CAPTION SHEET CASE MANAGEMENT SYSTEM

1. REPORT DATE: 00/00/00	:	
2. BUREAU: ALJ	:	
3. SECTION(S):	:	4. PUBLIC MEETING DATE:
5. APPROVED BY:	:	00/00/00
DIRECTOR:	:	
SUPERVISOR:	:	
6. PERSON IN CHARGE:	:	7. DATE FILED: 11/09/06
8. DOCKET NO: A-110500 F0385	:	9. EFFECTIVE DATE: 00/00/00

PARTY/COMPLAINANT: SOUTH LEBANON BERKS 230 KV TRANS LINE

RESPONDENT/APPLICANT: PPL ELECTRIC UTILITIES CORP

COMP/APP COUNTY: UTILITY CODE: 110500

ALLEGATION OR SUBJECT

APPLICATION OF PPL ELECTRIC UTILITIES CORPORATION FILED PURSUANT TO 52 PA CODE CHAPTER 57, SUBCHAPTER G, FOR APPROVAL OF THE SITING AND CONSTRUCTION OF THE PROPOSED SOUTH LEBANON-BERKS 230 KV TRANSMISSION LINE IN SPRING TOWNSHIP, BERKS COUNTY AND EAST COCALICO TOWNSHIP, LANCASTER COUNTY, PENNSYLVANIA, AND THE BERKS-SOUTH READING 230 KV LINE REARRANGEMENT IN BRECKNOCK TOWNSHIP, BERKS COUNTY, PENNSYLVANIA.

ORIGINAL

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

RE: APPLICATION OF PPL ELECTRIC UTILITIES CORPORATION FILED PURSUANT TO 52 PA. CODE CHAPTER 57, SUBCHAPTER G, FOR APPROVAL OF THE SITING AND CONSTRUCTION OF THE PROPOSED SOUTH LEBANON – BERKS 230 kV TRANSMISSION LINE IN SPRING TOWNSHIP, BERKS COUNTY AND EAST COCALICO TOWNSHIP, LANCASTER COUNTY, PENNSYLVANIA AND THE BERKS – SOUTH READING 230 kV LINE REARRANGEMENT IN BRECKNOCK TOWNSHIP, BERKS COUNTY, PENNSYLVANIA	:	**Docket No. A-110500F0385**

DOCUMENT FOLDER

PA PUC SECRETARY'S BUREAU 2006 NOV -9 PM 12:13

NOTICE OF FILING

The foregoing Application will be filed with the Pennsylvania Public Utility Commission ("Commission") on or about November 9, 2006. The South Lebanon - Berks 230 kV Transmission Line will be approximately 6.8 miles in length and will be built within existing right-of-way currently occupied by the Berks-South Akron #1 69 kV Transmission Line in Spring Township, Berks County and East Cocalico Township Lancaster County. In addition, the Berks-South Reading 230 kV Transmission Line will be reestablished by connecting the Berks portion of the South Akron - Berks 230 kV line and the South Reading portion of the South Lebanon-South Reading 230 kV Line at the point where they intersect in Brecknock Township, Berks County.

The majority of right-of-way width for the proposed South Lebanon - Berks 230 kV and Berks-South Reading 230 kV Transmission Lines will be 150 feet. In most instances, the route PPL has selected for the lines will occupy existing PPL transmission line rights-of-way.

As required by Commission's Siting Regulations (52 Pa. Code §57.71 *et seq.*), we have enclosed a map showing the route of either the South Lebanon - Berks 230 kV or Berks - South Reading 230 kV Transmission Lines across your property. You are not required to appear or participate in this matter, but you may request Commission permission to intervene.

Respectfully submitted,

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Of Counsel:

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Date: November 9, 2006

Attorneys for PPL Electric Utilities Corporation

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2006 NOV -9 PM 12:09
PA PUC
SECRETARY'S BUREAU

November 9, 2006

VIA HAND DELIVERY

DOCUMENT
FOLDER

James J. McNulty
Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor North
PO Box 3265
Harrisburg, PA 17105-3265

RE: Application of PPL Electric Utilities Corporation Filed Pursuant to 52 Pa. Code Chapter 57, Subchapter G, for Approval of the Siting and Construction of the Proposed South Lebanon – Berks 230 kV Transmission Line in Spring Township, Berks County and East Cocalico Township, Lancaster County Pennsylvania and the Berks – South Reading 230 kV Line Rearrangement in Brecknock Township, Berks County, Pennsylvania – Docket No. A-110500F0385

Dear Secretary McNulty:

Enclosed, for filing, are the original and six (6) copies of the Application of PPL Electric Utilities Corporation Filed Pursuant to 52 Pa. Code Chapter 57 Subchapter G for Approval of the Siting and Construction of the Proposed South Lebanon – Berks 230 kV Transmission Line in Spring Township, Berks County and East Cocalico Township, Lancaster County Pennsylvania and the Berks – South Reading 230 kV Line Rearrangement in Brecknock Township, Berks County, Pennsylvania, together with seven (7) copies of the accompanying exhibits and appendices which are contained in a separately-bound volume.

As indicated in the enclosed certificates of service, copies of the Application and accompanying exhibits and appendices are being served by certified mail, return receipt requested upon all involved governmental agencies and municipalities listed in Appendix J to the Application. A copy of the Notice of the Application and relevant maps are being served in the same manner on the affected property owners listed in Appendix F to the Application. Also enclosed for the Commission's information is a copy of the form of Notice served upon affected property owners. If there are any questions concerning this matter, please contact me at the addresses or telephone numbers provided above.

Respectfully submitted,

John H. Isom

JHI/jl
Enclosures
cc: Certificate of Service

ORIGINAL

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

RE: APPLICATION OF PPL ELECTRIC UTILITIES CORPORATION FILED PURSUANT TO 52 PA. CODE CHAPTER 57, SUBCHAPTER G, FOR APPROVAL OF THE SITING AND CONSTRUCTION OF THE PROPOSED SOUTH LEBANON – BERKS 230 kV TRANSMISSION LINE IN SPRING TOWNSHIP, BERKS COUNTY AND EAST COCALICO TOWNSHIP, LANCASTER COUNTY, PENNSYLVANIA AND THE BERKS – SOUTH READING 230 kV LINE REARRANGEMENT IN BRECKNOCK TOWNSHIP, BERKS COUNTY, PENNSYLVANIA	:	**Docket No. A-110500F0385**

DOCUMENT FOLDER

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PA PUC
SECRETARY'S BUREAU

APPLICATION

TO THE PENNSYLVANIA PUBLIC UTILITY COMMISSION:

I. INTRODUCTION AND OVERVIEW

1. The Applicant is PPL Electric Utilities Corporation ("PPL Electric"). Its address is:

Two North Ninth Street
Allentown, Pennsylvania 18101

2. PPL Electric is a public utility incorporated in Pennsylvania for the purpose of supplying light, heat and power to the public by means of electricity in a service territory covering approximately 10,000 square miles in all or portions of twenty-nine counties in eastern and central Pennsylvania.

3. PPL Electric provides electric distribution and provider of last resort services to approximately 1.3 million customers subject to the regulatory jurisdiction of the Pennsylvania Public Utility Commission ("Commission").

4. PPL Electric's attorneys are:

John H. Isom (ID # 16569)
Andrew S. Tubbs (ID #80310)
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PPL Electric's attorneys are authorized to receive all notices and communications regarding this Application.

5. This Application is filed pursuant to the Commission's regulations at 52 Pa. Code § 57.71, governing the review of siting and construction of high voltage electric transmission lines. In this Application, PPL Electric seeks the Commission's approval for the siting and construction of 6.8 miles of 230 kV transmission line within its existing right-of-way presently occupied by the Berks-South Akron #1 69 kV Transmission Line. As part of the same project, the existing 69 kV line will be removed and replaced with a new, double circuit transmission line that will host both the 6.8 mile section of the South Lebanon-Berks 230 kV Transmission Line and the reconstructed Berks-South Akron #1 69 kV Transmission Line. The Berks-South Akron

#1 69 kV Transmission Line will be constructed with conductors capable of operating at 230 kV, but the line initially will energized at 69 kV.

6. In addition, the Berks-South Reading 230 kV Transmission Line will be reestablished by connecting the Berks portion of the South Akron - Berks 230 kV line and the South Reading portion of the South Lebanon-South Reading 230 kV Line at the point where they intersect in Brecknock Township, Berks County.

7. The purpose of this project is to reinforce the 230 kV bulk power system in northern Lancaster and southwestern Berks Counties. The project will provide a third 230 kV source to PPL EU's Berks 230-69 kV Substation by sectionalizing the Met-Ed South Lebanon-South Reading 230 kV Line and looping it into, and out of, the Berks substation.

8. This project is required to meet reliability guidelines established by the Reliability*First* Corporation (RFC), a member of the North American Electric Reliability Council (NERC). The project will alleviate reliability concerns in northern Lancaster and southwestern Berks Counties. This project was identified by a coordinated effort of PPL Electric and PJM Interconnection LLC's ("PJM") Regional Transmission Expansion Plan ("RTEP") to maintain reliable electrical service on the PJM transmission system.

9. The route PPL Electric selected for the South Lebanon-Berks 230 kV Line involves construction of the proposed facility along, and within, an existing PPL Electric right-of-way. In order to construct the proposed facility, PPL Electric is actively negotiating with property owners to convert existing right-of-way agreements, where feasible, to a standard, fixed-width easement of 150 feet. Presently, the existing right-of-way contains a variety of easement widths. Where conversion of existing right-of-way agreements is not possible, PPL Electric will configure the proposed facilities consistent with the existing rights-of-way agreements.

10. The estimated cost to design and construct the South Lebanon-Berks 230 kV Line is $21 million, including right-of-way acquisition costs. The project has a scheduled construction start date of July 2007 to support an in-service date of May 2008.

11. Accompanying this Application is a separate ring binder containing Exhibits A - D and Appendices A - J, which provide additional information about the project. This Application and the accompanying Exhibits and Appendices, which are incorporated herein by reference, contain all of the information required by 52 Pa. Code § 57.72(c).

II. DESCRIPTION OF THE PROJECT

12. Due to the breadth of the work involved and the functional requirements necessary to reinforce the existing 230 kV transmission system in northern Lancaster and southwestern Berks Counties, PPL Electric has submitted the overall project under two separate filings. The first filing was approved by the Commission on August 17, 2006 at Docket No. A-110500F0376 for the reconstruction of a 12.4 mile section of the South Akron – Berks 230 kV Line for double-circuit operation. The South Lebanon-Berks 230 kV Transmission Line subject of this filing proposes to extend a third 230 kV source into PPL Electric's Berks 230-69 kV Substation by sectionalizing the Met-Ed South Lebanon – South Reading 230 kV Transmission Line and looping it into, and out of, the Berks Substation. The basic functional arrangement of the 230 kV Transmission System in the region is shown in Figure 1. The proposed system reinforcements are shown in Figure 2, which is a functional one-line diagram depicting the existing and proposed facilities. These Figures are provided at the end of Exhibit A which accompanies this Application. The proposed third 230 kV circuit into Berks Substation involves rebuilding a 6.8 mile section of the single circuit Berks – South Akron #1 69 kV Transmission Line for double-circuit beginning at the point where the 69 kV line interests the Met-Ed South Lebanon – South Reading 230 kV Transmission Line to the Berks Substation. One circuit would

reestablish the Berks – South Akron #1 69 kV Line. The other circuit would establish the South Lebanon – Berks 230 kV Line. The new 230 kV transmission line will be terminated in the Berks Substation by modifying the substation configuration and the associated relay and control facilities.

13. Also, the Berks – South Reading 230 kV circuit will be reestablished by reconnecting the Berks portion of the South Akron – Berks 230 kV line and the South Reading portion of the South Lebanon – South Reading 230 kV Transmission Line at the location where these lines intersect in Brecknock Township, Berks County. The South Lebanon – South Reading Line between the two locations described above would be de-energized.

III. NECESSITY FOR THE SOUTH LEBANON – BERKS 230 KV TRANSMISSION LINE

14. Presently, northern Lancaster and southwestern Berks Counties receive the bulk of their electric power supply from PPL Electric's South Akron 230-138-69 kV Substation, the Berks 230-69 kV Substation and from the Met-Ed South Reading 230-69 kV Substation.

15. PPL Electric's Berks 230-69 kV Substation is supplied by two 230 kV lines, one from PPL Electric's South Akron 230-138-69 kV Substation and the other from Met-Ed's South Reading 230-69 kV Substation. For the last 7.8 miles into the Berks Substation, both circuits occupy the same set of structures in a double-circuit configuration. The South Akron 230-138-69 kV Substation is supplied by three 230 kV transmission lines. The first is from PPL Electric's South Manheim 230-69 kV Substation and the second is from the Manor and Millwood[1] 230-69 kV Substations. The third line is the above-mention 230 kV circuit connecting the Berks 230-69 kV Substation with the South Akron Substation.

16. As an owner of transmission facilities in the mid-Atlantic region, PPL Electric is a member of PJM. PJM is a federally-regulated Regional Transmission Organization (RTO)

[1] Millwood 230-69 kV Substation is currently scheduled to be in service in November 2007.

regulated by the Federal Energy Regulatory Commission ("FERC"). As part of its responsibilities, PJM directs and coordinates the RTEP process in order to maintain the reliability of the electric power system. All plans to reinforce the bulk power transmission system are developed through PJM in a highly coordinated process involving all transmission owners for the region, and are reviewed publicly through the PJM RTEP process, which provides opportunity for stakeholder input. The need to construct the South Lebanon-Berks 230 kV Line was identified through this process.

17. The immediate area of concern is the capability of the 230 kV Transmission System to provide reliable power supply to the PPL Electric's Berks 230-69 kV and South Akron 230-138-69 kV Substations within acceptable voltage levels and within the power line conductor's thermal capability during the periods of high summer demand under contingency outages as described below. Specifically, thermal overloads and excessive voltage drop violations have been documented via the PJM RTEP process for several single contingency (NERC Standard TPL 002, Category B) and double contingency (NERC Standard TPL 003, Category C) outages.[2] Additionally, the same violations occur under the PJM generation emergency import test.

18. The contingency violations are as follows:

- For the loss of PPL Electric's Brunner Island – South Manheim 230 kV Transmission Line and South Manheim's #3 230-69kV Transformer, PPL Electric's Manor – Millwood 230 kV Transmission Line will load to 107% of its summer emergency rating (7% above the permissible limit).
- For the loss of PPL Electric's Brunner Island – South Manheim 230 kV Transmission Line and South Manheim's #3 230-69 kV Transformer, PPL Electric's Brunner Island – West Hempfield 230 kV Transmission Line will

[2] A NERC Category B violation is briefly defined as the loss of single transmission line, generating unit, transformer, bus section *etc.* without exceeding the applicable emergency rating and voltage drop criteria. A NERC Category C violation is the loss of a double-circuit line with one mile or greater in length, without exceeding the applicable emergency rating and voltage drop criteria.

load to 103% of its summer emergency rating (3% above the permissible limit).

- For the loss of PPL Electric's Brunner Island – South Manheim 230 kV Transmission Line and South Manheim's #3 230-69 kV Transformer, PPL Electric's South Manheim Substation 230 kV Bus voltage drops 11.6% (6.6% above the permissible limit).
- For the loss of PPL Electric's Brunner Island – South Manheim 230 kV Transmission Line and South Manheim's #3 230-69 kV Transformer, PPL Electric's South Akron Substation 230 kV Bus voltage drops 9.7% (4.7% above the permissible limit).
- For the loss of PPL Electric's Brunner Island – South Manheim 230 kV Transmission Line and South Manheim's #3 230-69 kV Transformer, PPL Electric's Berk's Substation 230 kV Bus voltage drops 7.4% (2.4% above the permissible limit).
- For the loss of the interconnected PPL Electric/Met-Ed Berks – South Reading 230 kV Transmission Line and the Berks #1 230-69 kV Transformer, PPL Electric's South Manheim Substation 230 kV Bus voltage drops 5.8% (0.8% above the permissible limit).
- For the loss of the interconnected PPL Electric/Met-Ed Berks – South Reading 230 kV Transmission Line and the Berks #1 230-69 kV Transformer, PPL Electric's South Akron Substation 230 kV Bus voltage drops 7.4% (2.4% above the permissible limit).
- For the loss of the interconnected PPL Electric/Met-Ed Berks – South Reading 230 kV Transmission Line and the Berks #1 230-69 kV Transformer, PPL Electric's Berks Substation 230 kV Bus voltage drops 9.6% (4.6% above the permissible limit).
- Additionally, a structure failure on the 7.8 miles of double-circuit 230 kV transmission line (NERC Standard TPL 003, Category C condition) serving PPL Electric's Berks 230-69 kV Substation, will interrupt all of the 225 MW of the load connected to the substation. Initially, approximately 45,000 customers will lose their electric supply. After extensive field switching approximately half of the customers will be restored. The balance of customers will remain out of service, for an extended period of time, until repairs are completed.

19. Exhibit A, which accompanies this Application contains a detailed description of PPL Electric's existing bulk power system in south central Pennsylvania, PPL Electric's system planning process, and the analysis that led to the conclusion that the South Lebanon-Berks 230

kV line is the best alternative for reinforcing the transmission system in south central Pennsylvania.

IV. ENVIRONMENTAL ASSESSMENT AND SITING ANALYSES

20. In accordance with the Commission's regulations at 52 Pa. Code § 57.72(c), PPL Electric conducted an extensive, multi-faceted analysis to determine the preferable option for the location of the South Lebanon – Berks 230 kV Transmission Line. These studies included the determination of a "Study Area", the compilation of an environmental inventory, and selection and analysis of the proposed line route corridor. The process helped select a route for the proposed transmission line that best balances functional requirements, environmental factors and cost considerations.

21. The Study Area for the project is shown on Maps 1 through 10 in Exhibit B. The Study Area is that territory in which line route alternatives can be sited to feasibly meet the project's functional requirements and, at the same time, minimize social and environmental impacts, and project costs. The boundaries of the South Lebanon - Berks 230 kV Transmission Line Project Study area were determined by the potential supply and destination service points viewed with consideration for man-made and natural boundaries beyond which line route alternatives would not be reasonable.

22. The Study Area is generally defined by the location of PPL Electric's Berks Substation at the northern end of the Study Area and Met-Ed's South Lebanon – South Reading 230 kV Transmission Line on the southern end. The existing Berks – South Akron #1 69 kV Transmission Line serves as a north-south "backbone" traversing the length of the Study Area. The eastern and western boundaries of the Study Area are roughly parallel to the Berks – South Akron #2 69 kV Transmission Line. Functional requirements dictate the exact extent of the

Study Area, which is approximately 3.8 miles wide from east to west, and approximately 6.8 miles long from north to south covering approximately 25.8 square miles in total land area.

23. Some PPL Electric siting studies include a project "Core Area" and a larger "Study Area" stretching two miles beyond the Core Area for cultural and historic inventory. Since this project consists of a transmission line rebuild as opposed to a new transmission line, the potential negative visual effects on existing cultural and historic resources have already been sustained. As a result, the Study Area boundary described above is used on every environmental inventory map associated with this project. However, all maps show features (and in some cases, inventoried sites) *outside* that boundary, but within the confines of the map extent.

24. PPL Electric conducted a detailed environmental inventory of the Study Area to identify and locate environmental factors that need to be considered when evaluating and selecting transmission line routes, which include:

- *Linear features*, such as existing electric transmission lines, roads and highways, and railroads. (Map 1)
- Existing and proposed land use, such as schools, public and private recreational areas and airports. (Map 2)
- Generalized Municipal zoning. (Map 3)
- Soil Characteristics. (Map 4)
- *Steep Slopes and Physical features. (Map 5)*
- Natural Features, including vegetation, surface waters floodplains, wetlands and unique natural areas. (Map 6)
- Geology. (Map 7)
- Agricultural Preservation. (Map 8)
- Cultural and Historic features, such as, historic sites and districts, recreation and *open space sites and recreation trails.* (Map 9)
- Alternative Line Routes. (Map 10)

25. The study used several levels of accurate, current geographic data to identify and record environmental data. The maps were developed by digitally compiling the most recent United States Geologic Survey (USGS) 1:24,000 scale maps of the area, in conjunction with Geographic Information System (GIS) data provided by the Berks County Planning Commission, Lancaster Planning Commission, and Pennsylvania State University. GIS provides information-linked map data for nearly all the natural, political, and cultural features mapped in this inventory. In addition, several hard-copy maps, including municipal zoning and new development plans, were digitized to supplement the inventory. All of the above data were manipulated in a GIS program to provide the necessary graphic and informational results for this study. Finally, the resulting maps were checked and confirmed by field investigations and meetings with local officials. A detailed description of the environmental inventory and mapping is provided in Exhibit B.

26. In addition to the determining the project's functional requirements described in Exhibit A and the completion of the environmental inventory provided in Exhibit B, PPL Electric reviewed the proposed project with municipal and state officials and agencies and discussed with property owners along the existing right-of-way. Using the aforementioned mapping and analysis procedure, PPL Electric identified two alternative line routes that take advantage of existing linear features and minimize land use "constraints" to the extent possible. Additionally, PPL Electric performed a detailed environmental impact assessment and calculated right-of-way acquisition and line construction costs for each. The impacts and costs for each alternative were quantified and are set forth in tabular form in Table 1 of Exhibit C.

27. The two line route alternatives were compared and a preferred route was selected based upon a detailed analysis of societal concerns, environmental impacts, engineering

considerations and cost. The preferred route was communicated to the public and to appropriate municipal, state and federal officials and agencies for further feedback.

28. PPL Electric's preferred line route, for which approval is requested herein, is shown on the map in the Exhibit C map pocket and is described in detail in Exhibit C at pages 3 through 5. PPL Electric's preferred line route is 6.8 miles long, and involves construction of the proposed facility along, and within an existing PPL Electric right-of-way. Presently, the existing right-of-way contains a section of the Berks – South Akron #1 69 kV Transmission Line. PPL Electric proposes to remove the existing 69 kV transmission line and replace it with a modern, high capacity double-circuit 230 kV transmission line. One of the circuits would remain energized at 69 kV and replace the removed section of the Berks – South Akron #1 69 kV Transmission Line. The other circuit would be energized at 230 kV and provide the required third 230 kV source into Berks 230-69 kV Substation.

29. As fully explained in Exhibit C (pages 9 to 14), PPL Electric's preferred route is superior to the alternative in every major category:

- The preferred route is about 3,800 feet shorter and, therefore will encumber less land.
- The preferred route requires less new private right-of-way.
- The estimated cost of the preferred route is nearly $3 million less than the other identified alternative.
- Access roads for the preferred route that are necessary to construct and maintain the transmission line are in place having been constructed for the existing line.
- The preferred route has less impact on residential areas.
- The preferred route has only minimal tree clearing because of the right-of-way was cleared and maintained for the existing transmission line.
- The preferred route has less potential for environmental impact.

30. The construction, operation and maintenance of the South Lebanon-Berks 230 kV Transmission Line will not have any significant environmental or land use impacts. As previously explained, the line is being constructed entirely within existing PPL Electric right-of way, and has been sited to avoid any significant impacts:

- The proposed line will have no adverse impact on the operation of communications or cellular telephone towers (Exhibit C, p. 15).
- The proposed line will not affect any airports (Exhibit C, p. 15).
- The impact on terrestrial and aquatic resources will be minimal and incremental because of the proposed line is being rebuilt entirely within existing transmission line rights-of-way. (Exhibit C, p. 15).
- The proposed line route does cross three wetlands that were identified as potential habitat for the bog turtle. Subsequent studies were carried out at all three wetlands and no bog turtles were sighted. PPL Electric has filed all appropriate documentation with the US Fish and Wildlife Service and Pennsylvania's Fish and Boat Commission. PPL Electric will acquire all appropriate permits prior to commencement of construction activities at these locations.
- No lakes, ponds or major bodies of water will be affected. Five small, unnamed streams will have to be crossed, but they will be easily spanned. No impacts to the streams are expected. (Exhibit C, p. 16).
- Wetlands along the line will be delineated, and all necessary permits will be obtained from the Pennsylvania Department of Environmental Protection and U.S. Army Corps of Engineers if there is any potential for wetlands to be affected (Exhibit C, p. C-13).
- Of the 79 structures of historical interest within two miles of the proposed transmission line, the closest is the Zinn Farmhouse, which is eligible for inclusion on the National Register of Historic Places. The proposed line is located approximately 1,100 feet east of the Zinn Farmhouse and is not part of the primary view shed. (Exhibit C, pp. 17-18).
- PPL Electric's consultant investigated the one archeological site near the proposed line route, and the research indicates that the site in question does not extend into the transmission line corridor. The results of the consultant's research have been forwarded to the Pennsylvania Historical and Museum Commission. (Exhibit C, p. 17).
- No schools, churches, cemeteries, parks or recreational areas will be significantly affected (Exhibit C, p. 15)

31. The preferred line route was designed to avoid as many impacts as practical. Where impacts are unavoidable, PPL Electric will employ mitigating measures to minimize such impacts. Examples of such mitigating measures include PPL Electric's "Transmission Line Right-of-Way Program for Vegetation Management" and "Specifications for Soil Erosion and Sedimentation Control on Transmission Line Rights-Of-Way."

V. ENGINEERING DESCRIPTION

32. The 6.8 mile South Lebanon-Berks 230 kV Transmission Line will be designed and constructed for double circuit operation, although, one circuit will be the reconstructed Berks – South Akron #1 Line that will operate initially at 69 kV. The proposed line will be built within existing right-of-way that has been widened to accommodate the higher voltage circuit.

33. Tangent poles on the South Lebanon - Berks 230 kV Transmission Line will consist of single steel poles equipped with steel upswept support arms. Angle structures will be either single steel poles or two-pole steel structures depending upon the severity of the angle. All poles will be installed on concrete foundations. In addition, some angle structures may be guyed. Altogether, the project requires the installation of approximately 46 structures averaging 125 feet high. Average span lengths will be approximately 900 feet. The proposed structures are shown in Figures 1 through 3 in Exhibit D.

34. The proposed line will have six power conductors, one ½" EHS Overhead Ground Wire ("OHGW") and one Optical Ground Wire ("OPGW"). The conductors will be 1,590 KCMIL 45/7 stranding ACSR, and the OPGW will be 0.756 inch in diameter with 36 single mode fibers.

35. The South Lebanon - Berks 230 kV Transmission Line will be designed, constructed, operated and maintained in accordance with the National Electrical Safety Code ("NESC") and will include such further design, construction and maintenance features as are

required by PPL Electric standards and by law. Design specifications and safety rules practiced by PPL Electric are included in Appendix H.

VI. RIGHT OF WAY

36. With few exceptions, the right-of-way width for the majority of the proposed South Lebanon - Berks 230 kV Transmission Line will be 150 feet, which is the standard right-of-way width for a line of this voltage. The existing transmission line corridor contains a variety of right-of-way types, where widening is not possible due to adjacent buildings or property owners unwilling to provide additional easements. In those locations, PPL Electric will reduce the distance between structures in order to ensure proper electrical clearance to present or future development outside the right-of-way.

37. Currently, PPL Electric has successfully negotiated a widening of the existing right-of-way with 80 of 84 property owners. Four property owners have not signed new agreements. However, the existing right-of-way agreements allow for reconstruction of new facilities and those rights will be exercised at the appropriate time.

38. As discussed in Section V of Exhibit A, the Berks end of the existing South Akron – Berks 230 kV Transmission Line needs to be electrically connected to the South Reading end of the Met-Ed South Lebanon – South Reading 230 kV Transmission Line. This work will take place at the location where the lines intersect in Brecknock Township, Berks County. Due to the terrain, and the design of both these existing lines, approximately 0.7 acres of additional right-of-way will be require to effect this connection. The aerial exhibit for this line rearrangement is found in the Exhibit C map pockets. The names and addresses of the property owners within the right-of-way of the preferred route are listed in Appendix F.

VII. COST AND COMPLETION DATE

39. The estimated cost to construct the South Lebanon-Berks 230 kV Transmission Line is approximately $21 million, including the cost to acquire the necessary rights-of-way. This project has a scheduled construction commencement date of July 2007 to support an in-service date of May 2008. For system reliability reasons, it is important that the project be completed before the summer of 2008.

VIII. MISCELLANEOUS

40. No litigation has been concluded or is in progress concerning any aspect of the project.

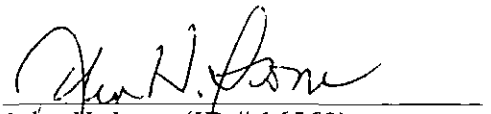
41. Copies of this Application are being served in accordance with the provisions of Section 57.74 of the Commission's regulations (52 Pa. Code § 57.74).

42. As soon as practicable after the filing of this Application, PPL Electric will publish notice of the filing in two newspapers of general circulation in the area of the line. This notice will: (a) note the filing with the Commission; (b) provide a brief description of the project and its location; (3) provide area locations where the complete Application may be reviewed by the public; and (d) instruct that any party who wishes to participate in this proceeding should contact the Commission's Secretary, Mr. James J. McNulty, within 15 days, at the Commission's Harrisburg address.

IX. CONCLUSION

PPL Electric respectfully requests that the Commission approve the siting and construction of the South Lebanon-Berks 230 kV Transmission Line as explained above.

Respectfully submitted,



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Date: November 9, 2006

Attorneys for PPL Electric Utilities Corporation

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA)
: SS
COUNTY OF LEHIGH)

JOHN F. SIPICS, being duly sworn according to law, deposes and says that he is President-PPL Electric Utilities Corporation; that he is authorized to and does make this affidavit for it; and that the facts set forth above are true and correct to the best of his knowledge, information and belief and he expects the said PPL Electric Utilities Corporation to be able to prove the same at any hearing hereof.

Sworn to and subscribed
before me this 26th day
of October, 2006.

James R. Harper

Notarial Seal
James R. Harper, Notary Public
City Of Allentown, Lehigh County
My Commission Expires Dec. 23, 2006
Member, Pennsylvania Association Of Notaries

EXHIBIT "B"
SOUTH LEBANON – BERKS 230 kV LINE RECONSTRUCTION
STUDY AREA ENVIRONMENT

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EXHIBIT "B"
SOUTH LEBANON – BERKS 230 kV LINE RECONSTRUCTION
STUDY AREA ENVIRONMENT

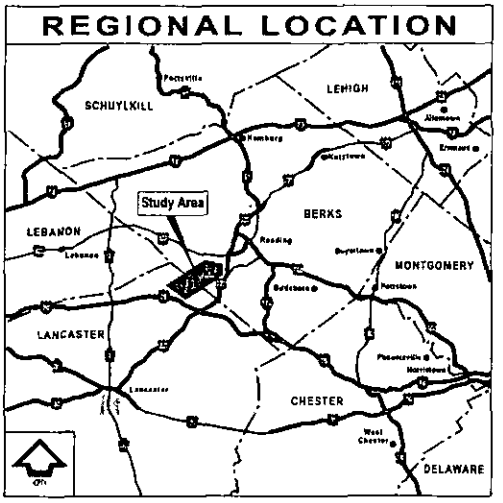
I. INTRODUCTION

Exhibit "B" provides an environmental inventory of the South Lebanon - Berks 230 kV Transmission Line Project Study Area. The information contained in this report was gathered from several sources, including Geographic Information Systems (GIS), field reconnaissance surveys, meetings and discussions with environmental specialists and planners, information supplied by public agencies, and appropriate publications. References used and contacts made to gather this environmental information are listed in Appendices "B" (Bibliography) and "C" (Governmental Agencies, Municipalities and Other Public Entities Contacted).

II. STUDY AREA LOCATION AND DESCRIPTION

The Study Area is located in Berks and Lancaster Counties in Eastern Pennsylvania. The following municipalities are included in the Study Area, either in whole or in part:

- South Heidelberg Township, Berks County
- Spring Township, Berks County
- Adamstown Borough, Lancaster County
- East Cocalico Township, Lancaster County
- West Cocalico Township, Lancaster County



The Study Area contains a variety of natural features and human development patterns. Rural areas tend toward the central and southern quadrants of the Study

Area, providing a patchwork of farm fields and woodlands atop the gently rolling terrain. A more intense suburban-style environment is starting to emerge in the northeast section of the Study Area.

Several village crossroad communities are located in the Study area. These villages include; Montello and Vinemont in Spring Township; Reinholds in West Cocalico Township; and White Oak and Vera Cruz located in East Cocalico Township. The Borough of Denver is located immediately to the south of the Study Area. The City of Reading is located six miles northeast of the Study Area while the City of Lancaster is located fifteen miles to the southwest.

III. DELINEATION OF STUDY AREA

PPL EU conducted a detailed siting analysis to determine the most acceptable options for the location of the South Lebanon - Berks 230 kV Transmission Line. These studies included the determination of a Study Area, the compilation of an environmental inventory, and selection and analysis of the proposed line route corridor. This process helped determine whether to rebuild the line on the existing centerline or on a new centerline.

The Study Area for the project is shown on Maps 1 through 10 included in this report. The Study Area is that territory in which line route alternatives can be sited to feasibly meet the project's functional requirements and, at the same time, minimize social and environmental impacts, and project costs.

The boundaries of the South Lebanon - Berks 230 kV Transmission Line Project Study Area were determined by the potential supply and destination service points viewed with consideration for man-made and natural boundaries beyond which line route alternatives would not be reasonable.

The Study Area boundary is generally defined by the location of PPL EU's Berks Substation at the northern end of the Study Area and Met-Ed's South Lebanon - South

Reading 230 kV Transmission Line on the southern end. The existing Berks - South Akron #1 69 kV Transmission Line serves as a north-south "backbone" traversing the length of the Study Area. The eastern and western boundaries of the Study Area are roughly parallel to the Berks-South Akron #2 69 kV Transmission Line. Functional requirements dictate the exact extent of the Study Area, which is approximately 3.8 miles wide from east to west, and approximately 6.8 miles long from north to south, covering approximately 25.8 square miles in total land area.

Some PPL EU siting studies include a project "Core Area" and a larger "Study Area" stretching two miles beyond the Core Area for cultural and historic inventory. Since this project consists of a transmission line rebuild as opposed to a new transmission line, the potential negative visual effects on existing cultural and historic resources have already been sustained. As a result, the Study Area boundary described above is used on every environmental inventory map associated with this project. However, all maps show features (and in some cases, inventoried sites) *outside* that boundary, but within the confines of the map extent.

IV. ENVIRONMENTAL INVENTORY GUIDELINES

An environmental inventory lists environmental factors considered when evaluating and selecting transmission line routes and substation sites. These factors can be either adversely affected by, or compatible with, transmission line facilities.

Major environmental factors and the reasons why they are inventoried are listed in Appendix A - Environmental Inventory Guidelines.

V. ENVIRONMENTAL INVENTORY

This study used several levels of accurate, current geographic data to identify and record environmental data. The maps for the project Study Area were developed by digitally compiling the most recent United States Geologic Survey (USGS) 1:24,000 scale maps of the area, in conjunction with Geographic Information System (GIS) data

provided by the Berks County Planning Commission, Lancaster County Planning Commission, and Pennsylvania State University. GIS provides information-linked map data for nearly all the natural, political, and cultural features mapped in this inventory. In addition, several hard-copy maps, including municipal zoning maps and new development plans, were digitized to supplement the inventory. All of the above data were manipulated in a GIS program to provide the necessary graphic and informational results for this study. Finally, the resulting maps were checked and confirmed by field investigations and meetings with local officials. The environmental data collected include the following subjects:

- Linear Features (Map 1)
- Existing and Proposed Land Use (Map 2)
- Generalized Municipal Zoning (Map 3)
- Soils Characteristics (Map 4)
- Steep Slopes (Map 5)
- Natural Features (Map 6)
- Geology (Map 7)
- Agricultural Preservation (Map 8)
- Cultural and Historic Features (Map 9)
- Map of Alternative Line Routes (Map 10)

A. LINEAR FEATURES – MAP 1

Roadways, railroads, pipelines and transmission lines are examples of linear features. In many situations, it is desirable for a proposed transmission line to parallel existing linear features. This paralleling approach can eliminate the need for a new corridor and thereby reduce land use and environmental impacts. A new line creates only incremental impacts when added to an existing linear feature.

The following linear features, which are found within the Study Area, appear on all of the Environmental Inventory Maps:

ELECTRIC TRANSMISSION LINES AND SUBSTATIONS

Several existing transmission lines traverse the Study Area. The names of the existing transmission lines are labeled on Maps 1 through 9 and identified below along with the operating utility:

PPL EU Transmission Lines:

- Berks – South Akron #1 69 kV Transmission Line
- Berks - South Akron #2 69 kV Transmission Line
- South Akron-Berks #1 230 kV and Berks - South Reading - 230 kV Transmission Line
- Shillington #1 & #2 69 kV Taps

Met-Ed Transmission Lines:

- South Lebanon-South Reading 230 kV Line

In addition to the transmission line facilities, one substation is located within the Study Area. PPL EU's Berks 230-69 kV Substation is located in the northern Study Area just west of Old Fritztown Road. The Berks Substation is served by both the South Akron-Berks #1 230 kV and Berks - South Reading 230 kV Transmission Line.

HIGHWAYS AND ROADS

The road network of the Study Area is comprised of one PA route, township routes, numerous rural roads, residential streets, and unpaved roads. Significant roads include the following:

- **PA Route 897/Swartzville Road** provides for east-west travel through West Cocalico and East Cocalico Townships in the southwestern portion

of the Study Area. Route 897 also provides an important connection to PA Route 222 and the I-78/Pennsylvania Turnpike interchange. This interchange is located just outside the southern corner of the Study Area.

- **North Ridge Road/Fritztown Road** extends in a northeast-southwest direction through the Study Area. North Ridge Road originates in Denver Borough and extends through West Cocalico Township to the Lancaster/Berks County line. At the Lancaster/Berks County line, North Ridge Road becomes Fritztown Road and continues through South Heidelberg Township and Spring Township. Fritztown Road eventually connects with US Route 422 to the northeast of the Study Area boundary.

RAILROADS

One active railroad passes through the Study Area. The Lancaster Northern Railroad roughly follows the municipal boundary separating Spring Township from South Heidelberg, and East Cocalico from West Cocalico. The railroad is owned and operated by Penn Eastern Rail Lines, a short-line railroad company based in Langhorne, Bucks County. The active portion of the railroad extends from downtown Sinking Spring, Berks County, southwestward 12 miles to a point just north of Ephrata Borough, Lancaster County. Originally carrying passenger and freight trains between Reading and Lancaster, this singular railroad track currently transports freight only. As of 2006, the Lancaster Northern Railroad accommodates an average of six trains per week between Ephrata and Sinking Spring. Its clients include Four Seasons Produce Company, Bradco Supply Company, Wickes Lumber, Metropolitan Steel Industries, and several others. Most of the industries which utilize the railroad are found outside of the Study Area, with the exception of Metropolitan Steel. This company is located on Fritztown Road in Spring Township. Penn Eastern forecasts continued demand and use of the railroad into the foreseeable future.

Source: John C. Nolan, Penn Eastern Rail Lines, 1973 Wellington Drive, Suite 1, Langhorne, PA 19047

PIPELINES

Three petroleum pipeline corridors traverse the Study Area. These corridors may contain more than one pipeline. Two of these pipelines, operated by Texas Eastern Petroleum Pipeline Company (TEPPCO) and Buckeye Pipeline Company, are buried parallel to one another in a singular corridor through South Heidelberg and West Cocalico Townships. The TEPPCO line, an 8" liquid petroleum pipeline, is referred to as the Allegheny Pipeline. Buckeye operates the larger of the two pipelines, the 24" Laurel Line connecting its Sinking Spring and Highspire terminals.

Sunoco Pipeline LP operates a separate pipeline corridor in close proximity to the TEPPCO and Buckeye pipelines. This singular corridor contains the 8" Montello-Pittsburgh line, the 8" Montello-Cornwall line, and the 6" Montello-Mechanicsburg Line, all of which are high-pressure gasoline pipelines. In the northeastern corner of the Study Area, Sunoco also operates the 8" and 12" Point Breeze – Montello pipelines. All of the above pipelines lead to a major cluster of petroleum storage facilities ("tank farms") along the northern edge of the Study Area in Spring Township.

Sources: Don Ayers, TEPPCO, PO Box 312, Watkins Glen, NY 14891
Linda Conrad, Buckeye Pipeline, 5002 Buckeye Rd, Emmaus, PA 18049
Jomarie Jenkins, Sunoco Pipeline, 525 Fritztown Rd, Sinking Spring, PA 19608

TELECOMMUNICATION LINES

USGS topographic quadrangle maps indicate a "telephone line" passing in a west-to-east fashion through the Study Area, from the Galen Hall area of South Heidelberg Township to Shillington Borough. This line has been discontinued, and its right-of-way easement has been nullified.

B. EXISTING AND PROPOSED LAND USE – MAP 2

Identifying land use is important in the siting of electric transmission lines and related facilities. Each type of land use activity varies in the significance of impact from a transmission line. Land uses are mapped to provide an understanding of the wide variety of land activities found in the Study Area and to evaluate the potential impact of a transmission line upon them.

