ANGELICA STREET ▫ READING, PENNSYLVANIA 19611-1999 ▫ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   _X_ Drilled _____Dug _____Year ?

2. How deep is your well?
   _____Feet _____Casing Depth ?

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _✓_ Less than 100 Feet _____More than 100 Feet

4. Is your water treated by any method: N/A
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? _____

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _____Yes _✓_ No

6. If yes, what were the results? _____

7. Is your well protected from surface contaminants?
   _____Yes _✓_ No

8. Name: John M. Watkins
   Address: RR 4 Ben Franklin Hwy
   Telephone Number: 326-8570

9. Sample Number: 15 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

Amended Appendix A-22-b.4

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/25/97
Project Number: 9705722
Lab ID: 0145-97-0100774
Account Rep: Richard Wolfe
Date Received: 03/19/97
Date Collected: 03/18/97
Time Collected: 20:00
Collected By: CLIENT

Sample Description: #15 126 Ben Franklin Highway, Douglassville, PA Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/20	303	LJF
Total Coliform Bacteria	1*	/100ml	03/22	303	LJF

This water does not comply with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Richard Wolfe
Technical Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ◻ NEW JERSEY DEP #77903 ◻ FDA #42146
107 ANGELICA STREET ◻ READING, PENNSYLVANIA 19611-1999 ◻ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   _X_ Drilled _____Dug 1992 Year

2. How deep is your well?
   175 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _X_ Less than 100 Feet _____More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _X_ Ultraviolet light
   _____Water Softener
   _____Other, please specify? _____

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _X_ Yes _____No

6. If yes, what were the results? NOT SAFE FOR DRINKING

7. Is your well protected from surface contaminants?
   _X_ Yes _____No

8. Name: HENRY C. LEGENHOD
   Address: 10) SQUIRREL HOLLOW RD
   Telephone Number: 326 2994

9. Sample Number: 20 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/25/97
Project Number: 9705769
Lab ID: 0145-97-0100888
Account Rep: Barbara Coyle
Date Received: 03/18/97
Date Collected: 03/18/97
Time Collected: 13:10
Collected By: CLIENT

Sample Description: #20 102 Squirrel Hollow Road Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/19	303	LJF
Total Coliform Bacteria	20*	/100ml	03/20	303	LJF

This water does not comply with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ▫ NEW JERSEY DEP #77903 ▫ FDA #42146
107 ANGELICA STREET ▫ READING, PENNSYLVANIA 19611-1999 ▫ (610) 374-5129 FAX (610) 374-7234

Amended Appendix A-22-b.4

PLEASE CONTACT OWNER FOR THESE QUESTIONS

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   _X_ Drilled _____Dug _____Year

2. How deep is your well?
   _?_ Feet _?_ Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _X_ Less than 100 Feet _____More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? _____

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _____Yes _X_ No

6. If yes, what were the results? _____

7. Is your well protected from surface contaminants?
   _X_ Yes _____No

8. (RENT)
   Name: STEVEN + JULIE TEVIS
   Address: 205 BEN FRANKLIN Hwy, DOUGLASSVILLE PA 19518
   Telephone Number: 323-1483

9. Sample Number: 28 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

OWNER - WALTER WOODLAND
507 BEN FRANKLIN Hwy.
DOUGLASSVILLE PA 19518
385-4866

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

Amended Appendix A-22-b.4

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/25/97
Project Number: 9705769
Lab ID: 0145-97-0100892
Account Rep: Barbara Coyle
Date Received: 03/18/97
Date Collected: 03/20/97
Time Collected: 10:00
Collected By: CLIENT

Sample Description: #28 Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/21	303	LJF
Total Coliform Bacteria	0	/100ml	03/21	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ◻ NEW JERSEY DEP #77903 ◻ FDA #42146
107 ANGELICA STREET ◻ READING, PENNSYLVANIA 19611-1999 ◻ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled _____Dug 1950 Year

2. How deep is your well?
   285 Feet 106 Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet X More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? NO

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _____Yes X No

6. If yes, what were the results? _____

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: Howard Youngling
   Address: P O Box 2891 POTTSTOWN, PA
   Telephone Number: 326-5354

9. Sample Number: 36 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

I.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

Amended Appendix A-22-b.4

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/20/97
Project Number: 9705685
Lab ID: 0145-97-0100700
Account Rep: Richard Wolfe
Date Received: 03/18/97
Date Collected: 03/18/97
Time Collected: 12:45
Collected By: CLIENT

Sample Description: #36 P.O. Box 3091

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/19	303	AMW
Total Coliform Bacteria	0	/100ml	03/19	303	LJF

RECEIVED
MAR 2 1 1997
SYSTEMS DESIGN
ENG. INC.

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Richard G. Wolfe
Technical Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled _____Dug 1967 Year

2. How deep is your well?
   150 Feet 50 Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet X More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? NO

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _____Yes X No

6. If yes, what were the results? _____

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: Mary Harrison
   Address: 213 Old Reading Pk.
   Telephone Number: 610-323-2865

9. Sample Number: 44 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

Amended Appendix A-22-b.4

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
eported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/25/97
Project Number: 9705769
Lab ID: 0145-97-0100887
Account Rep: Barbara Coyle
Date Received: 03/18/97
Date Collected: 03/18/97
Time Collected: 12:35
Collected By: CLIENT

ample Description: #44 213 Old Philadelphia Pike Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/19	303	LJF
Total Coliform Bacteria	4*	/100ml	03/20	303	LJF

This water does not comply with the Pa DEP standard for safe drinking water.

Distribution of Report:
an Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled _____Dug 1940's Year

2. How deep is your well?
   100 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet X More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? NO

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   X Yes _____No

6. If yes, what were the results? SAFE FOR DRINKING

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: Charles A. Hartenstein
   Address: 243 Old Philadelphia Pike
   Telephone Number: 323 9098

9. Sample Number: 46 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/25/97
Project Number: 9705769
Lab ID: 0145-97-0100886
Account Rep: Barbara Coyle
Date Received: 03/18/97
Date Collected: 03/18/97
Time Collected: 12:45
Collected By: CLIENT

Sample Description: #46 243 Old Philadelphia Pike Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/19	303	LJF
Total Coliform Bacteria	3*	/100ml	03/20	303	LJF

This water does not comply with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ▫ NEW JERSEY DEP #77903 ▫ FDA #42146
107 ANGELICA STREET ▫ READING, PENNSYLVANIA 19611-1999 ▫ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled ____Dug 1954 Year

2. How deep is your well?
   70 & 80' Feet don't know Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   ____Less than 100 Feet X More than 100 Feet

4. Is your water treated by any method: no
   ____Chlorinator
   ____Ultraviolet light
   ____Water Softener
   ____Other, please specify? ____

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   X Yes ____No

6. If yes, what were the results? see attached sheet

7. Is your well protected from surface contaminants?
   X Yes ____No

8. Name: Ralph W. Bennet Jr.
   Address: 143 Old Rhiea Pike, Douglassville PA
   Telephone Number: 326-3277

9. Sample Number: 104 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

Amended Appendix A-22-b.4

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/21/97
Project Number: 9705722
Lab ID: 0145-97-0100773
Account Rep: Barbara Coyle
Date Received: 03/19/97
Date Collected: 03/19/97
Time Collected: 17:35
Collected By: CLIENT

Sample Description: #64 143 Old Philadelphia Pike, Douglassville, PA 19518 Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/20	303	LJF
Total Coliform Bacteria	0	/100ml	03/20	303	LJF

RECEIVED
MAR 2 4 1997
SYSTEMS DESIGN ENG. INC.

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle
Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ▫ NEW JERSEY DEP #77903 ▫ FDA #42146
107 ANGELICA STREET ▫ READING, PENNSYLVANIA 19611-1999 ▫ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   _X_ Drilled _____Dug _____?_____Year

2. How deep is your well?
   _50_ Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet _X_ More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? NA

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _____Yes _X_ No

6. If yes, what were the results? _____

7. Is your well protected from surface contaminants?
   _X_ Yes _____No

8. Name: Bill Gaul
   Address: 147 Old Phila. Pike
   Telephone Number: 610-323-6275

9. Sample Number: 66 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Brian J. Sinnwell
eported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/28/97
Project Number: 9706034
Lab ID: 0145-97-0101541
Account Rep: Barbara Coyle
Date Received: 03/25/97
Date Collected: 03/25/97
Time Collected: 10:30
Collected By: CLIENT

ample Description: #66 147 Old Philadelphia Pike

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/26	303	LJF
Total Coliform Bacteria	0	/100ml	03/26	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
rian J. Sinnwell - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle
Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ▫ NEW JERSEY DEP #77903 ▫ FDA #42146
107 ANGELICA STREET ▫ READING, PENNSYLVANIA 19611-1999 ▫ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled _____Dug 1950 Year

2. How deep is your well?
   150 Feet ? Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   X Less than 100 Feet _____More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? No

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _____Yes X No

6. If yes, what were the results? _____

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: Marian Heath
   Address: 157 old Phila. Pike, Douglassville
   Telephone Number: 326-1332

9. Sample Number: 68 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/20/97
Project Number: 9705685
Lab ID: 0145-97-0100702
Account Rep: Richard Wolfe
Date Received: 03/18/97
Date Collected: 03/18/97
Time Collected: 10:48
Collected By: CLIENT

Sample Description: #68 157 Old Philadelphia Pike

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Total Coliform Bacteria	0	/100ml	03/19	303	LJF

RECEIVED
MAR 21 1997
SYSTEMS DESIGN ENG. INC.

This water complies with the Pa DEP standard for safe drinking water. Fecal coliform bottle broken on transit.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Richard Wolfe
Technical Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled ___ Dug 1960's Year

2. How deep is your well?
   65 Feet ___ Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   ___ Less than 100 Feet X More than 100 Feet

4. Is your water treated by any method:
   ___ Chlorinator
   ___ Ultraviolet light
   ___ Water Softener
   ___ Other, please specify? No

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   ___ Yes X No

6. If yes, what were the results? ___

7. Is your well protected from surface contaminants?
   ___ Yes X No

8. Name: Ed Otter
   Address: 166 Old Leesburg Pike
   Telephone Number: 326-3491

9. Sample Number: 69 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/25/97
Project Number: 9705769
Lab ID: 0145-97-0100875
Account Rep: Barbara Coyle
Date Received: 03/18/97
Date Collected: 03/18/97
Time Collected: 12:25
Collected By: CLIENT

Sample Description: 166 Old Philadelphia Pike
69

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/19	303	LJF
Total Coliform Bacteria	7*	/100ml	03/20	303	LJF

This water does not comply with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ◻ NEW JERSEY DEP #77903 ◻ FDA #42146
107 ANGELICA STREET ◻ READING, PENNSYLVANIA 19611-1999 ◻ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   ✓ Drilled _____Dug _____Year

2. How deep is your well?
   160 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet X More than 100 Feet

4. Is your water treated by any method: NO
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? _____

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   ✓ Yes _____No

6. If yes, what were the results? Safe to drink

7. Is your well protected from surface contaminants?
   ✓ Yes _____No

8. Name: Paula Cappelini
   Address: 1516 Old Philadelphia Pike Douglassville
   Telephone Number: 610-970-9398

9. Sample Number: 70 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

Amended Appendix A-22-b.4

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/20/97
Project Number: 9705685
Lab ID: 0145-97-0100698
Account Rep: Richard Wolfe
Date Received: 03/18/97
Date Collected: 03/18/97
Time Collected: 10:30
Collected By: CLIENT

Sample Description: #70 156 Old Philadelphia Pike

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/19	303	AMW
Total Coliform Bacteria	0	/100ml	03/19	303	LJF

RECEIVED
MAR 21 1997
SYSTEMS DESIGN ENG. INC.