Existing land use data was obtained from the Berks County Planning Commission (BCPC) and Lancaster County Planning Commission (LCPC). Both agencies assigned land use classifications to individual areas digitized from aerial photography. These areas, shown on Map 2, do not necessarily fall along property lines. Boundaries and sizes of these areas were determined by visual breaks in the aerial imagery. The LCPC is more specific with regard to land use types, which is why certain categories (namely, orchards and feeding operations) are only shown in that county. Field surveys were undertaken throughout the Study Area to verify and update land use designations for both data sets. Existing and proposed land uses are described below, and shown on Map 2.

EXISTING LAND USE

Undeveloped – *Land that is not currently used for development or agriculture, and is not designated for any type of recreation. Most commonly, this includes woodlands and vacant lots. Map 2 shows not only vacant properties, but also portions of occupied properties that contain significant areas of undeveloped land.*

The largest contiguous area of undeveloped land is found along Adamstown Ridge, near the county line along the eastern edge of the Study Area. While some landowners have chosen to harvest trees here, a majority of this wooden

expanse remains in tact. Other upland areas dispersed through the Study Area have remained wooded due to their development and agricultural constraints. In particular, Spring and South Heidelberg Townships contain steep, forested ridges that remain undeveloped aside from the scattered large-lot homes found here. Similarly, many areas along streams are undeveloped because of flood hazards and wet soils. Frys Run and Little Cocalico creeks in Lancaster County are the best example of development-free stream corridors.

Pasture/Cropland – *Land used for growing forage crops (corn, soybean, wheat), and for animal grazing.*

Crop fields and pastures are common in the lowlands of East and West Cocalico Townships, especially west of Fry's Run. In general, pasture land is more common here, a monument to Lancaster County's thriving dairy industry.

Farmland is generally less common and scattered in the Berks County portion of the Study Area, largely due to topographic constraints. One major cluster of farmland persists in the Shiloh Hills area of Spring Township, near Goose Lane and Chapel Hill Road. In the northwest corner of the Study Area, large crop fields can still be found in the fast-growing Route 422 corridor.

Orchards / Tree Farms – *Shown in Lancaster County only, this includes land used for growing fruit trees, as well as tree nurseries and Christmas tree farms.*

Orchards and tree farms are not common in the Study Area. The only identified area is a Christmas tree farm along North Ridge Road in West Cocalico Township.

Feeding Operations – *Shown in Lancaster County only, these are areas on farms dedicated to the large-scale feeding of livestock, including open feed lots and enclosed feeding barns.*

Feeding operations can be found within a majority of the farms through the Study Area. However, only Lancaster County has identified feeding operations in its land use database. Generally, feeding operations are found in the interior of farm tracts, along with other buildings associated with the farmstead.

Single-Family Residential – *Detached, private homes and their associated yards and accessory structures. This category also includes farmsteads.*

Single-family residences in the Study Area have great range in age, type, and setting. Among the oldest homes in the Study Area are the fieldstone farmhouses found within many of the area's farms, and the Colonial era homes in the villages of Fritztown and Reinholds. However, a majority of the homes in the Study Area are found within residential subdivisions built in the past 30 years. Spring Township contains a number of such developments, including LenOak Estates along Old Fritztown Road, Grings Hill Estates along the namesake road, and Shiloh Hills and Wheaton Heights along Sage Drive. South Heidelberg Township contains a collection of massive single-family residential subdivisions along the Cacoosing Creek, collectively known as Heidelberg Run. This township also contains Galen Hall, originally the site of an early 20th century resort for the wealthy, and now a golf course with large-lot residences. In West Cocalico Township, Village Hollow subdivision developed west of the original village of Reinholds. East Cocalico Township contains more residential subdivisions than its western neighbor, including a considerable amount of land currently under development. Another common pattern in single-family housing is the linear arrangement of homes found along many rural roads, such as Fritztown Road in Spring Township, and Brunners Grove and Swartzville Roads in East Cocalico Township.

Multi-Family Residential – *Attached townhouses, duplexes, apartment complexes, mobile home parks, and senior living facilities.*

The Study Area is largely rural, and therefore high-density housing is not common. Exceptions include a townhouse development along Lincoln Drive in South Heidelberg Township, the Lilyfield retirement community on Wernersville Road in Spring Township, a townhouse development north of the village of Reinholds in Lancaster County, and several small mobile home parks in East Cocalico Township.

Commercial – *Shopping centers, restaurants, retail, wholesale, and service and /or related establishments, as well as office buildings.*

Large shopping centers are absent from the Study Area. Instead, most commercial land uses are in the form of small, stand-alone businesses. Main Street in the village of Reinholds contains a mix of family-owned service establishments such as restaurants and hair salons. In the southern part of that village are several larger contracting businesses. In South Heidelberg Township, several businesses have located along Mountain Home Road, in the form of a garden center and an office building. In neighboring Spring Township, in the Grings Hill area, several residents operate family-owned businesses out of their homes, including building contracting and agricultural businesses.

Industrial – *Light manufacturing operations such as machine shops, heavy operations such as steel mills and power plants, warehouse facilities, and all related production facilities and offices.*

A major cluster of industrial land use can be found along Fritztown Road near the northern edge of the Study Area. Sunoco and Buckeye pipeline companies operate storage facilities, known as "tank farms," along the Study Area boundary. All of the petroleum pipelines in the Study Area intersect at this major hub. South of these facilities, along the Lancaster Northern Railroad, sits Metropolitan Steel Industries, a small-scale steel manufacturing operation.

Adjacent and to the west of the steel plant is the Cacoosing Industrial Park, an arrangement of nine other industrial businesses. Further south, at the intersection of Fritztown and Chapel Hill roads, is Kreitz Motor Express, a freight transport company.

The remains of the Berks Landfill are found along Wheatfield Road in Spring Township. The landfill was closed several years ago, and is currently designated as an EPA Superfund site due to its environmental problems.

Elsewhere in the Study Area, industries have located near the Lancaster Northern Railroad in the village of Reinholds, and locations further south which offer close access to the nearby Pennsylvania Turnpike. Covance, a pharmaceutical company, is located on Pine Street in the southwest corner of the Study Area.

Utilities – *Non-linear infrastructure, including water or sewage treatment plants, telecommunication facilities, petroleum pipeline valve stations, and electric utility substations.*

PPL EU's Berks 230 – 69 kV Substation in Spring Township falls into this category, as do two properties owned by the Pennsylvania American Water Company. The water utility owns and operates a pump station on Mountain Home Road and a wellhead area south of Old Fritztown Road, both in Spring Township. Petroleum-related facilities are included in the Industrial land use category.

Institutional – *Public and private schools, colleges, churches, cemeteries, government offices, police stations, fire stations, and post offices.*

The largest institutional property in the Study Area is Pleasant View Cemetery, on the east side of Fritztown Road in Spring Township. Also in that municipality, the Wilson School District operates Shiloh Hills Elementary

School on Sage Drive, a relatively new facility. The East and West Cocalico Township office buildings are both located within the Study Area, the former on Hill Road and the latter on Main Street. The remaining institutional land uses in the Study Area take the form of small churches, cemeteries, and social clubs.

Recreation/Open Space – *Public and private recreational areas including athletic fields, golf courses, youth camps, and hunting clubs, as well as areas designated as open space, nature preserves, or watershed land.*

The Study Area contains ample recreation and open space land, both in the public and private realm. The largest recreation-based landholding is the South Mountain YMCA Camp in South Heidelberg Township. This private youth camp occupies some of the highest land elevations in the Study Area.

Two State Game Lands are located entirely within the Study Area. The larger of the two is Game Land #274, whose 344 acres are spread over three different sections in southern Spring Township. Game Land #220, at just over 96 acres, is located on Blainsport Road in West Cocalico Township. The private Cushion Peak Rod and Gun Club also owns land for hunting, on Vinemont Road in South Heidelberg Township.

Private golf courses are quite common in the Study Area. In Spring Township, Manor Golf Course is located on Bran Road, while Chapel Hill Golf Course occupies the valley of the Little Muddy Creek between Vinemont and Chapel Hill Roads. Galen Hall Country Club, dating from 1910, is located in South Heidelberg Township amidst luxury homes.

Other recreation and open space lands come in the form of municipal parks, private ball fields, and development open spaces. The largest municipally-owned park in the Study Area is Shiloh Hills Park, straddling both sides of

Sage Drive. Spring Township has plans to develop this 127-acre site into a multi-use park with numerous active and passive recreation facilities.

DEVELOPMENT PROPOSED OR UNDER CONSTRUCTION:

The Study Area is under a considerable amount of development pressure due to its location near the newly constructed Route 222 Expressway and the well-established Pennsylvania Turnpike. These two roads offer easy access to employment centers in and around Reading, Lancaster, Harrisburg and Philadelphia. Map 2 shows tracts of land that were either under construction or proposed for development as of 2006. All of the associated development projects are residential in nature. Planned developments include Heatherwoods, in the southeastern corner of the Study Area; Morganshire, on Swartzville Road in East Cocalico Township; Overlook Mountain, in the northeastern corner of the Study Area; and Stone Pond at Galen Hall, on Cushion Peak Road in South Heidelberg Township. In addition, land south of Shiloh Hills Park in Spring Township is likely to be developed in the next ten years.

AIRPORTS/LANDING STRIPS

The United States Department of Transportation (Federal Aviation Administration) and State Department of Transportation (Bureau of Aviation) have established structure height guidelines applicable to areas near airports. The nearest airport is Reading Regional Airport, located approximately five miles northeast of the edge of the Study Area. Lancaster Airport, near Lititz, and Air-Deck Airport, near Lebanon, are more than 10 miles from the edge of the Study Area. The proposed transmission line is expected to have no impact on established approach and departure paths for these airports.

C. GENERALIZED MUNICIPAL ZONING – MAP 3

Municipal zoning is often an indicator of the potential type and location of future community development. The municipalities that lie within the Study Area of the South Lebanon-Berks 230 kV Transmission Line Project all enforce zoning regulations of their own design, which are geographically organized into *districts*. Electric utilities are allowed in nearly all districts as a *special exception use.*

ZONING DISTRICTS

For the purposes of this study, zoning districts have been generalized into the following categories:

- Conservation
- Agricultural
- Rural Residential
- Low-Density Residential
- Medium-Density Residential
- High-Density Residential
- Commercial
- Industrial
- Mixed Use

General regulations enforced in each district are summarized below.

Conservation Zoning - This zoning type does not exclude development, rather it calls for much larger minimum lot sizes and/or clustering of housing in order to conserve open space. This type of zoning is typically found near sensitive natural features such as floodplains, wetlands, steep slopes, and major

woodlands. In Spring Township, this zone is called a *Rural Holding Area*, and the minimum lot size is 5 acres. The Lancaster County municipalities regulate similar districts. East Cocalico's district is named *Conservation*, while Adamstown maintains a *Woodlands* zoning district.

Agricultural Zoning - Portions of East and West Cocalico Townships are zoned *Agricultural.* This designation is intended to promote continued agricultural activities to support the economy of these municipalities. Residential uses are also allowed in Agricultural districts in moderate amounts. Some Lancaster County municipalities only allow limited numbers of new residential lots to be pieced off of farm tracts. Agricultural zoning is different from *Agricultural Preservation*, described under *Map 8.*

Rural Residential Zoning – These zones are intended for single family homes on large lots. Lot size minimums are in the 1 to 3 acre range, and actual lot sizes are typically larger. Most of these areas are not served by public sewer and water, but are also not as valuable for agricultural purposes. The result is a mixture of large lots, some with farmland and/or woodland, along with minimum size lots that were the result of land subdivision. Rural Residential zoning can be found in parts of South Heidelberg and Spring Townships. Generally these areas serve as transitions between urbanized areas and truly rural areas.

Low-Density Residential Zoning – This zoning type allows for residential subdivisions with lot sizes from a quarter to a half-acre. Low-Density Residential zoning has allowed many subdivisions to develop in the past 30 years in South Heidelberg and Spring Townships. Similar zoning is in place in the Cocalicos, surrounding the village of Reinholds.

Medium-Density Residential Zoning – This zoning type allows for residential land uses with lot sizes from 5,000 to 10,000 square feet. In addition to stand-alone single-family homes, this generalized category also

allows townhouses and duplexes. In the Study Area, Medium-Density Residential Zoning is found towards the corners: in the flatlands of South Heidelberg Township, at Grings Hill Estates in Spring Township, and within the Urban Growth Boundaries of East Cocalico Township and Adamstown Borough.

High-Density Residential Zoning – The district that allows the densest assemblage of housing units is the *Mobile Home Park* district in East Cocalico Township. This district occupies a small area along Holtzman Road near the county line.

Commercial Zoning – Retail, office and service uses are permitted in this zoning category. Commercial zoning is scattered in small pieces in only a few locations in the Study Area. East Cocalico's *General Commercial* zone along Route 272 reaches into the southeastern corner of the Study Area. A commercial area along Fritztown Road in South Heidelberg Township is zoned similarly. In Spring Township, a very small area is zoned *Neighborhood Commercial* on Grings Hill Road.

Industrial Zoning – This category includes those districts which permit less-intense industrial and warehouse uses that are relatively clean and quiet, as well as districts which allow heavy industrial uses associated with petroleum and manufacturing. The largest area of Industrial zoning in the Study Area is found along Mountain Home Road in South Heidelberg Township. This area is intended for light manufacturing, warehousing facilities, and other uses typical of a planned industrial park. To the east is the more intense *Petroleum Storage* district in Spring Township, where several petroleum companies have established tank farms. In West Cocalico Township, areas along the Lancaster Northern Railroad in Reinholds have been zoned *Industrial-Commercial*, allowing for light manufacturing. The smallest industrially-oriented zoning district is along Grings Hill Road in Spring Township, where an *Extractive Industries* district allows quarrying.

Mixed Use Zoning – In places where mixes of residences and small businesses have predated zoning regulations, Mixed Use zoning has been implemented. In Spring Township, the mixed-use area along Fritztown Road has been fitted with *Planned Business / Residential* zoning to allow a similar mix of uses to develop in the future. In West Cocalico Township, the village of Reinholds and surrounding areas are included in a *Village Residential* zone. This district allows not only high-density residential uses, but also small retail and service establishments, churches, and other staples typically found in small towns.

URBAN GROWTH BOUNDARIES

Lancaster is the only county in Pennsylvania that has designated urban growth boundaries (UGBs) in an attempt to steer new development into areas within or adjacent to existing boroughs, cities and villages, while protecting farmland and open space in rural areas. Designated by the Lancaster County Planning Commission, the UGBs are not regulated by law or financial incentive. Rather, the County encourages its municipalities to enact zoning regulations that allow generous densities of development within the UGBs, and strictly limit new development outside the UGBs. A major goal of this planning effort is to preserve the County's rich agricultural heritage.

UGBs have been delineated in two locations in the Study Area: surrounding the village of Reinholds, and along the Route 272 Corridor near Swartzville. With a few exceptions, municipal zoning has conformed to the UGBs. Therefore, it can be expected that medium to high-density development will continue to occur near Reinholds and Swartzville, while agricultural areas in Lancaster County remain as farmland with very limited new residential development or agri-business.

D. SOIL CHARACTERISTICS - MAP 4

The characteristics of soils are important factors in transmission line siting. Some soil or rock conditions can pose problems in engineering and construction of foundations. Environmental impacts can also occur with erosive soils and with re-vegetation of the right-of-way if droughty soils are found, especially on steeper slopes.

Using U.S.D.A. Natural Resources Conservation Service (NRCS) soil surveys for Berks and Lancaster Counties, the Study Area was analyzed and mapped to identify the most significant soil characteristics and problem areas. The NRCS indicates that Study Area soils are classified generally as "medium-textured" at the surface layer, with sub-surface layers that vary from "medium-textured," to "moderately fine," to "firm and compact."

Two soil characteristics were identified in the Study Area as significant to transmission line siting, including construction, operation and maintenance, which are as follows:

- High / Seasonally High Water Table Soils
- Shallow Depth to Bedrock Soils

High / Seasonally High Water Table soils, with a water table at a depth of 36 inches or less, are widespread in the Study Area, especially in the flatter terrain of Lancaster County. In the Berks County section of the Study Area, high water table soils are largely confined to stream valleys. It should be noted that some soils mapped as having water table depths of 36 inches or less may actually have deeper water tables, since the NRCS indicates water table depth in a broad range (e.g. 30 to 48 inches).

A small area of Shallow Depth to Bedrock soils, with bedrock found at a depth of 36 inches or less, are found in the extreme northeastern corner of the Study Area adjacent to Hain Road.

Other soils that were identified and mapped within the Study Area include Class I, Class II, and Class III prime agricultural soils. The United States Department of Agriculture (USDA) defines prime farmland soils as the land best suited to produce food, feed, forage, fiber, and oilseed crops. Prime farmland produces the highest yields with minimal inputs of energy and economic resources, and farming these soils results in the least damage to the environment. Counties also use prime agricultural soils as a determining factor in purchasing agricultural easements (described further under *Map 8*). Prime farmland soils tend toward the northern corner of Study Area in Berks County and through much of the Lancaster County area of the Study Area. Farmland preservation regulations recognize the benefit and minimal impact of transmission lines and, therefore, do not prohibit this land use.

It should be noted that potentially contaminated soils may be found in the area of a former Berks Landfill located in Spring Township in the vicinity of Wheatfield Road.

PPL EU has developed standard procedures for dealing with soil problems. These procedures are set forth in PPL EU's "Specifications for Soil Erosion and Sedimentation Control on Transmission Line Rights-of-Way" manual.

E. STEEP SLOPES AND PHYSCIAL FEATURES – MAP 5

Identification of steep slopes is very important to transmission line siting. The steeper the slope, the more difficult and costly it is to clear vegetation, maneuver construction equipment, handle, haul and erect transmission structures and grade access roads and structure sites. Drainage, erosion control and vegetation management problems generally increase with more severe

slopes, especially when a line crosses perpendicular to the slope. Also, steep slopes by nature of geometry are more visually sensitive.

Digital elevation models of the Study Area provided by the U.S. Geological Survey provide the basis for the Steep Slope and Physical Features map. Steep slopes were classified based on commonly-accepted land use planning methods, which are as follows:

- *15 - 25 percent slopes, where development density restrictions are often recommended.*
- *25 percent and greater slopes, where development is often prohibited or severely restricted.*

Generally, steep slopes in the Study Area are more prevalent in the Berks County section of the Study Area. Throughout the remainder of the Study Area, lesser areas of steep slopes are scattered on hillsides, along stream valleys, and in the sides of ravines.

F. NATURAL FEATURES – MAP 6

The natural features inventory and map represent a compilation of those natural elements in the environment that are considered to be significant to transmission line siting and construction. Map 6 shows major natural features in the Study Area, including natural vegetation, surface waters, floodplains, wetlands, and unique natural areas. Wildlife habitat, both terrestrial and aquatic, is confined largely to these resources. Appendix D contains the complete Wildlife and Plant Survey Report that was compiled for this project.

NATURAL VEGETATION

The Study Area contains a variety of vegetation, ranging from induced cropland, grass and scrublands to naturally-occurring floodplain forests and

upland forests. The Study Area is located within the Northern Piedmont Section of the Appalachian Oak Forest Region of Pennsylvania. The major vegetation types depicted on Map 6 are discussed below.

GIS analysis reveals that woodlands cover a large portion of the Study Area. These woodlands are generally scattered throughout rural portions of the Study Area, and often correspond with steep slopes, rocky soils, wet soils, and stream valleys. These areas are not suitable for development or agriculture, and have been left in a natural state. Large areas of contiguous woodlands are found throughout the Study Area. Common trees in floodplain forests include silver maple, red maple, bottomland oak, and sweetgum. Woodlands found near streams (also called *riparian woodland*) help create a natural buffer that enhances stream quality, and also serves as a habitat corridor for wildlife. In the dryer upland forests, common trees include red oak, shagbark hickory, and tulip poplar. Here and in other sloped areas, trees help to stabilize soil, and also provide a scenic backdrop to surrounding landscapes. Planted trees are common in residential areas of the Study Area, including weeping willow, flowering trees such as cherry, dogwood and pear, and imported evergreens such as Norway spruce.

Vegetation in non-woodland areas is almost always the result of human activity. This includes crops such as corn and soybean, common grasses in lawns, parks, pastures and roadsides, and taller grasses and shrubs in unmown vacant areas. One exception to this rule is wetland areas. Many wetlands are frequently naturally free of trees, and host a variety of wetland plants, such as cattails, sedges, rushes and buttonbush.

SURFACE WATERS

The Study Area lies at the convergence of four watersheds: The Tulpehocken, the Schuylkill, the Cocalico, and the Conestoga. The Study Area contains the sources of Cacoosing Creek, the Little Cacoosing Creek, Frys Run, Stony Run,

the Little Cocalico Creek, and Little Muddy Creek. The Little Cacoosing Creek flows to the northeast and joins the Cacoosing Creek. The Cacoosing Creek continues its flow to the northeast and empties into the Tulpehocken Creek (which flows into the Schuylkill River). The Little Cocalico, Frys Run, Stony Run, and Little Muddy Creek all drain to the southwest and eventually empty into the Conestoga River (which flows into the Susquehanna River).

Pennsylvania's Water Quality Standards designate protection categories for streams, which are the basis of water quality criteria. These classifications are important in regulating the discharge of wastewater and stormwater into streams. Cold Water Fisheries (CWF) are streams that should be protected as habitat for cold water fish and other fauna and flora indigenous to cold water. Trout Stock Fisheries (TSF) are streams that qualify for trout stocking by the Pennsylvania Fish and Boat Commission. Trout-stocking streams with excellent water quality are dubbed as High Quality Trout Stock Fisheries (HQ-TSF). Exceptional Value (EV) streams have excellent water quality, are important local or regional resources, and commonly flow through a state or national recreation area. Warm Water Fisheries (WWF) provide for fish species and flora and fauna that are indigenous to a warm water habitat. The following table shows State designations for streams within the Study Area:

State Protection Designations for Streams

STREAM	STREAM SEGMENT / AREA	DESIGNATION
Cacoosing Creek	Basin	WWF
Little Cacoosing Creek	Basin	WWF
Little Muddy Creek	Basin, Source	TSF
Little Cocalico Creek	Basin	TSF
Frys Run	Basin	WWF
Stony Run	Basin	WWF

In addition to streams, the Study Area also contains numerous small ponds, labeled as *Surface Water* on Map 6. Most of these ponds are man-made and situated on private property.

100-YEAR FLOODPLAINS

100-year floodplains are areas that would be inundated in a storm severe enough to occur only once in 100 years, according to the Federal Emergency Management Agency (FEMA). The 100-year floodplain boundaries shown on Map 6 were acquired digitally from Penn State University and were originally derived from Flood Insurance Rate Maps (FIRM) and SCS County Soil Surveys.

As mentioned in the *Zoning Overlays* section, development in 100-year floodplains is usually restricted or prohibited. The risks to human life, property, and water quality during flood events are the rationale for imposing these restrictions. Utilities are one of the few allowed uses within floodplains. Transmission lines are commonly allowed in floodplains, as long as they are designed, located and constructed to minimize flood damage.

In the Study Area, 100-year floodplains are located along the Little Cocalico Creek, Cacoosing Creek, Little Cacoosing Creek, Stony Run, Frys Run, Little Muddy Creek, and many of their tributaries.

WETLANDS

Wetlands fulfill an essential role in our landscapes by filtering impurities in surface runoff, recharging groundwater, mitigating floods and erosion, and providing critical habitat to many plant and animal species. Wetlands can vary considerably in their vegetation makeup, depending on the system and class to which they are identified. Wetlands in the Study Area are all of the *palustrine* variety, meaning they occur in or near shallow ponds, marshes, swamps or sloughs. Palustrine wetlands are further classified into emergent, forested, open-water, and scrub-shrub types.

In the Study Area, wetlands are common along the major creeks. Other, smaller wetland areas are found near other streams, and alongside man-made ponds. Since the National Wetlands Inventory is compiled using aerial remote sensing, site-specific investigation by a wetlands expert is necessary to exactly delineate wetland areas. PPL EU will retain a wetlands specialist and/or consult existing local wetlands inventories if necessary.

UNIQUE NATURAL AREAS

Berks and Lancaster Counties both contracted nature specialists for the purpose of compiling an inventory of unique and important natural areas. The publication "*A Natural Areas Inventory of Berks County*" was prepared by the Pennsylvania Science Office of The Nature Conservancy. The Lancaster County Planning Commission prepared the *Cocalico Region Strategic Comprehensive Plan – December 2003,* a joint study that included East Cocalico and West Cocalico Townships. The *Lancaster County Natural Areas Inventory* identifies the exemplary natural areas and species of special concern (endangered, threatened, and rare) within the County. The basis of these reports is the occurrence of endangered, threatened, rare, or of-concern plant and animal species in the landscape. The official list of such species is the *Pennsylvania Natural Heritage Program* (PNHP) formerly known as Pennsylvania Natural Diversity Inventory (PNDI). Using PNDI data, aerial photography, and extensive fieldwork, these agencies have identified important sites and prioritized their significance. Their findings are shown as *Sites on County Natural Areas Inventories* on Map 6. The horizontal extents of the natural areas are exaggerated by the nature consultants to avoid deliberate eradication of plant and animal communities. The unique natural areas of the Study Area are listed in the following table, along with their priority levels and significant features.

Natural Areas Inventory Sites

#	NATURAL AREA	MUNICIPALITY	SIGNIFICANT FEATURE	COUNTY RANK
1	NC524	Spring Township, Berks County	Aquatic plant species – site of statewide significance for the protection of biological diversity	Medium
2	Vinemont Dale	Spring Township, Berks County	Scenic ravine with bedrock outcrops mostly within SGL 274; seek protection of adjacent land – area of local significance based on size, diversity of wildlife and plant life, water quality protection, and recreation potential	Medium

The Little Cocalico Creek located in West Cocalico Township, Lancaster County, is considered a site of local significance because of its abundance of valuable wetlands along its banks.

G. GEOLOGY – MAP 7

The Study Area falls into three physiographic regions, or areas with similar geology and topography. The Gettysburg-Newark Lowland Section, constituting a large majority of the Study Area, is a level area underlain by a variety of non-carbonate rocks. The dominant formation, Brunswick, contains sedimentary rocks such as mudstone and siltstone. Quartz Fanglomerate, a conglomerate rock, is also part of this section. Diabase, the other significant rock of this section, is an igneous rock that formed when molten magma intruded on the area 200 million years ago.

The Reading Prong Section is found in non-contiguous, elongated areas of the northern section of the Study Area. This section consists of sharp hills formed on Precambrian gneiss, a metamorphic rock. The Felsic-to-Mafic Gneiss, Hardyston, and Hornblende Gneiss formations are part of this category. These rocks are more durable, but are also known to contain pockets of radon gas.

Most of the major hills and ridges in southwestern Berks County are part of the Reading Prong.

The Great Valley Section is located in a band across the northern boundary of the Study Area and is underlain by Millbach and Felsic to Mafic Gneiss Formations.

Bedrock formations of the Study Area are summarized in the following table, listing the formation name, map symbol, and major lithology (constituent rocks).

Underlying Bedrock Formations

FORMATION NAME	SYMBOL	AGE	LITHOLOGY
Buffalo Springs	Cbs	Cambrian	Limestone/Dolomite
Hardyston	Cha	Cambrian	Quartzite/Sandstone
Millbach	Cm	Cambrian	Limestone/Dolomite
Richland	Cr	Cambrian	Limestone/Dolomite
Diabase	Jd	Jurassic	Diabase
Epler	Oe	Ordovician	Limestone/Dolomite
Martinsburg	Om	Ordovician	Shale
Hamer Creek	Trh	Traissic	Quartzose/Sandstone
Hamer Creek Conglomerate	Trhc	Triassic	Quartzose/Sandstone
New Oxford	Trn	Triassic	Shale/Sandstone
Felsic to Mafic Gneiss	gn	Precambrian	Felsic gneiss
Hornblende Gneiss	hn	Precambrian	Mafic gneiss

H. AGRICULTURAL PRESERVATION – MAP 8

As recognized by the American Farmland Trust, Pennsylvania leads the nation in the number of farms and acres of farmland protected. Both Berks and Lancaster Counties maintain Farmland Preservation Boards that administer the establishment of Agricultural Security Areas (ASAs) and the purchase of Agricultural Easements. An ASA is an area of 500 or more semi-contiguous acres that is used for agricultural production. Farmers voluntarily form and/or

join ASAs as a way of receiving special consideration with regard to regulations, nuisance complaints and conflicting land uses. The Agricultural Easement purchase program allows counties to tap the Pennsylvania farmland preservation fund through the purchase of development rights. Qualifying farms must be part of an existing ASA, and are rated based on soil quality, proximity to other farmland, and other criteria. Once a farm is in easement, agricultural production must continue every year thereafter, with no new structures except farm accessory buildings. Act 319 "Clean and Green", and its predecessor, Act 515, are programs that offer lower real estate tax rates for parcels greater than 10 acres, based on its value for non-development uses. In return, the property owner is legally bound to keep the land undeveloped.

Map 8 shows Agricultural Security Areas, existing Agricultural Easements, and those properties that are enrolled in the 319/515 Clean and Green Act. Two farms in Lancaster County section of the Study Area are in the Agricultural Easement Program. Agricultural Security Areas are more prevalent in the Berks County Section of the Study Area. Act 319/515 Preferential Assessment parcels are located throughout both the Berks and Lancaster County sections of the Study Area.

I. CULTURAL AND HISTORIC FEATURES – MAP 9

As required by the Commission's siting regulations, Map 9 depicts the location of significant cultural features within two miles of the preferred transmission line route. These resources, identified both within and outside the Study Area, include Historic Sites, Historic Districts, and Historic Sites identified by both the Berks County Conservancy and the Lancaster County Planning Commission. Also identified on Map 9 are Recreation Areas and the Horse-Shoe Trail. Each category is described below:

HISTORIC SITES

The following is a table of historic sites, structures, and districts found in and around the Study Area, that are listed on the National Register of Historic Places. These include both officially *listed* sites and *eligible* sites. In the latter case, landowners have applied for National Register status, but the site has not yet been formally approved. Site location, municipality and listed/eligible status are shown in the table below. Location descriptions are quoted directly from the Pennsylvania Historic and Museum Commission. Numbers in the far-left column correspond with number labels on Map 9.

National Register Historic Sites

#	SITE NAME	MUNICIPALITY	STATUS
1	Grand View Dairy farm	South Heidelberg	Listed
2	Knorr/bare Farm	Lower Heidelberg	Listed
3	Reinholds Station Trinity Chapel	West Cocalico	Listed
4	Beverly Hills Tavern	Spring	Eligible
5	Denver Elementary School	Denver	Eligible
6	Evergreen Farm	Denver	Eligible
7	Fisher Farmstead	Lower Heidelberg	Eligible
8	Hoover Farm	East Cocalico	Eligible
9	Hoover Farmstead	East Cocalico	Eligible
10	Reinholds Hotel	West Cocalico	Eligible
11	Ruth Farm	Spring	Eligible
12	Sinking Spring Bank	Sinking Spring	Eligible
13	Zinn Farmhouse	East Cocalico	Eligible
14	Farmhouse	East Cocalico	Eligible

NOTE: The National Register of Historic Places also catalogues important archaeological sites. No such sites are listed in the Study Area.

The Berks County Conservancy (BBC) and the Lancaster County Planning Commission (LCPC) have both identified historic structures/sites that are significant to the historic character of the area on a local level. The following

table identifies these historic structures/sites. Numbers in the far-left column correspond with number labels on Map 9.

Historic Structures/Sites of Local Interest

#	SITE NAME	MUNICIPALITY	STATUS
15	809 Penn Ave.	Sinking Spring	BCC
16	Beidler Estate	Sinking Spring	BCC
17	Brubaker, Henry & Mary, Property	Sinking Spring	BBC
18	Butcher's Hotel	South Heidelberg	BCC
19	Cannon, Oliver G., Property	Sinking Spring	BCC
20	Eberly Farm	South Heidelberg	BCC
21	Evans Hall	Sinking Spring	BCC
22	Fegley, Fred & Milda, Property	Sinking Spring	BCC
23	Grand View Sawmill	South Heidelberg	BCC
24	Hain Farm	South Heidelberg	BCC
25	Hain Homestead	South Heidelberg	BCC
26	Hauseman, Carl, Property	Spring	BCC
27	Krick Home	Sinking Spring	BCC
28	Krick's Roller Mill	Sinking Spring	BCC
29	Krick, James, Property	Spring	BCC
30	Labe Property	Spring	BCC
31	Leiby, Donald, Property	Sinking Spring	BBC
32	Leibt, Earl and Emily, Property	Sinking Spring	BCC
33	Lentz, Gail, Property	Cumru	BCC
34	Lutz, John and Sons Farm	Spring	BCC
35	Lutz, John and Sons Property	Spring	BCC
36	Marshall Farm	South Heidelberg	BCC
37	Moberly, Arthur, Property	Sinking Spring	BCC
38	Morton Heim Farm	Lower Heidelberg	BCC
39	Mull Mansion/Charter Oaks Academy	Sinking Spring	BCC
40	Reinhart, Thomas C., Property	Sinking Spring	BCC
41	Roth, Paul and Dorothy, Property	Sinking Spring	BCC
42	Route 422/PA German House	South Heidelberg	BCC
43	Route 422 Property	South Heidelberg	BCC
44	Ruth, Dr., Property	Lower Heidelberg	BCC
45	Sinking Spring Freight Station	Sinking Spring	BCC
46	Sinking Spring High School	Sinking Spring	BCC
47	Sinking Spring Passenger Station	Sinking Spring	BCC
48	Spring Goose Farm	Spring	BCC
49	St. John's Lutheran Church	Sinking Spring	BCC
50	St. John's Reformed Church	Sinking Spring	BCC
51	Stoudt, Pearl, Property	Sinking Spring	BCC

#	SITE NAME	MUNICIPALITY	STATUS
52	Van Reed Hotel	Sinking Spring	BCC
53	Weidman, Martha, Property	Sinking Spring	BCC
54	Bill's Garage	East Cocalico	LCPC
55	Brinkley's Mill	West Cocalico	LCPC
56	Blainsport School	West Cocalico	LCPC
57	Huber, Philip and Margaret, House	East Cocalico	LCPC
58	Klapp, Henry & Susanna, House	East Cocalico	LCPC
59	Lausch Farmhouse	East Cocalico	LCPC
60	Lutz, Philip & Elizabeth, House	East Cocalico	LCPC
61	Mengel, George & Maria, Barn	East Cocalico	LCPC
62	Reinholds Village	West Cocalico	LCPC
63	Reinholdville U. B. Church	West Cocalico	LCPC
64	Swamp Reformed Church	West Cocalico	LCPC
65	Weinhold, M. H. & B. H., House	East Cocalico	LCPC
66	Windy Mansion	West Cocalico	LCPC
67	Wither's House	East Cocalico	LCPC
68	Barn	East Cocalico	LCPC
69	Barn	East Cocalico	LCPC
70	Barn	East Cocalico	LCPC
71	Barn	East Cocalico	LCPC
72	Farmhouse	West Cocalico	LCPC
73	Farmhouse	West Cocalico	LCPC
74	Farmhouse	West Cocalico	LCPC
75	Farmhouse	East Cocalico	LCPC
76	Farmhouse	East Cocalico	LCPC
77	Farmhouse	West Cocalico	LCPC
78	House	East Cocalico	LCPC
79	School	East Cocalico	LCPC

HISTORIC DISTRICTS

The Study Area contains several larger areas recognized for their historic value, and usually containing multiple historic structures or sites. Three of these historic districts are officially listed in the National Register, while the remaining one is eligible for National Register inclusion. The districts are as follow:

Historic Districts

#	DISTRICT NAME	MUNICIPALITY	STATUS
A	Bucher Thal Historic District	Lancaster County	Listed
B	Cacoosing Valley Rural Historic District	Berks County	Eligible
C	Grand View Dairy Farm Historic District	Berks County	Listed
D	Knorr/Bare Farm Historic District	Berks County	Listed

A complete listing of Berks and Lancaster County historical sites is provided in Appendix E.

RECREATION AND OPEN SPACE SITES

Many opportunities exist for recreation on public and private grounds within the Study Area. In addition, numerous open space sites have been established for the preservation of natural features. These recreation and open space facilities have been discussed in the Existing and Proposed Land Use section of this report. Major recreation facilities of shown on Map 9 Cultural and Historic Features include:

- South Mountain YMCA Camp - South Heidelberg Township.
- Game Land #274 - Spring Township
- Game Land #220 - West Cocalico Township.
- Cushion Peak Rod and Gun Club - South Heidelberg Township.
- Manor Golf Course - Spring Township
- Chapel Hill Golf Course - Spring Township

- Galen Hall Country Club - South Heidelberg Township
- Shiloh Hills Park - Spring Township

Other recreation and open space lands come in the form of municipal parks, private ball fields, and development open spaces.

RECREATION TRAILS

The Horseshoe Trail is a 120-mile trail traveling from Valley Forge to just north of Hershey. The trail is also used for horseback riding. It connects with the Appalachian Trail on Sharp Mountain. Approximately 7.5 miles of this trail traverses West Cocalico and East Cocalico Townships in the Lancaster County section of the Study area. This trail also crosses through a portion of Spring Township in Berks County.

Locally recognized trails in the Spring Township section of the Study Area include a trail system within State Game Lands #274 and Shiloh Hills Park. *The Spring Township Greenway Study* recommends new trails to connect with existing trails. Some of these recommended trails would utilize land along existing transmission line right-of-ways and railroad lines.

J. ALTERNATIE LINE ROUTES – MAP 10

Map 10 shows the line routing alternatives that were selected for study.

MAPS MADE CONFIDENTIAL

ELECTRIC & GAS LINES

ORIGINAL

DOCUMENT
FOLDER

Before the
Pennsylvania Public Utility Commission

SOUTH LEBANON – BERKS 230 kV TRANSMISSION LINE RECONSTRUCTION

Exhibits and Appendices in Support of the Certification Application

Application Docket No. A-110500F0385

Submitted by: PPL Electric Utilities Corp.

ORIGINAL
A-110500F0385

SUMMARY

This Application is submitted by PPL Electric Utilities Corporation (PPL EU) pursuant to the Pennsylvania Public Utility Commission's (PUC or Commission) regulations at 52 Pa. Code §§ 57.71 through 57.77. In this Application, PPL EU seeks the Commission's approval for the siting and construction of a 230 kV transmission line within its existing right-of-way presently occupied by the Berks-South Akron #1 69 kV Transmission Line. As part of the same project, the existing 69 kV line will be removed and replaced with a new, double circuit transmission line that will host a 6.8 mile section of the South Lebanon-Berks 230 kV Transmission Line as well as the reconstructed Berks-South Akron #1 69 kV Transmission Line. The Berks-South Akron #1 69 kV Transmission Line will be constructed with conductors capable of operating at 230 kV, but the line will energized at 69 kV.

DOCUMENT FOLDER

In addition, the Berks-South Reading 230 kV Transmission Line will be reestablished by connecting the Berks portion of the South Akron - Berks 230 kV line and the South Reading portion of the South Lebanon-South Reading 230 kV Line at the point where they intersect in Brecknock Township, Berks County. This work is required regardless of the line route alternative selected.

The purpose of this project is to reinforce the 230 kV bulk power system in northern Lancaster and southwestern Berks Counties. The project provides a third 230 kV source to PPL EU's Berks 230-69 kV Substation and is required to meet reliability guidelines set forth by the Reliability*First* Corporation (RFC), a member of the North American Electric Reliability Council (NERC).

Due to the breadth of the work involved and the functional requirements of the overall project, this reinforcement is being described and submitted under two separate filings. The first application for this regional bulk power system reinforcement was approved the the Commission on August 17, 2006, at A-110500F0376.

The estimated cost to design and construct this project is $21 million. This project has a scheduled construction start date of July 2007 to meet an in-service date of May 2008.