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Richard Wolfe
Technical Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ▫ NEW JERSEY DEP #77903 ▫ FDA #42146
107 ANGELICA STREET ▫ READING, PENNSYLVANIA 19611-1999 ▫ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled _____Dug 1952 Year

2. How deep is your well?
   200 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   X Less than 100 Feet _____More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   X Other, please specify? CHARCOAL FILTER

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   X Yes _____No

6. If yes, what were the results? SAFE

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: MARK YACOVELLI
   Address: 103 HILTYS LN.
   Telephone Number: 323-1843

9. Sample Number: 85 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

Amended Appendix A-22-b.4

CERTIFICATE OF ANALYSIS

Attention: Brian J. Sinnwell
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/28/97
Project Number: 9706034
Lab ID: 0145-97-0101538
Account Rep: Barbara Coyle
Date Received: 03/25/97
Date Collected: 03/25/97
Time Collected: 09:50
Collected By: CLIENT

Sample Description: #85 103 HILTY LANE

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/26	303	LJF
Total Coliform Bacteria	0	/100ml	03/26	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Brian J. Sinnwell - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled _____Dug 80 Year

2. How deep is your well?
   125 Feet 40 Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet X More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   X Water Softener
   _____Other, please specify? _____

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _____Yes X No

6. If yes, what were the results? _____

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: GARY TWARDOWSKI
   Address: 221 TOWNSHIPLINE RD DOUGLASSVILLE PA 19518
   Telephone Number: 323 0915

9. Sample Number: 87 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

Amended Appendix A-22-b.4

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/25/97
Project Number: 9705769
Lab ID: 0145-97-0100894
Account Rep: Barbara Coyle
Date Received: 03/18/97
Date Collected: 03/20/97
Time Collected: 10:15
Collected By: CLIENT

Sample Description: #87 221 Township Line Road Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/21	303	LJF
Total Coliform Bacteria	0	/100ml	03/23	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ◻ NEW JERSEY DEP #77903 ◻ FDA #42146
107 ANGELICA STREET ◻ READING, PENNSYLVANIA 19611-1999 ◻ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled _____Dug 57 Year

2. How deep is your well?
   300 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet X More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? No

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   X Yes _____No

6. If yes, what were the results? OK

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: ALEX ARCADIA
   Address: 251 TOWNSHIPLINE RD
   Telephone Number: 610-970-2511

9. Sample Number: 92 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

Amended Appendix A-22-b.4

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/21/97
Project Number: 9705713
Lab ID: 0145-97-0100751
Account Rep: Barbara Coyle
Date Received: 03/19/97
Date Collected: 03/19/97
Time Collected: 12:00
Collected By: CLIENT

Sample Description: #90 251 Township Road Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/20	303	LJF
Total Coliform Bacteria	0	/100ml	03/20	303	LJF

RECEIVED
MAR 24 1997
SYSTEMS DESIGN ENG. INC.

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ▫ NEW JERSEY DEP #77903 ▫ FDA #42146
107 ANGELICA STREET ▫ READING, PENNSYLVANIA 19611-1999 ▫ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   _X_ Drilled _____Dug _____? Year

2. How deep is your well?
   265 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet _X_ More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _X_ Water Softener
   _____Other, please specify? _____

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _X_ Yes _____No

6. If yes, what were the results? SAFE

7. Is your well protected from surface contaminants?
   _X_ Yes _____No

8. Name: Charles N. Bachman
   Address: 315 Furnace Hills Drive
   Telephone Number: 321-1135

9. Sample Number: 91 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Brian J. Sinnwell
eported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/28/97
Project Number: 9706034
Lab ID: 0145-97-0101540
Account Rep: Barbara Coyle
Date Received: 03/25/97
Date Collected: 03/25/97
Time Collected: 10:15
Collected By: CLIENT

ample Description: #91 315 Township Line Road

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/26	303	LJF
Total Coliform Bacteria	0	/100ml	03/26	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
rian J. Sinnwell - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled _____Dug 1971 Year

2. How deep is your well?
   115 Feet 115 Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   X Less than 100 Feet _____More than 100 Feet
   Approx 80 FT

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? _____

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   X Yes _____No

6. If yes, what were the results? OK

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: Richard Feight
   Address: 12-A Township Line Road Douglassville, PA 19518
   Telephone Number: 610-323-4292

9. Sample Number: 93 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/26/97
Project Number: 9705792
Lab ID: 0145-97-0100917
Account Rep: Barbara Coyle
Date Received: 03/20/97
Date Collected: 03/20/97
Time Collected: 08:15
Collected By: CLIENT

Sample Description: #93 12-A Township Line Road, Douglassville, PA Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/21	303	LJF
Total Coliform Bacteria	0	/100ml	03/21	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle
Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   ✓ Drilled _____Dug _____Year

2. How deep is your well?
   300 Feet 300 Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet ✓ More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? _____

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   ✓ Yes _____No

6. If yes, what were the results? hard water

7. Is your well protected from surface contaminants?
   ✓ Yes _____No

8. Name: Robert E Beal
   Address: 54 Old Douglass Douglassville PA 19518
   Telephone Number: 323-3498

9. Sample Number: 106 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Brian J. Sinnwell
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/28/97
Project Number: 9706034
Lab ID: 0145-97-0101536
Account Rep: Barbara Coyle
Date Received: 03/25/97
Date Collected: 03/25/97
Time Collected: 10:00
Collected By: CLIENT

Sample Description: #106 54 060 0606455 ORIG

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/26	303	LJF
Total Coliform Bacteria	0	/100ml	03/26	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Brian J. Sinnwell - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   ✓ Drilled _____Dug MARCH 1994 Year

2. How deep is your well?
   175 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   65 Less than 100 Feet _____More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? NONE

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   ✓ Yes _____No

6. If yes, what were the results? good

7. Is your well protected from surface contaminants?
   ✓ Yes _____No

8. Name: James Baber
   Address: 42 Old Douglass DR. Douglassville Pa. 19518-1604
   Telephone Number: 610-323-7751

9. Sample Number: 110 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
eported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/25/97
Project Number: 9705769
Lab ID: 0145-97-0100896
Account Rep: Barbara Coyle
Date Received: 03/18/97
Date Collected: 03/20/97
Time Collected: 10:00
Collected By: CLIENT

ample Description: #110 142 Old Douglad Drive Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/21	303	LJF
Total Coliform Bacteria	0	/100ml	03/21	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
an Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   _X_ Drilled _____Dug 1960 Year

2. How deep is your well?
   175 Feet 150 Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet _X_More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? NO

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _X_ Yes _____No

6. If yes, what were the results? SAFE

7. Is your well protected from surface contaminants?
   _X_ Yes _____No

8. Name: MARY RHODE
   Address: 166 MARYS LANE DOUGLASVILLE, PA
   Telephone Number: 610-323-6667

9. Sample Number: 119 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

WOULD LIKE TEST RESULTS

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/21/97
Project Number: 9705713
Lab ID: 0145-97-0100754
Account Rep: Barbara Coyle
Date Received: 03/19/97
Date Collected: 03/19/97
Time Collected: 13:20
Collected By: CLIENT

Sample Description: #119 166 Mark Lane Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/20	303	LJF
Total Coliform Bacteria	0	/100ml	03/20	303	LJF

RECEIVED
MAR 2 4 1997
SYSTEMS DESIGN ENG. INC.

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle
Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ▫ NEW JERSEY DEP #77903 ▫ FDA #42146
107 ANGELICA STREET ▫ READING, PENNSYLVANIA 19611-1999 ▫ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled _____Dug _____Year

2. How deep is your well?
   ? Feet ? Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet X More than 100 Feet

4. Is your water treated by any method: no
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? _____

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _____Yes X No

6. If yes, what were the results? _____

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: John T. Smith
   Address: 35 Old Douglass Dr, Douglassville PA 19518
   Telephone Number: (610) 327-3904

9. Sample Number: 121 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/25/97
Project Number: 9705769
Lab ID: 0145-97-0100893
Account Rep: Barbara Coyle
Date Received: 03/18/97
Date Collected: 03/20/97
Time Collected: 10:00
Collected By: CLIENT

Sample Description: #121 135 Old Douglad Drive Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/21	303	LJF
Total Coliform Bacteria	0	/100ml	03/21	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   ✓ Drilled _____Dug 1950 Year

2. How deep is your well?
   110 Feet Approx. 110 Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   ✓ Less than 100 Feet _____More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? —

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _____Yes ✓ No

6. If yes, what were the results? —

7. Is your well protected from surface contaminants?
   ✓ Yes _____No

8. Name: GEORGE & DENISE ROADCAP
   Address: 39 OLD DOUGLASS Dr.
   Telephone Number: 326-7397

9. Sample Number: 122 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/25/97
Project Number: 9705769
Lab ID: 0145-97-0100891
Account Rep: Barbara Coyle
Date Received: 03/18/97
Date Collected: 03/20/97
Time Collected: 10:00
Collected By: CLIENT

Sample Description: #122 39 Old Douglad Drive Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/21	303	LJF
Total Coliform Bacteria	0	/100ml	03/21	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled _____Dug 1959 Year

2. How deep is your well?
   125 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   X Less than 100 Feet _____More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? NO

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   X Yes _____No

6. If yes, what were the results? SAFE

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: Earl C. Shirey
   Address: 49 Old Douglass Dr.
   Telephone Number: 610-326-6729

9. Sample Number: ~~#0~~ 125 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

Amended Appendix A-22-b.4

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/21/97
Project Number: 9705713
Lab ID: 0145-97-0100755
Account Rep: Barbara Coyle
Date Received: 03/19/97
Date Collected: 03/19/97
Time Collected: 13:45
Collected By: CLIENT

Sample Description: ~~#110~~ 125 49 DD Water Sample

	Results	Unit	Date	Procedure	Analyst
ACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/20	303	LJF
Total Coliform Bacteria	0	/100ml	03/20	303	LJF

RECEIVED
MAR 24 1997
SYSTEMS DESIGN ENG. INC.

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle
Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ◻ NEW JERSEY DEP #77903 ◻ FDA #42146
107 ANGELICA STREET ◻ READING, PENNSYLVANIA 19611-1999 ◻ (610) 374-5129 FAX (610) 374-7234

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
eported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/25/97
Project Number: 9705769
Lab ID: 0145-97-0100895
Account Rep: Barbara Coyle
Date Received: 03/18/97
Date Collected: 03/20/97
Time Collected: 10:00
Collected By: CLIENT

ample Description: #133 304 Squirrel Hollow Road Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/21	303	LJF
Total Coliform Bacteria	0	/100ml	03/21	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
an Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   _✓_ Drilled _____Dug 1983 Year

2. How deep is your well?
   247 Feet 33'10" Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet _✓_ More than 100 Feet

4. Is your water treated by any method: NO
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? _____

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _✓_ Yes _____No

6. If yes, what were the results? NOT SURE

7. Is your well protected from surface contaminants?
   _✓_ Yes _____No

8. Name: MR. & MRS. WILLIAM STROCK
   Address: 304 SQUIRREL HL. RD., DOUGLASSVILLE, PA 19518
   Telephone Number: 610-323-7567

9. Sample Number: 133 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled _____Dug 1936 Year

2. How deep is your well?
   60 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet X More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? NO

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   X Yes _____No

6. If yes, what were the results? SAFE

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: Chuck & Lesa
   Address: 300 Squirrel Hollow RD
   Telephone Number: 323 2207

9. Sample Number: 135 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

Amended Appendix A-22-b.4

CERTIFICATE OF ANALYSIS

Attention: Brian J. Sinnwell
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/28/97
Project Number: 9706034
Lab ID: 0145-97-0101537
Account Rep: Barbara Coyle
Date Received: 03/25/97
Date Collected: 03/25/97
Time Collected: 11:05
Collected By: CLIENT

Sample Description: #135 360 Squirrel Hollow Lane

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/26	303	LJF
Total Coliform Bacteria	0	/100ml	03/26	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Brian J. Sinnwell - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   _X_ Drilled _____Dug 1955 Year