This document, which describes the need for the project and discusses the engineering and siting analysis for the proposed construction, consists of the following exhibits and appendices:

Exhibit "A" – Necessity Statement

Exhibit "B" – Study Area Environment

Exhibit "C" – Siting Analysis

Exhibit "D" – Engineering Description

Appendix A	Environmental Inventory Guideline
Appendix B	Exhibit "B" Bibliography
Appendix C	Governmental Agencies, Municipalities, and Other Public Entities Contacted
Appendix D	Wildlife and Plant Survey Report
Appendix E	Berks and Lancaster County Historic Sites
Appendix F	List of Property Owners Within the Proposed Right-of-Way
Appendix G	Local, State, and Federal Governmental Agency Requirements
Appendix H	PPL EU Design Criteria and Safety Practices
Appendix I	PPL EU Magnetic Field Program
Appendix J	List of Governmental Agencies, Municipalities and Other Public Entities Receiving Applications

PPL ELECTRIC UTILITIES SERVICE TERRITORY

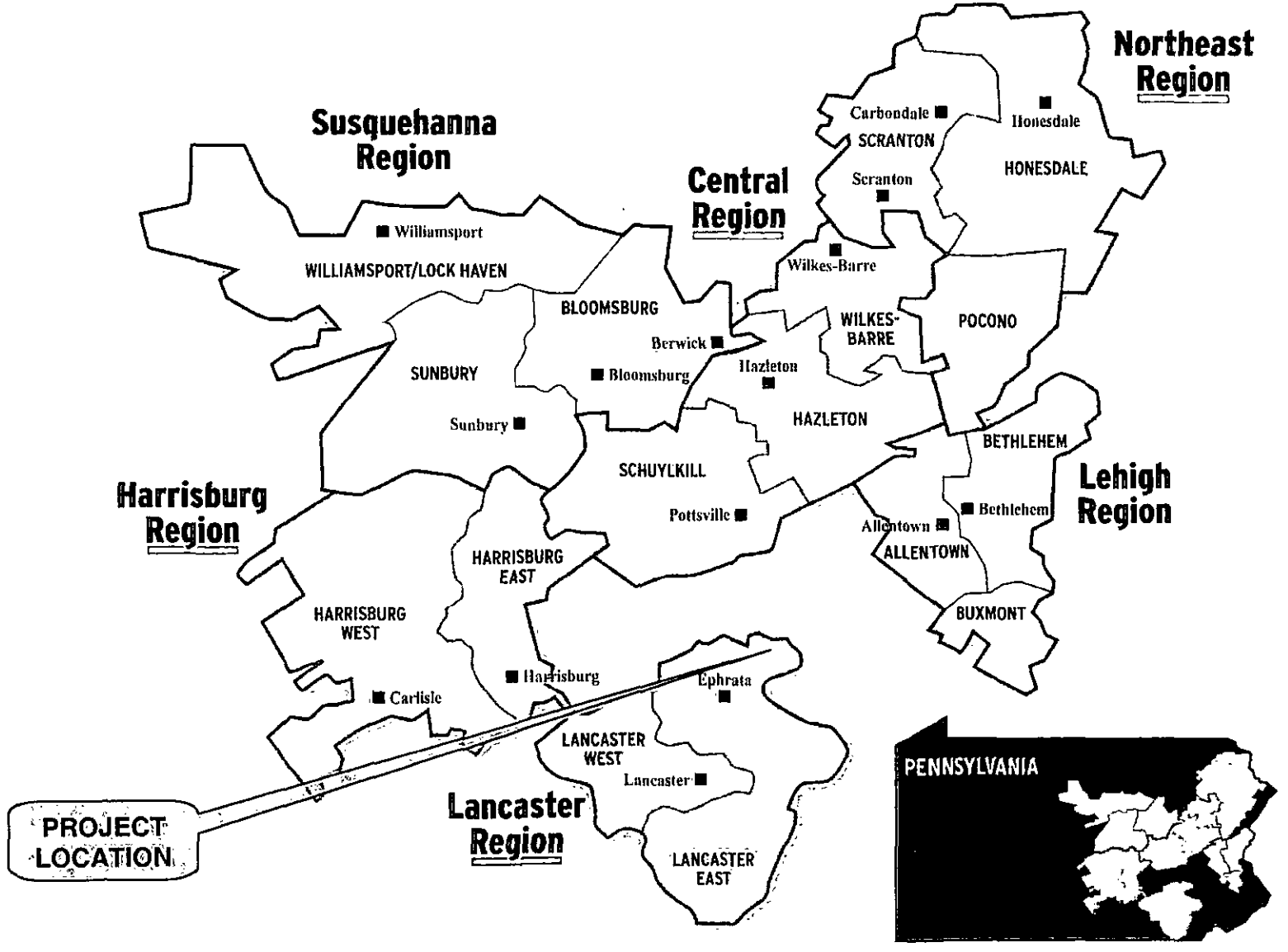


EXHIBIT "A"
SOUTH LEBANON – BERKS 230 kV LINE RECONSTRUCTION
NECESSITY STATEMENT

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MAP

EXHIBIT "A"
SOUTH LEBANON - BERKS 230 kV LINE
NECESSITY STATEMENT

I. INTRODUCTION

PPL EU, in order to meet reliability guidelines set forth by the Reliability*First* Corporation (RFC), a member of the North American Electric Reliability Council (NERC), is required to reinforce the existing 230 kV transmission system in northern Lancaster and southwestern Berks Counties. Because of the breadth of the work involved and the functional requirements of the overall project, the reinforcement of the 230 kV System is described and submitted under two separate filings. The first filing was approved by the Commission on August 17, 2006 under Docket # A-110500 F0376 and proposes to reconstruct a 12.4 mile section of the South Akron – Berks 230 kV Line for a double-circuit operation. The subject of this filing proposes to extend a third 230 kV source into PPL EU's Berks 230-69 kV Substation by sectionalizing the Met-Ed South Lebanon - South Reading 230 kV Transmission Line and looping it into, and out of, the Berks Substation.

This project was identified as a coordinated effort by PPL EU and PJM Interconnection, LLC (PJM) to develop an overall long-term transmission upgrade that will alleviate reliability concerns in the region. Specifically, construction of these facilities is required by PJM as part of their Regional Transmission Expansion Plan (RTEP) to maintain reliable electrical service on the PJM transmission system in general and in northern Lancaster and southwestern Berks Counties in particular. PJM is a federally regulated Regional Transmission Organization (RTO) and is responsible for maintaining reliability of the electric power system via its regional transmission expansion planning process.

The estimated cost to design and construct this project is $21 million. This project has a scheduled construction start date of July 2007 to meet an in-service date of May 2008. A PPL EU system map showing existing transmission facilities with a design

voltage of 35 kV or greater is included in the Exhibit "A" map pocket. This filing addresses only the existing and proposed 230 kV transmission system in northern Lancaster and southwestern Berks Counties.

II. SYSTEM PLANNING PROCESS AND GUIDELINES

System Planning is the process which assures that the bulk power transmission system can supply electricity to all customer loads in a reliable, economic and environmentally acceptable basis. This process assures that the bulk power transmission system:

- Can sustain probable contingencies and disturbances with no loss of load;
- Can adequately serve each customer's needs with regard to capacity, voltage and reliability; and
- Conforms to the applicable reliability principles, guidelines and standards of NERC/RFC Bulk Power Electric Transmission System for normal and emergency operating conditions.

The orderly and economical operation of an integrated bulk power transmission system requires planning guidelines for system expansion. The principles upon which these planning guidelines are based must recognize:

- The necessity of maintaining a proper balance between service reliability and the cost of providing that service; and
- That large scale, long term, or frequent interruptions are to be avoided because of the adverse effects on, and hazards to, the public.

In accordance with these guidelines and the NERC/RFC Reliability Criteria, the bulk power transmission system is planned so that:

- Normal operation of the system will not load any facility beyond its normal continuous rating.

- The loss of any single transmission line, generating unit, transformer, bus, circuit breaker, double-circuit tower line, or the combination of facilities resulting from a line fault coupled with a stuck breaker does not result in any system facility being operated beyond its applicable emergency limitations.

- After the initial facility loss, the system must be capable of readjustment so that all remaining equipment will be loaded within normal ratings and the subsequent outage of any remaining transmission line, generating unit, or transformer does not cause system facilities to exceed applicable emergency ratings or voltage criteria. After this subsequent outage, the system must be capable of readjustment so that all remaining equipment will be loaded within applicable emergency ratings and voltage criteria for the probable duration of the outage.

The planning process begins with the development of a computer model of the future system. A specific study year is chosen and the future system model is developed using the existing system plus any planned modifications to the transmission system scheduled to be in service prior to the study year. Load levels used in the system model are based on the latest forecast prepared annually by the PJM Load Analysis Subcommittee.

Once the system model is complete, comprehensive power flow simulations are performed to determine the ability of the system to comply with the NERC/RFC Reliability Criteria. This is accomplished by simulating an outage of each bulk power facility. All conditions where the system is not in compliance with the NERC/RFC Reliability Criteria are identified and system reinforcements required to bring the system into compliance are also identified along with estimated cost and lead-time to implement them. Computer simulations of the system with the identified reinforcement alternatives are completed to identify the best overall reinforcement that

will meet the needs of the region in a reliable, economic and environmentally acceptable manner.

As an owner of transmission facilities in the mid-Atlantic region, PPL EU is a member of PJM. PJM is a federally regulated (FERC) Regional Transmission Organization (RTO) and is responsible for maintaining reliability of the electric power system via its Regional Transmission Expansion Planning (RTEP) process. As part of its responsibilities PJM directs and coordinates the RTEP process. All plans to reinforce the bulk power transmission system are developed through PJM in a highly coordinated process involving all the transmission owners for the region and are reviewed publicly through the PJM RTEP process, providing opportunity for stakeholder input. This reinforcement project was identified as part of this PJM RTEP process.

III. EXISTING BULK POWER SUPPLY SYSTEM - NORTHERN LANCASTER AND SOUTHWEST BERKS COUNTIES

Presently, northern Lancaster and southwestern Berks Counties receive the bulk of their electric power supply from PPL EU's South Akron 230-138-69 kV Substation and the Berks 230-69 kV Substation and from Met-Ed Company's South Reading 230-69 kV Substation. The basic functional arrangement of the 230 kV Transmission System in the region is shown in Figure 1.

PPL EU's Berks 230-69 kV Substation is supplied by two 230 kV lines, one from PPL EU's South Akron 230-138-69 kV Substation and the other from Met-Ed's South Reading 230-69 kV Substation. For the last 7.8 line miles into Berks Substation, both circuits occupy the same set of structures in a double-circuit configuration.

The South Akron 230-138-69 kV Substation is supplied by three 230 kV transmission lines. The first line is from PPL EU's South Manheim 230-69 kV Substation and the

second is from the Manor and Millwood[1] 230-69 kV Substations. The third line is the above-mentioned 230 kV circuit connecting Berks 230-69 kV Substation with the South Akron Substation.

IV. DEFINITION OF THE PROBLEM

The immediate area of concern is the capability of the 230 kV transmission system to provide reliable power supply to PPL EU's Berks 230-69 kV and South Akron 230-138-69 kV Substations within acceptable voltage levels and within the power line conductor's thermal capability during the periods of high summer demand under contingency outages as described below. Specifically, thermal overloads and excessive voltage drop violations have been documented via the PJM RTEP process for several single contingency (NERC Standard TPL 002, Category B) and double contingency (NERC Standard TPL 003, Category C) outages[2]. Additionally the same violations occur under the PJM generation emergency import test.

The contingency violations are as follow:

- For the loss of PPL EU's Brunner Island - South Manheim 230 kV Transmission Line and South Manheim's #3 230-69 kV Transformer, PPL EU's Manor – Millwood 230kV Transmission Line will load to 107% of its summer emergency rating (7% above the permissible limit).

- For the loss of PPL EU's Brunner Island - South Manheim 230 kV Transmission Line and South Manheim's #3 230-69 kV Transformer, PPL EU's Brunner Island – West Hempfield 230 kV Transmission Line will load to 103% of its summer emergency rating (3% above the permissible limit).

[1] Millwood 230-69 kV Substation is currently scheduled to be in service in November 2007.

[2] NERC Category B is briefly defined as the loss of single transmission line, generating unit, transformer, bus section etc. without exceeding the applicable emergency rating and voltage drop criteria. NERC Category C is the loss of a double-circuit line with one mile or greater in length, without exceeding the applicable emergency rating and voltage drop criteria.

- For the loss of PPL EU's Brunner Island - South Manheim 230 kV Transmission Line and South Manheim's #3 230-69 kV Transformer, PPL EU's South Manheim Substation 230 kV Bus voltage drops 11.6% (6.6% above the permissible limit).

- For the loss of PPL EU's Brunner Island - South Manheim 230 kV Transmission Line and South Manheim's #3 230-69 kV Transformer, PPL EU's South Akron Substation 230 kV Bus voltage drops 9.7%. (4.7% above the permissible limit).

- For the loss of PPL EU's Brunner Island - South Manheim 230 kV Transmission Line and South Manheim's #3 230-69 kV Transformer, PPL EU's Berks Substation 230k V voltage drops 7.4% (2.4% above the permissible limit).

- For the loss of the interconnected PPL/Met-Ed Berks - South Reading 230 kV Transmission Line and the Berks #1 230-69 kV Transformer, PPL EU's South Manheim Substation 230 kV Bus voltage drops 5.8% (0.8% above the permissible limit).

- For the loss of the interconnected PPL EU/Met-Ed Berks - South Reading 230 kV Transmission Line and the Berks #1 230-69 kV Transformer, PPL EU's South Akron Substation 230 kV Bus voltage drops 7.4% (2.4% above the permissible limit).

- For the loss of the interconnected PPL EU/Met-Ed Berks - South Reading 230 kV Transmission Line and the Berks #1 230-69 kV Transformer, PPL EU's Berks Substation 230 kV voltage drops 9.6% (4.6% above the permissible limit).

- Additionally, a structure failure on the 7.8 miles of double-circuit 230 kV transmission line (NERC Standard TPL 003, Category C condition) serving PPL EU's Berks 230-69 kV Substation, will interrupt all of the 225 MW of load connected to the substation. Initially, approximately 45,000 customers will lose their electric supply. After extensive field switching approximately half of the customers will be restored. The balance of customers will remain out of service, for an extended period of time, until repairs are completed.

V. PROPOSED SYSTEM

To resolve the issues outlined above, PPL EU proposes constructing a third 230 kV circuit into the Berks 230-69 kV Substation and a fourth 230 kV circuit into the South Akron 230-138-69 kV Substation. The proposed system reinforcements are shown in Figure 2. This filing addresses only the third circuit into Berks Substation. Approval to construct the fourth 230 kV circuit into South Akron Substation was granted by the Commission on August 17, 2006 at Docket # A-110500 F0376.

The proposed third 230 kV circuit into Berks Substation involves sectionalizing Met Ed's South Lebanon – South Reading 230 kV Transmission Line as follows:

- Rebuild a 6.8-mile section of the single circuit Berks – South Akron #1 69 kV Transmission Line for double-circuit beginning at the point where the 69 kV line intersects the South Lebanon – South Reading 230 kV Transmission Line to the Berks 230-69 kV Substation. One circuit would reestablish the Berks – South Akron #1 69 kV Line. The other circuit would establish the South Lebanon – Berks 230 kV Transmission Line. Both circuits will be designed to 230 kV standards utilizing 1590 KCMIL ACSR conductors. The new 230 kV transmission line will be terminated in Berks Substation by modifying the substation configuration and the associated relay and control facilities.

- Reestablish the Berks – South Reading 230 kV Circuit by reconnecting the Berks portion of the South Akron – Berks 230 kV line and the South Reading portion of the South Lebanon – South Reading 230 kV Transmission Line at the location where these lines intersect in Brecknock Township, Berks County. The South Lebanon – South Reading Line between the two locations described above would be de-energized. This work is required regardless of the line route alternative selected.

The proposed 230 kV upgrades will provide the required PJM/PPL EU bulk power supply reinforcement in the region and meet all NERC/RFC, PJM, and PPL EU reliability criteria.

VI. ALTERNATIVES CONSIDERED

Three alternatives were considered to provide the needed reinforcement in the region. Each alternative was based on its ability to eliminate the single contingency thermal overload and excessive voltage drop violations outlined above, and ensure continued customer service for a structure failure along the double-circuit section of 230 kV transmission line serving Berks Substation. Additionally, each alternative was required to comply with NERC, PJM, and PPL EU reliability criteria in a long range economic and environmentally acceptable manner. Each of the three alternatives are identified and described below:

Alternative 1 **(Preferred Option)** - Construct a new South Akron - South Reading 230 kV Transmission Line and sectionalize the existing South Lebanon-South Reading 230 kV Transmission Line into Berks 230-69 kV Substation.

Part 1 of this alternative involves reconstructing approximately 12.4 miles of the South Akron – Berks 230 kV Transmission Line for double-circuit operation. Similar to the present arrangement, one circuit will recreate the tie between South Akron 230-138-69 kV Substation and Berks 230-69 kV Substation. The other circuit will create a new

230 kV tie between South Akron Substation and Met-Ed's South Reading 230-69 kV Substation. Part 2 of this project sectionalizes the South Lebanon – South Reading 230 kV Transmission Line into Berks 230-69 kV.

The construction of this alternative eliminates the single contingency thermal overloads and excessive voltage drop reliability violations. The project would improve electrical system reliability by providing additional 230 kV transmission sources into PPL EU's Berks 230-69 kV and South Akron 230-138-69 kV Substations and would provide enhanced reliability of electric service to customers in the region.

This alternative is the preferred option. The preferred option will utilize existing transmission line rights-of-way and thus has the least land use impact on the area. It fits well into the long term reinforcement of the PJM and PPL EU transmission systems and provides necessary load carrying capacity to ensure reliable electric service.

The estimated cost of Part 2 of this project is $21 million. The total cost of this project including Part 1 is an estimated $50 million.

Alternative 2- Construct a new South Lebanon-South Akron 230 kV Transmission Line and sectionalize the existing South Lebanon-South Reading 230 kV Transmission Line into the Berks 230-69 kV Substation as a double-circuit line.

Alternative 2 constructs a new 230 kV transmission line, approximately 22 miles long, from Met-Ed's South Lebanon 230-69 kV Substation to PPL EU's South Akron 230-138-69 kV Substation. Additionally, the existing Met-Ed South Lebanon - South Reading 230 kV line will also be sectionalized into PPL EU's Berks 230-69kV Substation as a double-circuit line to provide reinforcements in the southwestern Berks County area.

Although Alternative 2 eliminates all of the contingency reliability violations outlined above, it does not provide the capability for expected future system expansion needs. Also, at an estimated cost of $64 million, it is more expensive to build than the Alternative 1. Finally, construction of this alternative would require the acquisition of new right-of-way, a process that is becoming increasingly difficult and litigious and would likely jeopardize the project's required in-service date. Due to all of these constraints and higher cost of the project, this alternative was eliminated in favor of the preferred alternative.

Alternative 3- Construct a new Manor - South Akron 230 kV Transmission Line; sectionalize the existing Met-Ed South. Lebanon - South Reading 230 kV Transmission Line into Berks 230-69 kV Substation as a double-circuit line; install a 230 kV Static VAR Compensator (SVC) at South Akron 230-69 kV Substation; reconductor the Yorkana - Otter Creek 230 kV Transmission Line for increased capacity; construct a second 230 kV line between PPL EU's Brunner Island and West Hempfield 230-138-69 kV Substations.

Alternative 3 requires construction of two new 230 kV transmission lines. The first, approximately 25 miles long, connects PPL EU's Manor 230-69 kV and South Akron 230-138-69 kV Substations. The second, approximately 15 miles long, connects PPL EU's Brunner Island and West Hempfield 230-138-69 kV Substations.

Additionally, the existing 11-mile long, Yorkana – Otter Creek 230 kV Transmission Line would be reconductored with higher capacity conductor to accommodate additional power flows during the contingency outages outlined above. For the same reasons, a 230kV SVC will also be installed at South Akron to maintain 230 kV voltages at South Akron, South Manheim, and Berks Substations within acceptable limits.

Finally, the existing Met-Ed South Lebanon - South Reading 230 kV Transmission Line will also be sectionalized into the Berks 230-69 kV Substation as a double-circuit

line to provide reinforcements in southwestern Berks County. Alternative 3 is estimated to cost $ 79 million.

Although Alternative 3 also eliminates all contingency reliability violations it does not provide capability for the expected future system expansion needs. As with Alternative 2, new right-of-way acquisition is required for this alternative and difficulty in obtaining the required easements is anticipated.

Due to these constraints and the higher cost to construct, this alternative was eliminated in favor of Alternative 1.

VII. CONCLUSIONS

Failure to complete this project would violate NERC/RFC, PJM, and PPL EU Power System Reliability Guidelines. Furthermore, under the contingency conditions outlined above, extensive load shedding would be required to prevent damage to the region's 230 kV transmission system caused by excessive voltage drops and thermal overloads. This would result in the loss of electric service to thousands of PPL EU customers.

EXISTING 230 kV SYSTEM

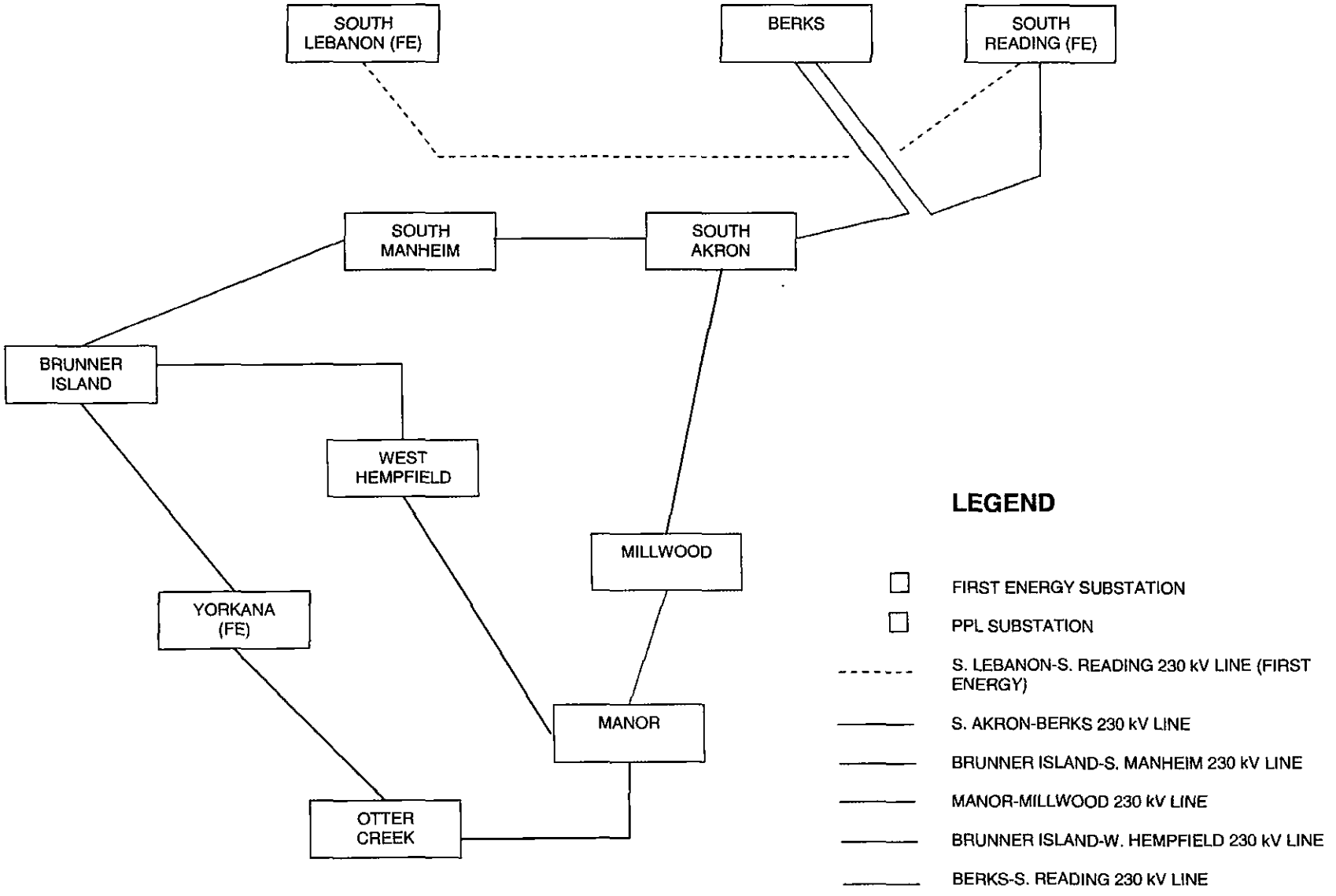

FIGURE 1

PROPOSED 230 kV SYSTEM

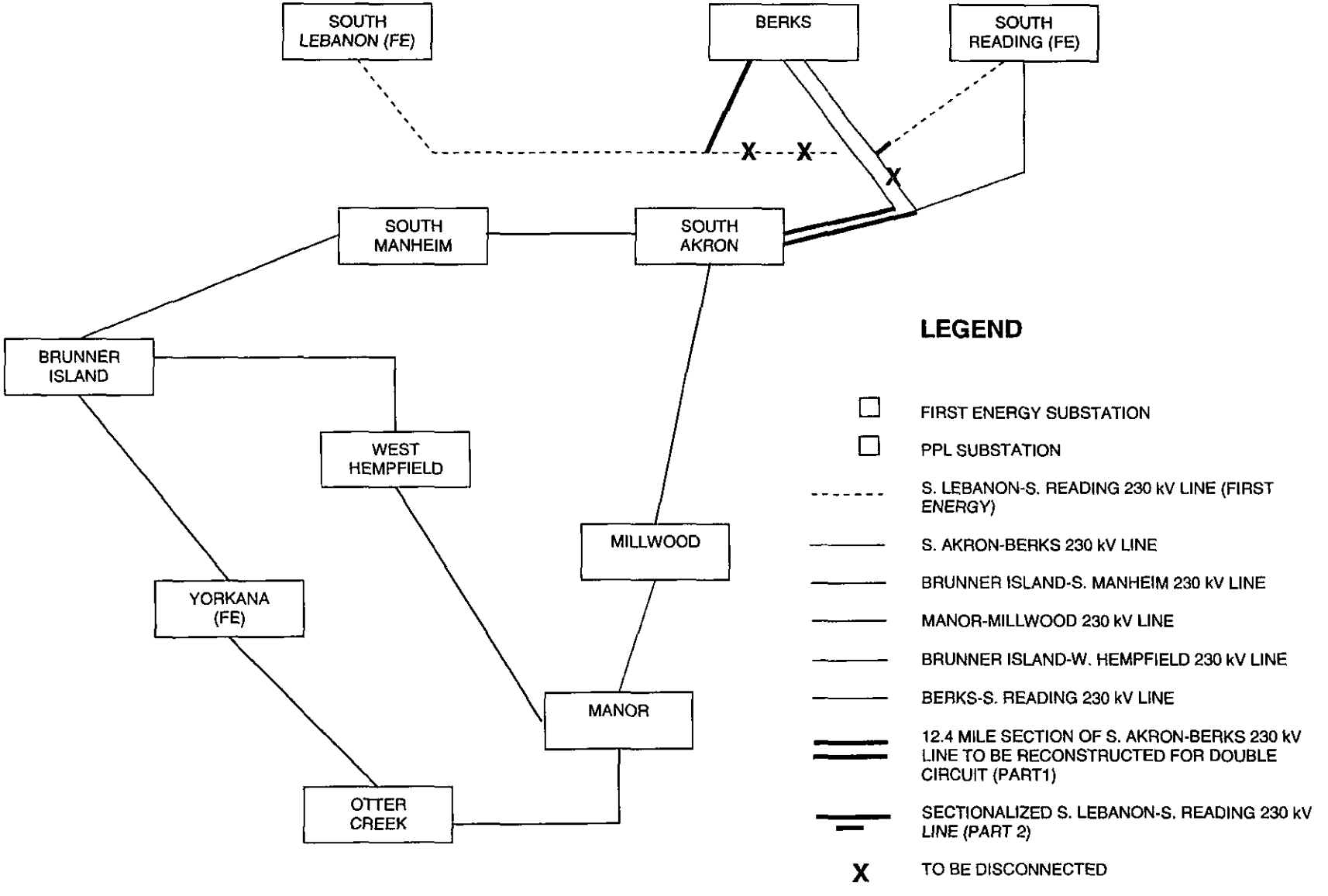

FIGURE 2

EXHIBIT "C"
SOUTH LEBANON – BERKS 230 kV LINE RECONSTRUCTION
SITING ANALYSIS

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MAPS

EXHIBIT "C"

SOUTH LEBANON – BERKS 230 kV LINE

SITING ANALYSIS

I. INTRODUCTION

PPL EU conducted an extensive siting analysis to determine a route for the proposed South Lebanon – Berks 230 kV Transmission Line that best balances functional requirements, environmental factors, and cost considerations (*see Figure 1*). First, using the project's functional requirements described in Exhibit "A," a project Core Area was identified.

Second, a land use and environmental inventory was compiled for the Core Area. These data were gathered and mapped on Maps 1 – 9 of Exhibit "B." A description of each map feature is provided in Exhibit "B," Section V – Environmental Inventory.

Third, the proposed project was reviewed with appropriate municipal and state officials and agencies and the project was discussed with property owners along the existing right-of-way.

Fourth, preliminary line route alternatives were identified using the mapping and analysis procedure shown in *Figure 2*. Route alternatives were generated to take advantage of existing linear features and to avoid land use constraints where possible.

Fifth, engineering design criteria were considered. Engineering design is determined by line voltage, current-carrying requirements, and topography. PPL EU standards in these areas are discussed in Exhibit "D" of this report, entitled "Engineering Description."

The sixth step was to perform an environmental impact assessment and calculate right-of-way acquisition and line construction costs for each route alternative. These impacts and costs are shown in Table 1 on Page C-10.

In step seven, the alternative line routes were compared. The preferred route was selected with consideration for public and governmental input and by analyzing land usage and environmental impacts, functional considerations, and cost for each alternative.

The final step was to communicate the preferred route to affected property owners and appropriate municipal, state, and federal agencies.

II. LINE ROUTE SELECTION

A. SUMMARY

PPL EU conducted detailed studies to determine the most acceptable route to construct the required third circuit into Berks 230 – 69 kV Substation. As explained in Exhibit "A", the third 230 kV circuit into Berks Substation will be created by sectionalizing Met-Ed's South Lebanon – South Reading 230 kV Transmission Line and looping the line into, and out of, Berks Substation. Berks Substation is located in Spring Township, Berks County and is the destination for the proposed transmission line. The beginning of the proposed transmission line is at the intersection of the Berks – South Akron #1 69 kV Transmission Line and the South Lebanon – South Reading Line located in East Cocalico Township, Lancaster County. Based on these studies, two alternative line routes were selected that connected these end points.

Both alternatives were sited to take advantage of the opportunities to share existing linear features. Frequently, combining linear features in a common corridor can reduce the impacts of a facility and encumber less land than

locating facilities in separate corridors. Alternative 1, by rebuilding the existing transmission line with double-circuit capability, combines two transmission lines in one linear corridor. Alternative 2 takes a similar approach and would combine a new transmission line with an active railroad corridor.

Alternative 1 constructs the proposed 230 kV line within existing PPL EU right-of-way through sections of East Cocalico Township, Lancaster County and Spring Township, Berks County. Alternative 2 constructs the proposed 230 kV line parallel to, and generally within, the Penn Eastern Rail Lines, Inc. railroad corridor. Alternative 2 traverses portions of East Cocalico and West Cocalico Townships in Lancaster County and South Heidelberg and Spring Townships in Berks County.

B. DESCRIPTION OF ALTERNATIVE 1

Alternative 1 is approximately 6.8 miles long. This alternative involves construction of the proposed facility along, and within, an existing PPL EU right-of-way. Presently, the existing right-of-way contains a section of the Berks – South Akron #1 69 kV Transmission Line. PPL EU proposes to remove the existing 69 kV transmission line and replace it with a modern, high-capacity, double-circuit 230 kV transmission line. One of the circuits would remain energized at 69 kV and replace the removed section of the Berks – South Akron #1 69 kV Transmission Line. The other circuit would be energized at 230 kV and provide the required third 230 kV source into Berks 230-69 kV Substation.

In order to construct the proposed facility as described above, PPL EU is actively negotiating with property owners to convert existing right-of-way agreements to a standard, fixed-width easement of 150 feet. Presently, the existing right-of-way contains a variety of easement widths as follow:

- 100 foot-wide easement,
- 100 foot-wide easement with 50 foot building restrictions on either side of the right-of-way,
- 50 foot-wide easement with 50 foot building restrictions on either side of the right-of-way,
- 50 foot-wide easement.

Where conversion of existing right-of-way agreements is not possible, PPL EU will reduce the span lengths and install additional structures, containing the proposed facilities within present rights-of-way per existing agreements.

EAST COCALICO TOWNSHIP, LANCASTER COUNTY

Alternative 1 begins where the existing Met-Ed South Lebanon – South Reading 230 kV Transmission Line intersects PPL EU's existing Berks – South Akron #1 69 kV Transmission Line. This intersection is located in East Cocalico Township, Lancaster County approximately 0.6 miles east northeast of Denver Borough. From this point, Alternative 1 proceeds in a northeasterly direction, 2.7 miles to the border with Spring Township, Berks County.

A variety of land use classifications are found along this section of Alternative 1 including, Single-family Residential, Pasture, Cropland and areas of undeveloped open space. Zoning classifications include Low Density Residential, Agricultural and Conservation. This section of Alternative 1 crosses SR 897 just east of Reinholds along with several township roads.

For the most part, the terrain is gently rolling with steeper grades found closer to the Lancaster/Berks County border. This section of Alternative 1 crosses an unnamed tributary of the Little Cocalico Creek along Brunners Grove Road. It does not cross any preserved farmland although, approximately 1.4 miles cross

PA Act 319/515 Preferential Assessment Parcels and a couple of hundred feet cross farmland in an Agricultural Security Area.

The closest historic structure is the Zinn Farmhouse, eligible for placement on the National Register of Historic Places that is located approximately 1,200 feet to the west along Reinholds Road.

SPRING TOWNSHIP, BERKS COUNTY

From the Lancaster/Berks County border, the line continues to the northeast approximately 4.1 miles to Berks 230-69 kV Substation. Undeveloped areas are the predominate land use type with smaller areas of Pasture/Cropland and Single-family Residential. This section of Alternative 1 crosses State Game Lands No. 274 and a wooded area of Manor Golf Course away from the golf course proper. The largest zoning classification is Conservation with the balance consisting of Rural and Low Density Residential. Several township roads are crossed by this section of Alternative 1.

The terrain is more rugged than the portion of line located in Lancaster County. Some of the grades involved exceed 25%. This line section crosses two unnamed tributaries of the Little Cocalico Creek and two unnamed tributaries of the Cacoosing Creek. One of the farms traversed by this section of Alternative 1 is in an Agricultural Security Zone. Several other properties are in Act 319/515 Preferential Assessment Parcels.

No historical structures are located in the immediate vicinity of this section of Alternative 1.

C. DESCRIPTION OF ALTERNATIVE 2

Alternative 2 is approximately 7.5 miles long. This alternative would construct a single circuit 230 kV line parallel to, and generally within, the confines of the Penn Eastern Railroad corridor. An estimated 80 feet of adjacent private right-of-way would need to be acquired in order to construct the line. Closer to Sinking Spring Borough, Alternative 2 leaves the railroad corridor and heads cross county approximately 4000 feet to its terminus in PPL EU's Berks 230-69 kV Substation.

EAST COCALICO TOWNSHIP, LANCASTER COUNTY

Alternative 2 begins at the intersection of the Met-Ed South Lebanon – South Reading 230 kV Transmission Line and the Penn Eastern Railroad just to the north of Denver Borough. The first 2,500 feet of this alternative are located in East Cocalico Township, Lancaster County. Land use in the immediate vicinity of the railroad corridor is mostly undeveloped with some Pasture/Cropland areas. A few homes are located adjacent to the railroad near the East Cocalico/West Cocalico Township border. Abutting property to the west of the railroad is zoned Low Density Residential and to the east, Conservation. The only road crossing, North Ridge Road, occurs at the border between the townships.

The railroad corridor parallels the Little Cocalico Creek. Construction of the railroad has allowed wetlands to form adjacent to the railroad ballast. The majority of this section of Alternative 2 falls within, or in close proximity to, the 100-year floodplain of the creek.

The Zinn Farmhouse, eligible for listing on the National Register of Historic Places, is located approximately 550 feet east of the railroad corridor.

WEST COCALICO TOWNSHIP, LANCASTER COUNTY

The next 2.4 miles of the railroad corridor and Alternative 2 traverse a section of northeastern West Cocalico Township and the town of Reinholds. Land use in the community of Reinholds consists of Commercial/Industrial, Single-family Residential, Utility, Recreational as well as a few undeveloped properties. North and south of Reinholds, land use patterns are primarily a combination of Single-family Residential, Pasture/Cropland and Undeveloped. North of Reinholds, the railroad crosses West Cocalico Township's Chapel Gate Park. Zoning classifications along this section of Alternative 2 include Commercial/Industrial and Mixed Use in Reinholds. Zoning to the north of Reinholds is a combination of Low Density Residential and Agricultural, and to the south, Commercial and Agricultural. This line section crosses several township roads as well as SR 897 in Reinholds.

Similar to the section in East Cocalico Township, wetlands and 100-year floodplain are found along the railroad corridor. The corridor crosses the Little Cocalico Creek three times in West Cocalico Township.

The Reinholds Hotel, that is eligible for inclusion on the National Register of Historic Places, is located adjacent to the railroad corridor in Reinholds. Further to the east is Reinholds Station Trinity Chapel that is listed on the National Register of Historic Sites.

SOUTH HEIDELBERG TOWNSHIP, BERKS COUNTY

The third section of Alternative 2 crosses approximately 2,300 feet of southeastern South Heidelberg Township, Berks County. Pasture and Cropland is found to the west of the corridor and single-family residential to the east. Zoning on both sides of the corridor is classified as Low Density

Residential indicating future development in the area. The single road crossing occurs at Fritztown Road.

Again, due to the close proximity of the Little Cocalico Creek, this section of the Alternative 2 lies in a 100-year floodplain.

SPRING TOWNSHIP, BERKS COUNTY

The final 4.1 miles of Alternative 2 cross Spring Township, Berks County. The major land use in this area is single family residential. The corridor passes adjacent to State Game Lands No. 274. Tracts of undeveloped land are scattered along this section of Alternative 2. As this section of Alternative 2 approaches Sinking Spring Borough it leaves the railroad corridor, heads east and then northeasterly around Pleasant View Cemetery. Zoning along this section of the corridor is classified as Conservation in the more rural southern portion of the township. Closer to Sinking Spring Borough zoning changes to Mixed Use and Rural Residential.

Significant sloping occurs upon leaving the railroad corridor. Slopes can exceed 25% in this area. Numerous wetlands are found where the railroad parallels the Cacoosing Creek. Sections of the corridor are again located within a 100-year floodplain. The final 4,000 feet of this alternative is almost entirely woodlands.

Several locally significant historical sites are found nearby. The closest of these being Butcher's Hotel in Fritztown, the Carl Hauseman Property and the John Lutz and Sons Farm and property, all located along Fritztown Road.

D. LINE ROUTE COMPARISON

To compare and evaluate the alternatives, it was necessary to quantify the potential impacts associated with each route using the land use and environmental inventory of the Study Area. Not all inventoried features are considered impacts. For example, areas of industrial development and farmland are considered compatible with transmission line construction and operation. Those impacts that do occur were carefully quantified, tabulated and evaluated.

Table 1, "Impact Assessment," on page 10, contains a detailed quantitative analysis of the alternative line routes.

TABLE 1

IMPACT ASSESSMENT

IMPACT CATEGORY	UNITS	ALTERNATIVE 1	ALTERNATIVE 2
LINE DATA			
Length	Feet/Miles	35,765/6.8	39,531/7.5
Private R/W Required	Acres	16.0	72.6
Construction Costs	$	16,629,000	19,195,000
LINEAR FEATURES			
Road Crossings			
State	Number	1	1
Secondary	Number	0	3
Township	Number	11	8
Parallel to Railroad	Feet/Miles	0/0	35,531/6.7
Within Existing Transmission Line R/W	Feet/Miles	35,765/6.8	0/0
LAND USE			
Undeveloped	Feet/Miles	18,500/3.5	24,500/4.6
Pasture/Cropland	Feet/Miles	8,250/1.6	5,450/1.0
Single-family Residential	Feet/Miles	6,750/1.3	5,600/1.1
Proposed Residential	Feet/Miles	0/0	400/0.1
Homes < 200' From Centerline	Number	32	52
Commercial	Feet/Miles	0/0	850/0.2
Industrial	Feet/Miles	0/0	600/0.1
Recreational	Feet/Miles	1,400/0.3	400/0.1
ZONING			
Conservation	Feet/Miles	17,625/3.3	12,100/2.3
Agricultural	Feet/Miles	5,550/1.1	3,350/0.6
Rural Residential	Feet/Miles	6,650/1.3	7,485/1.4
Low Density Residential	Feet/Miles	5,800/1.1	2,800/0.5
High Density Residential	Feet/Miles	0/0	9,400/1.8
Commercial	Feet/Miles	0/0	4,300/0.8
NATURAL FEATURES			
Streams Crossed			
Named Tributaries	Number	0	6
Unnamed Tributaries	Number	5	4
Floodplains	Feet/Miles	600/0.1	10,900/2.1
Wetlands	Number	4	7
Woodlands	Feet/Miles	19,800/3.8	18,200/3.4

Slopes			
15 – 25%	Feet/Miles	4,250/0.8	0/0
>25%	Feet/Miles	6,500/1.2	0/0
FARMLAND PRESERVATION			
Preferential Assessment Parcels	Feet/Miles	16,300/3.1	0/0
Agricultural Security Area	Feet/Miles	300/.01	0/0
Agricultural Easements	Feet/Miles	0/0	0/0

E. SELECTION OF PROPOSED LINE ROUTE

The route selection was based on a quantitative and qualitative analysis of the alternatives. Governmental agencies were contacted for their input. Field reviews were conducted with PPL EU's engineering and construction personnel. Discussions were held with affected property owners. Alternative 1 was selected as the proposed line route because it best balances social concerns, environmental impacts, engineering considerations, and cost. A discussion of the main points leading to the selection of Alternative 1 as the preferred line route is set forth below.

LINE LENGTH

Alternative 1 is approximately 6.8 miles long compared with 7.5 miles for Alternative 2. Alternative 1 will result in less property being encumbered and fewer land use impacts due to its shorter length.

PRIVATE RIGHT-OF-WAY REQUIRED

Alternative 1 involves the construction of the proposed transmission line within existing PPL EU right-of-way. As explained previously, these easements contain a variety of widths. PPL EU's standard right-of-way width for 230 kV transmission facilities is 150 feet. Converting the existing right-of-way agreements to a standard 150-foot easement involves the acquisition of approximately 16 acres of additional private right-of-way.

Alternative 2 would construct the transmission line within an existing railroad corridor. The railroad corridor, however, is not wide enough to contain a standard 230 kV transmission line. An estimated additional 80 feet of private right-of-way would be required along the length of the railroad corridor. Therefore, private right-of-way acquisition for this alternative is estimated at 72.6 acres.

RESIDENTIAL

Intrusions into residential areas are avoided to the extent possible. However, development patterns in the study area make it impossible to avoid all homes. The number of homes within 200 feet of the centerline of each alternative was compiled. Alternative 1 has the least amount of impact on residential areas with the line passing within 200 feet of 32 homes. This compares with 52 homes for Alternative 2.

Zoning is a good predictor of future land development. The zoning in undeveloped and pasture/cropland land use areas was analyzed to determine impacts on future residential development. Alternative 1 has approximately 1.0 mile of these land use types classified as residential. This compares with 1.4 miles along Alternative 2.

NATURAL FEATURES

Alternative 1 has less impact upon natural features. For example, Alternative 1 contains five water crossings, all unnamed tributaries compared with ten water crossings, six of which are named tributaries. Further, Alternative 1 crosses four wetland areas compared with seven for Alternative 2. The 100-year floodplain impacts are substantial with Alternative 2. More than two miles of

the railroad alternative would be located in the floodplains formed by the nearby Little Cocalico, a Trout Stock Fishery, and Cacoosing Creeks.

Both alternatives cross several miles of woodlands. Tree clearing on Alternative 1 is minimized by the fact that a transmission line already occupies the corridor. Additional tree clearing will be minimal and only what is required to safely and reliably operate a 230 kV line. While tree clearing has also occurred along the railroad corridor, single track railroad operations do not require the cleared area to be as wide as an operating transmission line. Therefore, Alternative 2 would require substantially more clearing.

Steep slopes can cause many problems during construction and are avoided whenever possible. The hilly terrain, especially in the northern part of the study area makes it difficult to avoid steep slopes entirely. Approximately 2.0 miles of Alternative 1 cross slopes in excess of 15%. Slopes are less of a problem with Alternative 2 because of the flatter ground traversed due to active railroad operations.

CONCLUSIONS

Construction of the proposed transmission line within the existing right-of-way (Alternative 1) has many advantages over Alternative 2, construction of the line in the Penn Eastern Railroad Corridor. Among these advantages are:

- Alternative 1 is about 3,800 feet shorter and, therefore, will encumber less land.
- Alternative 1 requires less new private right-of-way then Alternative 2, 16 acres versus 72.6 acres.
- The estimated construction cost of Alternative 1 is $16.6 million as compared to $19.2 million for Alternative 2.

- Access roads along Alternative 1 that are necessary to construct and maintain the transmission line are in place having been constructed for the existing line.
- Alternative 1 has less impact on residential areas.
- Alternative 1 has only minimal tree clearing because the right-of-way was cleared and maintained for the existing transmission line.
- Alternative 2 has the potential for larger environmental impact due to its proximity and orientation to the Little Cocalico and Cacoosing Creeks.
- The construction and maintenance of Alternative 2 is potentially more difficult due to the extent of the 100-year flood plain along the railroad corridor.

For all the above reasons, Alternative 1 was selected as the preferred line route.

III. PREDICTED IMPACTS AND MITIGATING MEASURES OF THE PROPOSED LINE ROUTE

The following is a discussion of the predicted impacts of the proposed South Lebanon – Berks 230 kV Transmission Line. For a full understanding of the impacts, refer to the appropriate inventory maps and discussions in Exhibit "B".

The proposed line was routed to avoid as many impacts as practical. Where impacts are unavoidable, mitigating measures will be employed. PPL EU's standard mitigating measures are set forth in its "Transmission Line Right-of-Way Program for Vegetation Management" and "Specifications for Soil Erosion and Sedimentation Control on Transmission Line Rights-of-Way".

A. LAND USE

The proposed route was analyzed in relation to current and future land use. The preferred alternative will not create a significant impact on present or potential land use because the proposed transmission line is being constructed entirely within existing PPL EU right-of-way. For the same reason, there will be no significant impacts upon any nearby schools, churches, or cemeteries. In fact, land use impacts will be reduced because, based upon preliminary engineering, a total of 60 structures including 5 single wood poles, 9 towers and 46 two-pole wooden H-frame structures will be replaced with an estimated 46 single-shaft steel poles. Although the poles will be taller then the existing structures, averaging approximately 125 feet in height, the footprint of the pole will be less than that of the towers and the 2-pole wood H-frame structures.

No pipelines, communications towers, or other utilities will be affected by the proposed line. Reading Regional Airport is located approximately 5 ½ miles northeast of the Berks 230-69 kV Substation and will not be impacted.

The right-of-way required for the proposed transmission line will preclude certain land uses, such as locating buildings or swimming pools within the easement. Because the line is being reconstructed within existing rights-of-way and building restriction zones, these impacts, if any, will be minimal. Property owners will be reimbursed for the right-of-way. Additionally, PPL EU's Encroachment Policy allows for future compatible land uses on transmission line easements.

B. NATURAL FEATURES

The impact to terrestrial and aquatic resources will be minimal and incremental because the proposed line is being rebuilt entirely within existing PPL EU

right-of-way. Because the right-of-way is being widened to accommodate a 230 kV line, some tree clearing will be necessary. Any herbicides utilized on the right-of-way will be EPA-approved and will be applied selectively in accordance with label instructions.

The proposed line will not impact any lakes, ponds, or other major water bodies. The proposed line crosses five unnamed tributaries of the Little Cocalico and Cacoosing Creeks. The stream crossings are easily spanned, and no impacts to the streams are expected. A consultant has been retained to delineate wetlands along the proposed line route. Permits, as required, will be obtained from the Pennsylvania Department of Environmental Protection and the United States Army Corps of Engineers prior to the start of construction. Impacts of line construction will be minimal because the line is being reconstructed within existing PPL EU right-of-way and construction and maintenance personnel will utilize existing access roads.

C. THREATENED AND ENDANGERED SPECIES

PPL EU consultant and biologist Richard Mellon researched threatened and endangered species plant and animal life within the project Study Area. With the exception of the bog turtle (*Glyptemys muhlenbergii*), no other species of concern were identified.

The proposed line route does cross three wetlands that were identified as potential bog turtle habitat during a Phase I assessment performed by Mr. Mellon. Subsequent Phase II studies were carried out in spring 2006 at all three wetlands and resulted in no bog turtle sightings. The appropriate documentation has been filed with both the US Fish and Wildlife Service and the Pennsylvania Fish and Boat Commission. PPL EU will acquire all required permits prior to commencement of construction activities at these locations.

A copy of Mr. Mellon's report can be found in Appendix D.

D. CULTURAL FEATURES

PPL EU has reviewed this project with the Pennsylvania Historical and Museum Commission (PHMC). PHMC notes the presence of one recorded archaeological site near the proposed line route. PPL EU retained the services of Dr. Frank Vento of Clarion State University to locate and investigate the site. Dr. Vento's research indicates that the site in question does not extend into the transmission line corridor. The results of Dr. Vento's research have been forwarded to PHMC.

The following lists were reviewed for the presence of historical districts and structures in the area:

- National Historic Landmarks in Pennsylvania
- National Register Historic Districts in Pennsylvania
- National Register Individual Properties and Historic Districts in Pennsylvania
- National Register/Listed and Eligible Properties in Pennsylvania

These lists note the presence of 79 structures of historical interest within two miles of the proposed transmission line. The closest of these is the Zinn Farmhouse that is eligible for inclusion on the National Register of Historic Places.

The Zinn Farmhouse, on Reinholds Road, is located approximately 1,100 feet west of the proposed line route. The only impact to the farmhouse will be visual. The construction of single-family homes across Reinholds Road, between the Zinn Farmhouse and the proposed line, defines the primary view

shed. The proposed transmission line, not being part of the primary view shed, becomes less noticeable.

The Horseshoe Trail traverses the southern portion of the Study Area. At its closest point to the proposed transmission line, the trail is approximately 1,600 feet away and will not be impacted.

IV. SPECIFIC RIGHT-OF-WAY REQUIREMENTS

A. DESCRIPTION OF RIGHT-OF-WAY REQUIREMENTS

The existing transmission line corridor contains a variety of right-of-way types. They are:

- 100 foot-wide easement,
- 100 foot-wide easement with 50 foot building restrictions on either side of the right-of-way,
- 50 foot-wide easement with 50 foot building restrictions on either side of the right-of-way,
- 50 foot-wide easement.

With a few exceptions, the right-of-way width for the majority of the proposed South Lebanon – Berks 230 kV Transmission Line will be 150 feet, which is the standard right-of-way width for a line of this voltage. The right-of-way width is determined by structure type, design tensions, span length and conductor "blowout" (the distance the wires are moved by a crosswind). In a few cases, widening the right-of-way is not possible do to adjacent structures or property owners unwilling to provide additional easements. In these locations, PPL EU will reduce the distance between structures in order to ensure proper electrical clearances to present or future development outside the right-of-way.

A cross-section of the proposed right-of-way is illustrated in Figure 3. The aerial exhibit of the proposed line route (see Exhibit "C" map pockets) shows the location of the proposed route, identifies the properties that are traversed by the proposed line and denotes right-of-way widths.

B. STATUS OF RIGHT-OF-WAY NEGOTIATIONS

SOUTH LEBANON – BERKS 230 kV TRANSMISSION LINE

The right-of-way required to construct the proposed line is actively being negotiated. Currently, PPL EU has successfully negotiated a widening of the existing right-of-way with 80 of 84 property owners. Four property owners have not signed new agreements. Their existing right-of-way agreements allow reconstruction of new facilities. Those rights will be exercised at the appropriate time.

BERKS – SOUTH READING 230 kV TRANSMISSION LINE REAARANGEMENT

As discussed in Section "V" in Exhibit "A", the Berks end of the existing South Akron – Berks 230 kV Transmission Line needs to be electrically connected to the South Reading end of the Met-Ed South Lebanon – South Reading 230 kV Transmission Line. This work must take place at the location where the lines intersect in Brecknock Township, Berks County. Due to the terrain, and the design of both these existing lines, approximately 0.7 acres of additional right-of-way will be required to effect this connection. The aerial exhibit for this line rearrangement is found in the Exhibit "C" map pockets. This work is required regardless of which alternative line route is selected.

A list of all persons owning property within the proposed right-of-way is included as Appendix F.

V. LOCAL, STATE AND FEDERAL GOVERNMENTAL AGENCY REQUIREMENTS

Appendix G includes a list of some or all of the governmental agencies having requirements that must be satisfied in connection with the construction or maintenance of this line. The list also describes the documentary filings that may have to be made in connection with the siting and construction of the proposed line. This list reflects the agency requirements and documentary filings that can reasonably be identified at this stage of the project. It is possible that additional governmental requirement and documentary filings, which cannot reasonably be identified at this time, may come to light at later stages of this project. If such additional governmental requirements or filings are identified by PPL while this application is pending, PPL will provide that information to the Commission and the parties.

SITING PROCESS

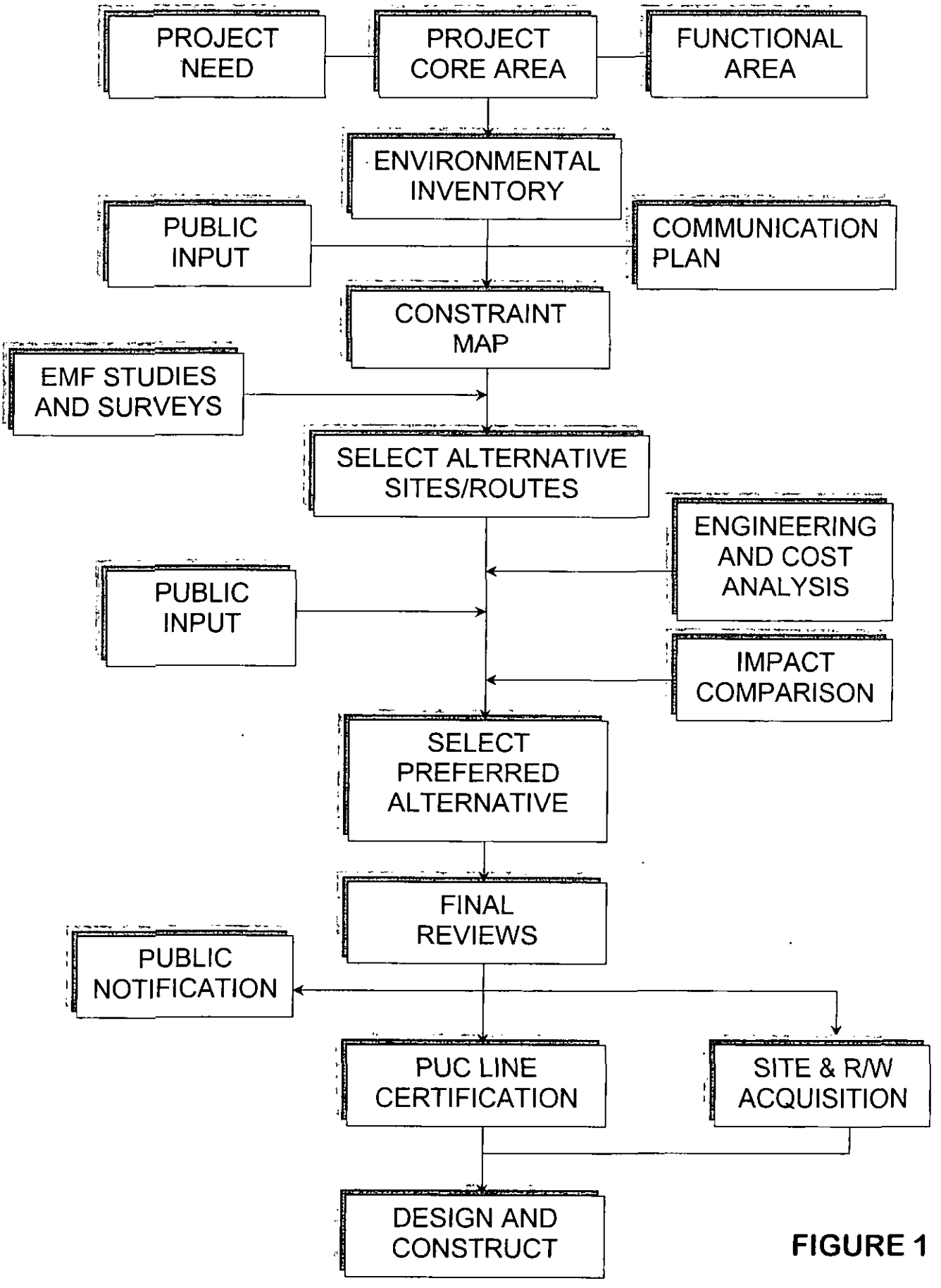
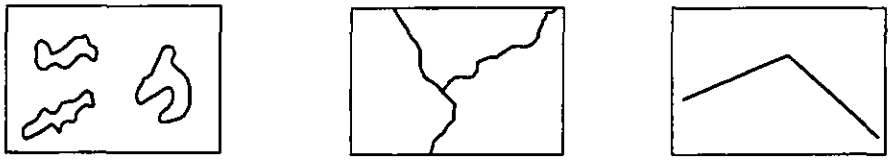


FIGURE 1

MAPPING AND ANALYSIS PROCEDURE

COMBINING OVERLAYS FOR PPL ELECTRIC UTILITIES TRANSMISSION SITING PROCESS



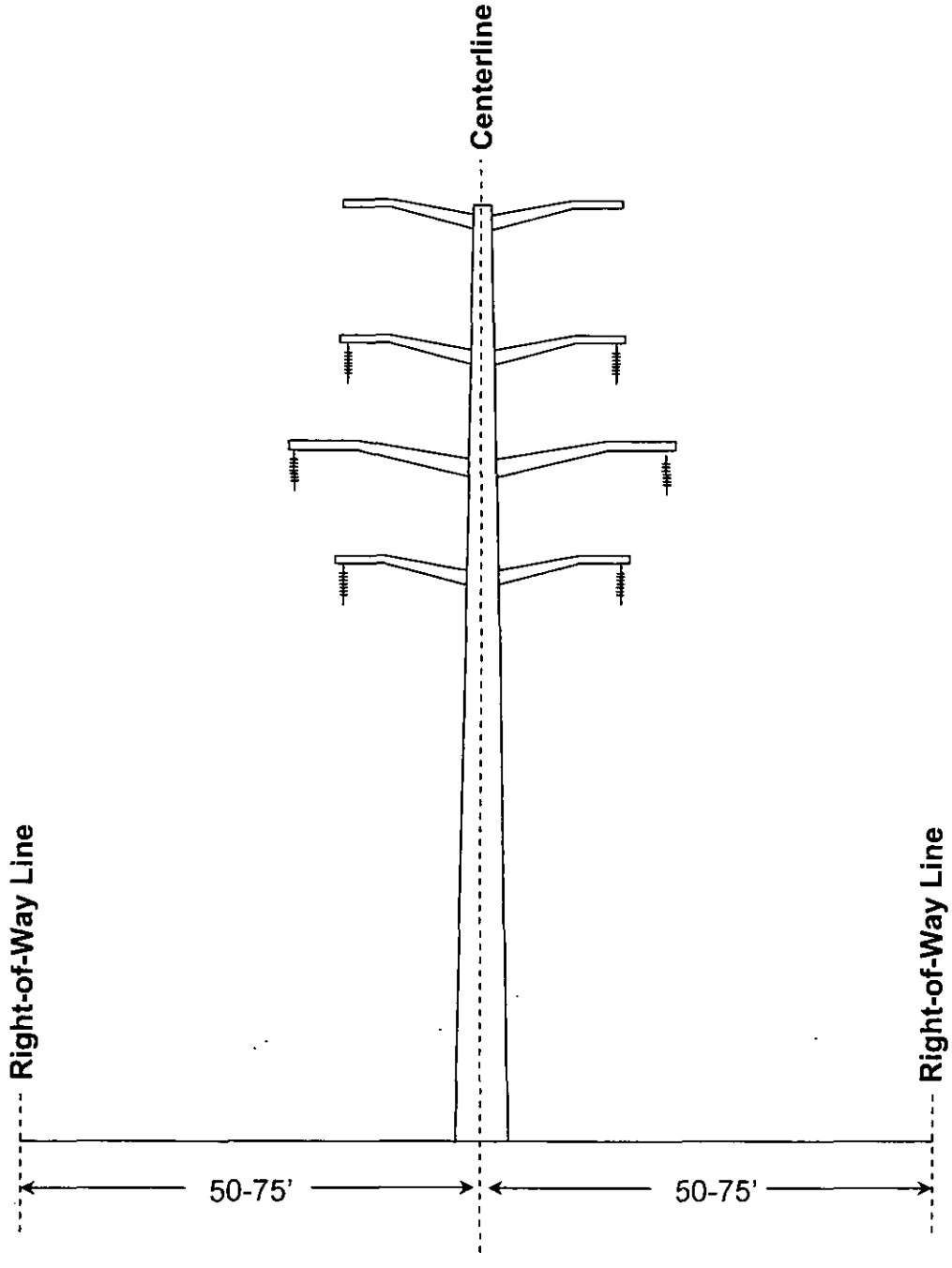
INVENTORY MAP OVERLAYS

TERRAIN MAP UNDERLAY

COMPOSITE OF OVERLAYS. IDENTIFY OPTIONS– SELECT PREFERRED ALTERNATIVE

COMPOSITE OF OVERLAYS. IDENTIFY OPTIONS– SELECT PREFERRED ALTERNATIVE AND OVERLAY ON AERIAL PHOTOGRAPHY

FIGURE 2



TYPICAL RIGHT-OF-WAY CROSS SECTION

NOT TO SCALE

FIGURE 3

OVER SIZED DOCUMENTS

EXHIBIT C

AERIAL EXHIBIT
SHEET 1 OF 3

SOUTH LEBANON - BERKS
230 kV LINE

EAST COCALICO, AND SPRING TOWNSHIPS
LANCASTER AND BERKS COUNTIES

SCALE: 1" = 400'

400' 0 200' 400' 800'

PREPARED BY:
PPL ELECTRIC UTILITIES CORP.

PPL ELECTRIC UTILITIES

PPL ELECTRIC UTILITIES

ACCT- 139134	SOUTH LEBANON - BERKS 230KV LINE	
SCALE- AS SHOWN		
BY- CDW	RIGHT OF WAY	
REVIEWED: DLH		
	EAST COCALICO AND SRRING TWP'S.	LANCASTER AND BERKS CO'S., PA.
	APPROVED / DATE	PPL ELECTRIC UTILITIES
PPL DRAWING NO. SM139134	SHEET NO. 1	REV. 0

PC CAD

SM139134_S004.DWG

OF:

DATE	ACCT.	REVISION	BY	REVIEWED	APPROVED

REVIEWED

ACCT- 139134
SCALE- NONE
BY- CDW

BERKS - SOUTH READING 230KV LINE
LINE REARRANGEMENT
AERIAL EXHIBIT

BRECKNOCK TWP. BERKS CO., PA.

APPROVED DATE

PPL ELECTRIC UTILITIES

PPL DRAWING NO. SM139134

SHEET NO. 1

REV. 0

46800	45800	LE89361	480-332-58	C	
		PLAN & PROFILE NO.	TRANSMISSION MAP NO.	SPRS	

SM139134_5001.DWG

EXHIBIT "D"
SOUTH AKRON – BERKS 230 kV LINE RECONSTRUCTION
ENGINEERING DESCRIPTION

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EXHIBIT D

SOUTH LEBANON-BERKS 230 kV TRANSMISSION LINE

ENGINEERING DESCRIPTION

I. PROPOSED LINE DESIGN

PPL EU proposes to construct a new 230 kV transmission line between GPU's existing South Lebanon – South Reading 230 kV Transmission Line and PPL EU's Berks 230 – 69 kV Substation. The new line will be approximately 6.8 miles long. It will be built for double-circuit 230 kV operation although one of the circuits will be the reconstructed Berks – South Akron #1 Line that will operate at 69 kV. The proposed line will be built within existing right-of-way that has been widened to accommodate the higher voltage circuit. The project is located in East Cocalico Township, Lancaster County and Spring Township, Berks County.

Tangent poles on the proposed South Lebanon - Berks 230 kV Transmission Line will consist of single steel poles equipped with steel upswept conductor support arms. Angle structures will be either single steel poles or two-pole steel structures depending upon the severity of the angle. All poles will be installed on concrete foundations. Additionally, some angle structures may be guyed. Altogether, this project requires the installation of approximately 46 structures averaging 125 feet high. Average span lengths will be 900 feet. The proposed structures are shown in Figures 1 through 3.

The proposed new line construction described above will be designed according to, and will meet, all National Electrical Safety Code standards. Design specifications and safety rules practiced by PPL EU are included in Appendix H. Six power conductors, one ½" EHS Overhead Ground Wire (OHGW) and one Optical Ground Wire (OPGW). The conductors will be 1,590 KCMIL 45/7 stranding ACSR, and the OPGW will be 0.756 inch diameter with 36 single mode fibers.

Table 1 shows the designed minimum conductor clearances and the conductor thermal ratings of the proposed line.

TABLE 1

DESIGN MINIMUM CONDUCTOR CLEARANCES
FOR 1590 KCMIL 45/7 STRANDING ACSR*
SOUTH LEBANON – BERKS 230 kV LINE

Condition	Transmission Double-Circuit Design Clearance-to-Ground
Normal load average weather (16°C ambient temperature)	39.3 feet
Predicted extreme thermal load (125°C conductor temperature)	32 feet
Predicted extreme weather conditions (1-inch ice, 8 lb. Wind, -18°C)	38.5 feet

*Clearances based on a maximum tension of 16,777 pounds and a ruling span of 900 feet.

CONDUCTOR THERMAL RATING
1590 KCMIL 45/7 STRANDING ACSR
125°C MAXIMUM CONDUCTOR TEMPERATURE

Condition	Ambient Temperature °C	Wind Speed Knots	Ampacity Amps
Summer Normal	35	0	1640
Winter Normal	10	0	1861
Summer Emergency	35	1-1/2	1990
Winter Emergency	10	1-1/2	2220

BERKS – SOUTH READING 230 kV LINE REARRANGEMENT

As discussed previously in this application, PPL EU needs to re-establish the 230 kV line connection between PPL EU's Berks 230 – 69 kV Substation and Met Ed's South Reading Substation. This connection will be made at the point where the South Lebanon – South Reading 230 kV Transmission Line intersects the Berks – South Reading 230 kV Transmission Line in Brecknock Township, Berks County. Four custom steel poles installed on concrete foundations will be required to make this connection. These structures will range in height from 70 to 100 feet. In addition, one guyed structure will be installed in the existing Met Ed right-of-way to stabilize the disconnected line section. This work is required regardless of which alternative line route is selected.

II. MAGNETIC FIELD MANAGEMENT PLAN

PPL EU has instituted a Magnetic Field Management Program for new and rebuilt transmission lines, which is set forth in Appendix H to this Application. The Company does not believe that the current scientific evidence demonstrates that magnetic fields cause any adverse health effects or pose a health or safety danger to the public. Nevertheless, PPL EU has determined, as a matter of policy, to design its new and rebuilt transmission lines to reduce magnetic fields when that can be done at low or no cost and consistent with functional requirements. PPL EU's Magnetic Field Management Program has been developed to implement that policy decision.

In order to lower magnetic field exposures, the program generally prescribes the use of line design that provides five feet higher ground clearances for 230 kV lines (32 feet minimum) and reverse phasing new double-circuit lines. When load flow on both transmission lines is in the same direction, reverse phasing can be employed to reduce the magnetic field. When the load flow is in the opposite directions, the same reduction

in the magnetic field can be achieved through normal phasing. Since power flow on the proposed South Lebanon – Berks 230 kV Transmission Line is opposite the Berks – South Akron #1 69 kV Transmission Line, the greatest reduction of magnetic field levels is achieved by phasing both transmission lines the same. Also, pursuant to PPL EU's Magnetic Field Management Program, some additional reduction in magnetic field levels will be attained through the use of taller structures.

230KV DOUBLE CIRCUIT TANGENT STRUCTURE

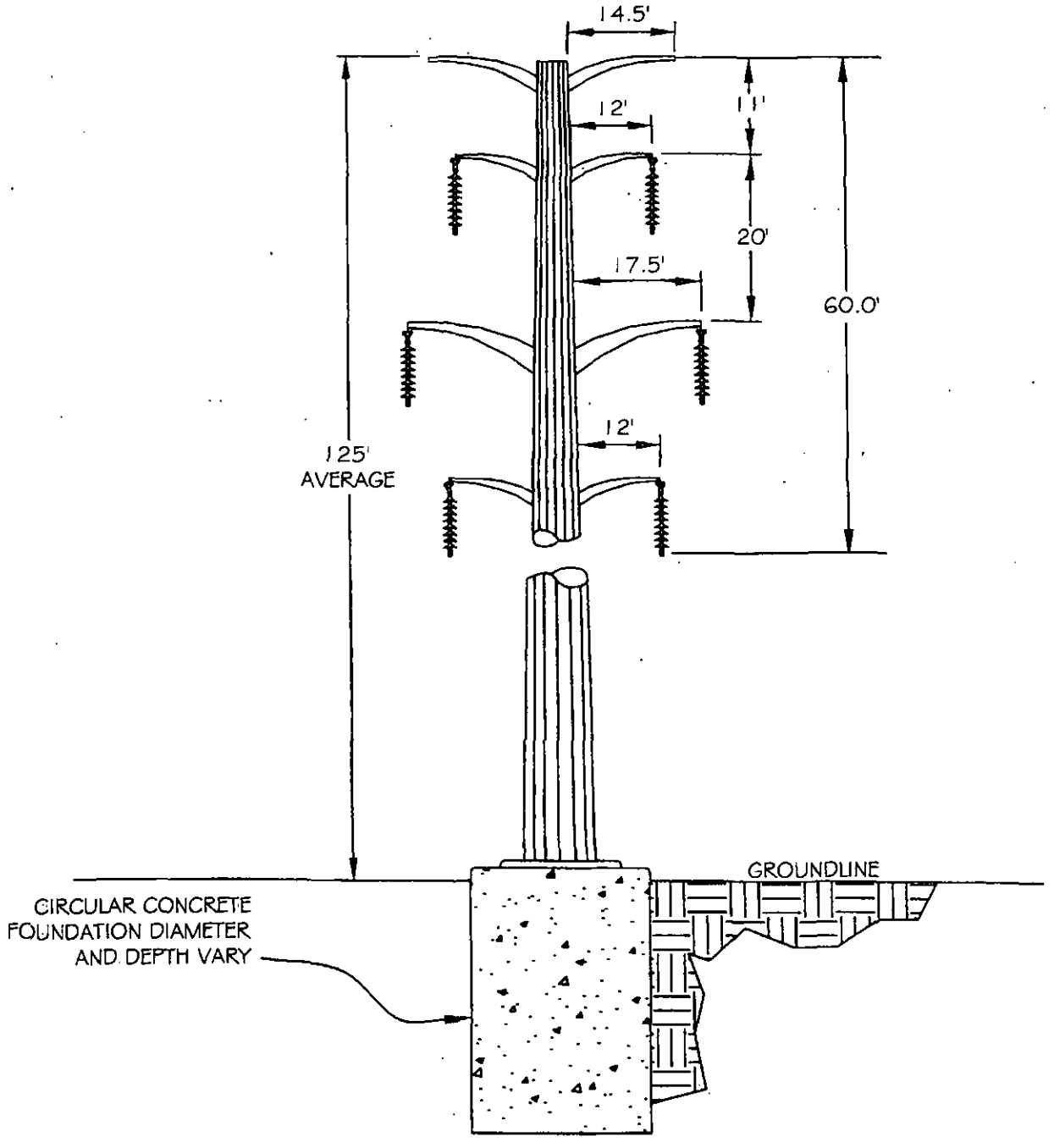

FIGURE 1
N.T.S.

230KV DOUBLE CIRCUIT ANGLE STRUCTURE
(GUYING AS REQUIRED)

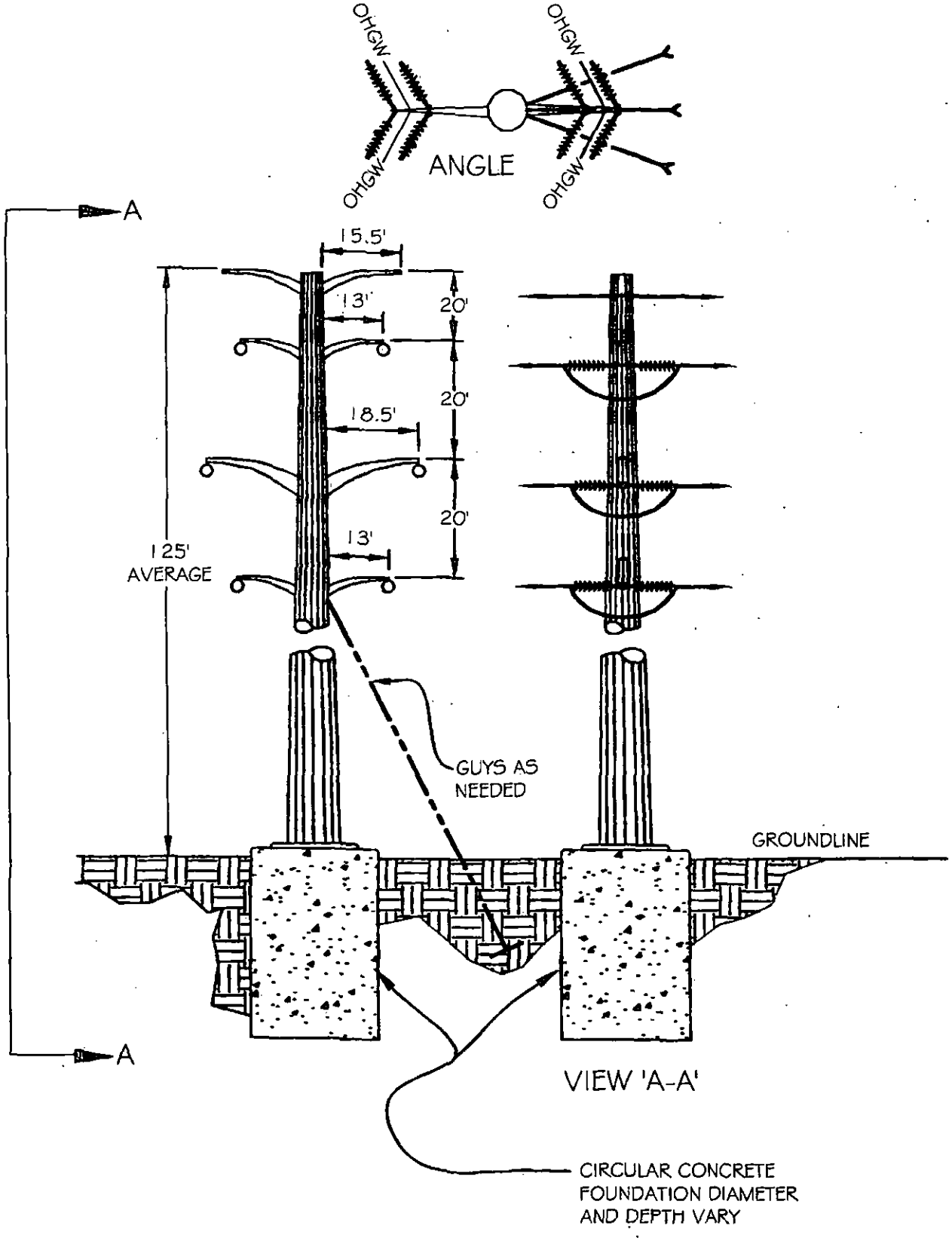

FIGURE 2
N.T.S.

230KV TWO POLE DOUBLE CIRCUIT ANGLE STRUCTURE
(GUYING AS REQUIRED)

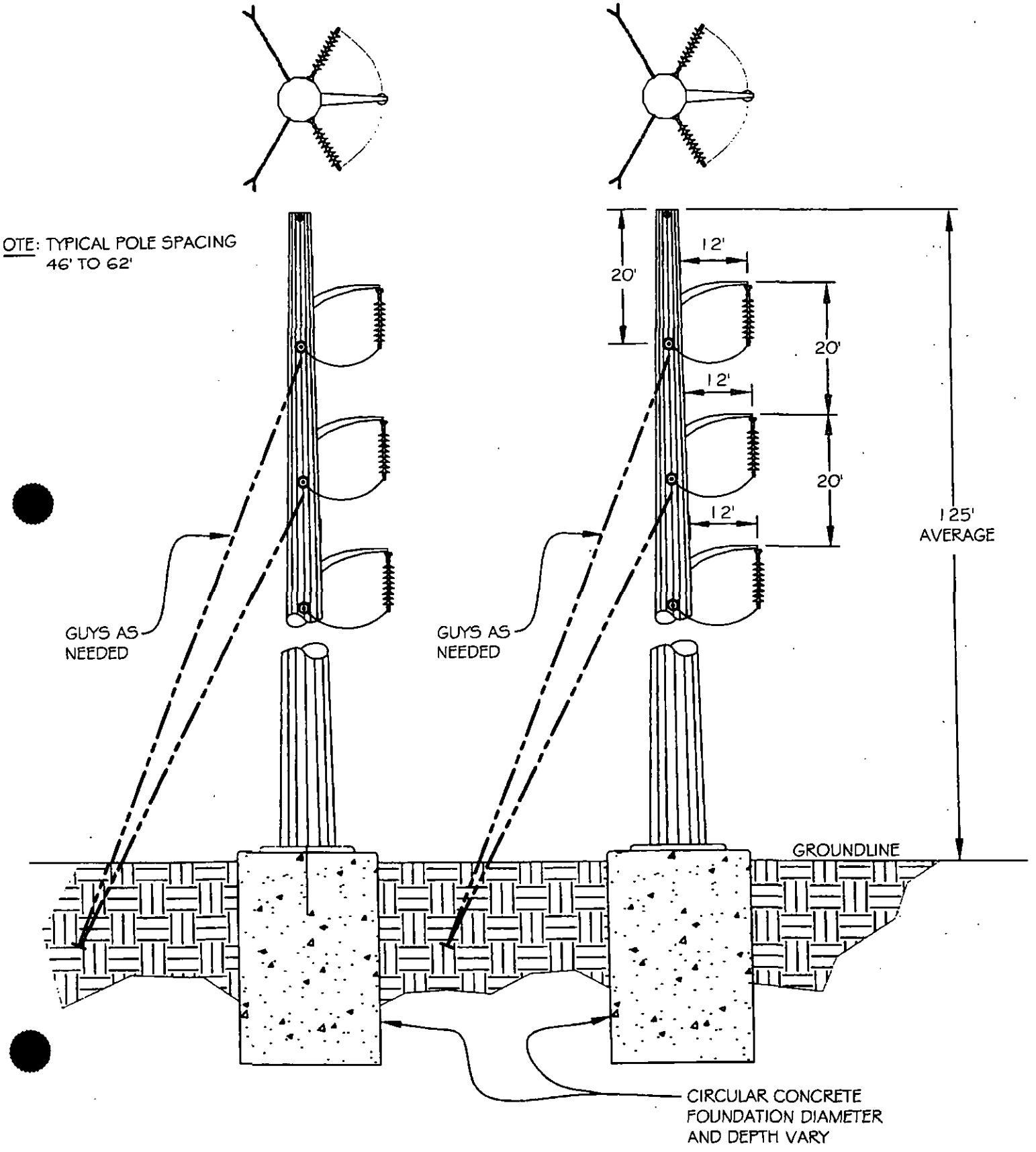

FIGURE 3
N.T.S.

LIST OF APPENDICIES

Appendix	Topic
A	Environmental Inventory Guidelines
B	Exhibit "B" Bibliography
C	Governmental Agencies, Municipalities and Other Public Entities Contacted
D	Flora and Fauna of the Study Area
E	Berks and Lancaster County Historic Sites
F	List of Property Owners Within the Proposed Right-of-Way
G	Local, State, and Federal Governmental Agency Requirements
H	PPL Design Criteria and Safety Practices
I	PPL Magnetic Field Program
J	List of Governmental Agencies, Municipalities and Other PPL Entities Receiving Applications

APPENDIX A

ENVIRONMENTAL INVENTORY GUIDELINES

An environmental inventory lists environmental factors considered when evaluating and selecting transmission line routes. These factors can be adversely affected by, or be compatible with, transmission facilities.

Major factors and the reasons why they are inventoried are listed in the following table:

CATEGORY	WHY INVENTORIED
A. Linear Features	
1. Turnpikes, Interstate Highways, Major U.S., Pennsylvania, and Legislative Routes (LR) 2. Pipelines 3. Railroads 4. Floodwalls, Levees 5. Communication Facilities 6. Property Lines 7. Vacant Right-of-Way 8. Power Lines 9. Tree Rows	Paralleling existing linear features, particularly transmission lines, is often desirable for several reasons. Paralleling usually adds only incrementally to existing impacts, rather than creating new impacts. Narrower rights-of-way are needed because maximum utilization is made of land already encumbered. Existing access roads can be used, less tree clearing is needed, and, from a community planning perspective, the combination of linear features into a common corridor is desirable.
B. Land Use	
1. Residential a. Dwellings b. Subdivisions c. Developments d. Future Developments e. Urbanized Areas	Whenever possible, avoiding present and proposed residential development is desirable because land use impacts, potential visual intrusions and costs are minimized. Compatible joint uses of land are also explored.

CATEGORY	WHY INVENTORIED
2. Commercial and Industrial	Because these areas are generally compatible with transmission facilities, the possibility of routing through these areas is explored.
3. Interference Zones a. Radio Stations b. Microwave Towers c. Airports	These are usually avoided, if feasible. If this is not feasible, undergrounding or mitigating measures are considered.
4. Agricultural a. Cropland b. Pasture	Generally, this is a compatible land use. There is minimal impact at the borders of these areas. The number of structures is kept to a minimum, and irrigation equipment is avoided.
5. Public Areas a. Cemeteries b. Churches c. Hospitals d. Schools	Visual intrusions into these areas are avoided where possible.
6. Recreational Areas a. Parks b. Golf Courses c. Ski Areas d. Preserves and Game Lands e. Tourist Recreational Facilities	Visual intrusions into these areas are avoided where possible.