2. How deep is your well?
   80 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _X_ Less than 100 Feet _____More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? NO

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _____Yes _X_ No

6. If yes, what were the results? _____

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: Marian R. Rose
   Address: 247 Samuel Hollow Rd. Douglassville, Pa 19518
   Telephone Number: 610-323-4950

9. Sample Number: 144 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

Amended Appendix A-22-b.4

CERTIFICATE OF ANALYSIS

Attention: Brian J. Sinnwell
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/28/97
Project Number: 9706034
Lab ID: 0145-97-0101539
Account Rep: Barbara Coyle
Date Received: 03/25/97
Date Collected: 03/25/97
Time Collected: 11:00
Collected By: CLIENT

Sample Description: #144 247 Squirrel Hollow Road

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/26	303	LJF
Total Coliform Bacteria	0	/100ml	03/26	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Brian J. Sinnwell - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ▫ NEW JERSEY DEP #77903 ▫ FDA #42146
107 ANGELICA STREET ▫ READING, PENNSYLVANIA 19611-1999 ▫ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   _X_ Drilled _____Dug 1940's Year

2. How deep is your well?
   100 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet _X_ More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? NO

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _____Yes _X_ No

6. If yes, what were the results? _____

7. Is your well protected from surface contaminants?
   _X_ Yes _____No

8. Name: Joan Kastenbaum
   Address: 235 Douglass Dr. Douglassville
   Telephone Number: 327-1537

9. Sample Number: 148 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

Amended Appendix A-22-b.4

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/21/97
Project Number: 9705713
Lab ID: 0145-97-0100746
Account Rep: Barbara Coyle
Date Received: 03/19/97
Date Collected: 03/19/97
Time Collected: 11:20
Collected By: CLIENT

Sample Description: #148 231 Squirrel Hollow Road Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/20	303	LJF
Total Coliform Bacteria	0	/100ml	03/20	303	LJF

RECEIVED
MAR 24 1997
SYSTEMS DESIGN ENG. INC.

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ◻ NEW JERSEY DEP #77903 ◻ FDA #42146
107 ANGELICA STREET ◻ READING, PENNSYLVANIA 19611-1999 ◻ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   _X_ Drilled _____Dug 1970 Year

2. How deep is your well?
   220 Feet ? Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet _X_ More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? NO

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _____Yes _X_ No

6. If yes, what were the results? _____

7. Is your well protected from surface contaminants?
   _X_ Yes _____No

8. Name: T LEAK
   Address: 226 SQUIRREL HOLLOW ROAD
   Telephone Number: 326-2398

9. Sample Number: 154 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/26/97
Project Number: 9705927
Lab ID: 0145-97-0101284
Account Rep: Barbara Coyle
Date Received: 03/24/97
Date Collected: 03/24/97
Time Collected: 09:50
Collected By: CLIENT

Sample Description: #154 200 Squirrel Hollow Lane

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/25	303	LJF
Total Coliform Bacteria	0	/100ml	03/25	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle
Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled _____Dug 1996 Year

2. How deep is your well?
   200 + Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet X More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? No

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   X Yes _____No

6. If yes, what were the results? SAFE

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: Beverly A. Sites
   Address: 217 Squirrel Hollow Rd. Douglassville, Pa.
   Telephone Number: [redacted]

9. Sample Number: 157 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/21/97
Project Number: 9705713
Lab ID: 0145-97-0100749
Account Rep: Barbara Coyle
Date Received: 03/19/97
Date Collected: 03/19/97
Time Collected: 11:05
Collected By: CLIENT

Sample Description: ~~#164~~ #157 217 Squirrel Hollow Road Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/20	303	LJF
Total Coliform Bacteria	0	/100ml	03/20	303	LJF

RECEIVED
MAR 24 1997
SYSTEMS DESIGN ENG. INC.

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle
Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ◻ NEW JERSEY DEP #77903 ◻ FDA #42146
107 ANGELICA STREET ◻ READING, PENNSYLVANIA 19611-1999 ◻ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   ✓ Drilled _____Dug 75 Year

2. How deep is your well?
   200 Feet 80# Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet X More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   ✓ Water Softener
   _____Other, please specify? _____

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   ✓ Yes _____No

6. If yes, what were the results? good + bad.

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: Ephriam B Wade JR
   Address: 160 Squirrel Hollow Rd
   Telephone Number: 1010-327-9995

9. Sample Number: 162 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

Amended Appendix A-22-b.4

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/25/97
Project Number: 9705769
Lab ID: 0145-97-0100890
Account Rep: Barbara Coyle
Date Received: 03/18/97
Date Collected: 03/20/97
Time Collected: 10:00
Collected By: CLIENT

Sample Description: #162 161 Squirrel Hollow Road Water Sample

	Results	Unit	Date	Procedure	Analyst
LACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/21	303	LJF
Total Coliform Bacteria	0	/100ml	03/21	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ▫ NEW JERSEY DEP #77903 ▫ FDA #42146
107 ANGELICA STREET ▫ READING, PENNSYLVANIA 19611-1999 ▫ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   _X_ Drilled _____Dug 1950's Year

2. How deep is your well?
   250 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet _X_ More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? NO

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _____Yes _X_ No

6. If yes, what were the results? _____

7. Is your well protected from surface contaminants?
   _X_ Yes _____No

8. Name: [illegible]
   Address: [illegible]
   Telephone Number: 610-326-1975

9. Sample Number: 164 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/25/97
Project Number: 9705713
Lab ID: 0145-97-0100752
Account Rep: Barbara Coyle
Date Received: 03/19/97
Date Collected: 03/19/97
Time Collected: 11:00
Collected By: CLIENT

Sample Description: #164 168 Squirrel Hollow Road Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/20	303	LJF
Total Coliform Bacteria	8*	/100ml	03/22	303	LJF

This water does not comply with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ◻ NEW JERSEY DEP #77903 ◻ FDA #42146
107 ANGELICA STREET ◻ READING, PENNSYLVANIA 19611-1999 ◻ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   _X_ Drilled _____Dug 1942 Year

2. How deep is your well?
   140 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet _X_ More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? NO

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _X_ Yes _____No

6. If yes, what were the results? SAFE FOR DRINKING

7. Is your well protected from surface contaminants?
   _X_ Yes _____No

8. Name: John Yorgey
   Address: 155 Squirrel Hollow Rd
   Telephone Number: 326-8464

9. Sample Number: 167 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/21/97
Project Number: 9705713
Lab ID: 0145-97-0100748
Account Rep: Barbara Coyle
Date Received: 03/19/97
Date Collected: 03/19/97
Time Collected: 10:45
Collected By: CLIENT

Sample Description: #167 155 Squirrel Hollow Road Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/20	303	LJF
Total Coliform Bacteria	0	/100ml	03/20	303	LJF

RECEIVED
MAR 24 1997
SYSTEMS DESIGN ENG. INC.

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 ▫ NEW JERSEY DEP #77903 ▫ FDA #42146
107 ANGELICA STREET ▫ READING, PENNSYLVANIA 19611-1999 ▫ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   _X_ Drilled _____Dug 1992 Year

2. How deep is your well?
   206 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet _X_ More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? NO

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _____Yes _X_ No

6. If yes, what were the results? _____

7. Is your well protected from surface contaminants?
   _X_ Yes _____No

8. Name: Diane Patten
   Address: 121 Squirrel Hollow Rd. Douglassville PA. 19518
   Telephone Number: (610) 327-4738

9. Sample Number: 169 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
eported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/21/97
Project Number: 9705713
Lab ID: 0145-97-0100750
Account Rep: Barbara Coyle
Date Received: 03/19/97
Date Collected: 03/19/97
Time Collected: 10:30
Collected By: CLIENT

ample Description: #169 121 Squirrel Hollow Road Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/20	303	LJF
Total Coliform Bacteria	0	/100ml	03/20	303	LJF

RECEIVED
MAR 2 4 1997
SYSTEMS DESIGN ENG. INC.

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
an Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled _____Dug 1987 Year

2. How deep is your well?
   125 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _____Less than 100 Feet X More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? NO

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   X Yes _____No

6. If yes, what were the results? SAFE

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: Goldie Patton
   Address: 123 Spring Hollow Rd
   Telephone Number: 327-4405

9. Sample Number: 170 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

Amended Appendix A-22-b.4

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/25/97
Project Number: 9705713
Lab ID: 0145-97-0100753
Account Rep: Barbara Coyle
Date Received: 03/19/97
Date Collected: 03/19/97
Time Collected: 10:00
Collected By: CLIENT

Sample Description: #170 123 Squirrel Hollow Road Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	16*	/100ml	03/20	303	LJF
Total Coliform Bacteria	38*	/100ml	03/22	303	LJF

This water does not comply with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled _____Dug _____Year

2. How deep is your well?
   142 Feet 30 ft Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   X Less than 100 Feet X More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   X Water Softener
   _____Other, please specify? _____

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   X Yes _____No

6. If yes, what were the results? NO PROBLEMS

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: CHRISTOPHER STEIN
   Address: 17 CEDAR LANE DOUGLASSVILLE, PA.
   Telephone Number: 610-326-1638

9. Sample Number: 173 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/26/97
Project Number: 9705927
Lab ID: 0145-97-0101283
Account Rep: Barbara Coyle
Date Received: 03/24/97
Date Collected: 03/24/97
Time Collected: 09:25
Collected By: CLIENT

Sample Description: #173 17 CEDAR LANE

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/25	303	LJF
Total Coliform Bacteria	0	/100ml	03/25	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle
Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled _____Dug 1987 Year

2. How deep is your well?
   226 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   X Less than 100 Feet _____More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? NO

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   X Yes _____No

6. If yes, what were the results? CONTAMINATED

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: GABE FIENI
   Address: 31 CEDAR LN. DOUGLASSVILLE, PA. 19518
   Telephone Number: 323-2330

9. Sample Number: 05 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

Amended Appendix A-22-b.4

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
eported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/26/97
Project Number: 9705927
Lab ID: 0145-97-0101282
Account Rep: Barbara Coyle
Date Received: 03/24/97
Date Collected: 03/24/97
Time Collected: 09:20
Collected By: CLIENT

ample Description: #175 31 Cedar Lane

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/25	303	LJF
Total Coliform Bacteria	0	/100ml	03/25	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
an Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle
Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   _X_ Drilled _____Dug 1957 Year

2. How deep is your well?
   200 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   _X_ Less than 100 Feet _____More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _X_ Water Softener
   _____Other, please specify? _____

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   _____Yes _X_ No

6. If yes, what were the results? _____

7. Is your well protected from surface contaminants?
   _X_ Yes _____No

8. Name: SHARON E. PAUL
   Address: 40 CEDAR LN. 19518
   Telephone Number: 610-323-7979

9. Sample Number: 177 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
eported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/26/97
Project Number: 9705927
Lab ID: 0145-97-0101285
Account Rep: Barbara Coyle
Date Received: 03/24/97
Date Collected: 03/24/97
Time Collected: 09:45
Collected By: CLIENT

ample Description: #177 40 Cedar Lane

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/25	303	LJF
Total Coliform Bacteria	0	/100ml	03/25	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
an Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle
Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   ✓ Drilled _____Dug _____Year

2. How deep is your well?
   140 Feet 2 Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   ✓ Less than 100 Feet _____More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   _____Water Softener
   _____Other, please specify? No.