CATEGORY	WHY INVENTORIED
7. Extractive a. Coal b. Limestone c. Peat Bogs	Areas where significant mineral resources can be economically extracted are generally avoided. Where practical, lines span small areas and are routed along boundaries.
8. Orchards and Nurseries	Removal of productive trees and interference with orchard maintenance (spraying, irrigating, etc.) are avoided where possible.
C. Visual and Scenic Features	
1. Unique Scenic Areas	It is preferable to avoid these areas.
2. Highpoints Prominent Slopes Ridge Lines Panoramic Views Scenic Highways Residential Areas	These features are avoided where practical to eliminate or minimize visual intrusion in areas of potentially high visual exposure and scenic quality. Views from residential areas are avoided, if possible.
D. Soils and Slopes	
1. Soils a. Shallow Bedrock b. Stony Soils c. Wet Soils d. Erodible Soils	These soil types are generally avoided due to both construction and environmental constraints. High construction costs and disruption to the area may result from blasting, road construction, structure grading and setting, and material handling and hauling.
2. Slopes	Steep slopes (15 percent to 25 percent or greater) are avoided where possible to minimize the potential for soil erosion and slower revegetation.

CATEGORY	WHY INVENTORIED
	Again, increased construction costs and environmental damage may occur when building on slopes due to road construction, vegetation clearing, and the handling, hauling and setting of structures.
3. 100-Year Floodplain	These areas are generally avoided to prevent potential disruption of floodplains and flood control facilities. Construction costs necessary to maintain reliability also are higher.
E. Cultural Features	
1. Historic Sites	Visual intrusions on historic sites are avoided where possible.
2. Archaeological Areas	Known sites and areas of high potential are avoided to prevent damage to resources.
F. Geology	Bedrock type is determined to predict the potential presence of endangered species and other wildlife, and mineral resources are identified. Special attention is given to certain bedrock types with particular characteristics or problems. Caves, springs, and sinkholes are avoided.
1. Unique Geological Areas	Visual intrusions on unique formations and destruction of collection sites are avoided where practical.

CATEGORY	WHY INVENTORIED
G. Natural Features	
1. Aquatic Resources, Water Bodies, Streams, Rivers and Wetlands	
a. Water Quality	The potential for siltation or obstruction with silt or mud, and temperature increases due to removal of bank vegetation are avoided to the greatest extent possible. Special caution is exercised near waters recognized for exceptional quality. Measures used to mitigate effects of crossing water bodies may result in reduced reliability or increased maintenance costs.
b. Fish, Aquatic Life	Major aquatic organisms present in potentially affected water bodies are identified to determine potential impacts. Widely used fisheries are avoided. If this is not practical, caution is exercised in crossing to prevent decrease in water quality, especially due to siltation. The presence or likely occurrence of endangered or threatened aquatic species is determined, and known locations of such species are avoided or impacts are mitigated.
2. Terrestrial Resources	
a. Vegetation Types	Major types of vegetation are identified to characterize area habitats and predict the occurrence of wildlife species and potential

CATEGORY	WHY INVENTORIED
	impacts of removing these vegetation types. Important areas are identified, especially vegetation not common in the area, and attempts are made to avoid them where possible (e.g., coniferous growth in a primarily deciduous woodland; trees in an urban area, etc.).
	An attempt is made to minimize clearing of wooded areas, which is considered a constraint due to disruption of existing environment, costs of clearing, future maintenance, and reduced liability. However, clearing through areas of heavy woodland can benefit wildlife as open areas resprout and are widely used as browse and cover areas.
	Attempts are made to avoid or minimize interference with commercially-used vegetation and tree plantations, lumbering operations, etc.
b. Wildlife	Positive and negative impacts on area species are predicted.
	The presence or likely occurrence of endangered or threatened animal species or their critical habitat requirements are considered. Known areas of occurrence are avoided or impacts are mitigated.
c. Unique Natural Wilderness Areas	Visual intrusion and disruption of the natural environment should be avoided where possible.

APPENDIX B

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APPENDIX C

GOVERNMENTAL AGENCIES, MUNICIPALITIES AND OTHER PUBLIC ENTITIES CONTACTED

County

Berks County GIS Department
Berks County Service Center
633 Court Street, 3rd Floor
Reading, PA 19601

Lancaster County GIS Department
50 North Duke Street
Lancaster, PA 17608
CONTACT: Steve Gochenaur, Director

Municipal

East Cocalico Township
100 Hill Road
Denver, PA 17517

South Heidelberg Township
Lincoln Drive
Sinking Spring, PA 19608

Township of Spring
2800 Shillington Road
Reading, PA 19609-1682

West Cocalico Township
P.O. Box 244
Reinholds, PA 17569

Other

Buckeye Pipe Line Company
5002 Buckeye Road
P.O. Box 368
Emmaus, PA 18049
CONTACT: Linda E. Conrad

Historic Preservation Trust of Lancaster County
123 North Prince Street
Lancaster, PA 17603
CONTACT: Nancy Haubert

Lancaster County Historical Society
230 North President Avenue
Lancaster, PA 17603
CONTACT: Lynn Stauffer

Penn Eastern Rail Lines
1973 Wellington Drive
Suite 1
Langhorne, PA 19047
CONTACT: John C. Nolan

Sunoco Pipeline L.P.
525 Fritztown Road
Sinking Spring, PA 19608
CONTACT: Jomarie Jenkins

Texas Eastern Pipeline Co.
Highway 14 North
P.O. Box 312
Watkins Glen, NY 14891
CONTACT: Don Ayres

APPENDIX D

FLORA AND FAUNA OF THE STUDY AREA

Mellon Biological Services
200 Flint Court South • Yardley, PA 19067 • 215-493-0697 • FAX 215-493-0660, call first

WILDLIFE AND PLANT SURVEY REPORT

FOR

SOUTH LEBANON - BERKS 230/69 KV LINE
SPRING TOWNSHIP, BERKS COUNTY
EAST COCALICO TOWNSHIP, LANCASTER COUNTY
PENNSYLVANIA

AUGUST 23, 2006

PREPARED FOR

PPL ELECTRIC UTILITIES

TRANSMISSION DESIGN ENGINEERING-GENN4

TWO NORTH NINTH STREET

ALLENTOWN, PENNSYLVANIA 18101-1179

PREPARED BY: RICHARD MELLON
CERTIFIED PROFESSIONAL WETLAND SCIENTIST

TABLE OF CONTENTS

SUMMARY

1. **The study area can be divided between lower, flatter agricultural and developed land (lowlands) and higher, hillier forested land (highlands).**

2. **The lowlands consists of highly fragmented habitats composed primarily of medium sized agricultural fields interspersed with hedgerow, woodlots, houses and farm buildings at lower elevations.**

3. **The highlands are moderately fragmented forests in higher, hilly elevations.**

4. **Fragmented lowland habitats are dominated by common, generalist species of southeastern Pennsylvania. There are no exceptional habitats in the lowlands, except for scattered wetlands and stream corridors. No "prairie" habitat (large fallow herbaceous fields or extensive agricultural fields) in the study area. The only area-sensitive bird species found in the study area in the first and second (currently in progress) Pennsylvania Breeding Bird Atlases were Eastern Meadowlark (*Sturnella neglecta*), which is only marginally area-sensitive.**

5. **Intrusion into large unfragmented habitats should be avoided if possible or additional study should be completed in specific habitats to determine impacts on areas-sensitive-species.**

6. **A Pennsylvania Natural Diversity Inventory (PNDI) search was conducted for the power line right-of-way with Bog Turtle being the only Species of Special Concern found in the vicinity.**

7. **A Phase 1 & 2 Bog Turtle survey was conducted along the existing power line.**

8. **Additional possible potential Bog Turtle wetlands outside the right-of-way were delineated, based on soils, position in the landscape and aerial photographs.**

9. **The field survey did not reveal any endangered, threatened or even rare species of plants or vertebrates nor their habitats in the study area.**

10. **The field survey did not reveal any exceptional concentrations or populations of plants or vertebrates nor their habitats in the study area.**

11. **Little Cocalico Creek is listed as Trout Stocking, while Cocoosing Creek is listed as Warm Water Fishes on the Pennsylvania Fish and Boat Commission Listing of Surveyed Streams by 25 Pa. Code § 105.17. No exception value wetlands were found.**

12. **All report conclusions and interpretations are the professional opinion of the author.**

INTRODUCTION

This study examines the plants and wildlife for the S. Lebanon - Berks 230/69 kV Line study area, which extends one mile from the power line. The line extends from a substation near Sinking Springs at latitude 40°18'43" and longitude 76°04'56", in Spring Township, Berks County to a power line at latitude 40°14'52" and longitude 7624807'00" in East Cocalico Township, Lancaster County, on the Sinking Spring and Terre Hill Topographic Quadrangles.

The plants and wildlife of the study area are examined by analyzing the habitats of the study area. Plants and wildlife are dependent on specific habitats in order to survive and propagate. By examining the habitats in the study area, reasonably accurate predictions can be made as to the species expected in the study area.

Plant habitats are defined primarily by climate, parent material, successional stage and hydrology. The climate throughout the study area is basically uniform; temperature and precipitation do not vary significantly. The parent material or geologic formations of the study area are varied northward and much more uniform southward.

Mellon Biological Services compiled a database over the last 22 years of 1347 data sites in eastern Pennsylvania, including 268 sites of Species of Special Concern collected while providing botanical consulting services to the Morris Arboretum of the University of Pennsylvania for work for PNDI. Data collected includes geologic formations.

Wildlife habitat is primarily defined by three factors: structure, size and location. Structure refers to the structure of the physical and biological components (e.g. – ponds, marshes, trees, shrubs, etc.). Size refers to the physical size and shape of the habitat and location refers to the habitats position relative to other similar habitats. A two-acre woodlot located in a mosaic of small woodlots and small fields will have a different animal species composition than two acres of woodlands in the middle of a 1000-acre forest. The animals that specialize in the center of large forests are called interior forest species, while the species that thrive in the small woodlots, interspersed with fields are referred to as generalists.

Shape is also important, since the critical factor appears to have more to do with the distance to the edge, rather than absolute size. Thus, a 1000 acre forested stream corridor whose maximum width is 200 yards will generally be occupied by the same species that occupies the 2-acre woodlot in the mosaic landscape, rather than those that live in the center of a 1000-acre circular forest.

Location is the final piece to the puzzle. A 1000-acre forest will generally produce more interior forest species than the forest can support. These surplus individuals will emigrate outward to less desirable habitats and attempt to mate and rear young. However, since they are not well adapted to these marginal habitats, their success rate generally is not high enough to maintain a population. Marginal habitats close to the 1000-acre forest can maintain a population by constant emigration from the large forest, while the further from the 1000-acre forest the

woodlot is located, the fewer the immigrants. Thus, at some point, immigration will no longer sustain the inherent population losses, and the species is lost from the woodlot.

Size is as important for field habitats as it is for woodlands. A large area with no trees, power lines, buildings or other perches for predatory birds provides habitat for a number of species of birds that rely mainly on camouflage for protection. If trees, power lines or other perches occur too close for the birds to escape predatory birds, these field birds will not be successful. Generally, the sparser the vegetation in the field, the larger the habitat size needs to be.

METHODS

This study examined and classified plant and wildlife habitats within the study area, and researched recent records within similar habitat types to predict the probable plant and wildlife populations in the study area. ArcView GIS was used to determine the extent of habitats, their size, shape, proximity to regional habitats, degree of fragmentation and geologic origins. Field evaluation verified habitat classification types and the GIS mapping.

Plant habitats were based primarily on the geologic formation, successional stage, hydrology and size and shape. Wildlife habitats were based primarily on successional stage and size and shape. Large areas of forest, shrub/scrub or field are classified as "interior" habitats: either interior forest, interior shrub/scrub or interior field. Wetlands are divided into poorly drained and very poorly drained and then further divided based on size. Based on the results of literature research into the known populations and distribution of species in the study area and the results of the field and GIS investigations, an overall understanding of the plant life and wildlife of the region and study area has been developed.

A PNDI search was completed for the right-of-way of the power line to determine whether any known species of special concern have been documented in the study area.

SITE DESCRIPTION

REGIONAL OVERVIEW

This study area is located primarily in the Triassic Lowlands region of the Piedmont Physiographic Province, with the northern quarter in the study area in the Ridge and Valley province. A small corner of the Reading Prong Physiographic province intrudes in the study area from the northwest. Farmland dominates the lowlands and is extensively fragmented by small woodlots, stream valleys, houses and hedgerows. No interior field habitat was found in the study area. The undulating topography contributes to the mosaic of habitats by limiting farming to gentler slopes. On hills and steeper slopes, forests cover extensive areas.

The Piedmont Province is underlain by Hammers Creek, New Oxford and Cocalico formations. The Hammers Creek formation tends to be very acidic, red sandstone and sandstone conglomerate, while the New Oxford is arkosic sandstone that tends to be moderately acidic. There are isolated areas of slightly acidic diabase intrusions. These formations are primarily hilly and forested, except for flatter agricultural areas to the west. In the extreme southwestern

tip of the study area is a small section of Cocalico formation consisting of shaly limestone. The Ridge and Valley Province is underlain by Richland, Ontelaunee and Milbach limestones and dolomites; and the Hamburg sequence, primarily made up of shale and limestone. The limestones and dolomites are neutral to slightly acidic and are found in agricultural and developed land. The very small area of Reading Prong found in the study area consists of very acidic Hartyston quartzite and graphitic gneiss.

SITE OVERVIEW

PLANTS

There are no PNDI reports of plants for the right-of-way and generally most of the formations do not provide appropriate habitats for Species of Special Concern. Diabase does provide habitat for a few rare species in Pennsylvania, but most do not occur on ridgetops or steep slopes, which is where most of the diabase in the study area occurs. The limestones and dolomites occur in areas of heavy agricultural and housing development, leaving little natural habitats in the study area. The Hammer Creek formation, granitic gneiss and Hardyston quartzite are very acidic habitats that may have small unusual areas of extremely acidic soils that contain species of special concern.

ANIMALS

Besides forest, one other large area specialist species-type habitat occurs in upland in our area: Prairie, or more accurately, large areas with no trees, power lines, buildings or other perches for predatory birds. Birds are the primary area-sensitive species found in extensive open uplands. These habitats an be natural and in some instances agricultural.

Size is critical for those species that require large contiguous blocks of primary habitat, and the size varies depending on the species and habitat type. Prairie species birds can roughly be divided into two habitat types: bare ground and grassy meadow. Those that require bare or sparsely vegetated ground generally need larger blocks of land, since their primary defense against predators is camouflage. Hawks can spot and attack a bird at a longer distance on bare ground than in a grassy field where the bird can drop out of sight into the vegetation. Therefore, bare ground breeders like the Horned Lark (*Eremophila alpestris*) and the Vesper Sparrow (*Pooecetes gramineus*) need larger fields than grass breeders like the Savannah Sparrow (Passerculus sandwichensis), Grasshopper Sparrow (*Ammodramus savannarum*), Field Sparrow (*Spizella pusilla*), Eastern Meadowlark (*Sturnella magna*) and Bobolink (*Dolichonyx oryzivorus*). To provide the security from attack by a hawk, the safe part of the field probably needs to be 300 yards from the nearest tree. Given another 200 yards for breeding, the minimum size required for sustaining a population of bare ground birds, roughly estimated, is a 50 acre round field. Eastern Meadowlark is the only "interior" field species found in the first and second (currently in process) bird atlas survey on the topographic quadrangles that enclose the study area. Therefore, based on aerial photos, field checks and the atlas data, there are no good habitats "interior" field species in the study are.

The size of forest habitat required to support a proliferating population of interior forest birds ranges from a low of approximately 80 acres for the American Redstart (*Setophaga*

ruticilla), to greater than 1000 acres for the Black-and-white Warbler (*Mniotilta varia*). These numbers vary depending on the species, shape of the habitat and proximity to larger contiguous habitats.

On the enclosed habitat maps in the appendix, all habitats whose minimum cross-section was greater than 600 yards were mapped and labeled. In addition, areas with a strong core of interior forest, but with islands of houses, small fields and other small openings were included in the interior forest mapping. These habitats are the most likely to contain habitat-size-sensitive species. No extensive marshland or scrub/shrub land was found in the study area

FISH

Cacoosing Creek and the Little Cocalico Creek drain the study area. Cacoosing drains into the Tuplehocken Creek, then into the Schuykill River and the Delaware River, while the Little Cocalico drains into the Cocalico Creek, which drains into the Conestoga River and the Susquehanna River. The Cacoosing Creek is classified as a "warm water fishes" stream in Pennsylvania Code Title 25 Chapter 93 Water Quality Standards, while the Little Cocalico Creek is classified as "Trout Stocking" – "Maintenance of stocked trout from February 15 to July 31 and maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat." (PADEP Chapter 93. 93.3).

ENDANGERED SPECIES

DCNR – plant species of special concern in area, not impacted
PFBC – Bog Turtle
PGC – no impact
USFWS – Bog Turtle

The Pennsylvania Natural Diversity Inventory (PNDI) reported one Species of Special Concern for the study area (see appendix): the Bog Turtle, which requires very poorly drained, herbaceous wetlands. A phase 1 and phase 2 Bog Turtle study was completed along the right-of-way and found four potential Bog Turtle wetlands, but no Bog Turtles.

Cacossing Creek corridor is the primary area within the study area where potential Bog Turtle habitat might be found.

FIELD OBSERVATIONS

FORESTS

BIRDS

The largest contiguous forests are associated with the higher elevations of the power line and has the least fragmented forests, which is consistent with the distribution of interior forest species reported in the Atlas of Breeding Birds in Pennsylvania (Brauning 1992). The interior forest species reported in the study area during the 1990 and current bird atlas fieldwork are:

Broad-winged Hawk (*Buteo platypterus*),
Red-shouldered Hawk (*Buteo lineatus*)

Pileated Woodpecker (*Dryocopus pileatus*),
Wood Thrush (*Hylocichla mustelina*),
Veery *(Catharus fuscescens)*
Red-eyed Vireo (*Vireo olivaceus*)
Yellow-throated Vireo (*Vireo flavifrons*)
Brown Creeper *(Certhia Americana)*
Black-and-white Warbler (*Mniotilta varia*),
American Redstart (*Setophaga ruticilla*),
Worm-eating Warbler (*Helmitheros vermivorus*),
Hooded Warbler *(Wilsonia citrina)*
Ovenbird (*Seiurus aurocapillus*),
Louisiana Waterthrush (*Seiurus motacilla*),
Kentucky Warbler (*Oporornis formosus*),
Scarlet Tanager (*Piranga olivacea*),

MAMMALS, REPTILES, AMPHIBIANS AND FISHES

DCNR – plant species of special concern in area, not impacted
PFBC – Bog Turtle
PGC – no impact
USFWS – Bog Turtle

Bog Turtle is the only animal Species of Special Concern found reported in or near the right-of-way. The literature research did not reveal any other endangered, threatened or even rare species of mammals, reptiles, amphibians or fishes reported in the study area. Bog Turtles were addressed in a phase 1 and phase 2 Bog Turtle survey and report.

FIELDS

BIRDS

The is no extensive areas of fallow or agricultural fields without hedgerows and Eastern Meadowlark is the only "interior" field species recorded in the study area and it is a marginal "interior" species.

CONCLUSIONS

The study area consists of a mosaic of highly fragmented habitats, with large more or less contiguous forest habitats. Commonly occurring generalist species dominate the study area, with habitat-size-sensitive species occurring commonly in the forests. The only report of endangered species is the Bog Turtle and a Phase 1 and 2 Bog Turtle study was completed along the right-of-way. Additional potential Bog Turtle habitat is most likely along the Cocoosing Creek, but may occur in any wetland in the study area that has the proper soils, hydrology and vegetation. Unlike area-sensitive species, Bog Turtles can occur in small habitats.

The generalist species are common throughout the region. The habitat-size-sensitive species generally occur in large contiguous habitats, which are the most sensitive habitats in the study region (see the map in the appendix) and are most susceptible to loss of habitat. Intrusion

into large unfragmented habitats should be avoided if possible or additional study should be completed of the specific habitats to determine impacts on areas-sensitive-species.

No threatened or endangered species were found in the study area and no habitats for either threatened nor endangered species were found.

The Little Cocalico Creek is a stocked (Trout) stream.

VERIFICATION

All data and conclusions in this report are based on field examinations and research by Richard Mellon, Certified Professional Wetland Scientist, Mellon Biological Services.

I, Richard Mellon, verify that the information included in this 8 page report, and its 4 appendices are accurate to the best of my abilities.

Richard Mellon, Ecologist

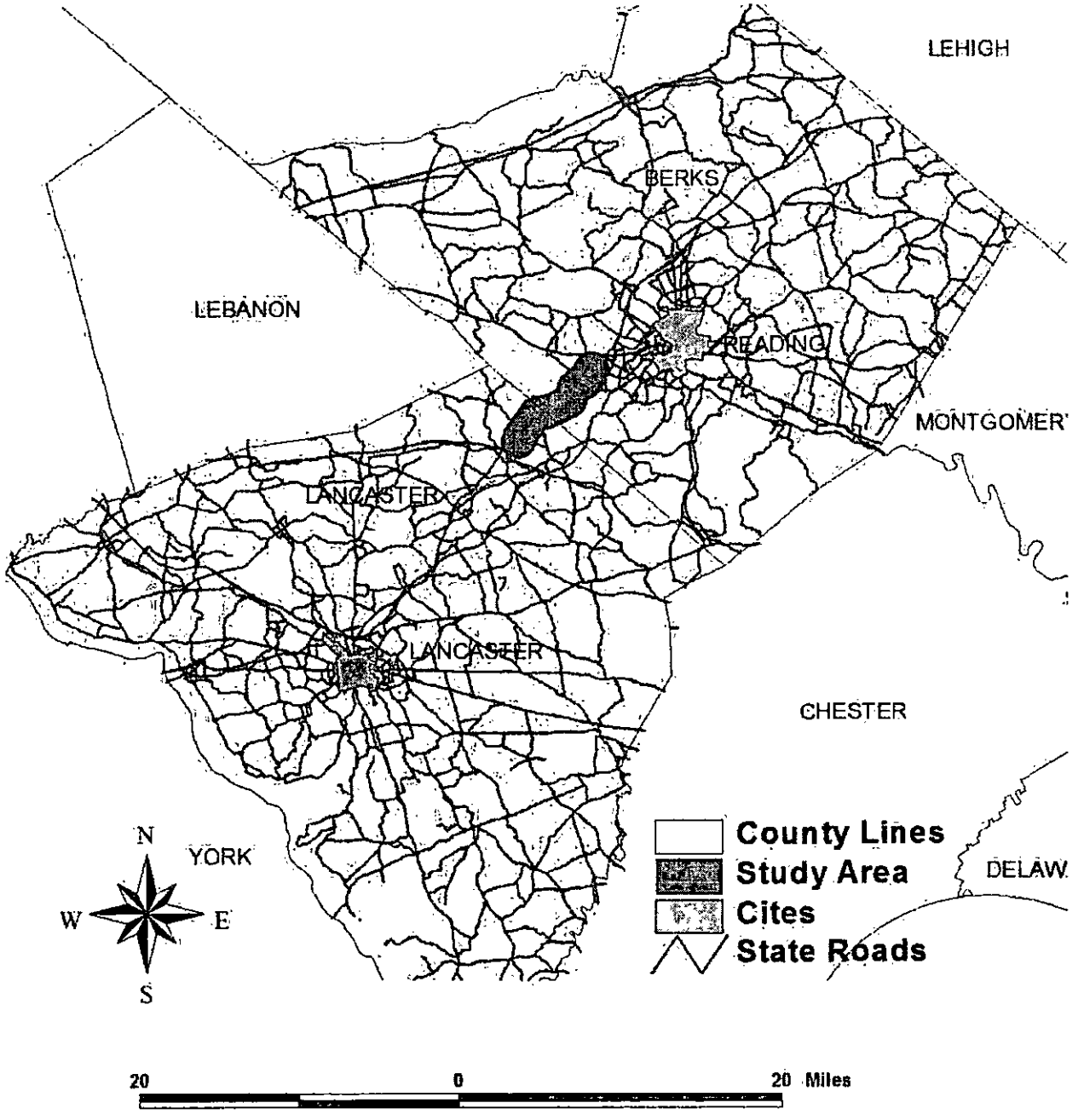
August 23, 2006
Date

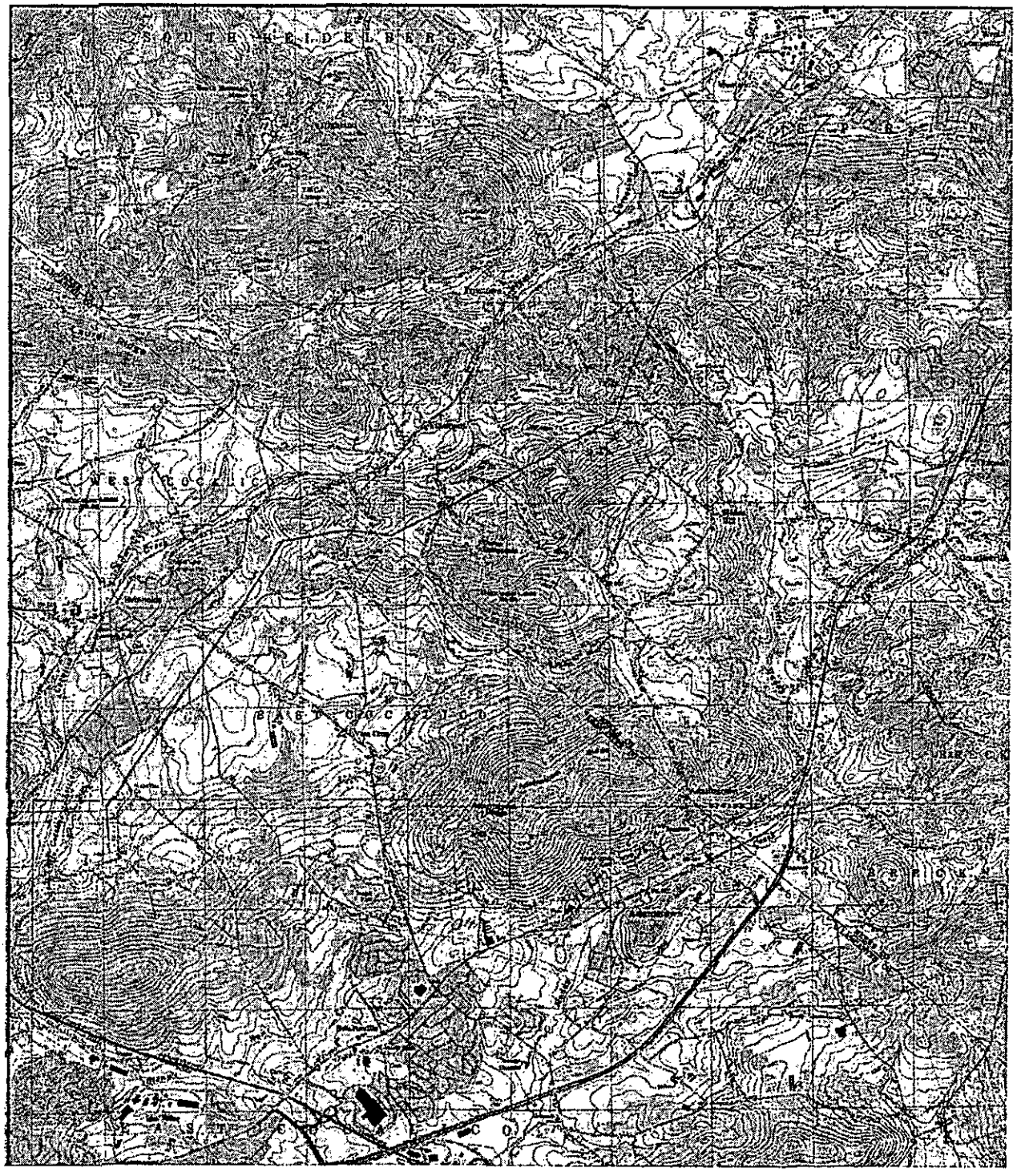
APPENDICES

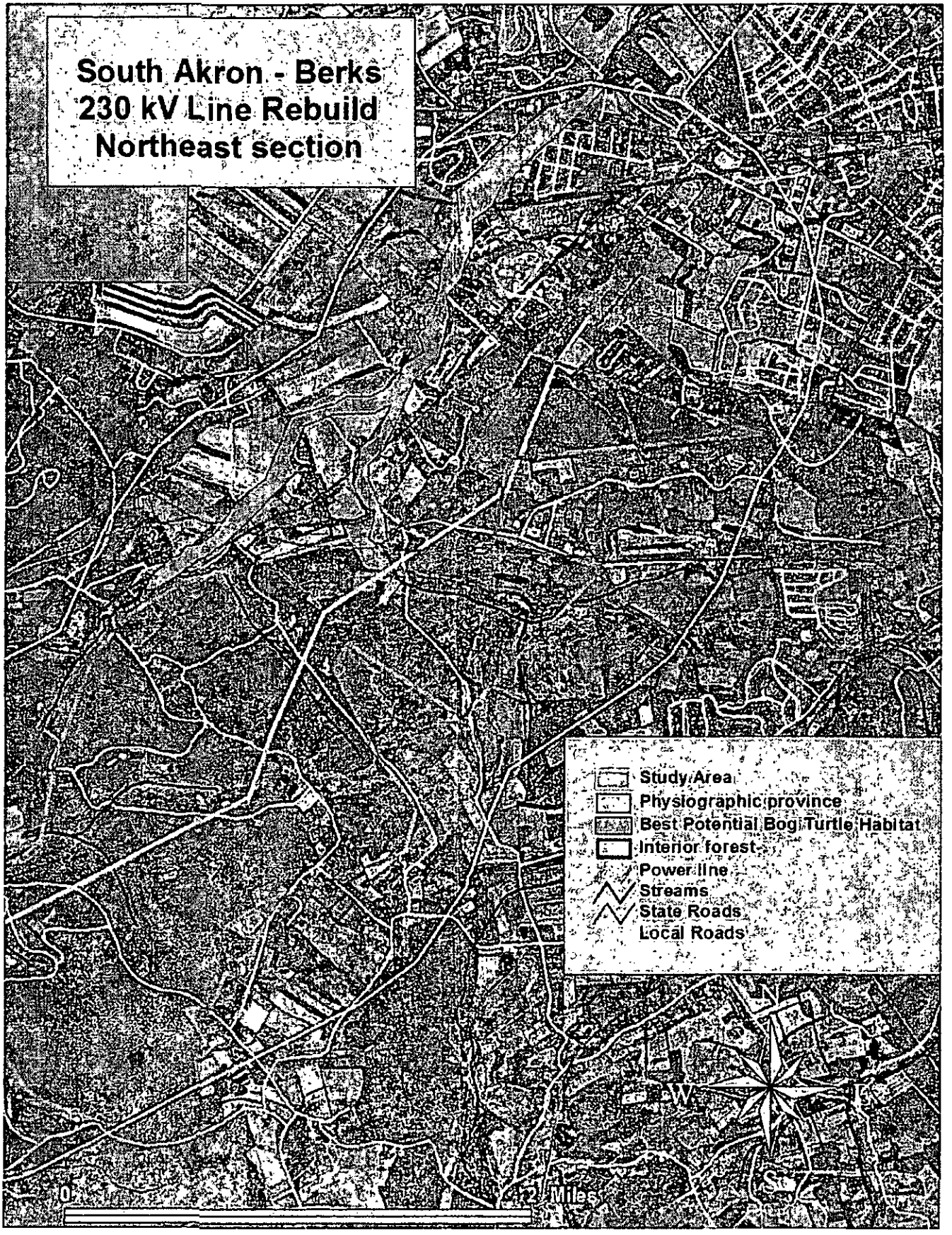
APPENDIX A

MAPS

Location Map



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230 kV Line Rebuild
Northeast section
Study Area
Physiographic province
Best Potential Bog Turtle Habitat
Interior forest
Power line
Streams
State Roads
Local Roads
W
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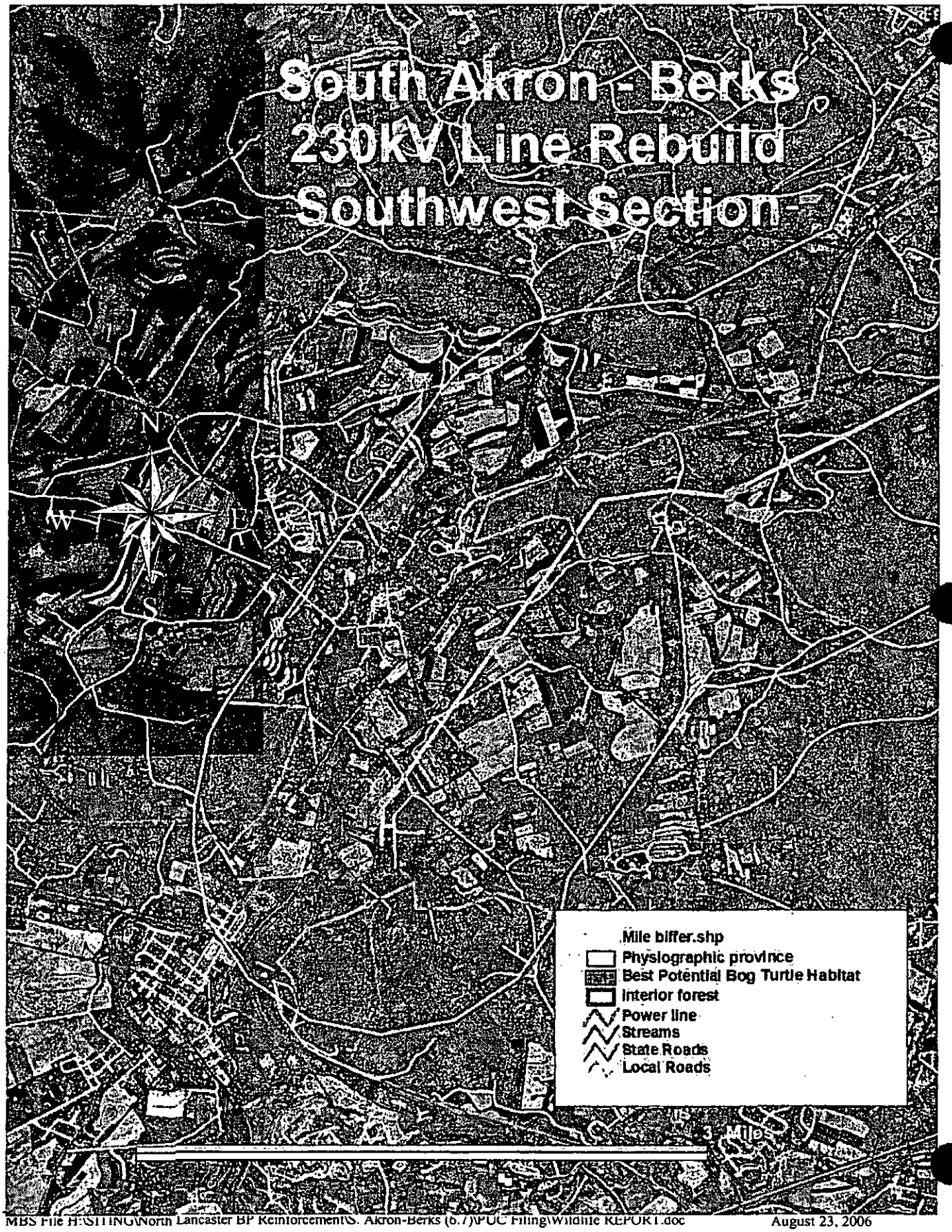
2 Miles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Interior forest
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Streams
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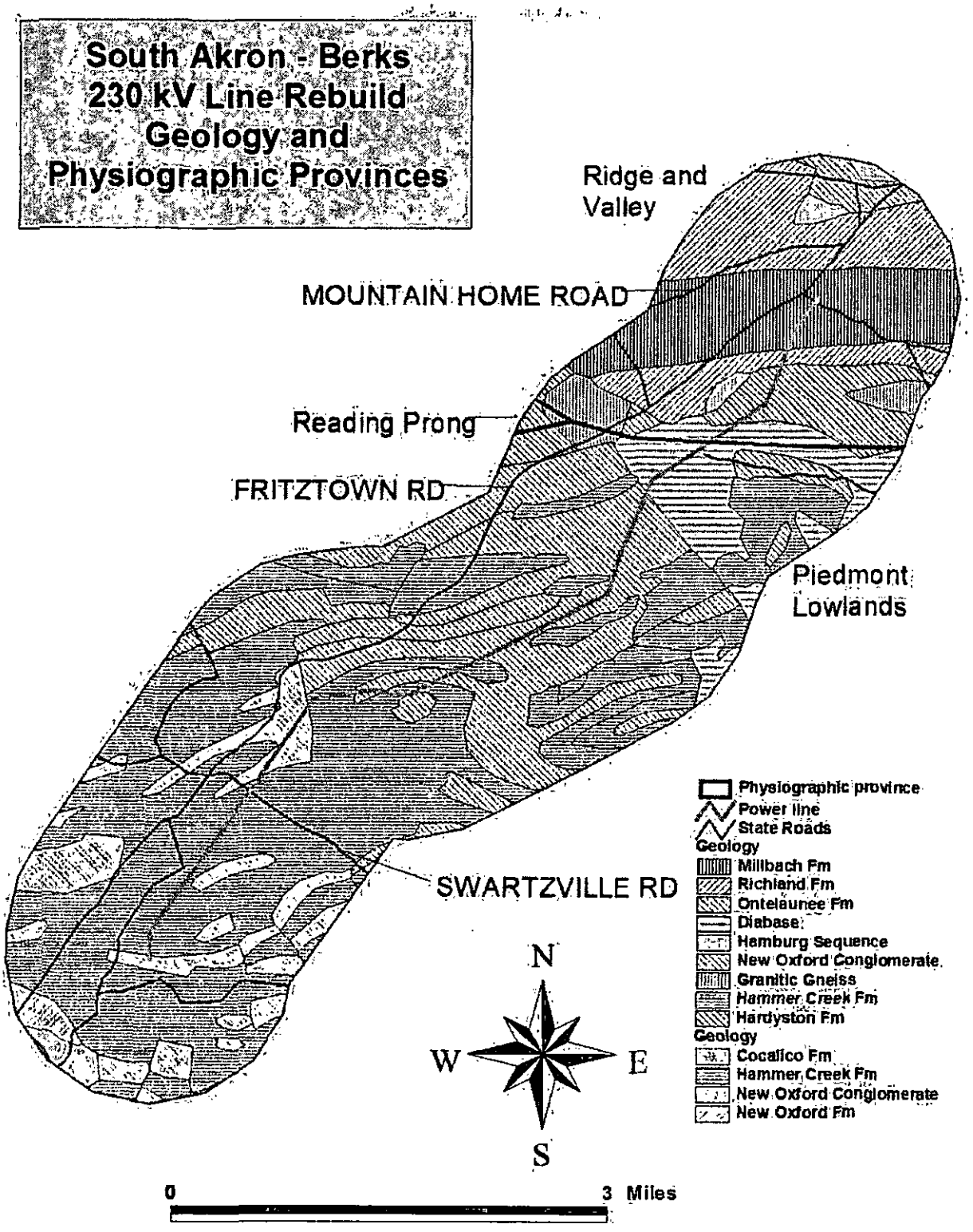
South Akron - Berks
230 kV Line Rebuild
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Ridge and
Valley
MOUNTAIN HOME ROAD
Reading Prong
FRITZTOWN RD
Piedmont
Lowlands
SWARTZVILLE RD
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3 Miles
Physiographic province
Power line
State Roads
Geology
Millbach Fm
Richland Fm
Ontelaunee Fm
Diabase
Hamburg Sequence
New Oxford Conglomerate
Granitic Gneiss
Hammer Creek Fm
Hardyston Fm
Geology
Cocalico Fm
Hammer Creek Fm
New Oxford Conglomerate
New Oxford Fm

APPENDIX B

SPECIES DATA

Following are lists of species expected in the study area with the best available information regarding their status.

Birds[1]

P – Prairie; S – Shrub/Scrub; F – Forest; G – Generalist; W - Wetlands

C – Common; U – Uncommon; R – Rare

Bold – Breeding; * - Habitat Size Sensitive for Breeding

Ardea herodias (Great Blue Heron) – WU

Casmerodius albus (Great Egret) – WU

Egretta thula (Snowy Egret)- WU

Egretta caerulea (Little Blue Heron) – WR

Butorides striatus (Green-backed Heron) – WU

Coragyps atratus (Black Vulture) – GU

Cathartes aura (Turkey Vulture) – GC

Branta canadensis (Canada Goose) – PC

Aix sponsa (Wood Duck) – WU

Anus rubripes (American Black Duck) - WU

Anas platyrhynchos (Mallard) – WU

Pandion haliaetus (Osprey) – GU

Haliaeetus leucocephalus (Bald Eagle) – GR

Circus cynaneus (Northern Harrier) – PU

Accipiter striatus (Sharp-shinned Hawk) - FU

Accipiter cooperii (Cooper's Hawk) - FU

Accipiter gentilis (Northern Goshawk) – FR

Buteo lineatus (Red-shouldered Hawk) – FR

Buteo platypterus (Broad-winged Hawk) – FU*

Buteo jamaicencis (Red-tailed Hawk) – PC

Falco sparverius (American Kestrel) - PU*

Phasianus colchicus (Ring-necked Pheasant) – PU

Meleagris gallapavo (Wild Turkey) – GU

Charadrius vociferus (Killdeer) – PU

Tringa solitaria (Sandpiper, Solitary) – WU

[1] Based on data from the Atlas of Breeding Birds in Pennsylvania and A Checklist of the Birds of The Delaware Valley Region.

Acititis macularia (Spotted Sandpiper) - WU

Gallinago gallinago (Common Snipe) - WU

Philohela minor (American Woodcock) - FU

Larus delawarensis (Gull, Ring-billed) - PU

Larus argentatus (Gull, Herring) - PU

Columba livia (Rock Dove) - PC

Zenaida macroura (Mourning Dove) - GC

Coccyaus erythropthalmus (Black-billed Cuckoo) - FU

Coccyzus americanus (Yellow-billed Cuckoo) - FC

Otus asio (Eastern Screech-Owl) - GU

Bubo virginianus (Great Horned Owl) - GC

Chordeiles minor (Common Nighthawk) - GR

Chaetura pelagica (Chimney Swift) - GC

Archilochus colubris (Ruby-throated Hummingbird) - GU

Ceryle alcyon (Belted Kingfisher) - WU

Melanerpes carolinus (Red-bellied Woodpecker) - FC

Sphyrapicus varius (Yellow-bellied Sapsucker) - FU

Picoides pubescens (Downy Woodpecker) - FC

Picoides villosus (Hairy Woodpecker) - FU

Colaptes auratus (Northern Flicker)- GC

Dryocopus pileatus (Pileated Woodpecker) – FR*

Contopus borealis (Olive-sided Flycatcher) - FR

Contopus virens (Eastern Wood-pewee) - FU

Empidonax flaviventris (Yellow-bellied Flycatcher) - GR

Empidonax virescens (Acadian Flycatcher) – FU*

Empinodax alnorum (Alder Flycatcher) - GR

Empinodax trailii (Willow Flycatcher) - SU

Empidonax minimus (Least Flycatcher) - GR

Sayornis phoebe (Eastern Phoebe) - GC

Myiarchus crinitus (Great Crested Flycatcher) - FU

Tyrannus tyrannus (Eastern Kingbird) - PC

Vireo griseus (White-eyed Vireo) - SU

Vireo flavifrons (Yellow-throated Vireo) – FU*

Vireo solitarius (Blue-headed Vireo) - FU

Vireo gilvus (Warbling Vireo) – FU*

Vireo philadelphicus (Vireo, Philadelphia) - FR

Vireo olivaceus (Red-eyed Vireo) - FC

Cyanocitta cristata (Blue Jay) - GC

Corvus brachyrhyncho (American Crow) - GC

Corvus ossifragnus (Fish Crow) - GU

Progne subis (Purple Martin)- GU

Tachycineta bicolor (Tree Swallow) - GU

Stelgidopteryx serripennis (Northern Rough-winged Swallow) - GU

Riparia riparia (Bank Swallow) - GU

Hirundo pyrrhonota (Cliff Swallow) - GU

Hirundo rustica (Barn Swallow) - GC

Parus atricapillus (Black-capped Chickadee) - GC

Parus bicolor (Tufted Titmouse) - GC

Sitta canadensis (Red-breasted Nuthatch) - FU

Sitta carolinensis (White-breasted Nuthatch) - FC

Certhia americana (Brown Creeper) - FU

Thryothorus ludovicianus (Wren, Carolina) - GC

Troglodytes aedon (House Wren) - GC

Troglodytes troglodytes (Winter Wren) - GU

Regulus satrapa (Golden-crowned Kinglet) - FU

Regulus calendula (Kinglet, Ruby-crowned) - FU

Polioptila caerulea (Blue-gray Gnatcatcher) - FU

Sialia sialis (Eastern Bluebird) - PC

Catharus fuscescens (Veery) – FU*

Catharus minima (Gray-cheeked Thrush) - FR

Catharus bickneli (Bicknell's Thrush) - FR

Catharus ustulatus (Swainson's Thrush) - FU

Catharus guttatus (Hermit Thrush) - FU

Hylocichla mustelina (Wood Thrush) – FC*

Turdus migratorius (American Robin) – GC

Dumetella carolinensis (Gray Catbird) - GC

Mimus polyglottos (Northern Mockingbird) - GC

Toxostoma rufum (Brown Thrasher) - SU

Sturnus vulgaris (European Starling) - GC

Bombycilla cedrorum (Cedar Waxwing) - GU

Vermivora pinus (Blue-winged Warbler) - GU

Vermivora chrysoptera (Golden-winged Warbler) - FR

Vermivora peregrina (Warbler, Tennessee) - FU

Vermivora ruficapilla (Nashville Warbler) - FU

Parula americana (Northern Parula) – FU*

Dendroica petechia (Yellow Warbler) - SU

Dendroica pensylvanica (Chestnut-sided Warbler) - SU

Dendroica magnolia (Magnolia Warbler) - FU

Dendroica tigrina (Warbler, Cape May) - FU

Dendroica caerulescens (Black-throated Blue Warbler) - FU

Dendroica coronata (Yellow-rumped Warbler) - GC

Dendroica virens (Black-throated Green Warbler) - FC

Dendroica fusca (Blackburnian Warbler) - FU

Dendroica dominica (Yellow-throated Warbler) - FR

Dendroica pinus (Pine Warbler) - FR

Dendroica discolor (Prairie Warbler) - SU

Dendroica palmarum (Warbler, Palm) - GC

Dendroica castanea (Warbler, Bay-breasted) - FU

Dendroica striata (Warbler, Blackpoll) - GC

Dendroica cerulea (Cerulean Warbler) – FR*

Mniotilta varia (Black-and-white Warbler) – FC*

Setophaga ruticilla (American Redstart) – FU*

Helmitheros vermivorus (Worm-eating Warbler) – FU*

Seiurus aurocapillus (Ovenbird) – FC*

Seiurus noveboracensis (Northern Waterthrush) - WU

Seiurus motacilla (Louisiana Waterthrush) – WU*

Oporornis formosus (Kentucky Warbler) – FU*

Oporornis philadelphia (Mourning Warbler) - SR

Geothlypis trichas (Common Yellowthroat) - GC

Wilsonia citrina (Hooded Warbler) – FU*

Wilsonia pusilla (Warbler, Wilson's) - SR

Wilsonia canadensis (Canada Warbler) - FU

Icteria virens (Yellow-breasted Chat) – SU*

Piranga olivacea (Scarlet Tanager) – FC*

Pipilo erythrophthalmus (Eastern Towhee) - SC

Spizella arborea (American Tree Sparrow) - PU

Spiwll passerina (Chipping Sparrow) - GC

Spizella pusilla (Field Sparrow) - PC

Passerella iliaca (Fox Sparrow) - GU

Melospiza melodia (Song Sparrow) - GC

Melospiza georgiana (Swamp Sparrow) - WR

Zonotrichia albicollis (White-throated Sparrow) - GC

Zonotrichia leucophrys (White-crowned Sparrow) - PU

Junco hyemalis (Dark-eyed Junco) - GC

Cardinalis cardinalis (Northern Cardinal) - GC

Pheucticus ludovicianus (Rose-breasted Grosbeak) - FU

Passerina cyanea (Indigo Bunting) - GC

Agelaius phoeniceus (Red-winged Blackbird) - GC

Sturnella magna (Eastern Meadowlark) - PU

Euphagus carolinus (Rusty Blackbird) - FR

Quiscalus quiscula (Common Grackle) - GC

Molothrus ater (Brown-headed Cowbird) - GC

Icterus spurius (Orchard Oriole) - GU

Icterus galbula (Baltimore Oriole) - GC

Carpodacus purpureus (Purple Finch) - FU

Carpodacus mexicanus (House Finch) - GC

Carduelis flammea (Common Redpoll) - PR

Carduelis pinus (Pine Siskin) - GR

Carduelis tristis (American Goldfinch) - GU

Coccothraustes vespertinus (Evening Grosbeak) - GR

Passer domesticus (House Sparrow) – GC

Mammals[2]

Scientific Name	Common Name	Status
Cryptotis parva	Least Shrew	PE
Didelphia marsupialia	Virginia Opossum	C
Sorex cinereus	Masked Shrew	C
Sorex fontinalis	Maryland Shrew	
Sorex fumeus	Smoky Shrew	C
Blarina brevicauda kirtlandi	Northern Short-tailed Shrew	C
Cryptotis parva parva	Least Shrew	PE
Parascalops breweri	Hairy-tailed Mole	C
Scalopus aquaticus aquaticus	Eastern Mole	C
Condylura cristata cristata	Star-nosed Mole	C
Myotis lucifugus lucifugus	Little Brown Myotis	C
Myotis keenii septentrionalis	Keen's Myotis	R
Lasionycteris noctivagans	Silver-haired Bat	R
Eptesicus fuscus fuscus	Big Brown Bat	C
Lasiurus borealis borealis	Red Bat	U
Lasiurus seminolus	Seminole Bat	U
Lasiurus cinereus	Hoary Bat	U
Nycticeius humeralis humeralis	Evening Bat	R
Sylvilagus floridanus	Eastern Cottontail	C
Sylvilagus transitionalis	New England Cottontail	A
Sciurus carolinensis	Gray Squirrel	C
Tamiasciurus hudsonicus	Red Squirrel	C
Tamias striatus	Eastern Chipmunk	C
Marmota monax	Woodchuck	C
Sciurus niger vulpinus	Fox Squirrel	R
Vulpes fulpa	Red Fox	C
Castor canadensis	Beaver	C
Glaucomys volans volans	Southern Flying Squirrel	C
Peromyscus leucopus noveboracensis	White-footed Mouse	C
Clethrionomys gapperi gapperi	Southern Red-backed Vole	C
Microtus pennsylvanicus pennsylvanicus	Meadow Vole	C
Microtus pinetorum scalopsoides	Woodland Vole	C
Synaptomys cooperi	Southern Bog Lemming	I
Ondatra zibethicus	Muskrat	C
Rattus norvegicus norvegicus	Norway Rat	C
Mus musculus musculus	House Mouse	C
Zapus hudsonius	Meadow Jumping Mouse	C
Odocoileus virginianus	White-tailed Deer	C
Canis latrans	Coyote	S
Urocyon cinereoargenteus	Gray Fox	C
Procyon lotor	Raccoon	C
Mustela erminea cicognanii	Ermine	I
Mustela frenata	Long-tailed Weasel	C
Mustela vison	Mink	C
Mephitis mephitis	Striped Skunk	C

[2] Based on the Guide to the Mammals of Pennsylvania and information from DCNR's web site -

REPTILES[3]

Scientific Name	Common Name	Status
Chelydra serpentina serpentina	Common Snapping Turtle	
Sternotherus odoratus	Stinkpot Turtle	
Clemmys muhlenbergii	Bog Turtle	PE
Clemmys guttata	Spotted Turtle	
Clemmys insculpta	Wood Turtle	
Terrapene carolina carolina	Eastern Box Turtle	
Graptemys	Map Turtle	
Sceloporus undulatus hyacinthinus	Northern Fence Lizard	
Eumeces fasciatus	Five-lined Skink	
Nerodia sipedon sipedon	Northern Water Snake	
Regina septemvittata	Queen Snake	
Storeria dekayi dekayi	Northern Brown Snake	
Storeria occipitomaculata	Northern Redbelly Snake	
Thamnophis sirtalis sirtalis	Eastern Garter Snake	
Thamnophis sauritus	Ribbon Snake	
Heterodon platyrhinos	Eastern Hognose Snake	
Diadophis punctatus edwardsii	Northern Ringneck Snake	
Carphophis amoenus amoenus	Worm Snake	
Coluber constrictor constrictor	Northern Black Racer	
Elaphe obsoleta obsoleta	Black Rat Snake	
Lampropeltis triangulum triangulum	Eastern Milk Snake	
Agkistrodon contortrix mokasen	Northern Copperhead	

[3] Based on Pennsylvania Amphibians and Reptiles and information from DCNR's web site

AMPHIBIANS REPORTED IN THE STUDY AREA[4]

Scientific Name	Common Name	Status
Cryptobranchus alleganiensis	Eastrn Hellbender	
Ambystoma jeffersonianum	Jefferson Salamander	
Ambystoma maculatum	Spotted Salamander	
Ambystoma opacum	Marbled Salamander	
Notophthalmus viridescens viridescens	Red-spotted Newt	
Desmognathus fuscus fuscus	Northern Dusky Salamander	
Plethodon cinereus	Redback Salamander	
Plethodon glutinosus glutinosus	Slimy Salamander	
Hemidactylium scutatum	Four-toed Salamander	
Gyrinophilus porphyriticus porphyriticus	Northern Spring Salamander	
Pseudotriton ruber ruber	Northern Red Salamander	
Eurycea bislineata bislineata	Northern Two-lined Salamande	
Eurycea longicauda longicauda	Longtail Salamander	
Scaphiopus holbrookii holbrookii	Eastern Spadefoot Toad	
Bufo terrestris americanus	American Toad	
Bufo woodhousei fowleri	Fowler's Toad	
Acris crepitans crepitans	Northern Cricket Frog	
Hyla crucifer crucifer	Spring Peeper	
Hyla versicolor versicolor	Eastern Gary Tree Frog	
Pseudacris triseriata	Western Chorus Frog	
Rana catesbeiana	Bullfrog	
Rana clamitans melanota	Green Frog	
Rana sylvatica sylvatica	Wood Frog	
Rana palustris	Pickerel Frog	
Rana pipiens	Northern Leopard Frog	

[4] Based on Pennsylvania Amphibians and Reptiles and information from DCNR's web site

FISH REPORTED IN THE SUSQUEHANNA DRAINAGE[5]

LAMPETRA AEPYPTERA	LEAST BROOK LAMPREY
PETROMYZON MARINUS	SEA LAMPREY
AMIA CALVA	BOWFIN
ALOSA PSEUDOHARENGUS	ALEWIFE
ALOSA SAPIDISSIMA	AMERICAN SHAD
DOROSOMA CEPEDIANUM	GIZZARD SHAD
ONCORHYNCHUS MYKISS	RAINBOW TROUT
SALMO TRUTTA	BROWN TROUT
SALVELINUS FONTINALIS	BROOK TROUT
OSMERUS MORDAX	RAINBOW SMELT
ESOX A.AMERICANUS	REDFIN PICKEREL
ESOX LUCIUS	NORTHERN PIKE
ESOX MASQUINONGY	MUSKELLUNGE
ESOX NIGER	CHAIN PICKEREL
CAMPOSTOMA ANOMALUM	CENTRAL STONEROLLER
CARASSIUS AURATUS	GOLDFISH
CLINOSTOMUS ELONGATUS	REDSIDE DACE
CLINOSTOMUS FUNDULOIDES	ROSYSIDE DACE
CYPRINUS CARPIO	COMMON CARP
NOTROPIS BUCCATA	SILVERJAW MINNOW
EXOGLOSSUM MAXILLINGUA	CUTLIPS MINNOW
NOTEMIGONUS CRYSOLEUCAS	GOLDEN SHINER
NOTROPIS AMOENUS	COMELY SHINER
CYPRINELLA ANALOSTANA	SATINFIN SHINER
NOTROPIS ATHERINOIDES	EMERALD SHINER
LUXILUS CORNUTUS	COMMON SHINER
NOTROPIS HUDSONIUS	SPOTTAIL SHINER
NOTROPIS PROCNE	SWALLOWTAIL SHINER
NOTROPIS RUBELLUS	ROSYFACE SHINER
LUXILUS SPILOPTERA	SPOTFIN SHINER
NOTROPIS VOLUCELLUS	MIMIC SHINER
PIMEPHALESNOTATUS	BLUNTNOSE MINNOW
PIMEPHALES PROMELAS	FATHEAD MINNOW
RHINICHTHYS ATRATULUS	BLACKNOSE DACE
RHINICHTHYS CATARACTAE	LONGNOSE DACE
SEMOTILUS ATROMACULATUS	CREEK CHUB
SEMOTILUS CORPORALIS	FALLFISH
MARGARISCUS MARGARITA	PEARL DACE
NOCOMIS MICROPOGON	RIVER CHUB
CARPIODES CYPRINUS	QUILLBACK
CATOSTOMUS COMMERSONI	WHITE SUCKER

[5] Based on Pennsylvania Gap Analysis, Penn State University

ERIMYZON OBLONGUS	CREEK CHUBSUCKER
HYPENTELIUM NIGRICANS	NORTHERN HOG SUCKER
MOXOSTOMA MACROLEPIDOTUM	SHORTHEAD REDHORSE
AMEIURUS CATUS	WHITE CATFISH
AMEIURUS NATALIS	YELLOW BULLHEAD
AMEIURUS NEBULOSUS	BROWN BULLHEAD
ICTALURUS PUNCTATUS	CHANNEL CATFISH
NOTURUS FLAVUS	STONECAT
NOTURUS GYRINUS	TADPOLE MADTOM
NOTURUS INSIGNIS	MARGINED MADTOM
ANGUILLA ROSTRATA	AMERICAN EEL
FUNDULUS DIAPHANUS	BANDED KILLIFISH
APELTES QUADRACUS	FOURSPINE STICKLEBACK
MORONE AMERICANA	WHITE PERCH
MORONE SAXATILIS	STRIPED BASS
AMBLOPLITES RUPESTRIS	ROCK BASS
ENNEACANTHUS GLORIOSUS	BLUESPOTTED SUNFISH
LEPOMIS AURITUS	REDBREAST SUNFISH
LEPOMIS CYANELLUS	GREEN SUNFISH
LEPOMIS GIBBOSUS	PUMPKINSEED
LEPOMIS MACROCHIRUS	BLUEGILL
LEPOMIS MEGALOTIS	LONGEAR SUNFISH
MICROPTERUS DOLOMIEUI	SMALLMOUTH BASS
MICROPTERUS SALMOIDES	LARGEMOUTH BASS
POMOXIS ANNULARIS	WHITE CRAPPIE
POMOXIS NIGROMACULATUS	BLACK CRAPPIE
ETHEOSTOMA OLMSTEDI	TESSELLATED DARTER
ETHEOSTOMA BLENNOIDES	GREENSIDE DARTER
ETHEOSTOMA FLABELLARE	FANTAIL DARTER
ETHEOSTOMA ZONALE	BANDED DARTER
PERCA FLAVESCENS	YELLOW PERCH
PERCINA CAPRODES	LOGPERCH
PERCINA MACULATA	BLACKSIDE DARTER
PERCINA PELTATA	SHIELD DARTER
S. VITREUM VITREUM	WALLEYE
COTTUS BAIRDI	MOTTLED SCULPIN
COTTUS COGNATUS	SLIMY SCULPIN
COTTUS GIRARDI	POTOMAC SCULPIN

APPENDIX C

BIBLIOGRAPHY

BIBLIOGRAPHY

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Conant, Roger. 1975. A Field Guide to Reptiles and Amphibians of Eastern and Central North America. Boston: Houghton Mifflin Company.

Geyer, Alan R. and J. Peter Wilshusen. 1982. Engineering Characteristics of the Rocks of Pennsylvania, Second Edition. Harrisburg: Pennsylvania Geological Survey, Fourth Series.

Merritt, Joseph F. 1987. Guide to the Mammals of Pennsylvania. Pittsburgh: University of Pittsburgh Press.

Pennsylvania Topographic and Geologic Survey. 1980. Geologic Map of Pennsylvania. Harrisburg: Pennsylvania Department of Environmental Resources.

Rhoads, Ann Fowler and William McKinley Klein, Jr. 1993. The Vascular Flora of Pennsylvania, Annotated Checklist and Atlas. Philadelphia: American Philosophical Society.

Shaffer, Larry, L. 1991. Pennsylvania Amphibians and Reptiles. Pennsylvania Fish Commission.

Socolow, Arthur A. 1980. Geologic Map of Pennsylvania. Commonwealth of Pennsylvania.

APPENDIX D

MELLON BIOLOGICAL SERVICES

PERSONNEL

NAME — **RICHARD MELLON, ECOLOGIST**

EDUCATION

Bachelor of Science in Biology, Pennsylvania State University - 1972

RECOGNIZED EXPERTISE

{ Threatened and Endangered Species
{ Vascular Plants and Vertebrate Animals of the Mid-Atlantic Region
{ Habitat Requirements of Native and Alien Plants
{ Habitat Classification
{ Flora and Fauna Surveys
{ Natural Areas Analysis, Design and Management
{ Wetland Delineation, Mitigation and Permitting

PROFESSIONAL EXPERIENCE

{ **MELLON BIOLOGICAL SERVICES**, Owner/Ecologist. 1979 - Present

{ U.S. Fish and Wildlife Service List of Botanists Skilled in the Location and Identification of the Northeastern Bulrush (Scirpus ancistrochaetus).
{ Completed dozens of Endangered Species Plant Surveys for developers and engineers and approved by the Pennsylvania Department of Environmental Protection.
{ Habitat requirements database development. The development of a database of habitat requirements for native plants and animals of the Mid-Atlantic region, including soil chemistry, geology, biological components and physical characteristics.
{ Botanical consultant to the University of Pennsylvania - Morris Arboretum - Endangered Species Research for eight years. Field research for Pennsylvania Natural Diversity Inventory (PNDI), Pennsylvania Department of Environmental Resources' Project to determine the current status of all vascular plant "Species of Special Concern" in Eastern Pennsylvania. The field investigations involved relocating historic sites of rare, threatened, and endangered species of plants, discovering new locations based on habitat characteristics and documenting extent populations. Additional field data concerning habitat and associated species was also recorded.

- Prepared a Natural Resource Inventory for East Greenwich, Township, New Jersey and Falls Township, Pennsylvania.
- Powerline corridor natural features analysis. Mapped over 150 square miles for wetlands, woodlands, potential endangered species habitat and other significant features, using soil, topography and geology maps, and aerial photographs, with ground verification, for Pennsylvania Power and Light Company.
- Over 400 wetland projects, involving delineations, wetland mitigation and replacements and permitting.
- Assisted as part of the Morris Arboretum field team to identify areas of special natural significance in the Upper Delaware River Corridor for the National Park Service, including responsibility for the ornithological inventory.
- Developed the Ecological Master Plans for Pike County Park in Milford Pennsylvania, Trenton Road Park in Falls Township, Pennsylvania and 5-Mile Woods Preserve in Lower Makefield Township, Pennsylvania. The Master Plans included Physical Components: Topography, Geology, Soils and Hydrology; Biological Components: Botany, Mammalogy, Herpetology and Ornithology; Ecological Components: Habitats; and Recommendations: Preservation, Habitat Management and Public Use Plan.
- Ecological consultant to the University of Pennsylvania - Morris Arboretum - Defined and mapped the habitats of Fairmont Park, Philadelphia.
- Ecological Consultant to Lower Makefield Township for eight years.
- Directed operations at the 285 acre 5-Mile Woods Preserve for 15 years.

MELLON NATURE TOURS, 1977 - 1986

- Organize, promote and lead nature tours throughout North America. Primary emphasis included birds, botany, wolves and whales.

BOWMAN'S HILL WILDFLOWER PRESERVE, WASHINGTON CROSSING HISTORIC PARK, 1973 - 1979

- Primary responsibility involved establishing and maintaining as many native Pennsylvania plant species as possible in the 40 acre preserve.

EXPERT TESTIMONY

- Pennsylvania Public Utility Commission - Testimony addressing neotropical, interior forest species and biodiversity.
- Numerous Municipal Meetings addressing a variety of ecological topics.

AFFILIATIONS

- Pennsylvania Rare Plant Committee - This committee consists of field botanists from throughout Pennsylvania who have regional expertise in Pennsylvania's flora. The committee makes recommendations on the status of Species of Special Concern.
- Society of Wetland Scientists, Past Mid-Atlantic Chapter Chairman.
- Delaware Valley Ornithological Club - Past President, Vice-president, Secretary, Field Trip Chairman.
- Philadelphia Botanic Club – Past Endowment Fund Committee
- New Jersey Audubon Society.

CERTIFICATION

- Professional Wetland Scientist #000475, Society Of Wetland Scientists
- Habitat Evaluation Procedure Certification

AWARDS

- Franklin Wood Award sponsored by the Central Bucks Chamber of Commerce for Excellence in Design. Worked with the Heritage Conservancy and Falls Township to implement a Wrap Grant for the Martins Creek Restoration Project. 2000
- William H. Bates Memorial Award in recognition of outstanding site design and land planning of Garnet Oaks from the Delaware County Planning Commission. Worked with Realen Homes, Inc. on an innovative mitigation area and an open space enhancement plan and implementation that included the design and construction of a nature trail and educational trail guide. 1995
- Julian Potter Award for "outstanding contributions to field ornithology," presented by the Delaware Valley Ornithological Club.
- Witmer Stone Award for the "best paper...which embodies the results of ornithological research," presented by the Delaware Valley Ornithological Club.

MAJOR PUBLICATIONS

- Soil Chemistry Data for Species of Special Concern in Pennsylvania for the botanical journal Bartonia in 1996.
- Neotropical Migrants in Pennsylvania for Pennsylvania Birds in 1994.
- An Ornithological History of the Delaware Valley Region for the Ornithological Journal Cassinia in 1990.
- A Dichotomous Key to the Shorebirds of North America, published by Mellon Biological Services in 1980.

SERVICES

Due Diligence Reconnaissance Site Study

Provides reconnaissance studies of potential purchase properties for wetlands and "Waters of the United States" and their classification (exceptional value, trout streams, etc.); woodlands; probable occurrences of rare or endangered species; and soil characteristics: soil types, steep slopes, septic suitability, depth to rock and hydric soils. Hydrologic, agronomic and ecological conclusions highlight potential site problems, as does a permitting chart for "Waters of the United States" (including wetlands) encroachments.

Wetlands Delineation

Delineates, maps, flags and documents wetlands and prepares appropriate reports in compliance with Federal, State and local regulations. Primary service provided since 1986 (over 300 delineations).

Wetland Encroachment Permitting

Coordinates preparation of General, Nationwide, Small Projects, and Joint Permits; Environmental Assessments; Pennsylvania Natural Diversity Inventory and Pennsylvania Historical and Museums Commission notification; and meeting scheduling and attendance.

Wetland Mitigation

Designs and implements appropriate wetland mitigation plans, based on avoidance, enhancement and/or restoration.

Endangered Species Survey

Surveys sites for Species of Special Concern (endangered plants and animals).

Open Space Analysis and Development

Designs and implements Open Space Enhancement plans which transform your open space liabilities into assets. This service provides information for developing and administering natural areas, including surveys of habitats and species; mapping of habitats, and sensitive areas; designing public use and habitat management plans, which can include trail layout, public access options, and maintenance schedules.

APPENDIX E

BERKS AND LANCASTER COUNTY HISTORIC SITES

Berks

MUNICIPALITY	REFNO	FIRNO	PROPERTY NAME	ADDRESS	STATUS	LIST
Albany Township						
	000178		Bridge in Albany Township	L.R. 06172 Near Trexler	Listed	06/22/1988
	000948		Berk, Daniel, Log House.	R.R. 840 on Maiden Creek	Listed	12/16/1977
	000981		Schaumboch's Tavern	Hawk Mountain Rd. Northwest of Hamburg	Listed	11/20/1979
	089129		Trexler Historic District	T-805	Listed	09/07/2001
	096536		Brobst Grist Mill	Off T-814 on Pine Cr.	Listed	11/08/1990
Amity Township						
	000972		Old Swede's House	Old Philadelphia Pike	Listed	01/21/1974
	000978		Saint Gabriel's Episcopal Church, Old	Rte. 422 & L.R. 06180	Listed	03/08/1978
	000983		White Horse Tavern	509 Old Philadelphia Pike	Listed	04/21/1975
	025619		Irey Mansion	Rte. 422 (North side), 1000ft West of Old Swede Rd.	Eligible	05/18/1998
	025624		Douglass, George, House	Old Philadelphia Pike	Eligible	05/18/2000
	025637	1991-2080-011	Charles, T.B., Property	Junction Rte. 562 & Rte. 662, Southeast Corner	Eligible	05/18/1991
	025639		Rhoads, Johann Jacob, Homestead	1832 Old Swede Rd. Rte. 662, 1750ft South of Rte. 562	Eligible	05/31/2005
	025675		Griesemer/Brown Mill Complex	Browns Mill Rd. T-465, 2250ft West of Limekiln Rd.	Listed	11/08/1990
	025683	1989-1645-011	Moyer's School	Monocacy Creek Rd. L.R. 06179 at Junction with Rte. 422	Eligible	05/08/1990
	096534		Weidner Mill	Blacksmith Rd. at Mantawny Cr.	Listed	11/08/1990
	096833	1989-1645-011	Perkiomen Turnpike Milestone	North Side of Rte. 422	Eligible	05/08/1990
	097767		Ben Franklin Inn	Rte. 422 at Monocacy Creek Rd.	Eligible	05/26/1992
Bechtelsville Borough						
	093810	1992-0154-011	Bechtelsville Hotel/Bar	10 S Main St.	Eligible	11/12/1991
	093811	1992-0154-011	Bechtelsville Store & Post Office	20 S Main St.	Eligible	11/12/1991
	093814	1992-0154-011	Bechtel, Edwin, House	21 N Main St.	Eligible	11/12/1991
	097555	1992-0154-011	Bechtelsville Historic District		Eligible	11/12/1991
Bern Township						
	000955		Wertz's Covered Bridge	T-602	Listed	11/17/1978
	000962		Gruber Wagon Works	Red Covered Bridge Rd. In Tulpehocken Creek Park	NHL	12/22/1977
	078978		Reeser Farm	Red Bridge Rd. T-602	Eligible	02/10/1982
	089464		Rieser Mill	Cross Keys & Grange Rd.	Listed	11/08/1990
	089465		Rieser-Shoemaker Farm	Cross Keys Rd.	Listed	07/29/1992
	089470	1991-1246-011	Prison, Berks County	County Rd.	Eligible	02/12/1991
	089476		County Farm No. 1	County Rd.	Eligible	09/30/1994
	102461		Lower Tulpehocken Creek Historic District	2201 Tulpehocken Rd.	Eligible	10/21/1994

Berks

MUNICIPALITY	KEYNO	ERNO	PROPERTY NAME	ADDRESS	STATUS	DATE
Bern Township (continued)						
	111068	1998-2525-011	Ritz's Lock, Lock No. 42 Schuylkill Canal	Ritz's Lock Schuylkill Canal Near Felix Dam	Eligible	12/09/1998
	115377	1998-2525-011	Felix Dam No. 2		Eligible	04/03/2000
	119544	2002-6089-011	Union Canal - Blue Marsh to Rebers Bridge Rd.	Blue Marsh Dam to Rebers Bridge Rd.	Eligible	02/28/2002
	128755	2004-8038-011	Epler, Jared, House	2619 Leisz's Bridge Rd.	Eligible	06/01/2004
	140475	1985-1523-011	Reading Municipal Airport City Hangar	Bernville Rd. S.R. 183	Eligible	11/12/2004
	140513		Reading Army Airfield Buildings 501 & 502		Eligible	11/12/2004
Bernville Borough						
	021917		Conrad, Joseph B., Home	219 N Main St.	Eligible	09/21/1983
Bethel Township						
	084823		Spannuth Mill	Junction of Frystown & Crosskill Creek Rds.	Listed	11/08/1990
Birdsboro Borough						
	001116		Saint Michaels Protestant Episcopal Church Complex	Mill & Church Sts.	Listed	12/20/1982
	093024		Brooke, Edward II, Mansion	Washington St. & Carnegie Drive	Eligible	09/04/1987
	093634		Brooke, E. & G., Ironworks	200 N Furnace St. Off Furnace St.	Eligible	10/28/2005
Boyertown Borough						
	021922		Boyer Store	10 E Philadelphia Ave.	Eligible	06/21/1985
	096160	1984-1079-011	Boyertown U.S. Post Office	27 N Reading Ave.	Eligible	04/27/1990
	097918	1999-1032-011		200 N Reading Ave.	Eligible	06/02/1992
	140311	2004-8045-011-A		85 S Walnut St.	Eligible	07/27/2004
Brecknock Township						
	093608	1997-1087-011	Simmerman Farm	Rte. 625	Eligible	04/03/1998
	095494	1987-0147-011	Fitterling Farm	Adamstown/Knauer Rd.	Eligible	02/16/1990
Caernarvon Township						
	082631		Morgan, Col. Jacob, Homestead	Shiloh Rd. Morgantown	Eligible	08/20/1985
	092673	85-0079-011	Kurtz, J. Limekiln	Mineview Dr.	Eligible	06/09/1987
	092674	85-0079-011	Zager, Donald, Farm	Mineview Dr.	Eligible	06/09/1987
	093386		Morgantown Historic District	Walnut St. to Washington St., Between North St. & South St.	Listed	11/07/1995
	096896	1985-0079-011	Ames House	Mineview Dr.	Eligible	08/30/1990
	096897	1985-0079-011	Kurtz-Beiler Farmstead	Hartz Rd.	Eligible	08/30/1990
	097860		Hertler House		Eligible	03/25/1992
	105925		Jones, Jonathan, Colonel, Homestead	South side Rte. 23, 1 Block West of Twin Valley Rd.	Eligible	02/14/1997
Centre Township						
	000135		Dauberville Bridge	Belleman's Church Rd. L.R. 06036	Listed	06/22/1988
	000947		Bellman's Union Church	Off Rte. 726, Southwest of Centreport	Listed	12/04/1973

Berks

MUNICIPALITY	AGENCY	PROPERTY NAME	ADDRESS	STATUS	LIST
Colebrookdale Township					
	093848	Bahr Mill Complex	Ironstone Dr.	Listed	11/08/1990
	093855	New Berlin Historic District	N Reading Ave.	Eligible	06/15/1992
	096533	Johnson, Nicholas, Mill	Mill Crest Rd.	Listed	11/08/1990
Cumru Township					
	092818	1987-0147-011 Shennauer Tavern	Old Lancaster Pike	Eligible	02/16/1990
	092823	1987-0147-011 Five Mile House	1540 Old Lancaster Pike	Eligible	07/01/1992
	092835	Ridgewood Farm	Junction of Pa 724 & I-176	Listed	05/07/1992
	140678	High House	Poplar Neck Rd.	Eligible	01/05/2005
Douglass Township					
	000284	Ironstone Bridge	Farmington Ave. L.R. 284	Listed	06/22/1988
	079356	1990-2753-011 Pine Forge Mansion and Industrial Site	Pine Forge Rd. Near Douglas Drive	Listed	03/18/2004
	096927	1990-2753-011 Pine Forge Village Historic District		Eligible	10/11/1990
	128763	Douglassville Historic District	Benjamin Franklin Hwy.	Eligible	01/12/2004
Earl Township					
	096861	Apler Stone Cabin	Sunset Hill Rd. at Longview Rd.	Eligible	08/02/1990
Exeter Township					
	000950	Boone, Daniel, Homestead Site & Bertolet Cabin	2 mile North of Birdsboro	Listed	03/24/1972
	000971	Mill Tract Farm	Mill Rd. T-461, South of Limekiln Rd., Northeast of Stonerville	Listed	09/22/1977
	025726	Oley Line Hotel	800 Limekiln Rd.	Eligible	07/07/2000
	050661	Boonecroft	Oley Line Rd. On (T-440)	Listed	07/26/1982
	064328	Bishop, John, House	North Side of U.S. 422, L.R. 06110 & T-434	Listed	06/27/1985
	079044	Lincoln, Mordacai, House	Lincoln Rd.	Listed	11/03/1988
	079045	Exeter Friends Meetinghouse	Boone Rd. T-465	Eligible	04/14/1982
	096407	Bishop-Tyson House	Rte. 422, Opposite Reading Country Club	Eligible	02/22/1990
	096540	Snyder Mill	Oley Line Rd. at Monocacy Cr.	Listed	11/08/1990
	141705	1999-6016-011 Philadelphia and Reading Railroad Mainline		Eligible	10/28/2005
Fleetwood Borough					
	101338	Fleetwood School	Arch St.	Eligible	02/25/1993
	110124	First National Bank in Fleetwood	Main St. & Fleetwood St.	Listed	05/20/2005
Greenwich Township					
	000953	Kutz's Mill Bridge	Northwest of Kutztown on T-798	Listed	02/23/1981
	000967	Lenhart Farm	Intersection U.S. 22 & Rte. 143	Listed	09/18/1978
	089652	Merkel Grist Mill	Dreibelbis Station Rd. at Maiden Cr.	Listed	11/08/1990
	089656	1992-1742-011 Stein, Adam, Farm	Kohler Rd.	Eligible	05/13/1992
	089659	Dunkel, Jacob, Homestead	Dreibelbis Station Rd.	Eligible	01/30/1991
	089669	Stein Mill	Rte. 737 at Mill Cr.	Listed	11/08/1990

Berks

MUNICIPALITY	KEYNO	ERNO	PROPERTY NAME	ADDRESS	STATUS	LISTED DATE
Greenwich Township (continued)						
	089672		Kutz Mill	Kutz Mill Rd. at Sacony Cr.	Listed	11/08/1990
	099886		Maiden Creek Charcoal Furnace	Rte. 22, East of Lenhartsville	Eligible	08/24/2004
	129271	2003-8024-011-B	Miller Property	Old Route 22 Southwest side of Old Route 22	Eligible	08/24/2004
	129272	2003-8024-011-B		Saddle and Feather Hill Rd. Southwest of the intersection of Saddle and	Eligible	08/24/2004
	129277	2003-8024-011-B		93 Donat Rd. Both sides of Donat Road adjacent to the intersection	Eligible	08/24/2004
	129280	2003-8024-011-B	Keller Farm Property	88 George Rd.	Eligible	08/24/2004
	129289	2003-8024-011-B	Wee Cottages Property	Old Route 22 On the south side of Old Route 22 approximately .40	Eligible	08/24/2004
	129298	2003-8024-011-B	Hegerman Farm Property	685 Route 22	Eligible	08/24/2004
	129299	2003-8024-011-B	Grimville Historic District	Center around the intersection fo T.R. 7441 and Long Lange (Church road)	Eligible	08/24/2004
	129302	2003-8024-011-B	Knittle Farm Property	S.R. 0078 South side of S.R. 0078 along Gensinger Rd	Eligible	08/24/2004
	129306	2003-8024-011-B	Kengel Farm Property	Stump Road	Eligible	08/24/2004
Hamburg Borough						
	022004		Hamburg Public Library	35 N 3rd St.	Listed	11/03/1988
	096457		Hamburg Armory	N 5th St. South of I-78	Listed	05/09/1991
	101958	1994-0287-011	Schuylkill Navigation Canal Culvert	Near Port Clinton Ave.	Eligible	11/15/1993
	101959	1994-0287-011	Hamburg Historic District		Eligible	11/15/1993
	106866		Saint John's Evangelical Lutheran Church	99 Church St.	Eligible	09/09/1999
Heidelberg Township						
	000982		Weiser, Conrad, House	28 Weiser Rd.	NHL	10/09/1960
	025784	1991-1270-011	Manbeck, Robert, Property	N Church St. L.R. 06052, 1000ft Southwest of Manbeck Rd. (T-512)	Eligible	02/12/1991
	025791		Kissling Farm	Brownsville Rd.	Listed	07/29/1992
Hereford Township						
	091860		Hunter's Mill District	Forgedale Rd.	Listed	12/22/1988
	093734		Meusch Mill	Camp Meusch Mill Rd.	Eligible	04/23/2001
	093738		Baver, Faith & George, Property	Township Rd.	Eligible	08/16/2001
	093740		Gehman, John, Farm	Township Rd. North of Harlem	Listed	05/07/1992
	093748	1991-2115-001	Treichlersville (Village of Hereford)	Rte. 100 & Seisholtzville Rd. (Rte. 29)	Eligible	04/09/1991
	097194	1991-1055-011	Wiegner-Schelly House	Rte. 29 & Toll Gate Rd.	Eligible	01/22/1991
Jefferson Township						
	084883		Potteiger Farm	New Schaefferstown Rd. Rte. 183	Eligible	03/17/2006
	084890	1997-1551-011	Moyer, John Nicholas & Elizabeth, House	152 Hetrick Rd.	Listed	05/02/2001
Kutztown Borough						
	000965		Kutztown 1892 Public School Building	White Oak & Normal Ave.	Listed	08/27/1980