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   ✓ Yes _____No

6. If yes, what were the results? O. K.

7. Is your well protected from surface contaminants?
   ✓ Yes _____No

8. Name: Alfred Kolarz
   Address: 24 Cedar Land
   Telephone Number: 926-1946

9. Sample Number: 178 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/25/97
Project Number: 9705713
Lab ID: 0145-97-0100747
Account Rep: Barbara Coyle
Date Received: 03/19/97
Date Collected: 03/19/97
Time Collected: 09:30
Collected By: CLIENT

Sample Description: #178 24 Cedar Lane Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/20	303	LJF
Total Coliform Bacteria	0	/100ml	03/22	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled _____Dug 1992 Year

2. How deep is your well?
   300 Feet _____Casing Depth

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   X Less than 100 Feet _____More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   X Water Softener
   _____Other, please specify? _____

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   X Yes _____No

6. If yes, what were the results? SAFE

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: Ruth Scholleberger
   Address: 8 Cedar Lane
   Telephone Number: 326-1765

9. Sample Number: 185 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

M.J. Reider Associates, Inc.
LICENSED ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/20/97
Project Number: 9705685
Lab ID: 0145-97-0100701
Account Rep: Richard Wolfe
Date Received: 03/18/97
Date Collected: 03/18/97
Time Collected: 13:25
Collected By: CLIENT

Sample Description: #185 8 Cidar Lane

	Results	Unit	Date	Procedure	Analyst
ACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/19	303	AMW
Total Coliform Bacteria	0	/100ml	03/19	303	LJF

RECEIVED
MAR 2 1 1997
SYSTEMS DESIGN ENG. INC.

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Richard G. Wolfe

Richard Wolfe
Technical Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

DOUGLASS TOWNSHIP, BERKS COUNTY
WELL TESTING QUESTIONNAIRE
MARCH 1997

Dear Resident: Please complete this questionnaire and return questionnaire with water sample bottle or bottles in plastic bag provided.

1. How is your well constructed? When was it constructed?
   X Drilled _____Dug _____Year

2. How deep is your well?
   _____Feet _____Casing Depth ?

3. How far away is your well located in relation to nearest septic system (your own or a neighbor's)?
   X Less than 100 Feet _____More than 100 Feet

4. Is your water treated by any method:
   _____Chlorinator
   _____Ultraviolet light
   X Water Softener
   _____Other, please specify? _____

IMPORTANT:
IF YOUR WELL IS TREATED, THE COLLECTION OF THE WATER SAMPLE FOR WELL TESTING SHOULD BE COLLECTED PRIOR TO THE POINT OF TREATMENT.

5. Have you ever had your water tested?
   X Yes _____No

6. If yes, what were the results? ALL GOOD

7. Is your well protected from surface contaminants?
   X Yes _____No

8. Name: MARK SHOPE
   Address: 111 SQUIRREL HOLLOW RD. DOUGLASSVILLE, PA 19518
   Telephone Number: 470-5658

9. Sample Number: 186 (This number can be found on the plastic bag in which the sample bottle or bottles and questionnaire were delivered to your property (and will be picked up in).

Thank you for your cooperation.

Amended Appendix A-22-b.4

CERTIFICATE OF ANALYSIS

Attention: Dan Unger
Reported to: System Design Engineering, Inc.
4 Park Plaza
Wyomissing PA 19610-1340

Date of Report: 03/25/97
Project Number: 9705769
Lab ID: 0145-97-0100889
Account Rep: Barbara Coyle
Date Received: 03/18/97
Date Collected: 03/20/97
Time Collected: 10:00
Collected By: CLIENT

Sample Description: #186 111 Squirrel Hollow Road Water Sample

	Results	Unit	Date	Procedure	Analyst
BACTI					
MICROBIOLOGY					
Fecal Coliform	0	/100ml	03/21	303	LJF
Total Coliform Bacteria	0	/100ml	03/21	303	LJF

This water complies with the Pa DEP standard for safe drinking water.

Distribution of Report:
Dan Unger - System Design Engineering, Inc.

M. J. Reider Associates, Inc.
Reviewed and Approved by:

Barbara R Coyle

Barbara Coyle
Laboratory Director

PENNSYLVANIA DER / U.S. ENVIRONMENTAL PROTECTION AGENCY #06-003 □ NEW JERSEY DEP #77903 □ FDA #42146
107 ANGELICA STREET □ READING, PENNSYLVANIA 19611-1999 □ (610) 374-5129 FAX (610) 374-7234

Amended Appendix A-22-b.4

	Name & Address	Nitrate Nitrogen	Total Coliform	Fecal Coliform	Fecal Strep
13.	Pine Forge c/o R. Trainer Box 355, Pine Forge, PA 19548	2.1	1	0	0
14.	R. Trainer Box 355 Pine Forge, PA 19548	2.4	0	0	0
15.	D. Luciano Pine Forge Road Pine Forge, PA 19548	5.3	0	0	0
16.	D. Adams 384 Douglass Drive Douglassville, PA 19518	3.8	0	0	0
17.	B. DeLong 382 Douglass Drive Douglassville, PA 19518	3.7	0	0	0
18.	R. Breen 358 Douglass Drive Douglassville, PA 19518	4.7	18	0	2
19. # 139	T. McCane 363 Squirrel Hollow Road Douglassville, PA 19518	2.7	0	0	0
20. # 108	D. Burns 138 Douglass Drive Douglassville, PA 19518	0.8	97	0	6
21. #61	S. Banos 135 Old Reading Pike Douglassville, PA 19518	2.9	1	0	0
22. # 4	S. Core 210 Ben Franklin Highway Douglassville, PA 19518	2.6	1	0	0
23.	D. Carl 774 Constitution Avenue Douglassville, PA 19518	0.76	0	0	0
24.	J. Sotter R.D. 2, Box 761 Boyertown, PA 19512	3.9	81	8	1

Amended Appendix A-22-b.4

	Name & Address	Nitrate Nitrogen	Total Coliform	Fecal Coliform	Fecal Strep
37.	B. Updegrove Woodside Drive Boyertown, PA 19512	0.42	0	0	0
38.	Don Heimbach R.D. 5, Box 410 Boyertown, PA 19512	6.0	0	0	0
39.	Mark Scott R.D. 2, Box 473 Boyertown, PA 19512	6.2	21	0	0
40.	Pottstown Rock Quarry 1 Quarry Road (Office) Douglassville, PA 19518	0.70	1	0	0
41.	Pottstown Rock Quarry 14 Quarry Road (Resid.) Douglassville, PA 19518	0.42	0	0	22
42.	M. Dexter R.D. 2 Boyertown, PA 19512	4.0	43	15	32
#4 43.	Ice City Pools	---	0	0	0
#6 44.	84 Lumber Co.	0.78	0	0	0
#5 45.	Douglassville Auto Body	4.0	2	0	0

* - Maximum Contaminant Level for Nitrate Nitrogen is 10.00
** - Maximum Contaminant Level for Total Coliform is 1
*** - There are no Maximum Contaminant Levels set by the state of PA for Fecal Coliform & Fecal Strep.

The ratio of fecal strep to fecal coliform is approximately 1 fecal strep to 4.4 fecal coliforms in human fecal contamination and 2 fecal strep to 1 fecal coliform in animal fecal contamination. Therefore, the fecal strep most likely represents animal waste.

CERTIFIED
PA DER LAB 06-317
NY EPA 10-956
REPORT

Randy S. Haring
Technical Director

Amended Appendix A-22-b.4

Hydro-Analysis Associates, Inc.
R.D. 1 • NOBLE STREET EXTENSION • KUTZTOWN, PA 19530
(800)622-6424 or (215)683-7474

Sampling Instructions

Taking A Bacteria Water Sample
(Green Lid Cup)

1. Use a sterile sample green lid cup provided by the laboratory. Be careful not to touch the cap or the mouth of the bottle with anything. Do not open the bottle until you are ready to fill it. Do not rinse it.

2. Inspect the outside of the cold water faucet to be sure there are no leaks around the handle. If there is leaking, take the sample from another faucet.

3. Remove any attachments, such as a faucet aerator. Clean the outside of the faucet.

4. Let the water run at full force for about five minutes in order to clean the pipes and storage unit before you collect the sample.

5. Reduce the water flow to one-third of full force and run again for about two minutes.

6. Open the sterile bottle. Fill bottle. Put the cap on the bottle immediately.

7. Allow water to continue to run and proceed to Taking An Organic Solvent Sample.

Taking An Organic Solvent Sample
(Small Glass Vial)

1. Remove cap of small glass vial and fill to the top.

2. Place white side of rubber septum face down toward water and screw on cap vial and turn upside down. If an air bubble is present, repeat step one.

3. Allow water to continue to run and proceed to Taking Ion And Heavy Metal Sample.

Taking Ion and Heavy Metal Sample
(Red Lid Cup)

. Fill red lid container to 100 ml mark.

** REFRIGERATE UNTIL SAMPLE IS DELIVERED OR PICKED UP **

NAME J. McCann

ADDRESS 363 Squirrel Hollow Rd.

CITY Douglassville STATE PA ZIP 19518

PHONE NUMBER (___)_____

DOUGLASS TWP.

Sample # 19

Date Sampled 11-4-89 Time Collected 10:25 Am.

Source of Supply: X Drilled Well __Dug Well __Cistern __Spring
__Public __Stream __Other_____

Treatment of Supply: X None __Chlorinated __Filtration __Softner __Other_____

Sample Location (~~Kitchen Faucet~~ Outdoor Tap, Barn, etc.):_____

Sampled By J. Jerome Skrincosky

MOTLEY ENGINEERING CO., INC.
60 Shillington Rd.
SINKING SPRING, PA 19608

Hydro-Analysis Associates, Inc.
R.D. 1 • NOBLE STREET EXTENSION • KUTZTOWN, PA 19530
(800)622-8424 or (215)683-7474

Sampling Instructions

Taking A Bacteria Water Sample
(Green Lid Cup)

1. Use a sterile sample green lid cup provided by the laboratory. Be careful not to touch the cap or the mouth of the bottle with anything. Do not open the bottle until you are ready to fill it. Do not rinse it.

2. Inspect the outside of the cold water faucet to be sure there are no leaks around the handle. If there is leaking, take the sample from another faucet.

3. Remove any attachments, such as a faucet aerator. Clean the outside of the faucet.

4. Let the water run at full force for about five minutes in order to clean the pipes and storage unit before you collect the sample.

5. Reduce the water flow to one-third of full force and run again for about two minutes.

6. Open the sterile bottle. Fill bottle. Put the cap on the bottle immediately.

7. Allow water to continue to run and proceed to Taking An Organic Solvent Sample.

Taking An Organic Solvent Sample
(Small Glass Vial)

1. Remove cap of small glass vial and fill to the top.

2. Place white side of rubber septum face down toward water and screw on cap vial and turn upside down. If an air bubble is present, repeat step one.

3. Allow water to continue to run and proceed to Taking Ion And Heavy Metal Sample.

Taking Ion and Heavy Metal Sample
(Red Lid Cup)

1. Fill red lid container to 100 ml mark.

** REFRIGERATE UNTIL SAMPLE IS DELIVERED OR PICKED UP **

NAME D. Burns DOUGLASS TWP.

ADDRESS 138 Douglass Dr.

CITY Douglassville STATE PA ZIP 19518 Sample #20

PHONE NUMBER ( )

Date Sampled 11-4-89 Time Collected 10:40 Am

Source of Supply: X Drilled Well __ Dug Well __ Cistern __ Spring
__ Public __ Stream __ Other

Treatment of Supply: X None __ Chlorinated __ Filtration __ Softner __ Other

Sample Location (Kitchen Faucet, Outdoor Tap, Barn, etc.):

Sampled By J. Jerome Skrincosky

MOTLEY ENGINEERING CO., INC.
60 Shillington Rd.
SINKING SPRING, PA 19608

Amended Appendix A-22-b.4

Hydro-Analysis Associates, Inc.
R.D. 1 • NOBLE STREET EXTENSION • KUTZTOWN, PA 19530
(800)822-8424 or (215)683-7474

Sampling Instructions

Taking A Bacteria Water Sample
(Green Lid Cup)

1. Use a sterile sample green lid cup provided by the laboratory. Be careful not to touch the cap or the mouth of the bottle with anything. Do not open the bottle until you are ready to fill it. Do not rinse it.