Berks

MUNICIPALITY	KEY NO	URNO	PROPERTY NAME	ADDRESS	STATUS	DATE
Kutztown Borough (continued)						
	079277		Deisher, H.K., Knitting Mill	56 Noble St.	Listed	09/05/1985
Leesport Borough						
	000966		Leesport Lock House	Wall St.	Listed	06/08/1977
	127147	2004-8018-011	Reuben Wanner House	4 N Centre Ave.	Eligible	04/19/2004
	127148	2004-8018-011	Edwin Gernant House	69 N Centre Ave.	Eligible	04/19/2004
	127150	2004-8018-011	Fisher, J. B., House	80 N Centre Ave.	Eligible	04/19/2004
	127152	2004-8018-011	Major, William, House	108 N Centre Ave.	Eligible	04/19/2004
	127154	2004-8018-011	Gauker, John, House	167 N Centre Ave.	Eligible	04/19/2004
	127156	2004-8018-011	Boyer, David, House	173 N Centre Ave.	Eligible	04/19/2004
Lenhartsville Borough						
	097497		Penn Street Bridge	Penn St.	Eligible	05/16/1991
Longswamp Township						
	093513		Long/Hawerter Mill	Longsdale Rd. at Little Lehigh Cr.	Listed	11/08/1990
	093517		Mary Ann Furnace Historic District	Centennial & Mary Ann Rds.	Listed	09/06/1991
	097542		Lower Longswamp Historic District	Longswamp Rd., Centennial Rd.	Eligible	06/28/1995
Lower Alsace Township						
	093858		William Penn Memorial Firetower	Skyline Dr.	Eligible	12/09/1992
	116259		Antietam Lake & Watershed		Eligible	02/22/2001
Lower Heidelberg Township						
	000973		Old Dry Road	Highland Rd. 3 mile Northwest of Wernersville	Listed	01/23/1978
	079037		Saint John's Hain Reformed Church	Church Rd. L.R. 06058	Eligible	06/12/1996
	079039		Essig Farm	T-513, Northeast of Brownsville	Eligible	03/27/1978
	084856		Hain Mill	Junction of Hain Mill Rd. & T-495	Listed	11/08/1990
	097362		Knorr/Bare Farm	4995 Penn Ave.	Listed	07/29/1992
	111791	1997-8048-011	Cacoosing Valley Rural Historic District	Reedy Rd.	Eligible	12/13/1999
	141478	2005-1637-011	Ruth Farmstead	205 Gaul Rd.	Eligible	08/19/2005
	141480	2005-1637-011	Fisher Farmstead	91 Gaul Rd.	Eligible	08/19/2005
Maidencreek Township						
	079353		Guldin Mill	Off Pa 73 Southeast of Junction with U.S. 222	Listed	11/08/1990
	101715		Kindt's Corner Historic District	Kindt's Corner Rd.	Eligible	08/12/1993
	105618	1996-8267-011	Kaufman, Samuel G., House		Eligible	09/25/1996
	119356	2002-0604-011	Ontelaunee Dam Gatehouse	S.R. 73	Eligible	02/14/2002
Marion Township						
	000179		S-Bridge	L.R. 06024	Listed	06/22/1988
	000799		Spycker, Peter, House	150 Main St. Stouchsburg (N.R. H.D.)	Listed	04/22/1983
	076574	2002-0225-011	Burkholder, Noah, Property	Wintersville Rd.	Eligible	01/09/2002

Berks

MUNICIPALITY	KEYNO	ERNO	PROPERTY NAME	ADDRESS	STATUS	DATE
Marion Township (continued)						
	076575	2002-0225-011	Etschberger, Jacob, House	Wintersville Rd.	Eligible	01/09/2002
	077376		Stouchsburg Historic District	12-153 Main St. & Water St.	Listed	01/08/1985
	083509		Tulpehocken Creek Historic District	Tulpehocken & Mill Creeks	Listed	03/28/1985
Maxatawny Township						
	000960		Hottenstein Mansion	U.S. 222, Box 370 (Kutztown)	Listed	06/22/1972
	000964		Kemp's Hotel	U.S. 222, East of Kutztown	Listed	12/19/1978
	050687		Kutztown University, Old Main	Main St. U.S. 222	Eligible	03/15/1983
	064532		Siegfried's Dale Farm	Siegfriedale Rd.	Listed	05/10/1984
	096372		Grim, G., Homestead	Grim Rd.	Eligible	08/14/1989
	097361		Boyer-Mertz Farm	Northeast Corner Noble St. & Bastian Rd.	Listed	09/09/1992
	104902		Ift Maxatawny Fish Farm	Topton Rd. S.R. 1049 West side	Eligible	11/22/1995
Muhlenberg Township						
	111068	1998-2525-011	Ritz's Lock, Lock No. 42 Schuylkill Canal	Ritz's Lock Schuylkill Canal Near Felix Dam	Eligible	12/09/1998
	115377	1998-2525-011	Felix Dam No. 2		Eligible	04/03/2000
North Heidelberg Township						
	079034	81-011-0001	Skinner House	T-374	Eligible	01/29/1982
	084936		Stupp-Oxenrider Farm	Dundore Rd. Northwest of Robesonia	Listed	07/29/1992
Oley Township						
	000796		Oley Township Historic District	Pa 73	Listed	03/11/1983
	000951		Pleasantville Bridge	Covered Bridge Rd. T-916	Listed	02/23/1981
	000952		Greisemer's Mill Bridge	Northwest of Boyerstown on T-579	Listed	02/23/1981
	000957		Fisher, Henry, House	About 1.25 mile North of Yellow House on Pa 662	Listed	06/04/1973
	025875		Knabb-Beiber Mill	Beiber Mill Rd. T-539 1/4 mile from W. School Rd. (T-500	Listed	11/08/1990
	025882		Reiff Farm	Old State Road T-454, 1000ft. Southwest of Reiff Rd. (T-569)	Listed	02/25/1982
Ontelaunee Township						
	000813		Davies House	Berkley Rd.	Listed	11/14/1982
	064388		Schmehl, Robert, Property	Berkley Rd.	Eligible	05/10/1984
	089690	1992-0582-011	Fox Farm	Leesport Ave.	Eligible	12/03/1991
	092342		Berkley Historic District	Berkley & Snyder Rds.	Listed	08/22/2002
	101714	2004-8018-011	City of Reading Bureau of Water	Berkley Rd.	Eligible	02/09/2004
	101715		Kindt's Corner Historic District	Kindt's Corner Rd.	Eligible	08/12/1993
	102963	1995-0449-011	Kirkhoff, Miles, Property	Indian Manor Rd. East Side	Eligible	12/19/1994
	102978	2004-8018-011	Blue Mountain & Reading Railroad		Eligible	12/19/1994
	124005	2002-1584-011	Koller Plantation	Willow Creek Rd., Leesport Ave. & Snyder Rd.	Eligible	02/26/2003

Berks

MCD/INCPLACE	REFNO	ERNO	PROPERTY NAME	ADDRESS	STATUS	DATE
Ontelaunee Township (continued)						
	127126	2004-8018-011	Ulrich House	W side of Pottsville Pike, N.side of Maiden Creek	Eligible	02/09/2004
	127164	2004-8018-011	Blue Mountain & reading RR Bridge	Between Cross Keys and Berkley	Eligible	02/09/2004
	141514	2004-2121-011	Moser, John, Farmstead	403 Snyder Rd.	Eligible	09/02/2005
Perry Township						
	093191		Leiby, Jacob, Farm	Rte. 143	Listed	07/29/1992
	096495		Dreibilbis Mill	Dreibilbis Mill Rd. & Bellevue Rd.	Listed	11/08/1990
	102973	1995-0449-011	Levan, Amela R., Property	Main St. West side of Rte. 61	Eligible	12/19/1994
	102977	1995-0449-011	Zwezig Property	Hughes Hill Rd. West side	Eligible	12/19/1994
	102978	2004-8018-011	Blue Mountain & Reading Railroad		Eligible	12/19/1994
	110137	1997-8046-011	Berne Station Bridge	Fisher Dam Rd. T-558	Eligible	08/11/1998
Pike Township						
	000963		Keim Homestead	T-500 (Boyer Rd.), 1.1 mile West of Lobachsville	Listed	05/01/1974
	079051		Hartman Cider Press	T-500, 1.1 Mi. West of Lobachsville	Listed	01/07/1988
	093190		Pikeville Hotel	Oysterdale Rd.	Eligible	09/24/1987
	093531		Mill at Lobachsville	Mill Rd. at Pine Cr.	Listed	11/08/1990
	093543		Yoder Mill	Yoder Rd. at Oysterville Cr.	Listed	11/08/1990
	105455		Northern Oley Valley Historic District	Lobachsville & Pikeville	Eligible	08/06/1996
Reading City						
	000232		Lindbergh Viaduct	Mineral Springs Rd. L.R. 146, U.S. 422	Listed	06/22/1988
	000949		Bethel African Methodist Episcopal Church	119 N Tenth St.	Listed	09/07/1979
	000958		Hendel Brothers, Sons & Company Hat Factory	517-539 S 5th St.	Listed	11/20/1979
	000970		Log House, Hiester House & Market Annex	30 S 4th St.	Listed	11/20/1979
	000975		Pagoda	100 Skyline Dr. Duryea Dr. & Skyline Blvd., Mt. Penn	Listed	11/07/1972
	000976		Reading Hardware Company Butt Works	537 Willow St.	Listed	11/20/1979
	000979		Stirling	1120 Centre Ave.	Listed	04/17/1980
	000980		Trinity Lutheran Church	Northwest Corner 6th & Washington Sts.	Listed	06/07/1976
	000984		Wilhelm Mansion & Carriage House	730 Centre Ave.	Listed	03/01/1982
	001292		Askew Bridge	N 6th St. Near Woodward St.	Listed	03/01/1973
	064455		Liberty Fire Company No. 5	501 S 5th St.	Listed	01/18/1985
	067777		Meinig Glove Factory	621-641 McKnight St. and 612-632 McKnight	Listed	08/30/1985
	077397		Grimshaw Silk Mill	1200 N 11th St.	Listed	01/31/1985
	078974	1982-0524-011	Prince Historic District	S 6th, Franklin, Bingham, Laurel Sts.	Eligible	09/05/1984
	078986		Union Firehouse No. 13	433 A 15th St.	Eligible	03/31/1982

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MUNICIPALITY	ENANO	ERNO	PROPERTY NAME	ADDRESS	STATUS	DATE
Reading City (continued)						
	078987	82-011-0524	Centre Park Historic District	Church, Robeson, 2nd, Greenwich Sts.	Eligible	09/05/1984
	078992	82-011-0524	Penn, Thomas District	N 5th, Reed, 6th, Court Sts.	Eligible	02/09/1983
	078993	82-011-0524	Queen Anne Historic District	Centre, Schuylkill Aves., Spring St.	Listed	11/12/2004
	078994	82-011-0524	Ricktown District	Lebanon Valley Railroad, Schuylkill Ave., N 2nd St.	Eligible	02/09/1983
	078995	82-011-0524	Riverfront District	Franklin, Between S 3rd & S 5th, Laurel Sts.	Eligible	02/09/1983
	078996	82-011-0524	Factory District	Pike, N 12th St., Marion, N 11th St. to Doryless St.	Eligible	02/09/1983
	078997	82-011-0524	Parkline District	Hill Rd., Perkiomen Ave., 18th St.	Eligible	09/11/1981
	078998	82-011-0524	Penn's Common District	Buttonwood, N 11th St., Cherry St., N 9th St.	Eligible	02/09/1983
	079002	82-011-0524	Callowhill Historic District	5th St. from Buttonwood to Laurel Sts.	Eligible	12/20/1979
	079012		Metropolitan Edison Building	412 Washington St.	Listed	10/28/1983
	079013		Hampden Firehouse	1101 Greenwich St.	Listed	04/13/1982
	079014		Foos, Charles S., Elementary School	Douglas & Weiser Sts.	Listed	11/10/1983
	079016		City Hall (Boy's High School)	8th & Washington Sts.	Listed	04/13/1982
	079018		Reading Knitting Mills	350 Elm St.	Listed	04/13/1982
	080319		Keystone Hook & Ladder Company No. 1	200 Penn St. 2nd & Penn Sts.	Listed	10/31/1985
	080604		Livingood House/Stryker Hospital	419 Walnut St.	Listed	11/07/1996
	080617		Yocum Bros. Cigar Factory (La Cubana Cigar Factory	701 Walnut St.	Eligible	04/07/1988
	080622		Willson, Thomas A, & Company, Building	201 Washington St.	Eligible	02/15/2005
	080730		Aldine	200 N 4th St.	Eligible	06/09/1992
	080963		Tyson-Schoener Elementary School	315 S 5th St.	Eligible	04/18/2003
	080974		Berks County Courthouse	33 N 6th St.	Eligible	06/16/1987
	080975		Berks County Trust Company	35 N 6th St.	Eligible	01/13/1998
	081023		Franklin Street Station	100 S Fictitious 7th St.	Eligible	04/14/1988
	081066		Curtis & Jones Company	720-734 N 8th St.	Eligible	02/12/1987
	081488	1982-0524-011	Hagenman, George	368-372 N Front St.	Eligible	01/05/1988
	081685		Reading Public Museum & Art Gallery	500 Museum Rd.	Eligible	11/16/1992
	082518		Cotton & Maple Street School	1018 Cotton St.	Listed	07/17/1986
	083523		Swanane, Carpenter, James, House	606 N 5th St.	Eligible	09/12/1985
	086393		Yocum Brothers Cigar Company	150 N 4th St.	Eligible	11/04/1985
	092110		Wanner, Peter D., House	1401 Walnut St.	Listed	11/05/1987
	092268		Miller Hat Factory (Hyde Park Bedding)	500 S 4th St.	Eligible	04/30/1987
	102981		Pomeroys Department Store	600-620 Penn St.	Eligible	12/18/1994
	104975	1994-3249-011	Noe-Equal Hosiery Company	12th St. & Bern St.	Eligible	11/15/1994

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MUNICIPALITY	KEYNO	ERNO	PROPERTY NAME	ADDRESS	STATUS	LIST
Reading City (continued)						
	105382		Reading Hardware Company	Willow St. Between S 5th St. & S 6th St.	Listed	06/13/1997
	105575		Reading Railroad Shops North Sixth Street Complex	N 6th St.	Eligible	09/23/2001
	106172	1982-0101-011	Harolds Furniture Building	726 Penn St.	Eligible	04/30/1997
	111048	1998-0263-011	Home of Friendless Children	1010 Centre Ave.	Eligible	04/02/1999
	111482		Red Men Hall	831-833 Walnut St.	Listed	07/27/2000
	115271		Park Line Historic District	Hill Rd., Mt. Penn Preserve, Perkiomen Ave.	Eligible	09/11/1981
	116259		Antietam Lake & Watershed		Eligible	02/22/2001
	118600	2001-3529-011	Pendora Park Channel	Pendora Park	Eligible	09/14/2001
	140544		Northwest Junior High School	1000 N Front St.	Eligible	01/07/2004
Richmond Township						
	079275		Crystal Cave	L.R. 06169 & T-770	Eligible	04/17/2001
	089693		Moselem Farms Mill	Rte. 662 & Forge Rd.	Listed	11/08/1990
	089698		Merkel Mill Complex	Eagle Rd. at Rte. 662; Junction of Pa. 662 & Pa. 143	Listed	11/08/1990
	089705		Leibelsperger Farm	Rte. 662 & Mine Rd.	Eligible	04/28/1993
	089710		Schlegel, Christian, Farm	Fleetwood-Lyons Rd.	Listed	07/29/1992
	089711		Schlegel Grist Mill	Stump Rd. at Fleetwood Rd.	Eligible	09/25/1990
	096358		Dreibelbis, Joel, Farm	Rte. 183	Listed	11/13/1989
	096563		Dreibilbis Mill	Dreibilbis Mill Rd. & Bellevue Rd.	Listed	11/08/1990
	105250	1996-8136-011	Virginville Historic District	Virginville	Listed	09/28/2000
	105360	1993-4231-011	Henry, Isaac, Farmstead	201 Willow St.	Eligible	06/02/1994
Robeson Township						
	000961		Joanna Furnace Complex	L.R. 244, North of Morgantown on Pa. 10	Listed	04/23/1980
	021842	1997-1774-011	Bitler Farm	Rte. 568 (L.R. 06084), 2000ft Southwest of Gunhart Rd. (T-342)	Eligible	05/14/1997
	021888		Geiger Mill	Mill Rd. T-357, 200ft. North of Rte. 82	Listed	11/08/1990
	021890		White Bear Tavern	Rte. 82 (East side), 800ft South of Buck Hollow Rd. (T-341)	Eligible	07/23/2001
	079017		Allegheny Aqueduct	Rte. 724, Allegheny Creek	Listed	02/23/1984
	096554		Thompson Mill	Golf Course Rd. at Seidel Cr.	Listed	11/08/1990
	102514		Beidler House & Mill Site	6 Old River Rd.	Eligible	08/29/1994
Robesonia Borough						
	079040		Robesonia Furnace Historic District	Furnace, S. Church & Freeman & Mountain & E Meadow Aves.	Listed	09/06/1991
	085075		Robesonia Elementary Center	120 W Penn Ave.	Eligible	02/01/1984
	140603		Robesonia Historic District	422 East and West Penn Ave (422), Linden St., Anna St.	Eligible	01/07/2005

Berks

MUNICIPALITY	REMOVED	HRNO	PROPERTY NAME	ADDRESS	STATUS	DATE
Rockland Township						
	000977		Sally Ann Furnace Complex	Mine Rd. R D Box 169, Topton	Listed	08/17/1976
Ruscombmanor Township						
	093771	1991-3967-011	Hill Homestead	Rte. 662	Eligible	08/30/1991
Shillington Borough						
	000989		High, William, House	8 Philadelphia Ave.	Eligible	03/16/1992
	093801	1991-0984-011	Dobson, Thomas R., Property	332 Handel St.	Eligible	01/16/1991
	093802	1991-0984-011	Millers House	302 Hendel St.	Eligible	01/06/1991
	097271	1990-2296-031	Fritz, Henry, House	14 Philadelphia Ave.	Eligible	03/16/1992
	101337		Shillington Town Hall	Lancaster Ave.	Eligible	02/25/1993
Shoemakersville Borough						
	103848	1995-1674-011	Merit Underwear Company	43 Noble Ave.	Listed	06/28/1996
Sinking Spring Borough						
	097865		Sinking Spring Bank	Rte. 422	Eligible	03/25/1992
South Heidelberg Township						
	084964		Wernersville State Hospital	Texter Mountain Rd.	Eligible	06/00/1984
	084974		Grand View Dairy Farm	Preston Rd. South of Wernersville	Listed	07/29/1992
Spring Township						
	000955		Wertz's Covered Bridge	T-602	Listed	11/17/1978
	080659	1987-0354-011	Van Reed, John, House	Paper Mill Rd. Across from Van Reed Paper Mill	Eligible	06/15/1999
	080660	1987-0354-011	Van Reed, Mary, House	Tulpehocken Rd. & L.R. 06039 at Bridge Over Tulp. Creek	Eligible	04/11/1990
	095482	1987-0147-011	Ruth Farm	Old Fritztown Rd. at Hain Rd.	Eligible	02/16/1990
	095495	1987-0147-011	Beverly Hills Tavern	Old Fritztown Rd.	Eligible	02/16/1990
	096561	1987-0354-011	Van Reed Paper Mill	Van Reed Rd.	Eligible	04/11/1990
	096813	1987-0354-011	Kissinger Church District	Kissinger Land	Eligible	05/29/1990
	096816	1987-0354-011	Janssen Historic District	Between Tulpehocken Rd. & Papermill Rd.	Eligible	04/11/1990
	102461		Lower Tulpehocken Creek Historic District	2201 Tulpehocken Rd.	Eligible	10/21/1994
	111791	1997-8048-011	Cacoosing Valley Rural Historic District	Reedy Rd.	Eligible	12/13/1999
St. Lawrence Borough						
	000969		Levan Farm	Pa 562	Listed	12/19/1978
	102334		Lutz, John F., Furniture Company & Funerary	3559-3561 St. Lawrence Ave.	Listed	02/16/1996
Strausstown Borough						
	097491		Strausstown Historic District	Main St.	Eligible	05/07/1991
Tilden Township						
	105661	1997-0088-011	Sontag, Benjamin, Farmstead	Walnut Rd.	Eligible	11/19/1996
	110137	1997-8046-011	Berne Station Bridge	Fisher Dam Rd. T-558	Eligible	08/11/1998

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MUNICIPALITY	KEY NO	ER NO	PROPERTY NAME	ADDRESS	STATUS	DATE
Union Township						
	000959	1990-0896-042-I	Hopewell Furnace National Historic Site	Rte. 345	Listed	10/15/1966
	088890		French Creek State Park, Six Pennyday Use District	7 mile Northeast of Morgantown on Pa 345	Listed	02/11/1987
	088891		French Creek State Park Organized Group Camp 4	French Creek State Park	Listed	02/12/1987
Upper Bern Township						
	089724		Kauffman's Mill	Mill Rd. at Mill Hill Rd.	Listed	11/08/1990
Upper Tulpehocken Township						
	085043		Seyfert Mill	Old 22 & Campsite Rd.	Listed	11/08/1990
	104287	1992-3867-011	Boltz, Valentine, House	Bloody Springs Rd.	Eligible	01/12/1995
	104288	1992-3867-011	Ney, Michael, Farm	Bloody Springs Rd.	Eligible	01/12/1995
	104976		Wagner, Benjamin, Farmstead	Off Campsite Rd.	Eligible	01/12/1995
Washington Township						
	000282		Barto Bridge	L.R. 284	Listed	06/22/1988
	000956		Christman, Philip, House	Gehman Rd. Off T-865 (	Listed	03/07/1973
	093454		Dale Furnace & Forge Historic District	Forgedale Rd. North of Dale	Listed	09/06/1991
	093456		Borneman Mill	Off Pa. 100 Southwest of Clayton	Listed	11/08/1990
Wernersville Borough						
	000968		Lerch Tavern	182-184 W Penn Ave.	Listed	09/12/1979
	096557		Wertz Mill	60 Werner St.	Listed	11/08/1990
West Lawn Borough						
	093357		West Lawn Borough Hall	Woodside Ave. & Noble St.	Eligible	03/25/1992
West Reading Borough						
	088902		West Reading High School	4th Ave. & Franklin St.	Eligible	09/02/1986
	093316		West Reading Borough Hall	5th Ave. & Chestnut St.	Eligible	04/21/1995
Windsor Township						
	000954		Dreibelbis Station Bridge	South of Lenhartsville on T-745	Listed	02/23/1981
	064465		Hamburg State Hospital	S.R. 4028	Eligible	06/00/1984
	089747	1994-0287-011	Merkel, Shollenberger, B., Tavern	Old Rte. 22	Eligible	11/15/1993
	101960	1994-0287-011	Stein, Jacob, Farmstead	Old Rte. 22	Eligible	11/15/1993
	101961	1994-0287-011	Zettlemoyer, David, Farmstead	Mountain Rd.	Eligible	11/15/1993
	110303	1998-6012-011	Kershner Bridge	Woodland Rd.	Eligible	08/18/1998
Womelsdorf Borough						
	000985		Womelsdorf Historic District	Bounded by Water, 4th, Franklin & Jefferson Sts.	Listed	03/10/1982
Wyomissing Borough						
	093188		Lauer's Farm	Lauer's Ln.	Eligible	09/24/1987
	093224	1991-0734-011	Fry, Mrs. Samuel, Property	Between Old Wyomising Rd. & Museum Rd.	Eligible	12/19/1990
	093227		Evans Mill Complex	960 Old Mill Rd.	Eligible	07/21/1995

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MUNICIPALITY	KEY NO	HRN NO	PROPERTY NAME	ADDRESS	STATUS	DATE
Wyomissing Borough (continued)						
	093268		*Thun, Ferdinand Mansion*	*22 Reading Blvd.*	Eligible	02/25/1993
	093269	2000-1750-011	Wyomissing Public Library	9 Reading Blvd.	Eligible	05/01/2000
	093273	1987-0354-011	Marshall House	Tulpehocken Rd.	Eligible	04/11/1990
	120935	2002-1544-011	Wyomissing High School	630 Evans Ave.	Eligible	07/05/2002

Berks	Eligible	Listed	NHL	Total
Total	183	127	2	312

National Register Listed, Eligible, and NHL Properties
Pennsylvania Historical Museum Commission
Bureau for Historic Preservation

5/11/2006

Lancaster

MUNICIPALITY	TREVNO	ERNO	PROPERTY NAME	ADDRESS	STATUS	DATE
Adamstown Borough						
	036909		Kagerise Store & House	84-86 W Main St.	Listed	11/03/1988
Brecknock Township						
	001092		Good, John B., House	Rte. 625, Northeast Corner at Bowmansville	Listed	02/08/1980
	036730		Schneder, Christian, House	Center Church Rd. East Side, South of Black Creek Rd.	Eligible	07/01/1993
	036772		Bowmansville Roller Mill	Rte. 625 & Von Neida St.	Listed	01/19/1990
	036776		Bowman, Samuel, House/Store	Rte. 625 Southeast Corner at Maple Grove Rd. Bowmansville	Eligible	01/08/1993
	036779	1998-1174-071	Musselman, Christian & Judi H.	Pa 625, West side, South of Lauschtown Rd.	Eligible	04/02/1998
	050819		Red Run Covered Bridge	T-816, South of Red Run	Listed	12/10/1980
	105028		Von Neida Mill/Farm	Willow St.	Eligible	11/03/1995
Caernarvon Township						
	050792		Pool Forge Covered Bridge	T-773, North of Beartown	Listed	12/10/1980
	050793		Weaver's Mill Covered Bridge	T-679, North of Goodville	Listed	12/10/1980
	070877		Bangor Episcopal Church	Main St. (Rte. 23) at Water St. (T-918) in Churchtown	Listed	04/30/1987
	070881		Poole Forge	1936-1942 Main St.	Listed	04/29/1993
	070891		Evans, Ann, House (Mrs. James)	Rte. 322, North side, West of Pool Forge Rd.	Listed	05/09/2002
	070901		Windsor Forge Mansion	Windsor Rd. South side of Bootjack Rd.	Listed	01/04/1990
	096375		Davies, Edward, House	Rte. 23, West of Water St.	Listed	09/06/1991
	106058		Churchtown Historic District	S.R. 23 Between S.R. 1044, S.R. 1017, Boot Jack Rd.	Eligible	04/03/1997
Christiana Borough						
	086463		Christiana Wrought Iron Railroad Bridge	N Bridge St.	Eligible	07/24/1980
	101697		Dickinson Hotel	Slocum St. North side, West of Railroad	Eligible	08/11/1993
	104996		Christiana Historic District	Christiana	Eligible	04/22/1997
	112264		Christiana Machine Company	Gay & Green St.	Eligible	07/07/2000
Clay Township						
	036818		Eberly, Henry S., House	Durlach Hill Rd. Northeast Corner at Durlach Rd.	Eligible	08/02/1984
Colerain Township						
	050818		White Rock Forge Covered Bridge	T-337, East of White Rock	Listed	12/10/1980
	078746		Bell, Col. Patterson, House	Bell Rd. East side, North of Street Rd.	Eligible	03/04/2002
	093446		Andrews Bridge Historic District	Int. Rte. 896 & Creek & Sproul Rds.	Listed	12/22/1988
	096415		Douglas, John, House	Sproul Rd. West Side, South of Rte. 896	Listed	09/05/1990

Lancaster

MUNICIPALITY	KEYNO	ERNO	PROPERTY NAME	ADDRESS	STATUS	DATE
Columbia Borough						
	000236		Old Columbia - Wrightsville Bridge	L.R. 128	Listed	06/22/1988
	001058		Wright's Ferry Mansion	38 S 2nd St.	Listed	11/20/1979
	001113		Bachman & Forry Tobacco Warehouse	125 Bank Aly. South of Locust St.	Listed	03/29/1979
	001168		Columbia Historic District (Act 167)	Roughly Bounded by Susquehanna River, Union, Cedar, 4th & 5th Sts.,	Listed	05/06/1983
	067769		Union Hotel	647 Union St.	Eligible	07/31/1984
	077413		Manor Street Elementary School	Manor St. at 10th St.	Listed	04/02/1987
	097311		Columbia Wagon Works	920 Plane St.	Listed	02/02/2001
	116784		Reading & Columbia Freight Building	Bank Alley	Eligible	05/30/2001
Conestoga Township						
	001114		Big & Little Indian Rock Petroglyphs		Listed	04/03/1978
	050802		Colemanville Covered Bridge	T-408, South of Colemanville	Listed	12/10/1980
	097294	1991-2064-071	Colemanville Historic District	Rte. 324	Eligible	03/25/1991
Conoy Township						
	001083		Locust Grove	T-839, 1/2 mile South of Bainbridge	Listed	08/03/1977
	082182		Haldeman/Fitzkee House	Race St. Between Front & 2nd Sts.	Eligible	09/22/1988
	101634		Engle, Christian & Maria, Farm	Shumaker Rd. Southwest of Stacktown	Eligible	07/01/1993
Denver Borough						
	036707		Denver Elementary School	Walnut St. Northeast Corner at N 4th St. Denver	Eligible	04/15/1997
	123684		Evergreen Farm	705 Franklin St.	Eligible	01/14/2003
Drumore Township						
	077808	1991-1938-071	Lancis House	Park Dr. North side, West of Susquehannock Dr.	Eligible	03/14/1991
	086450		Bare Island Prehistoric District (36LA51, 56, 67)	Near Holtwood	Eligible	05/12/1981
Earl Township						
	010820	1991-4085-071	Eastern Mill Creek Rural Historic District		Eligible	09/24/1993
	029642		Davis, David, Farm	737 Spruce Rd.	Listed	08/30/1994
	029643	1998-8104-071	Bushong or Shreiner's Mill	Rte. 322 East side South of Martindale Rd.	Eligible	05/14/1998
	102245	1994-2081-071	Schowalter Farm	992 Lancaster Ave. S.R. 1010	Eligible	05/05/1994
	107553		Martin Farm	134 Orlan Rd.	Eligible	12/15/1997
East Cocalico Township						
	036864	1991-2134-071		Main St. East side, North of Blue Jay Dr Near Denver	Eligible	04/09/1991
	036865		Zinn Farmhouse	Reinholds Rd.	Eligible	03/08/1993
	050810		Bucher's Mill Covered Bridge	Cocalico Creek Rd. (T-955)	Listed	12/10/1980
	079891		Bucher Thal Historic District	Weaver Rd.	Listed	12/31/1987
	097851		Reamstown Historic District	Main & Church Sts.	Eligible	04/28/1992

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MUNICIPALITY	KEYNO	HRSO	PROPERTY NAME	ADDRESS	STATUS	DATE
East Cocalico Township (continued)						
	103700	1995-1934-071	Grace Chapel	Muddy Creek Church Rd.	Eligible	06/26/1995
	104295	1995-3481-071	Hoover Farm	Muddy Creek Rd. South Side	Eligible	10/24/1995
	104296	1995-3481-071	Hoover Farmstead	Smoketown Rd. North Side	Eligible	10/24/1995
	105423	1994-1432-071	Swartz, N., House	Rte. 272, South Side, East of Rte. 897	Eligible	06/11/1996
	105424	1994-1432-071	Graeff, D.S., House	North Corner of Intersection of Rtes. 272 & 897	Eligible	06/11/1996
	105425	1994-1432-071	Swartz, Benjamin, Store	E Corner of Intersection of Rts 272 & 897	Eligible	06/11/1996
East Donegal Township						
	000801		Grove Mansion	133 River Rd.	Listed	04/21/1983
	001101		Donegal Mills Plantation	Trout Run Rd.	Listed	01/20/1978
	001108		Cameron Estate	Donegal Springs Rd. 2 mile West of Mt. Joy	Listed	11/03/1975
	051002		Ewing-Hershey House (Old Stone House Complex)	Marietta Pike Rte. 23, West of Mt. Pleasant Rd.	Eligible	12/16/1980
	082282		Erisman-Snyder Farm	Greider Rd. South of Bossler Rd., West side	Eligible	07/01/1993
	082291	2002-0022-071		Maytown Rd. East side, South of Fuhrman Rd.	Eligible	10/12/2001
	082293	1990-0543-042	Share's Mill Complex	Mount Joy Rd. at Donegal Creek	Eligible	06/28/1990
	082617		Donegal Presbyterian Church Complex	Donegal Springs Rd. L.R. 36002	Listed	07/02/1985
	086458		Riverview Tower	Rte. 441 & Rte. 23 (Marietta Pike)	Eligible	11/19/1985
	097284		Chickies Industrial Historic District	Rte. 441, Furnace Rd., Chickies Creek	Eligible	05/01/1991
	097290		Heistand, B. F. & Company Saw Mill Site	Rte. 441 at Chickies Creek	Eligible	05/01/1991
	097291		Donegal Furnace Ruins	Furnace Rd.	Eligible	05/01/1991
	103107		Maytown Historic District	High & River Sts.	Eligible	02/13/2002
	105190		Hiestand, B.F., Estate	3272 Maytown Rd. Marietta 17547	Eligible	04/16/1996
	105438	1990-2578-071	Groff's Farm Restaurant & Golf Club	Pinkerton Rd.	Eligible	03/08/1994
	109964		Chickies Historic District	River Rd., Quarry Rd., Long Ln.	Listed	12/28/2005
	115584		Byers/Muma House	1402 Trout Run Rd.	Listed	02/22/2002
	116069	2001-0691-071	Engle Farm	S.R. 772, Koser Rd., Pinkerton Rd.	Eligible	02/12/2001
	116071	2001-0391-071	Donegal Manor Farm	S.R. 772, Koser Rd., Pinkerton Rd.	Eligible	02/12/2001
	118734	2002-0022-071	Hiestand, Andrew, House	3266 Maytown Rd.	Eligible	10/12/2001
	118736	2002-0022-071	Fletcher, H., House	Rte. 743 at Engle Toll Gate Rd	Eligible	10/12/2001
	118742	2002-0022-071	Marietta Air Force Station	Rt 441 at Engle Toll Gate Rd.	Eligible	10/12/2001
East Earl Township						
	001063		Weaver, Henry, Farmstead	W Quarry Rd. T-771, West of T-894 & South of Weavertown	Listed	12/15/1978
	010820	1991-4085-071	Eastern Mill Creek Rural Historic District		Eligible	09/24/1993
	064380		Spring Grove Forge Mansion	Spring Grove Rd. at Conestoga Creek	Listed	07/11/1984

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MUNICIPALITY	KEY NO	HRNO	PROPERTY NAME	ADDRESS	STATUS	DATE
East Earl Township (continued)						
	070910		Stauffer, Peter I., House	Fetterville Rd. East side, South of Rte. 23	Eligible	07/01/1993
	070911	2000-0550-071	Frogtown/Goodville Mill	Frogtown Rd. East side, South of Rte. 23	Eligible	05/12/2000
	070917	1994-2081-071	Galt, Alexander, House	Lancaster Ave. South side, East of White Oak Rd.	Eligible	05/05/1994
	070934		Stauffer, Joseph, Farm	Rte. 23, South side, East of Fetterville Rd.	Eligible	12/02/2004
	070935		Stauffer, George, House	Rte. 23, South Side, East of Fetterville Rd.	Eligible	07/01/1993
	114423	2000-0550-071	Goodville Area Historic District	S.R. 23, S.R. 897, Weaverland Rd., Brickerville Rd., S.R. 322	Eligible	07/24/2000
East Hempfield Township						
	050797		Landis Mill Covered Bridge	Shreiner Station Rd. West of Oreville	Listed	12/10/1980
	050812		Shenk's Mill Covered Bridge	T-372, Northwest of Landisville	Listed	12/10/1980
	081773		Baughman, Michael & Elizabeth, House	1790 Kauffman Rd. In Landisville	Eligible	02/12/1987
	081791		Brubaker House	1836 Marietta Pike Lancaster	Eligible	04/08/1994
	081806	1991-3607-071		2345 Old Harrisburg Pike	Eligible	05/18/1992
	083690		Colebrook Rd. Bridge	Colebrook Rd. T-374	Eligible	05/09/1984
	101682		Habecker, Christian, Farm	2301 Spring Valley Rd.	Listed	08/30/1994
	101914	1991-4195-071	Landis Mill	1048 W Roseville Rd.	Eligible	11/03/1993
	102201		Eshleman, John, Farm	2352 Marietta Pike	Eligible	04/06/1994
	103079	1994-0896-071	Bassler Farm	1366 Colebrook Rd.	Eligible	03/07/1995
	103081	1994-0896-071	Kolb Dairy Farm	Dairy Rd./Rohrerstown Rd.	Eligible	03/07/1995
	104608		Mumma, Samuel N., Tobacco Warehouse	Elizabeth St. Southeast Corner of Barbara Ave.	Listed	05/30/1997
	105435	1994-0909-071	Bamford, Charles, Farmstead	Yellow Goose Rd.	Eligible	12/20/1993
	105446	1994-0113-071	Structures on Proposed Hechinger Site	North of Harrisburg Pk.	Eligible	12/13/1993
	121467	2001-1157-071	Miller Property	2348 Harrisburg Pike	Eligible	07/05/2002
East Lampeter Township						
	001059		Witmer's Tavern	2014 Old Philadelphia Pike	Listed	12/01/1978
	001102		Dohner, Michael, Farmhouse	South of Rte. 30, East of Junction with Rte. 283 & Rte. 896	Listed	06/27/1980
	029664	2003-8010-071	Denlinger Property	199 Bowman Rd.	Eligible	11/18/2005
	029694		Stauffer, Christian, House	Millcross Rd. East side North of Pitney Rd.	Listed	10/16/1986
	029700		Groff, Benjamin, House	1826 Old Philadelphia Pike	Eligible	02/07/2002
	029719	2001-8031-071	Binkley, House	Strasburg Pike East Side, South of Mill Creek	Eligible	09/24/2001
	029720	2001-8031-071	Binkley (Graff) Mill	Strasburg Pike West Side, South of Mill Creek	Eligible	09/24/2001

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MUNICIPALITY	REFNO	PROPERTY NAME	ADDRESS	STATUS	DATE
East Lampeter Township (continued)					
	050816	Herr's Mill Covered Bridge	T-696, Southwest of Soudersburg	Listed	12/10/1980
	082535	85-1255-071-A Musser Farm	Rte. 30, Contestoga River to Pitney Rd.	Eligible	09/04/1985
	096391	Bird-In-Hand Hotel	2695 Old Philadelphia Pike Pa. Rte. 340	Listed	07/24/1992
	111781	1999-1745-071 Kolb Farm	Pine Dr.	Eligible	07/13/1999
	118415	2001-8013-071 Barnn, Robert W., Barn	Strasburg Pike West Side	Eligible	08/30/2001
	141010	2003-8010-071 Pequea North Rural Historic District		Eligible	01/25/2006
	141162	2003-8010-071 Esbenshade, Eliza, House	2574 Lincoln Hwy.	Eligible	06/13/2005
	141177	2003-8010-071 Ronks Road Auto	SW Lincoln Hwy.	Eligible	06/13/2005
	141178	2008-8010-071 Landis, David, House	2515 Lincoln Hwy.	Eligible	06/13/2005
	141179	2003-8010-071 Gilboa Meetinghouse	2948 Lincoln Hwy.	Eligible	06/13/2005
	141184	2003-8010-071 Dutch Haven	Lincoln Highway East	Eligible	06/13/2005
	141187	2003-8010-071 Lightner, Adam, Farmstead	2975 Lincoln Hwy.	Eligible	06/13/2005
	141207	2003-8010-071 Buckwalter, Joseph, House	2909 Lincoln Hwy.	Eligible	06/13/2005
	141251	2003-8010-071 Mill Creek Tributary Rural HD	North of S.R. 0030, South of Siegrist Road, West of Ronks Road, Eas of	Eligible	01/25/2006
	141259	2003-8010-071 Ferree, Isaac, Property	3032 A Lincoln Hwy. East	Eligible	11/18/2005
	141265	2003-8010-071 Elliott, Samuel, House	2649 Lincoln Hwy.	Eligible	06/13/2005
	141266	2003-8010-071 Fairview School	11 S Ronks Rd.	Eligible	06/13/2005
	141286	2003-8010-071 Pleasant View School	2110 Horseshoe Rd.	Eligible	11/18/2005
Eden Township					
	083686	Hess Rd. Bridge	Hess Rd. T-490	Eligible	05/09/1984
Elizabeth Township					
	000299	Hammer Creek Bridge	L.R. 36011	Listed	06/22/1988
	001100	Stiegel-Coleman House	Rte. 501 & U.S. 322, Brickerville	NHL	11/13/1966
	029604	Old Zion Reformed Church	Reifsnyder Rd. South of Rte. 322; in Brickerville	Eligible	02/03/1984
	029607	Speedwell Forge Mansion	465 Speedwell Forge Rd. at Hammer Creek	Eligible	10/08/1991
	112356	2000-8008-071 Grube Mill Property	475 Snavely Rd.	Eligible	10/25/2000
	112358	2000-8008-071 Risser Farm Property	1615 Brunnerville Rd.	Eligible	10/25/2000
Elizabethtown Borough					
	001079	Kreider Shoe Manufacturing Company	155 S Poplar St.	Listed	06/27/1980
	106430	Hestaco Garment Factory	443 W High St.	Eligible	07/01/1997
	141701	Elizabethtown Historic District		Eligible	11/15/2005
	141913	2005-8040-071 Pennsylvania Railroad Overpass over West Bainbridge Avenue	W Bainbridge Ave.	Eligible	02/13/2006
Ephrata Borough					
	001077	Mountain Springs Hotel	320 E Main St.	Listed	03/02/1982