2. Inspect the outside of the cold water faucet to be sure there are no leaks around the handle. If there is leaking, take the sample from another faucet.

3. Remove any attachments, such as a faucet aerator. Clean the outside of the faucet.

4. Let the water run at full force for about five minutes in order to clean the pipes and storage unit before you collect the sample.

5. Reduce the water flow to one-third of full force and run again for about two minutes.

6. Open the sterile bottle. Fill bottle. Put the cap on the bottle immediately.

7. Allow water to continue to run and proceed to Taking An Organic Solvent Sample.

Taking An Organic Solvent Sample
(Small Glass Vial)

1. Remove cap of small glass vial and fill to the top.

2. Place white side of rubber septum face down toward water and screw on cap vial and turn upside down. If an air bubble is present, repeat step one.

3. Allow water to continue to run and proceed to Taking Ion And Heavy Metal Sample.

Taking Ion and Heavy Metal Sample
(Red Lid Cup)

1. Fill red lid container to 100 ml mark.

** REFRIGERATE UNTIL SAMPLE IS DELIVERED OR PICKED UP **

NAME S Basas

ADDRESS 135 Old Reading Pike

CITY Douglassville STATE PA ZIP 19518

PHONE NUMBER (___)_____

Date Sampled 11-4-89 Time Collected 10:55 AM

Source of Supply: X Drilled Well __Dug Well __Cistern __Spring

__Public __Stream __Other_____

Treatment of Supply: X None __Chlorinated __Filtration __Softner __Other_____

Sample Location (Kitchen Faucet, Outdoor Tap, Barn, etc.):_____

Sampled By J. Jerome Skrincosky

DOUGLASS TWP.

Sample #21

MOTLEY ENGINEERING CO., INC.
60 Shillington Rd.
SINKING SPRING, PA 19608

Amended Appendix A-22-b.4

Hydro-Analysis Associates, Inc.
R.D. 1 • NOBLE STREET EXTENSION • KUTZTOWN, PA 19530
(800)622-6424 or (215)683-7474

Sampling Instructions

Taking A Bacteria Water Sample
(Green Lid Cup)

1. Use a sterile sample green lid cup provided by the laboratory. Be careful not to touch the cap or the mouth of the bottle with anything. Do not open the bottle until you are ready to fill it. Do not rinse it.

2. Inspect the outside of the cold water faucet to be sure there are no leaks around the handle. If there is leaking, take the sample from another faucet.

3. Remove any attachments, such as a faucet aerator. Clean the outside of the faucet.

4. Let the water run at full force for about five minutes in order to clean the pipes and storage unit before you collect the sample.

5. Reduce the water flow to one-third of full force and run again for about two minutes.

6. Open the sterile bottle. Fill bottle. Put the cap on the bottle immediately.

7. Allow water to continue to run and proceed to Taking An Organic Solvent Sample.

Taking An Organic Solvent Sample
(Small Glass Vial)

1. Remove cap of small glass vial and fill to the top.

2. Place white side of rubber septum face down toward water and screw on cap vial and turn upside down. If an air bubble is present, repeat step one.

3. Allow water to continue to run and proceed to Taking Ion And Heavy Metal Sample.

Taking Ion and Heavy Metal Sample
(Red Lid Cup)

1. Fill red lid container to 100 ml mark.

** REFRIGERATE UNTIL SAMPLE IS DELIVERED OR PICKED UP **

NAME S. Core DOUGLASS TWP.

ADDRESS 210 Ben Franklin Hwy.

CITY Douglassville STATE PA ZIP 19518 Sample # 22

PHONE NUMBER ( )

Date Sampled 11-4-89 Time Collected 11:10 Am.

Source of Supply: X Drilled Well __ Dug Well __ Cistern __ Spring

__ Public __ Stream __ Other

Treatment of Supply: X None __ Chlorinated __ Filtration __ Softner __ Other

Sample Location (Kitchen Faucet, Outdoor Tap, Barn, etc.):

Sampled By J. Jerome Skrincosky

MOTLEY ENGINEERING CO., INC.
60 Shillington Rd.
SINKING SPRING, PA 19608

Amended Appendix A-22-b.4

Hydro-Analysis Associates, Inc.
R.D. 1 • NOBLE STREET EXTENSION • KUTZTOWN, PA 19530
(800)622-6424 or (215)683-7474

Sampling Instructions

Taking A Bacteria Water Sample
(Green Lid Cup)

1. Use a sterile sample green lid cup provided by the laboratory. Be careful not to touch the cap or the mouth of the bottle with anything. Do not open the bottle until you are ready to fill it. Do not rinse it.

2. Inspect the outside of the cold water faucet to be sure there are no leaks around the handle. If there is leaking, take the sample from another faucet.

3. Remove any attachments, such as a faucet aerator. Clean the outside of the faucet.

4. Let the water run at full force for about five minutes in order to clean the pipes and storage unit before you collect the sample.

5. Reduce the water flow to one-third of full force and run again for about two minutes.

6. Open the sterile bottle. Fill bottle. Put the cap on the bottle immediately.

7. Allow water to continue to run and proceed to Taking An Organic Solvent Sample.

Taking An Organic Solvent Sample
(Small Glass Vial)

1. Remove cap of small glass vial and fill to the top.

2. Place white side of rubber septum face down toward water and screw on cap vial and turn upside down. If an air bubble is present, repeat step one.

3. Allow water to continue to run and proceed to Taking Ion And Heavy Metal Sample.

Taking Ion and Heavy Metal Sample
(Red Lid Cup)

1. Fill red lid container to 100 ml mark.

** REFRIGERATE UNTIL SAMPLE IS DELIVERED OR PICKED UP **

NAME Ice City Pools DOUGLASS TWP.

ADDRESS_____

CITY_____ STATE_____ ZIP_____ Sample #43

PHONE NUMBER (___)_____

Date Sampled 11-4-89 Time Collected 11:45 AM

Source of Supply: X Drilled Well __Dug Well __Cistern __Spring

__Public __Stream __Other_____

Treatment of Supply: X None __Chlorinated __Filtration __Softner __Other_____

Sample Location (Kitchen Faucet, Outdoor Tap, Barn, etc.):_____

Sampled By J. Jerome Skrincosky

MOTLEY ENGINEERING CO., INC.
60 Shillington Rd.
SINKING SPRING, PA 19608

Hydro-Analysis Associates, Inc.
R.D. 1 • NOBLE STREET EXTENSION • KUTZTOWN, PA 19530
(800)622-8424 or (215)683-7474

Sampling Instructions

Taking A Bacteria Water Sample (Green Lid Cup)

1. Use a sterile sample green lid cup provided by the laboratory. Be careful not to touch the cap or the mouth of the bottle with anything. Do not open the bottle until you are ready to fill it. Do not rinse it.

2. Inspect the outside of the cold water faucet to be sure there are no leaks around the handle. If there is leaking, take the sample from another faucet.

3. Remove any attachments, such as a faucet aerator. Clean the outside of the faucet.

4. Let the water run at full force for about five minutes in order to clean the pipes and storage unit before you collect the sample.

5. Reduce the water flow to one-third of full force and run again for about two minutes.

6. Open the sterile bottle. Fill bottle. Put the cap on the bottle immediately.

7. Allow water to continue to run and proceed to Taking An Organic Solvent Sample.

Taking An Organic Solvent Sample (Small Glass Vial)

1. Remove cap of small glass vial and fill to the top.

2. Place white side of rubber septum face down toward water and screw on cap vial and turn upside down. If an air bubble is present, repeat step one.

3. Allow water to continue to run and proceed to Taking Ion And Heavy Metal Sample.

Taking Ion and Heavy Metal Sample (Red Lid Cup)

1. Fill red lid container to 100 ml mark.

** REFRIGERATE UNTIL SAMPLE IS DELIVERED OR PICKED UP **

NAME 84 Lumber Co. DOUGLASS TWP.

ADDRESS _____

CITY _____ STATE _____ ZIP _____ Sample #44

PHONE NUMBER (___) _____

Date Sampled 11-4-89 Time Collected 11:50 AM

Source of Supply: X Drilled Well __ Dug Well __ Cistern __ Spring
__ Public __ Stream __ Other _____

Treatment of Supply: X None __ Chlorinated __ Filtration __ Softner __ Other _____

Sample Location (Kitchen Faucet, Outdoor Tap, Barn, etc.): _____

Sampled By J. Jerome Skrincosky

MOTLEY ENGINEERING CO., INC.
60 Shillington Rd.
SINKING SPRING, PA 19608

6106838568

Amended Appendix A-22-b.4

Hydro-Analysis Associates, Inc.
R.D. 1 • NOBLE STREET EXTENSION • KUTZTOWN, PA 19530
(800)622-6424 or (215)683-7474

Sampling Instructions

Taking A Bacteria Water Sample
(Green Lid Cup)

1. Use a sterile sample green lid cup provided by the laboratory. Be careful not to touch the cap or the mouth of the bottle with anything. Do not open the bottle until you are ready to fill it. Do not rinse it.

2. Inspect the outside of the cold water faucet to be sure there are no leaks around the handle. If there is leaking, take the sample from another faucet.

3. Remove any attachments, such as a faucet aerator. Clean the outside of the faucet.

4. Let the water run at full force for about five minutes in order to clean the pipes and storage unit before you collect the sample.

5. Reduce the water flow to one-third of full force and run again for about two minutes.

6. Open the sterile bottle. Fill bottle. Put the cap on the bottle immediately.

7. Allow water to continue to run and proceed to Taking An Organic Solvent Sample.

Taking An Organic Solvent Sample
(Small Glass Vial)

1. Remove cap of small glass vial and fill to the top.

2. Place white side of rubber septum face down toward water and screw on cap vial and turn upside down. If an air bubble is present, repeat step one.

3. Allow water to continue to run and proceed to Taking Ion And Heavy Metal Sample.

Taking Ion and Heavy Metal Sample
(Red Lid Cup)

1. Fill red lid container to 100 ml mark.

** REFRIGERATE UNTIL SAMPLE IS DELIVERED OR PICKED UP **

DOUGLASS TWP.

NAME Douglassville Auto Body

ADDRESS

CITY STATE ZIP

Sample #45

PHONE NUMBER ( )

Date Sampled 11-4-89 Time Collected 11:55 A.M.

Source of Supply: X Drilled Well __ Dug Well __ Cistern __ Spring

__ Public __ Stream __ Other

Treatment of Supply: X None __ Chlorinated __ Filtration __ Softner __ Other

Sample Location (Kitchen Faucet, Outdoor Tap, Barn, etc.):

Sampled By J. Jerome Skrincosky

MOTLEY ENGINEERING CO., IN
60 Shillington Rd.
SINKING SPRING, PA 19608

ATTACHMENT #2

❑

Construction Cost Estimates and Present Worth Analyses

DOUGLASS TOWNSHIP, BERKS COUNTY
PHASE I - 1993 PLAN
SANITARY SEWER CONSTRUCTION COST ESTIMATE

ITEM	GENERAL DESCRIPTION	ESTIMATED QUANTITY		UNIT PRICE	EXTENSION
1.	Mobilize, Demobilize	1		LUMP SUM	$ 10,000.00
2.	Clear and Grub	1		LUMP SUM	$ 1,500.00
3.	Gravity Sewer (including trench backfill)				
	a. 8" PVC 0' - 6' Depth	5,468	ft.	$ 22.00	$ 120,296.00
	b. 8" PVC 6' - 8' Depth	8,558	ft.	$ 25.00	$ 213,950.00
	c. 8" PVC 8' - 10' Depth	5,612	ft.	$ 28.00	$ 157,136.00
	d. 8" PVC 10' 14' Depth	1,230	ft.	$ 30.00	$ 36,900.00
	e. 10" PVC 0' - 6' Depth	2,315	ft.	$ 25.00	$ 57,875.00
	e. 10" PVC 6' - 8' Depth	2,242	ft.	$ 27.00	$ 60,534.00
	f. 10" PVC 8' - 10" Depth	1,649	ft.	$ 30.00	$ 49,470.00
	g. 10" PVC 10' - 12' Depth	3,385	ft.	$ 32.00	$ 108,320.00
	h. 10" PVC 12' - 14' Depth	574	ft.	$ 36.00	$ 20,664.00
4.	8" x 6" Wyes	134		$ 10.00	$ 1,340.00
5.	10" x 6" Wyes	48		$ 20.00	$ 960.00
6.	6" PVC Laterals	2,810	ft.	$ 23.00	$ 64,630.00
7.	10" PVC Highway Crossing Boring with 54 ft. of 20" Steel Casing	60	ft.	$ 250.00	$ 15,000.00
8.	10" PVC Railroad Crossing Boring with 130 ft. of 20" Steel Casing	130	ft.	$ 260.00	$ 33,800.00
9.	Concrete Encasement	15	ft.	$ 50.00	$ 750.00
10.	Pressure Sewer (including trench backfill)				
	a. 4" PVC Force Main	1,025	ft.	$ 15.00	$ 15,375.00
	b. 6" PVC Force Main	5,304	ft.	$ 20.00	$ 106,080.00
11.	Pumping Station #1	1		LUMP SUM	$ 80,000.00
12.	Pumping Station #2	1		LUMP SUM	$ 100,000.00
13.	Pumping Station #3	1		LUMP SUM	$ 120,000.00

DOUGLASS TOWNSHIP, BERKS COUNTY
PHASE I - 1993 PLAN
SANITARY SEWER CONSTRUCTION COST ESTIMATE

14. Manholes					
a. 4' Dia. Precast Manhole Walls (Vertical Foot)	860	ft	$	100.00	$ 86,000.00
b. Precast Bases	118		$	500.00	$ 59,000.00
c. Standard Frames & Covers	96		$	200.00	$ 19,200.00
d. Watertight Frames & Covers	22		$	250.00	$ 5,500.00
e. Doghouse Manhole	1		$	1,200.00	$ 1,200.00
15. Temporary Restoration					
a. Paved Areas	19,529	Sq Yd	$	2.50	$ 48,822.50
b. Stone Areas	178	Sq Yd	$	1.00	$ 178.00
16. Permanent Restoration					
a. Paved Areas	19,529	Sq Yd	$	13.00	$ 253,877.00
b. Stone Areas	178	Sq Yd	$	3.00	$ 534.00
c. Seeded Areas	587	Sq Yd	$	0.50	$ 293.50
17. Rock Excavation	1,585	Cu Yd	$	10.00	$ 15,850.00

SUB-TOTAL CONSTRUCTION COST $ 1,865,035.00
10% CONTINGENCY $ 186,503.50

TOTAL ESTIMATED CONSTRUCTION COST **$ 2,051,538.50**

DOUGLASS TOWNSHIP BERKS COUNTY			NOVEMBER 1996
PRELIMINARY SEWER RATE ANALYSIS			
			Phase I
WITH CONVENTIONAL FINANCING			1993 Plan
ADMINISTRATIVE		$	25,000.00
LEGAL		$	80,000.00
R/W		$	10,000.00
FINANCING COSTS		$	65,000.00
ACCOUNTING		$	2,000.00
INTEREST		$	150,000.00
ENGINEERING		$	260,000.00
PERMITS		$	2,000.00
LAND		$	20,000.00
CONSTRUCTION		$	1,875,000.00
AMITY STP FEE @ 3,200 EA.	(500)	$	1,600,000.00
CONTINGENCY +/- 10%		$	187,500.00
INITIAL O&M		$	30,000.00
TOTALS		**$**	**4,306,500.00**
NOTE: SOFT COSTS = 35% OF CONSTR.			
TOTAL COST PER EDU =	(213)	$	20,218.31
EQUITY (TAP FEES @ 5000/EDU)	(200)	$	1,000,000.00
PRINCIPAL AMOUNT OF BONDS		$	3,306,500.00
DEBT SERVICE			
20 YEARS @ 5-1/2% (0.08368)		$	276,687.92
O&M			
DOUGLASS		$	20,000.00
AMITY		$	20,000.00
RESERVE		$	2,500.00
TOTAL		$	319,187.92
PAYING CUSTOMERS			200
ANNUAL USER FEE REQ'D		$	1,595.94
MONTHLY USER FEE REQ'D		$	132.99

DOUGLASS TOWNSHIP, BERKS COUNTY
PHASE 1A - 1997 PLAN
SANITARY SEWER CONSTRUCTION COST ESTIMATE

(182 EDU's)

ITEM	GENERAL DESCRIPTION	ESTIMATED QUANTITY		UNIT PRICE	EXTENSION
1.	8" PVC complete in place per foot beneath:				
	a. State Highway Macadam Shoulder	3,150	ft.	$ 45.00	$ 141,750.00
	b. State Highway Macadam Road	4,500	ft	$ 40.00	$ 180,000.00
	c. County Macadam Road	770	ft.	$ 40.00	$ 30,800.00
	d. Township Macadam Road	5,600	ft.	$ 25.00	$ 140,000.00
	e. Improved Right-of-Way	4,200	ft.	$ 20.00	$ 84,000.00
2.	10" PVC complete in place per foot beneath:				
	a. State Highway Macadam Shoulder	3,800	ft.	$ 47.00	$ 178,600.00
	b. County Macadam Road	2,450	ft.	$ 42.00	$ 102,900.00
	c. Improved Right-of-Way	560	ft.	$ 22.00	$ 12,320.00
3.	10" PVC inside Steel casing highway crossing by boring	1		LUMP SUM	$ 15,270.00
4.	10" PVC inside Steel casing railroad crossing by boring	1		LUMP SUM	$ 35,570.00
5.	6" PVC complete in place beneath:				
	a. State Highway Macadam Shoulder	200	ft.	$ 43.00	$ 8,600.00
	b. State Highway Macadam Road	460	ft.	$ 38.00	$ 17,480.00
	c. County Macadam Road	30	ft.	$ 38.00	$ 1,140.00
	d. Township Macadam Road	1,172	ft.	$ 23.00	$ 26,956.00
	e. Improved Right-of-Way	190	ft.	$ 18.00	$ 3,420.00
6.	Manholes	102		$ 1,500.00	$ 153,000.00
7.	6" D.I. Force Main	2,300	ft.	$ 20.00	$ 46,000.00
8.	Pumping Station with Emergency Generator	1		LUMP SUM	$ 120,000.00
9.	Rock Excavation per Cu. Yd.	2,350		$ 70.00	$ 164,500.00
				TOTAL ESTIMATED CONSTRUCTION	**$ 1,462,306.00**

DOUGLASS TOWNSHIP BERKS COUNTY			NOVEMBER 1996
PRELIMINARY SEWER RATE ANALYSIS			
			Phase 1A
WITH PENNVEST LOAN			1997 Plan
ADMINISTRATIVE		$	20,000.00
LEGAL		$	35,000.00
R/W		$	35,000.00
ACCOUNTING		$	2,000.00
INTEREST		$	60,200.00
ENGINEERING		$	185,600.00
PERMITS		$	2,000.00
LAND		$	10,000.00
CONSTRUCTION		$	1,462,306.00
AMITY STP FEE @ 3,200 EA.	(250)	$	800,000.00
CONTINGENCY +/- 10%		$	146,694.00
INITIAL O&M		$	15,000.00
TOTALS		**$**	**2,773,800.00**
NOTE: SOFT COSTS = ~~35%~~ 25% OF CONSTR.			
TOTAL COST PER EDU =	(182)	$	15,240.66
PENNVEST GRANT		$	250,000.00
EQUITY (TAP FEES @ 5000/EDU)	(180)	$	900,000.00
PENNVEST LOAN			
~~PRINCIPAL AMOUNT OF BONDS~~		$	1,623,800.00
DEBT SERVICE			
18 YEARS @ 2% (0.06539)		$	106,180.28
O&M			
DOUGLASS		$	15,000.00
AMITY		$	15,000.00
RESERVE		$	1,800.00
TOTAL		$	137,980.28
PAYING CUSTOMERS			180
ANNUAL USER FEE REQ'D		$	766.56
MONTHLY USER FEE REQ'D		$	63.88

PRESENT WORTH
COST-EFFECTIVENESS ANALYSIS

Definition and Purpose:

Present worth is the sum of money which, if invested now at the given interest (discount) rate, would provide exactly the funds required to pay all present and future costs over the planning period. The purpose of a present worth analysis is to compare costs uniformly for each alternative over the planning period. The most cost-effective alternative will be the waste collection system which the analysis determines to have the lowest present worth value.

Cost Factors:

The cost factors considered in the present worth analysis include the initial capital cost for the project, operations and maintenance costs, and financing costs over the planning period of the project, and salvage value of the facilities at the end of the planning period. Table 1 below shows the values of these cost factors, which were developed for the "Preliminary Sewer Rate Analysis" for each alternative (copies attached).

TABLE 1-COST FACTORS

	Phase 1A 1997 Plan	**Phase I 1993 Plan**
Planning Period	20 Yrs.	20 Yrs.
Initial Capital Cost	$2,773,800.00	$4,306,500.00
including land cost	$10,000.00	$20,000.00
Avg. Annual O & M Cost	$30,000.00	$40,000.00
PennVest Loan	$1,623,800.00	
∴ Annual Debt Service (18 yrs. @ 2% (0.06539)	$106,180.28	
Municipal Bond Issue		$3,306,500.00
∴ Annual Debt Service (20 yrs. @ 5-1/2% (0.08368)		$276,687.92
Collection System Value	$1,342,306.00	$1,751,538.50
Coll. Sys. Useful Life	50 Yrs.	50 Yrs.
Lift Station(s) Value	$120,000.00	$300,000.00
Lift Station(s) Useful Life	30 Yrs.	30 Yrs.
Discount Rate (fiscal yr 1997)	7-3/8 %	7-3/8 %

Determine: Present Worth over 20 years.

Method: Present worth equals initial capital cost plus present worth of operating and maintenance costs plus present worth of financing costs. Subtract present worth of salvage value of collection system and lift station structure(s).

	Phase 1A 1997 Plan	Phase I 1993 Plan

Step 1:

Initial Capital Cost $2,773,800.00 $4,306,500.00

Step 2:

Calculate present worth of annual O & M costs as follows:

a. Present worth of annual O & M equals given cost times the uniform series present worth factor @ 7.375 % for 20 years. Thus:

$30,000.00 (10.2921) = $308,763.00

$40,000.00 (10.2921) = $411,684.00

Step 3:

Calculate present worth of annual finance costs as follows:

a. Present worth of annual finance costs equals given cost times the uniform series present worth factor @ 7.375 % for 18 yrs. Thus:

$106,180.28 (9.7925) = $1,039,770.00

$276,687.92 (9.7925) = $2,709,466.00

Step 4:

Calculate salvage value of collection system & lift station(s) after 20 years, using straight line depreciation, assuming salvage value at end of useful life is $0.00.

a. Collection System (useful life = 50 yrs.)

depreciation =	$1,342,306/50 = $26,846/yr.	$1,751,538.50/50 = $35,031/yr
salvage @ 20 yrs.	$805,386.00	$1,050,919.00

b. Lift Station(s) (useful life = 30 years)

depreciation =	$120,000/30 = $4000/yr	$300,000/30 = $10,000/yr
salvage @ 20 years	$40,000	$100,000

Calculate the escalated future value for the land by multiplying the present value of land by the compound amount factor @ 3% for 20 years. Thus:

c. Land Salvage Value

future value: $10,000 (1.806) $18,060.00

future value: $20,000 (1.806) $36,120.00

	Phase 1A 1997 Plan	Phase I 1993 Plan

Step 5:

Calculate present worth of salvage values from collection system and pump station(s). Present worth of future value equals given cost times the single payment present worth factor @ 7.375 % for 20 years. Thus:

a.	Collection System		
	$805,386 (0.2410) =	$194,098.00	
	$1,050,919 (0.2410) =		$253,271.00
b.	Pump Station(s)		
	$40,000.00 (0.2410) =	$9,640.00	
	$100,000 (0.2410) =		$ 24,100.00
c.	Land		
	$18,060.00 (0.2410) =	$4,352.00	
	$36,120 (0.2410) =		$ 8,705.00
	Subtotal	$208,090.00	$286,076.00

Step 6:

The sums of the values obtained in Steps 1, 2, and 3 minus the value obtained in Step 5 equals the present worth of the construction alternatives. Thus:

Initial Capital Cost	$2,773,800.00	$4,306,500.00
Present Worth of O&M Cost	$ 308,763.00	$ 411,684.00
Present Worth of Finance Cost	$1,039,770.00	$2,709,466.00
Total	$4,122,333.00	$7,427,650.00

Subtract from total the present worth of salvage values:

	- $ 208,090.00	- $ 286,076.00
PRESENT WORTH OF ALTERNATIVES:	$3,914,243.00	$7,141,574.00
Number of EDU's	182	213
PRESENT WORTH COST PER EDU:	$ 21,507.00	$ 33,529.00

Results Summary:

The analysis determined a present worth of the Phase 1A-1997 Plan to be $3,914,243.00 and $7,141,574.00 for the Phase I-1993 Plan. Therefore, the Phase 1A-1997 Plan is the more cost-effective alternative. Present worth on a per Equivalent Dwelling Unit (EDU) basis was also calculated since each alternative will serve a different number of units. The present worth cost per EDU is $ 21,507.00 and $ 33,529.00 for the Phase 1A-1997 Plan and Phase I-1993 Plan, respectively. Again, the Phase 1A-1997 Plan is the more cost effective alternative. This alternative will save $ 12,022.00 per EDU over the planning period when compared to the Phase I-1993 Plan alternative.

Present Worth Cost Effectiveness Analysis

Worksheet

Equal-Payment (Uniform) Series present worth factor:

$$(P/A, i, n) = \frac{(1+i)^n - 1}{i\,(1+i)^n}$$ pg. 43 of Ref.

$$(P/A, 7.375\%, 20) = \frac{(1+0.07375)^{20} - 1}{0.07375\,(1+0.07375)^{20}} = 10.2921$$

$$(P/A, 7.375\%, 18) = \frac{(1+0.07375)^{18} - 1}{0.07375\,(1+0.07375)^{18}} = 9.7925$$

Single-Payment present worth factor:

$$(P/F, i, n) = \frac{1}{(1+i)^n}$$ pg. 39 of Ref.

$$(P/F, 7.375\%, 20) = \frac{1}{(1+0.07375)^{20}} = 0.2410$$

Reference: Engineering Economy 6th Ed. by G.J. Thuesen and W. J. Fabrycky. Published 1984 by Prentice-Hall, Inc., Englewood Cliffs, NJ. ISBN 0-13-277723-1.

ATTACHMENT #3

❑

Correspondence:
Bureau of Historic Preservation
Pennsylvania Natural Diversity Inventory

Amended Appendix A-22-b.4

Systems Design Engineering, Inc.

CONSULTING ENGINEERS – PLANNERS – SURVEYORS
4 Park Plaza, Suite 105
Wyomissing, Pennsylvania 19610
(610) 320-5490
FAX (610) 320-5497

March 19, 1997

Pennsylvania Historical and Museum Commission
Bureau of Historic Sites
P.O. Box 1026
Harrisburg, PA 17108

ATTN: Mr. Kurt Carr

in re: ***Douglass Township Act 537 Plan Amendment***
ER #92-1921-011-A
Douglass Township, Berks County

Dear Mr. Carr:

This firm is in the process of assisting Douglass Township (Berks County) with an amendment to their Sewage Facilities Plan under Act 537. As required by the Pennsylvania Department of Environmental Protection, we are requesting on behalf of the Township that your office review the areas proposed for new sewage facilities to determine if the presence of any features of historical or archaeological significance will require a Phase I survey.

This project was previously reviewed by you in correspondence to Motley Engineering Co., Inc. dated April 30, 1992. Since that time, there has been no construction of any sewerage facilities, and the project is in the process of being re-designed. The new design, like the earlier one, utilizes an existing sewage treatment facility in Amity Township, which adjoins Douglass Township to the west. No treatment facility will be constructed in Douglass Township to implement this plan. Construction in Douglass Township is limited to the installation of new sewage collection pipes and a pump station. All of these elements will be located either adjacent to an existing road or to an existing rail line. The re-designed collection system is smaller than what was proposed earlier; the entirety of the system now proposed is actually a portion of the original plan. That is, the proposed location of the sewer mains is the same as the original plan, except that some segments have been eliminated. Since all of the area within the proposed alignment is previously disturbed land, the historical integrity of those lands has already been destroyed. The proposed construction activity will not affect any lands with potential historic value.

Jerome Skrincosky of Motley Engineering Co. wrote to you in correspondence dated June 1, 1992 regarding the need for a Phase I survey for this project. In that letter, he recited several reasons against the need for such a survey, including my point in the preceding paragraph. He also noted that historic sites have been identified within the Township Comprehensive Plan, and that "...no municipal or community wastewater treatment facilities proposed within the Township over the 20-year planning period ... will create a disturbance on existing and/or potential historical structures. Since there will be no construction impacts, the historical sites will not be disturbed." Finally, the Motley correspondence notes that the portion of the Township that will not be connected to the collection system will utilize individual on-site disposal systems. For these properties, any historical artifacts will be identified at the time that the builder or property owner applies for a planning module.

Within this same letter, Mr. Skrincosky states, "All proposed construction impacts and encroachments will be on previously disturbed areas of the Township. Therefore, since there are no proposed construction impacts, there will be no need to conduct a Phase I survey. *It should be further noted that this assumption has been confirmed through telephone conversations between Motley Engineering Company and the Pennsylvania Historical and Museum Commission*" (my emphasis). If this was in fact the position of the Commission in regard to the original system, it follows that this should still be the Commission position on the need for a Phase I survey. As I have stated, the system now planned is just a smaller version of what was originally proposed.

We are requesting that you forward to us at your earliest convenience a written confirmation regarding the Commission's position regarding the need for a Phase I survey for this project. To assist in your determination, I have enclosed portions of the USGS quadrangle maps for Boyertown and Pottstown showing the alignment of the sewer mains as currently proposed (the blue line indicates where the two quad maps have been joined). I trust that this will be of some assistance in your assessment.

Thank you for your attention in this matter. If you require additional information or wish to discuss this issue in greater detail, please call me any time during regular business hours at (610) 320-5490.

Very Truly Yours,
SYSTEMS DESIGN ENGINEERING, INC.

John Weller
Planner

encl.

cc: Douglass Twp. Board of Supervisors (w/o encl.)
SDE file #7428-103

JRW/

C:\DGL\537BHP.COR

Amended Appendix A-22-b.4



Amended Appendix A-22-b.4

Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Post Office Box 1026
Harrisburg, Pennsylvania 17108-1026

RECEIVED
APR - 2 1997
SYSTEMS DESIGN ENG. INC.

March 27, 1997

TO EXPEDITE REVIEW USE BHP REFERENCE NUMBER

John Weller, Planner
Systems Design Engineering, Inc.
4 Park Plaza, Suite 105
Wyomissing, PA 19610

Re: File No. ER 92-1921-011-C
DEP 537 PROGRAM:
Act 537 Sewage Facilities Plan Amendment, Douglass Twp., Berks Co.

Dear Mr. Weller:

The Bureau for Historic Preservation has reviewed the above named project under the authority of 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. (1995). This review includes comments on the project's potential effect on both historic and archaeological resources.

Based on our survey files, which include both archaeological sites and standing structures, there are no National Register eligible or listed historic or archaeological properties in the area of this proposed project. Therefore, your responsibility for consultation on this project is complete.

Should artifacts or archaeological resources be encountered during construction, we request that you notify our office. This notification will not delay your project in anyway. We simply wish to record this information before it is lost. The Bureau for Historic Preservation can be contacted at (717) 783-8946. Thank you in advance for this consideration.

Sincerely,

Kurt W. Carr, Chief
Division of Archaeology & Protection

KC/tmw

Amended Appendix A-22-b.4

Systems Design Engineering, Inc.

CONSULTING ENGINEERS – PLANNERS – SURVEYORS
4 Park Plaza, Suite 105
Wyomissing, Pennsylvania 19610
(610) 320-5490
FAX (610) 320-5497

March 19, 1997

Pennsylvania Department of Environmental Protection
Bureau of Forestry
P.O. Box 1467
Harrisburg, PA 17120

ATTN: Botanist

in re: *Douglass Township Act 537 Plan Amendment*
Douglass Township (Berks County)
1068 Douglass Dr.
Boyertown, PA 19512

Dear Sir or Madam:

We are hereby requesting that you conduct a search of the Pennsylvania Natural Diversity Inventory to identify any species of concern that may be impacted by an alternative being proposed as part of a plan developed under Act 537, the Pennsylvania Sewage Facilities Act.

This plan proposes extending an existing public sewage collection system from an adjacent municipality (Amity Township) to serve the southernmost portion of Douglass Township. Since all of the alternatives under consideration will utilize the Amity Township treatment facility, the infrastructure to be sited in Douglass Township is limited to underground sewer mains and a pump station.

The location of the proposed project components is shown on the attached copy of portions of the USGS quadrangle maps for Boyertown and Pottstown (the blue line indicates where the two maps have been joined). It is understood that you will notify the Township of any identified protected species within the proposed project area. We request that you provide a copy of such notification to this office (to my attention) as well. It is further understood that your agency will assist the Township to identify the appropriate contact agency to provide assistance in the evaluation and mitigation of potential impacts on the protected species under their jurisdiction.

Thank you for your attention in this matter. If you have any questions concerning this project, please contact myself or Michael Pohronezny, also of this office, who is the engineer in charge of this project.

Very Truly Yours,
SYSTEMS DESIGN ENGINEERING, INC.

John Weller, AICP
Planner

encl.

cc: Douglass Twp. Bd. of Supervisors (w/o encl.)
SDE file #7428-103

JRW/

C:\DGL\537PNDI.COR

333 W. Sixth Street
Boyertown, PA 19512

P.O. Box 353
Schuylkill Haven, PA 17972

Amended Appendix A-22-b.4



Amended Appendix A-22-b.4

Pennsylvania Department of Conservation and Natural Resources

Rachel Carson State Office Building
P.O. Box 8552
Harrisburg, PA 17105-8552
April 21, 1997

Bureau of Forestry

717-787-3444
Fax 717-783-5109

RECEIVED
APR 2 3 1997
SYSTEMS DESIGN ENG. INC.

John Weller
Systems Design Engineering, Inc.
4 Park Plaza, Suite 105
Wyomissing, PA 19610

PER reference no: 005241
RE: PNDI Review for Act 537 Plan Amendment, Douglass Township, Berks County

Dear Mr. Weller:

In response to the request of March 19, 1997, regarding information on species of special concern, the Pennsylvania Natural Diversity Inventory was used. There are no rare, threatened or endangered species within a mile and a half of the two project areas. This response represents an up-to-date summary of the PNDI data files and is applicable for one year. However, an absence of recorded information does not necessarily imply an absence of species on-site. A field survey of any site may reveal previously unreported populations.

PNDI is a site specific information system which describes significant natural resources of Pennsylvania. This system includes data descriptive of plant and animal species of special concern, exemplary natural communities and unique geological features. PNDI is a cooperative project of the Department of Conservation and Natural Resources, The Nature Conservancy and the Western Pennsylvania Conservancy.

PNDI is partially funded through contributions to the Wild Resource Conservation Fund. If you feel that this information has been of value to your company please use the enclosed flyer to make a donation to the Wild Resource Conservation Fund.

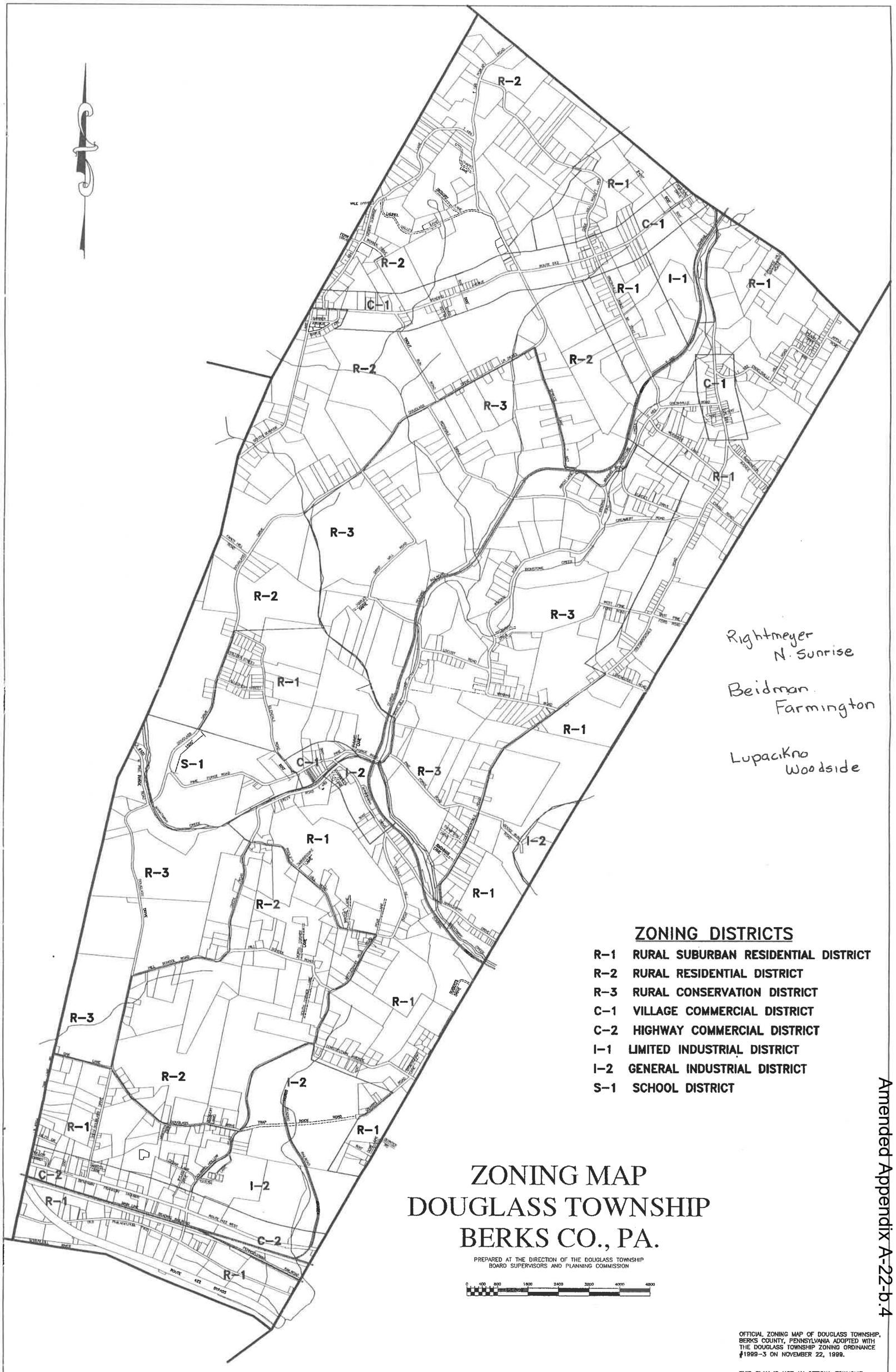
Legal authority for Pennsylvania's biological resources resides with three administrative agencies which are outlined in the enclosure entitled PNDI Management Agencies. If information provided by the PNDI system is to be published in any form, the Inventory should be informed at the outset and credited as the source. Please phone this office if you have questions concerning this response or the PNDI system. For any future correspondence in regards to this project, please use the PER reference number above.

Sincerely,

Ayesha Gray
Plant Program Specialist
Pennsylvania Natural Diversity Inventory

Enclosures

cc: Jenni Farber, PNDI-E



ZONING DISTRICTS

- R-1 RURAL SUBURBAN RESIDENTIAL DISTRICT
- R-2 RURAL RESIDENTIAL DISTRICT
- R-3 RURAL CONSERVATION DISTRICT
- C-1 VILLAGE COMMERCIAL DISTRICT
- C-2 HIGHWAY COMMERCIAL DISTRICT
- I-1 LIMITED INDUSTRIAL DISTRICT
- I-2 GENERAL INDUSTRIAL DISTRICT
- S-1 SCHOOL DISTRICT

ZONING MAP
DOUGLASS TOWNSHIP
BERKS CO., PA.

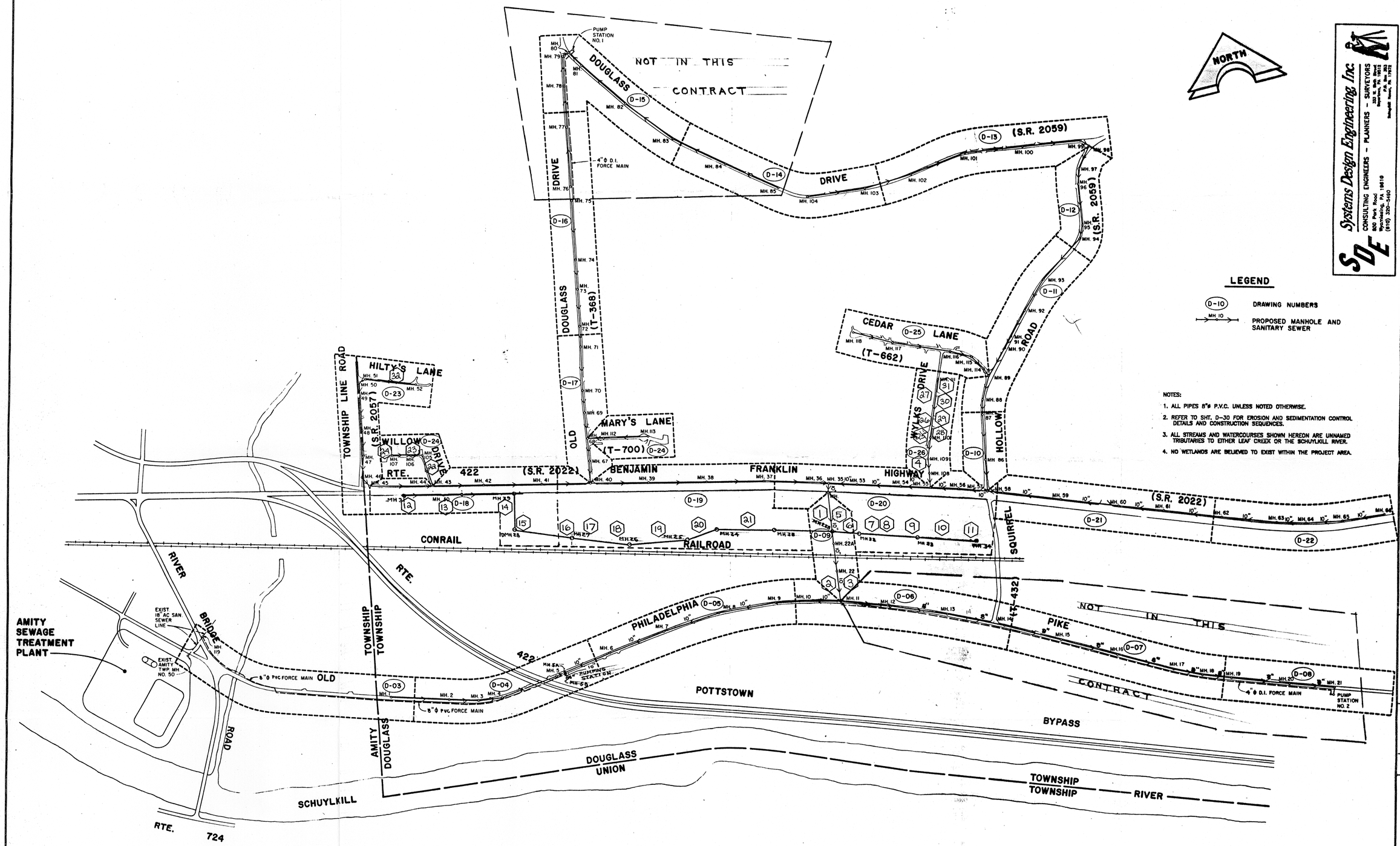
PREPARED AT THE DIRECTION OF THE DOUGLASS TOWNSHIP BOARD SUPERVISORS AND PLANNING COMMISSION

0 400 800 1600 2400 3200 4000 4800

OFFICIAL ZONING MAP OF DOUGLASS TOWNSHIP, BERKS COUNTY, PENNSYLVANIA ADOPTED WITH THE DOUGLASS TOWNSHIP ZONING ORDINANCE #1999-3 ON NOVEMBER 22, 1999.

THIS PLAN IS NOT AN OFFICIAL TOWNSHIP STREET MAP. THIS PLAN SHALL NOT BE USED TO DESIGNATE PUBLIC OR PRIVATE STREETS.

Amended Appendix A-22-b.4



NORTH

LEGEND

D-10 DRAWING NUMBERS

MH. 10 PROPOSED MANHOLE AND SANITARY SEWER

NOTES:

1. ALL PIPES 8"ø P.V.C. UNLESS NOTED OTHERWISE.
2. REFER TO SHT. D-30 FOR EROSION AND SEDIMENTATION CONTROL DETAILS AND CONSTRUCTION SEQUENCES.
3. ALL STREAMS AND WATERCOURSES SHOWN HEREON ARE UNNAMED TRIBUTARIES TO EITHER LEAF CREEK OR THE SCHUYLKILL RIVER.
4. NO WETLANDS ARE BELIEVED TO EXIST WITHIN THE PROJECT AREA.

⑩ EASEMENT REFERENCE NO.

REV. OCT 1998

Systems Design Engineering Inc.
CONSULTING ENGINEERS - PLANNERS - SURVEYORS
800 Park Road
Wyomissing, PA 19610
(610) 320-5490
333 N. 9th Street
Reading, PA 19601
(610) 372-8833
Schuylkill Haven, PA 17972

MOTLEY ENGINEERING CO. INC.
consulting engineers
1300 New Holland Rd • Kennorst, PA 19607 • (215) 775-0888

PROJECT TITLE
DOUGLASS TOWNSHIP
BERKS COUNTY, PA.
SANITARY SEWER SYSTEM
SOUTHWEST AREA OF TOWNSHIP

SEAL

REVISIONS
S.D.E. REVISIONS JUNE 98
S.D.E. REVISIONS APR 98
S.D.E. - REVISIONS JULY 1997
S.D.E. - GENERAL REVISIONS - JUNE 97
S.D.E. - GENERAL REVISIONS - APR 97

DRAWN BY D.A.D.
CHECKED BY

SHEET TITLE
PLOT PLAN

DATE JULY 1995
SCALE 1" = 300'
ORDER NO. 40489-9405
PLAN NO. D-02