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MUNICIPALITY	NR NO	CRN NO	PROPERTY NAME	ADDRESS	STATUS	DATE
Ephrata Borough (continued)						
	001097		Ephrata Cloister	632 W Main St.	NHL	12/24/1967
	001105		Connell Mansion	249 W Main St.	Listed	01/19/1979
	028581		Main Theatre (Demolished)	126 E Main St.	Eligible	08/02/1990
	028584		Mentzer Building	3 W Main St.	Listed	03/07/1985
	028599		Miller, John, House	830 Martin Ave.	Eligible	01/06/1999
	028600	1991-3900-071	Bauman, Daniel, House	N Oak St.	Eligible	03/11/1992
	028605	1991-3900-071	Bauman, Samuel, House	399 W Pine St.	Eligible	03/11/1992
	083689		West Pine Street Bridge	W Pine St.	Eligible	05/09/1984
	096202		Eby Shoe Company	136 N State St.	Listed	08/18/1989
	126729		Ephrata Borough Historic District	Bounded by Cocalico Creek, Poplar,	Eligible	12/08/2003
	141471		Ephrata Commercial Historic District	Church, Hill & Spring Garden Sts., roughly bounded by West Main St, East Main St, North State St, South	Eligible	12/08/2004
Ephrata Township						
	001088		Hibshman Farm	Springville Rd.	Listed	06/27/1980
	029736		Keller, Jacob, House	990 Rettew Mill Rd. East side, North of Cocalico Creek	Listed	07/17/1986
	050807		Erb's Covered Bridge	T-634, West of Akron	Listed	12/10/1980
	050808		Zook's Mill Covered Bridge	T-634, Northeast of Oregon	Listed	12/10/1980
	050809		Keller's Covered Bridge	T-656, Northwest of Akron	Listed	12/10/1980
	103073		Reyer, Peter & Catherine, Farmhouse	Trout Run Rd.	Listed	11/07/1996
	105180	1992-0793-071	Stoner Farm	Northwest Quadrant of Rte. 322 & Rte. 222 Intersection	Eligible	01/10/1995
	108197		Sharp Farmstead	1755 W Main St.	Eligible	02/10/1998
	126059	2003-2188-071	Royer Road Bridge	West of Rothsville Rd., Between Ephrata Boro & Rothsville	Eligible	04/24/2003
Fulton Township						
	001096		Fulton, Robert, Birthplace	Rte. 222 & T-468, 8 mile South of Quarryville	NHL	01/29/1964
	077672		Barclay, William, House	Ballance Meeting Rd. West side, South of Friends Rd.	Eligible	07/01/1993
Lancaster City						
	000805		Lancaster Crematorium	719 Highland Ave. Greenwood Cemetery	Listed	04/14/1983
	001062		Lancaster U.S. Post Office	50 W Chestnut St.	Listed	07/23/1981
	001067		Steinman Hardware Store	26-28 W King St.	Listed	10/18/1979
	001068		Sprenger Brewery	125-131 E King St.	Listed	11/27/1979
	001069		Soldiers & Sailors Monument	King & Queen Sts. (Center Square)	Listed	04/02/1973
	001070		Old City Hall	Penn Square	Listed	06/30/1972

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MUNICIPALITY	KEYSOURCENO	PROPERTY NAME	ADDRESS	STATUS	LISTDATE
Lancaster City (continued)					
	001071	Old Main, Goethean Hall & Diagnothian Hall	College Ave. Franklin & Marshall College Campus	Listed	07/30/1975
	001080	Lancaster County Courthouse	43 E King St.	Listed	11/07/1978
	001082	Lancaster Watch Company	901 Columbia Ave.	Listed	08/24/1982
	001084	Krauskap, Henry, House & Store	301-303 1/2 W King St.	Listed	10/07/1982
	001085	Lancaster Historic District	Roughly Bounded by Howard Ave., Queen, Church, Duke	Listed	11/15/1979
	001087	Yeates, Jasper, House	24 S Queen St.	Listed	09/23/1982
	001089	North Shippen/Tobacco Ave. Historic District	N. Shippen St. /Tobacco Ave. /E. Fulton St.	Listed	09/21/1990
	001091	Hager Building	25 W King St.	Listed	10/16/1979
	001094	Germania Turnverein Building	33-35 N Market St. (aka 33-35 W Grant St.)	Listed	04/10/1980
	001095	Fulton Opera House	12-14 N Prince St.	NHL	08/11/1969
	001098	Ellicott, Andrew, House	123 N Prince St.	Listed	01/13/1972
	001106	Central Market	William Henry Place	Listed	07/12/1972
	027565	Brimmer, John, Tobacco Warehouse	226 N Prince St.	Listed	09/21/1990
	027585	P.P.&L. (Originally Conestoga Traction)	535 N Prince St.	Eligible	04/06/1994
	027609	Montgomery, William, House	19-21 S Queen St.	Listed	05/18/2000
	027623	Farmers' Southern Market	106 S Queen St. at W Vine St.	Listed	11/10/1986
	027662	Griest, W.W., Building	8 N Queen St.	Listed	06/25/1999
	027675	Reilly Bros. & Raub Building	44-46 Queen St. & 45 N. Market St.	Listed	11/03/1983
	027682	Zimmerman's Restaurant	64-66 N Queen St.	Eligible	10/15/1997
	027912	1991-1125-071 Fulton Market	607 N Plum St.	Eligible	01/08/1991
	027961	Slater's Cigar Company	625 Columbia Ave. And 626-628 Columbia. Ave.	Listed	09/21/1990
	027970	Nevin Fountain	Inter of W Orange St. & Columbia Ave.	Eligible	12/04/2000
	028688	Rose Brothers & Company Umbrella Factory	221-223 E Chestnut St.	Eligible	11/12/1985
	028859	Hartman, John Ives, Mansion	439 N Duke St.	Eligible	01/11/1984
	028955	Watt & Shand Department Store	2 E King St.	Listed	03/12/1999
	028975	Lancaster Newspapers Building	8 W King St.	Eligible	04/27/1984
	028993	Demuth, H.C., Cigar & Snuff Factory	114-116 E King St.	Eligible	10/04/1989
	031075	Good, B.F. & Company Leaf Tobacco Warehouse	49-53 W James St.	Listed	01/03/1985
	050643	Wagner, Charlie, Café	30 E Grant St.	Listed	12/29/1983
	050947	Johnson, Kirk, Building	16-18 W King St.	Listed	07/07/1983
	050949	Lancaster Trust Company	37-41 N Market St.	Listed	11/03/1983
	050950	New Era Building	39-41 N Queen St.	Listed	07/14/1983

Lancaster

MUNICIPALITY	REVNO#	PROPERTY NAME	ADDRESS	STATUS	LIST DATE
Lancaster City (continued)					
050952		Stevens High School	Northeast Corner West Chestnut & Charlotte Sts.	Listed	06/30/1983
050953		Lancaster Historic District (Boundary Increase I)	E Vine, Church, S Duke, Washington, S Christian Sts.	Listed	11/10/1983
064366		Miller Drug/Barr-Hurst Building	12-16 W Orange St.	Eligible	05/14/1984
064385		Lancaster Historic District (Boundary Increase II)	E King St. 200 Block	Listed	06/21/1984
064537		Hamilton Apartments	247-249 N Duke St.	Listed	06/28/1984
078950	84-1595-071-B	Thaddeus Stevens School of Technology	750 E King St.	Eligible	02/20/1985
082139	1994-3484-071	Pennsylvania Railroad Station at Lancaster	McGovern Ave. East of Prince St., Lancaster	Eligible	10/07/1998
082531	1985-1255-071	Lancaster Cemetery	Lemon St; New Holland Ave. ; St. Mary's Cemetery	Eligible	07/07/2000
083513		West Lawn	407 W Chestnut St.	Listed	05/03/1984
083546		Conestoga Steam Cotton Mills (Lorillard Co)	201-265 S Prince St.	Eligible	01/15/1987
086431		Queen-Vine Apartments (W Vine St. Historic District)	200 Block of West Vine St.	Eligible	07/01/1982
086440		Masonic Lodge No. 43	13 W King St.	Eligible	06/18/1976
086448		Harold's Furniture Store	4-6 W King St.	Eligible	03/13/1991
086493		Follmer, Clogg & Company Umbrella Factory	254-260 W King St. at W Mulberry St.	Listed	08/21/1986
091935		Consolidated Cigar Corporation	3-5 Tobacco Ave.	Eligible	02/12/1987
091941		Miller, David H. Tobacco Warehouse	512 N Market St.	Listed	09/21/1990
095186		North Charlotte Street Historic District	N Charlotte, W. James Sts.; Lancaster Ave.	Listed	08/31/1989
095506		Nissly-Stauffer Tobacco Warehouses	322-324 N Arch St. 317-319 N. Mulberry St.	Listed	08/07/1989
096120		North Prince Street Historic District	Prince St. & Lemon St.	Listed	08/18/1989
096451	2000-1831-042	Lancaster Armory	438 N Queen St.	Listed	11/14/1991
096569		Harrisburg Ave. Tobacco Historic District	Harrisburg Ave. & N. Mulberry St.	Listed	09/21/1990
096574		Frey, Jacob L., Tobacco Warehouse	210 W Grant St.	Listed	09/21/1990
096575		Martin, B.B., Tobacco Warehouse	422-428 N Water St.	Listed	09/21/1990
096576		Milleysack, J.B., Cigar Factory	820 Columbia Ave. Rear	Listed	09/21/1990
096578		Schnader, Walter Tobacco Warehouse	417-419 W Grant St.	Listed	09/21/1990
096579		Schnader, R.K. & Sons Tobacco Warehouse	431-433 W Grant St.	Listed	09/21/1990
096587		Eisenlohr/Bayuk Tobacco Historic District	N Water St. at W. Liberty St.	Listed	09/21/1990
096588		American/Consolidated Tobacco Companies	820-830 N Prince St.	Listed	09/21/1990
096593		Friedman, Henry B., Tobacco Warehouse	309-311 Harrisburg Ave.	Listed	09/21/1990
096594		Bowman, Jacob, Tobacco Warehouse	226-230 E Grant St.	Listed	09/21/1990
096596		Sherman, L.G., Tobacco Warehouse	Corner of E. Marion & N. Marshall Sts.	Listed	09/21/1990
096597		Basch & Fisher Tobacco Warehouse	348 New Holland Ave.	Listed	09/21/1990
096598		McGovern, Edward, Tobacco Warehouse	302-304 N Plum St.	Listed	09/21/1990

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MUNICIPALITY	GENNO	FGNO	PROPERTY NAME	ADDRESS	STATUS	DATE
Lancaster City (continued)						
	096600	1991-3070-071	Conestoga Cork Works Building	215-235 E Fulton St.	Listed	03/28/1996
	097110		Teller Brothers/Reed Tobacco Historic District	N Prince St. 200 Block East Side	Listed	09/21/1990
	097679		Lancaster Water Company	Race Ave.	Eligible	03/27/1992
	100667		Burger's Row	35-47 S Prince St.	Eligible	03/25/1993
	102423		National Caramel Company Factory	453 S Lime St.	Eligible	08/10/1994
	102456		Hess, A.B., Cigar Factory & Warehouses	231 N Shippen St.	Listed	08/24/1982
	103384		Lancaster City Historic District		Listed	09/07/2001
	103684		Manor Street Public School	675 Manor Ave.	Eligible	06/05/1995
	103685		Henry, William, Public School	30 N Ann St.	Eligible	06/16/1995
	105190		Hiestand, B.F., Estate	3272 Maytown Rd. Marietta 17547	Eligible	04/16/1996
	111042		Woodward Hill Cemetery	Strawberry St., S Queen St., Chesapeake St.	Listed	02/24/2005
	111475		Lackawanna Trail Diner	302 N Mulberry St.	Eligible	04/20/1999
	126157		Franklin & Marshall College Campus Historic District	College Ave.	Listed	11/21/2003
	141780		Lancaster City Historic District (additional documentation)		Eligible	10/14/2005
Lancaster Township						
	001061		Buchanan, James, House	1120 Marietta Ave.	NHL	07/04/1961
	001081		Lancaster County House of Employment	900 E King St.	Listed	04/17/1980
	001112		Abbeville	1140 Columbia Ave.	Listed	12/14/1978
	064397		Conestoga House	1608 Marietta Ave.	Eligible	01/30/1986
	079437		Northeast Lancaster Township Historic District	Marrietta Pike; Race, Columbia Aves; Wilson Dr.	Listed	03/20/1986
	082528	85-1255-071-A	Pennsylvania Railroad Bridge	Near Grofftown Rd.	Eligible	09/04/1985
	082991		Bausman Farmstead	1630-1631 Millersville Pike	Listed	08/30/1994
	089634		Totten House	1049 E King St.	Listed	02/03/1989
	097681	1992-1425-071	Mumma, Jacob & Catherine, House	318 Barbara St. Millersburg	Eligible	03/02/1992
	101633		Hostetter, Christian, House	New Danville Pike	Eligible	07/01/1993
	104123	1994-0039-071	Miller, Conrad, House	1750 Wabank Rd.	Eligible	08/17/1995
	127679	2003-0942-071	Schenk Farm Complex	New Danville Pike	Eligible	04/29/2004
Leacock Township						
	029801	2004-1883-071	Intercourse School	3660 Old Philadelphia Pike Rte. 340 Southwest Corner at Hollander Rd.	Eligible	07/01/2004
	070767		Leaman Place Covered Bridge	Belmont Rd. at Pequea Creek	Listed	12/10/1980
	096118		Intercourse Bank	Rte. 340 at Y with 772	Eligible	07/25/1988
	101632		Stoltzfus, Samuel, Farm	Old Philadelphia Pike	Eligible	07/01/1993
	116358		Paradise Historic District		Eligible	04/23/2001
	141010	2003-8010-071	Pequea North Rural Historic District		Eligible	01/25/2006

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MUNICIPALITY	KEY NO	FRNO	PROPERTY NAME	ADDRESS	STATUS	DATE
Lititz Borough						
	000677		Congregational Store	120-122 E Main St.	Listed	01/06/1983
	001064		Sutter, Johann Agust, House	17-19 Main St.	Listed	04/20/1982
	001065		Sturgis, Julius, Pretzel House	219-221 E Main St.	Listed	12/16/1974
	027994	1992-1084-071		120 N Board St.	Eligible	07/01/1992
	028013		Werner, William, House	66 Main St.	Listed	05/10/1984
	028022		Mueller, Johannes, House	146 E Main St.	Eligible	08/15/1978
	082521		Lititz-Moravian Historic District	E Main, N & S Broad, W Orange Sts., Sturgis Ln.	Listed	05/09/1986
	086438		Linden Hall	212 E Main St.	Eligible	08/18/1975
	125110	2003-1445-071	Lititz Elementary School	20 S Cedar St.	Eligible	05/29/2003
Little Britain Township						
	001086		Kirks Mills Historic District	West of Nottingham off Pa. 272	Listed	07/17/1978
	050817		Pine Grove Covered Bridge	L.R. 36018, Pine Grove	Listed	12/10/1980
	050818		White Rock Forge Covered Bridge	T-337, East of White Rock	Listed	12/10/1980
	078681	2003-8023-071	Chester Water Authority - Octorara Water Treatment Plant	100 Ashville Rd.	Eligible	03/25/2003
	078736		Kirk-Haines House	Shady Ln. North side, East of Griest Rd.	Eligible	07/01/1993
Manheim Borough						
	092731		Eisenlohr, Otto & Bros. Cigar Factory	147 W High St.	Eligible	07/27/1987
	097258		Manheim Borough Historic District	Colebrook St., Laurel St., Fuller Dr, Fulton St.	Listed	02/04/2000
Manheim Township						
	050795		Pinetown Covered Bridge	T-620, Southeast of Oregon	Listed	12/10/1980
	050797		Landis Mill Covered Bridge	Shreiner Station Rd. West of Oreville	Listed	12/10/1980
	077433		Oregon Mill Complex	Oregon Rd.	Listed	06/27/1985
	082107	1992-3392-071		Creek Rd. at Fork of Oregon Pike	Eligible	09/22/1992
	082108	1992-3392-071		Creek Rd. (South) at Oregon Rd. (Pa 772)	Eligible	09/22/1992
	082110		Flory's Mill	841 Flory Mill Rd.	Eligible	06/10/1986
	082112		Mayer, David, House	1580 Fruitville Pike	Eligible	04/06/1998
	082116	85-1255-071-A	Graeff, Sebastian, House	1200 Grofftown Rd.	Eligible	09/04/1985
	082138		Mayer House	141 Maple Ln. Lancaster	Eligible	07/12/1993
	082144		Shreiner Farm	Oregon Pike North side, East of Suncrest Rd.	Listed	08/30/1994
	082148	1992-3392-071		Oregon Rd. (Pa 722) at Creek Rd., Oregon	Eligible	09/22/1992
	082153	1992-3392-071	Innkeepers House, Oregon Hotel	Oregon Rd. Pa 722 West of Creek Rd. (South) Oregon	Eligible	09/22/1992
	082164	1990-2214-071	Graybill, Peter, House	Quarry Rd. at Little Conestoga Creek, North side	Eligible	04/17/2001

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MUNICIPALITY	KEY NO	ALT NO	PROPERTY NAME	ADDRESS	STATUS	LISTED
Manheim Township (continued)						
	096381	1987-1057-071	Stoner Property	2065 Fruitville Pike	Eligible	04/06/1998
	099736	1992-3392-071	Bear, Frederick Cigar Factory	East Side Creek Rd.	Eligible	09/22/1992
	099737	1992-3392-071		1215-1217 Creek Rd.	Eligible	09/22/1992
	099805	1992-3392-071	Oregon Schoolhouse	Oregon Rd.	Eligible	09/22/1992
	101909	1991-4295-071	Mayer-Hunt House	1702 Lititz Pike	Eligible	11/03/1993
	101910	1991-4195-071	Matroni House	1701 Lititz Pike	Eligible	11/03/1993
	103093		Landis, George & Henry, Homestead	2451 Kissel Hill Rd.	Listed	01/03/2000
	105023		Kissel Hill Assoc. Subdivision	Kissel Hill Rd. East of Neffsville	Eligible	11/22/1995
	107996	1997-0970-071	Mayer Farmhouse	1589-1593 Fruitville Pike	Eligible	04/06/1998
	112266		Landis, Isaac, Farmstead	2451 Kissel Hill Rd.	Eligible	10/29/1999
	112268		Landis, Jacob, Hotel	2451 Kissel Hill Rd.	Eligible	10/29/1999
Manor Township						
	001066		Strickler Site		Listed	06/18/1973
	001073		Shultz-Funk Site (36LA0007, 36LA0009)		Listed	03/03/1982
	001076		Murry Site (36LA0183)		Listed	12/10/1980
	001104		Conestoga Town		Listed	06/18/1973
	081944		Windom Mill Farm	3407 Blue Rock Rd.	Listed	08/30/1994
	083516		Roberts Farm Site 36LA0001		Listed	04/03/1986
	083518	1996-2173-071	Frey-Haverstick Site 36LA0006		Listed	01/15/1986
	097683	1992-1425-071	Eshbach, Christian, House	840 E Cottage Ave. Millersville	Eligible	03/02/1992
	101631		Martin, Amos H., Farm	Letort Rd.	Eligible	07/01/1993
	101683		Schindel, Michael, House	S Centerville Rd. Southwest Corner Stone Creek Rd.	Eligible	07/01/1993
Marietta Borough						
	000675		Linden House	606 E Market St.	Listed	01/06/1983
	001075		Marietta Historic District	Bounded by Market, Front, Bridge & Waterford Sts.	Listed	07/18/1978
	001109		Bucher, Joseph, House	104 E Front St.	Listed	09/07/1979
	001111		Ashley & Bailey Silk Mill	E Walnut St. & Pine St.	Listed	06/27/1980
	082260		Zion English German Lutheran Church	100 W Walnut St.	Eligible	03/02/1982
	082262		Union Meeting House	N Waterford St. & E Prospect Ave.	Eligible	06/19/1979
	097279		Vesta Furnace Site Complex	Furnace Rd.	Eligible	05/01/1991
	097292		Marietta Furnace No. 1 Ruins	Furnace Rd.	Eligible	05/01/1991
	101708		Marietta Historic District (Boundary Increase)	Waterford Ave., Clay, Prospect & Front Sts.	Listed	08/17/1984
	106644	1997-0677-071	Marietta Historic District (Boundary Increase 2)	Weat Walnut St., Mulberry St., Fairview Ave.	Eligible	08/11/1997
Martic Township						
	001074		Shenk's Ferry Site (36LA0002)		Listed	03/03/1982

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MUNICIPALITY	KEYNO	ERNO	PROPERTY NAME	ADDRESS	STATUS	LISTED DATE
Martic Township (continued)						
	050801		Baumgardner's Mill Covered Bridge	T-427, East of Marticuille	Listed	12/10/1980
	050802		Colemanville Covered Bridge	T-408, South of Colemanville	Listed	12/10/1980
	064452		Duncan Island (36LA0060, 36LA0061)		Listed	05/10/1984
	086450		Bare Island Prehistoric District (36LA51, 56, 67)	Near Holtwood	Eligible	05/12/1981
	097536		Stevenson-Appleton House	Drytown Rd.	Eligible	08/07/1991
Millersville Borough						
	083067	1991-1865-071	Shenk, Jacob K., Farm	Shenk's Ln. West side, South of Frederick St.	Eligible	03/14/1991
	106167	1997-6114-071	Millersville Historic District	Manor St.	Eligible	04/21/1997
	112270	2000-0203-071	Singing Needles Garment Factory	Millersville University	Eligible	11/15/1999
Mount Joy Borough						
	001107		Central Hotel	102 N Market St.	Listed	06/04/1973
	082054	1991-3191-071	Hershey-Seitz Farmhouse	1043-1047 E Main St.	Eligible	11/25/2002
	096379		Brown's, George, Sons Cotton & Woolen Mill	324-360 E Main St.	Listed	07/21/1995
	101981		Nissley Swiss Chocolate Company	951 Wood St.	Listed	06/28/1996
	104915		Mount Joy Historic District	Mount Joy	Eligible	04/16/1996
	104916		Wentling Property	31 New Haven St.	Eligible	04/16/1996
	104917		Lapierre House	101 W Main St.	Eligible	04/16/1996
	104918		Bailey, James, Property	29 New Haven St.	Eligible	04/16/1996
	104919		Washington Hotel	78-80 W Main St.	Eligible	04/16/1996
	104920		Donegal Auction	17 New Haven St.	Eligible	04/16/1996
	104921		Rutt's Appliances & Knepper's Kitchens	100 W Main St.	Eligible	04/16/1996
	104922		New Haven Street Bridge	S.R. 4002	Eligible	04/16/1996
	105598			15-25 Marietta Ave.	Eligible	09/25/1996
	105599	1994-3306-071	Marietta Ave. Bridge	S.R. 0772	Eligible	09/25/1996
	105600		Rice Property	53 Marietta Ave.	Eligible	09/25/1996
	105601			55 Marietta Ave.	Eligible	09/17/1996
	105602			61 Marietta Ave.	Eligible	09/25/1996
	112500		Mt. Joy/Florin Historic District	Hill St., W Main St., Apple Alley, Wood St., S Market Ave., N Ann Angle St.,	Eligible	01/12/2000
Mount Joy Township						
	029810		Risser House	Milton Grove Rd. South of Elizabethtown Rd.	Eligible	11/30/1984
	140918	2004-0525-071	Nauman Property	Campus Rd.	Eligible	04/29/2005
	141016		Risser's Mill Complex	1451-1527	Eligible	07/17/2005
Multi-Municips						
	141010	2003-8010-071	Pequea North Rural Historic District		Eligible	01/25/2006
	141011	2003-8010-071	Pequea South Rural Historic District		Eligible	01/25/2006

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MUNICIPALITY	MCD NO	ERN NO	PROPERTY NAME	ADDRESS	STATUS	STATUS DATE
New Holland Borough						
	079214		Stoever, Rev. John Casper, Log House	200-202 W Main St.	Listed	01/06/1987
	110772		New Holland Machine Company	100 E Franklin St.	Listed	08/09/2000
Paradise Township						
	050816		Herr's Mill Covered Bridge	T-696, Southwest of Soudersburg	Listed	12/10/1980
	070767		Leaman Place Covered Bridge	Belmont Rd. at Pequea Creek	Listed	12/10/1980
	070770		Brackbill House	Belmont Rd. West side, South of Pa Railroad	Eligible	07/01/1993
	070776	1990-0038-071	Park, George W., House	Leacock Rd. East side, North of Rte. 30	Eligible	03/20/1990
	070778	1990-0038-071	Witmer, David, Sr	Leacock Rd. West side, North of Singer Ave.	Eligible	03/20/1990
	070783	1991-0602-087	McIlvaine Rd., East Side, South of Route 30	McIlvaine Rd. East side, South of Rte. 30	Eligible	11/21/1990
	070793		Rohrer, Christian, Mill & Farm	Rohrer Mill Rd. East side, North of Rte. 896	Eligible	07/01/1993
	070828	2003-8010-071	Slaymaker, Mathias, House	21 N Vintage Rd. Vintage	Eligible	11/18/2005
	099188	1992-2918-071	McIlvaine Rd. Bridge	T-790 Over Amtrack	Eligible	09/15/1992
	101672	1984-0234-071	Reynolds Tavern	London Vale Rd. South Side	Eligible	06/20/1993
	101673	1984-0234-071	Ebenshade Property	2141 Lincoln Hwy. East	Eligible	06/20/1993
	101674	1984-0234-071	Kreider, E., Property	3233 Lincoln Hwy. East	Eligible	06/20/1993
	101675	1984-0234-071	Toll House	North Side of Rte. 30	Eligible	06/20/1993
	101676	1984-0234-071	Pennsylvania Railroad Freight House	South side of Rte. 30	Eligible	06/20/1993
	101688		Keneagy Farm	Kinzer Rd. West Side	Eligible	07/01/1993
	102236	1984-0234-071	Leaman Place Bridge	U.S. 30	Eligible	05/29/1996
	103698	1995-1373-071	Farmhouse	Lehman Rd. South of Rte. 30	Eligible	06/26/1995
	116358		Paradise Historic District		Eligible	04/23/2001
	125753	1997-1978-071	Pennsylvania Railroad Bridge No. 56.37	Amtrak Railroad Tracks, Approximately 1500 Feet Southeast of	Eligible	07/28/2003
	125757	1997-1978-071	Pennsylvania Railroad Pumping Station	Lincoln Hwy. East Approximately 1500 Feet East of Bridge over Amtrak Line	Eligible	07/28/2003
	125761	1997-1978-071	Dwelling & Garage	Lincoln Hwy. East Approximately 1500 Feet East of Bridge over Amtrak Line	Eligible	07/28/2003
	140988		Kinzers Historic Disctrict	3545-3590 Lincoln Highway East, 3-50 N. Kinzer Road	Eligible	01/25/2006
	141010	2003-8010-071	Pequea North Rural Historic District		Eligible	01/25/2006
	141011	2003-8010-071	Pequea South Rural Historic District		Eligible	01/25/2006
	141109	2003-8010-071	Philadelphia and Lancaster Turnpike	E Lincoln Hwy.	Eligible	06/13/2005
	141208	2003-8010-071	Leaman Mansion	3385 Lincoln Hwy.	Eligible	06/13/2005
	141209	2003-8010-071	Paradise Township High School	3293 Lincoln Hwy.	Eligible	06/13/2005
	141210	2003-8010-071	Centre Secondary School	3296 Lincoln Hwy.	Eligible	06/13/2005

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MUNICIPALITY	KEYNO	ERNO	PROPERTY NAME	ADDRESS	STATUS	DATE
Paradise Township (continued)						
	141282	2003-8010-071	Eby's, Amos, Fertilizer Company	17 Meadow Ln.	Eligible	11/18/2005
Penn Township						
	050804		Shearer's Covered Bridge	High School Memorial Park	Listed	12/10/1980
	050805		Kaufman's Distillery Covered Bridge	T-889, Northeast of Sporting Hill	Listed	12/10/1980
	096846		Mt. Hope Estate (Boundary Increase)	Rte. 72, South of Exit 20 Pa Turnpike	Listed	09/06/1991
	120373		Cornwall Fire Tower	Valley Forge State Forest	Eligible	05/29/2002
Pequea Township						
	050801		Baumgardner's Mill Covered Bridge	T-427, East of Marticuille	Listed	12/10/1980
	100103	1990-0920-003	Burkholder-Rush House	Marticville Rd.	Eligible	04/28/1993
	103296		Silver Mine Farm	Silver Mine Rd.	Eligible	03/27/1995
Rapho Township						
	001078		Mount Hope Estate	Rte. 72, 1/2 Mile South of Exit 20, Pa. Turnpike	Listed	12/01/1980
	001526		Hossler School House	Hossler Rd.	Eligible	05/06/1994
	050804		Shearer's Covered Bridge	High School Memorial Park	Listed	12/10/1980
	050805		Kaufman's Distillery Covered Bridge	T-889, Northeast of Sporting Hill	Listed	12/10/1980
	050811		Seigrist's Mill Covered Bridge	T-360, North of Ironville	Listed	12/10/1980
	050812		Shenk's Mill Covered Bridge	T-372, Northwest of Landisville	Listed	12/10/1980
	050814		Forry's Mill Covered Bridge	T-362, Northwest of Ironville	Listed	12/10/1980
	082035		Zug, Samuel, Farm	Colebrook Rd. North side, West of Chiques Rd.	Eligible	07/01/1993
	096846		Mt. Hope Estate (Boundary Increase)	Rte. 72, South of Exit 20 Pa Turnpike	Listed	09/06/1991
	104652		Lindemuth, Peter, Property	East side S.R. 4003	Eligible	02/01/1996
	104653		Lindemuth, Jacob, Property	Longenecker Rd. East side, South of Little Chickies Creek	Eligible	02/01/1996
Sadsbury Township						
	050815		Mercer's Mill Covered Bridge	T-976, South of Christiana	Listed	12/10/1980
	086457		Sterrett Houses	Creek Rd. South of Mercer's Ford, at Octoraro Creek	Eligible	11/19/1985
	097477	1991-4331-071	Red Lion Hotel	Valley Rd.	Eligible	09/26/1991
	112659	1999-2980-042	Farm	Mount Vernon Rd.	Eligible	01/27/2000
	119606	2001-3084-071	Sadsbury Friends Meeting House	Simmonstown Rd.	Eligible	03/14/2002
	124910		Bart Friends Meeting House	402 Quaker Church Rd.	Eligible	08/19/2003
	141292	2003-8010-071	Walker, A. and S. Farm	159 Strasburg Rd.	Eligible	11/18/2005
Salisbury Township						
	001060		White Chimneys	Rte. 30 14 mile East of Lancaster, 1/4 mile West of Gap	Listed	04/01/1975
	070978	2003-1148-071	Linville, W. & S., Farm	Brackbill Rd. East side, North of Railroad	Eligible	09/24/2003

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MUNICIPALITY	KEYNO	MPSNO	PROPERTY NAME	ADDRESS	STATUS	DATE
Salisbury Township (continued)						
	071029			Rte. 30, Southeast Corner at Newport Rd.	Eligible	03/01/1994
	083687		Hoover Rd. Bridge	Hoover Rd. T-610	Eligible	05/09/1984
	104959		Ellmaker, Nathaniel, House	5380 Lincoln Hwy. East	Eligible	07/07/2000
	105537	1996-8211-071	Apple Auto Sales	West of S.R. 0041	Eligible	04/22/1997
	105541	1996-8211-071	Penn Monument Hall	873 Rte. 41	Eligible	07/23/1996
	105542	1996-8211-071	Gap Clock Tower	Southeast of Intersection of Bridge St. & S.R. 0041	Eligible	07/23/1996
	105548	1996-8211-071	Gap Historic District		Eligible	04/22/1997
	140987		Salisburyville	Lincoln Hwy. East 5085, 5114, 5117, 5118, 5122/5128 Lincoln Highway	Eligible	01/25/2006
	141010	2003-8010-071	Pequea North Rural Historic District		Eligible	01/25/2006
	141011	2003-8010-071	Pequea South Rural Historic District		Eligible	01/25/2006
	141101	2003-8010-071	Mt. Vernon Inn	5745 Lincoln Hwy. .	Eligible	06/13/2004
	141109	2003-8010-071	Philadelphia and Lancaster Turnpike	E Lincoln Hwy.	Eligible	06/13/2005
	141888	2003-8010-071	Gap Historic District Boundary Increase		Eligible	01/26/2006
	141889	2003-8010-071	Rising Sun Historic District	5261-5270 Lincoln Hwy. East	Eligible	01/25/2006
Strasburg Borough						
	000795		Strasburg Historic District	E & W Main St., S Decatur St., W Miller St.	Listed	03/03/1983
	141251	2003-8010-071	Mill Creek Tributary Rural HD	North of S.R. 0030, South of Siegrist Road, West of Ronks Road, Eas of	Eligible	01/25/2006
Strasburg Township						
	050799		Neff's Mill Covered Bridge	T-559, North of Lime Valley	Listed	12/10/1980
	050800		Lime Valley Covered Bridge	T-494, Lime Valley	Listed	12/10/1980
	077054		Neff's Mill Covered Bridge	Penn Grant Rd. at Pequea	Listed	12/11/1980
	086559		Combination Baggage & Mail Car No. 5403	Pa Railroad Museum	Listed	12/17/1979
	086560		Consolidation Freight Locomotive No. 1187	Pa Railroad Museum	Listed	12/17/1979
	086561		Consolidation Freight Locomotive No. 2846	Pa Railroad Museum	Listed	12/17/1979
	086562		Consolidation Freight Locomotive No. 7688	Pa Railroad Museum	Listed	12/17/1979
	086563		Cumberland Valley Car	Pa Railroad Museum	Listed	12/17/1979
	086564		DD1 Electric Locomotive No. 36	Pa Railroad Museum	Listed	12/17/1979
	086566		Flat Car No. 473567	Pa Railroad Museum	Listed	12/17/1979
	086567		Freight Locomotive No. 5741	Pa Railroad Museum	Listed	12/17/1979
	086568		Mikado Freight Locomotive No. 520	Pa Railroad Museum	Listed	12/17/1979
	086569		Passenger Coach No. 3556	Pa Railroad Museum	Listed	12/17/1979
	086570		Passenger Day Coach No. 8177	Pa Railroad Museum	Listed	12/17/1979
	086571		Passenger Locomotive No. 1223	Pa Railroad Museum	Listed	12/17/1979
	086572		Passenger Locomotive No. 1737	Pa Railroad Museum	Listed	12/17/1979

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MUNICIPALITY	KEYNO	ERNO	PROPERTY NAME	ADDRESS	STATUS	LIST DATE
Strasburg Township (continued)						
	086573		Passenger Locomotive No. 460	Pa Railroad Museum	Listed	12/17/1979
	086574		Passenger Locomotive No. 7002	Pa Railroad Museum	Listed	12/17/1979
	086575		Passenger & Baggage Car No. 4639	Pa Railroad Museum	Listed	12/17/1979
	086576		Steel Hopper Car No. 33164	Pa Railroad Museum	Listed	12/17/1979
	086577		Steel Passenger Coach No. 1650	Pa Railroad Museum	Listed	12/17/1979
	086578		Steel Passenger Coach No. 1651	Pa Railroad Museum	Listed	12/17/1979
	086579		Switcher No. 1670	Pa Railroad Museum	Listed	12/17/1979
	086580		Switcher No. 94	Pa Railroad Museum	Listed	12/17/1979
	086581		Wooden Baggage Express No.6	Pa Railroad Museum	Listed	12/17/1979
	086582		Wooden Express Baggage No. 6076	Pa Railroad Museum	Listed	12/17/1979
	086583		Wooden Hopper Gondola No. 1818	Pa Railroad Museum	Listed	12/17/1979
	102746	1993-0682-071	Hessdale Historic District	Beaver Valley Pike, Krantz Mill Rd., Bunker Hill	Eligible	11/01/1994
	116536		Pa. Railroad Air Brake Instruction Car No. 492445	Railroad Museum of Pennsylvania	Eligible	04/09/2001
	116716		Locomotive No. 6755, Class M1b, Mountain Type, 4-8-2	Pennsylvania Railroad Museum	Listed	12/17/1979
	141011	2003-8010-071	Pequea South Rural Historic District		Eligible	01/25/2006
Upper Leacock Township						
	050795		Pinetown Covered Bridge	T-620, Southeast of Oregon	Listed	12/10/1980
	050951		Mascot Roller Mills	Newport Rd. & Stumptown Rd.	Listed	09/29/1983
Warwick Township						
	000299		Hammer Creek Bridge	L.R. 36011	Listed	06/22/1988
	029902	1998-1893-071	Newport Rd. East of Orchard Rd. Lititz	Newport Rd. East of Orchard Rd. Lititz	Eligible	06/16/1998
	050796		Buck Hill Farm Covered Bridge	Off 501, Private Land, South of Kissel Hill	Listed	12/10/1980
	050807		Erb's Covered Bridge	T-634, West of Akron	Listed	12/10/1980
	050808		Zook's Mill Covered Bridge	T-634, Northeast of Oregon	Listed	12/10/1980
	097295	1991-1996-071	Snyder Hill Road Farm	Snyder Hill Rd.	Eligible	03/25/1991
	105129		Broome, John, Property	West Woods Dr. West of Rte. 501	Eligible	04/18/1995
West Cocalico Township						
	036823		Furnace Hill Tenant House	Girl Scout Rd. East of Project Drive	Listed	05/20/2005
	036998		Reinholds Hotel	Main St. Rte. 897 South Side, East of Railroad	Eligible	05/01/1991
	050702		Walter, Henry, House	Greenville Rd.	Listed	07/26/1984
	096398		Reinhold's Station Trinity Chapel	114 E Main St.	Listed	09/05/1990
West Donegal Township						
	101681		Coble Farm	1531 Bossler Rd. North of Haunstein Rd.	Eligible	07/01/1993
	102239		Wittle, Dorothy, Property	1165 Turnpike Rd.	Eligible	04/19/1994

Lancaster

MUNICIPALITY	KEYNO	ERNO	PROPERTY NAME	ADDRESS	STATUS	DATE
West Earl Township						
	000144		Bridge in West Earl Township	L.R. 36032	Listed	06/22/1988
	000383		Bitzer's Mill Covered Bridge	L.R. 36122	Listed	12/11/1980
	028469	1995-1068-071	Martin/Bitzer/Eberly	Cider Mill Rd. East side North of Covered Bridge Rd.	Eligible	03/07/1995
	028470	1995-1068-071	Marin-Bitzer House	Cider Mill Rd. East side North of Mill Itself	Eligible	03/07/1995
	086602		Bitzer's Mill Bridge	L.R. 36122	Listed	12/10/1980
	111799	1999-1529-071	Farmersville Historic District	Farmersville Rd.	Eligible	08/02/1999
West Hempfield Township						
	050811		Seigrist's Mill Covered Bridge	T-360, North of Ironville	Listed	12/10/1980
	050814		Forry's Mill Covered Bridge	T-362, Northwest of Ironville	Listed	12/10/1980
	097284		Chickies Industrial Historic District	Rte. 441, Furnace Rd., Chickies Creek	Eligible	05/01/1991
	097285		Henry Clay Furnace Ruins	0.3 mile West of Rte. 441	Eligible	05/01/1991
	097286		Chickies Lock	0.1 mile West of Rte. 441	Eligible	05/01/1991
	097287		Chickies Silica Stone Crusher	Along Susquehanna R., Between Chickies Rock & Jones Creek	Eligible	05/01/1991
	097288		Haldeman, S.S., Mansion Site	Rte. 441 Near Chickies Rock	Eligible	05/01/1991
	097289		Chickies Furnace Site No. 1	Rte. 441 at Chickies Creek	Eligible	05/01/1991
	097293		Saint Charles Furnace Ruins	North of Columbia on Conrail Right of Way	Eligible	05/01/1991
	109964		Chickies Historic District	River Rd., Quarry Rd., Long Ln.	Listed	12/28/2005
West Lampeter Township						
	001090		Herr, Hans, House	1851 Hans Herr Dr.	Listed	05/03/1971
	001093		Hand, General Edward, House	881 Rock Ford Rd.	Listed	11/21/1976
	028528		Stoner, Henry K., Farm	Gypsy Hill Rd. East side South of Morningside Rd.	Eligible	07/01/1993
	028537	1991-0295-071	Herr or Graff House & Mill	Hollinger Rd. Southeast Corner at Rte. 222 North of Mill Creek	Eligible	11/07/1990
	028553	1999-1709-071	Mylin, Martin III & Barbara, House 1787	Peach Bottom Rd. East side Opp Main St.	Eligible	05/12/1999
	028564		Herr, Christian & Emma, Farm	2131-2133 S View Rd.	Listed	08/30/1994
	050799		Neff's Mill Covered Bridge	T-559, North of Lime Valley	Listed	12/10/1980
	050800		Lime Valley Covered Bridge	T-494, Lime Valley	Listed	12/10/1980
	077054		Neff's Mill Covered Bridge	Penn Grant Rd. at Pequea	Listed	12/11/1980
	083507		Park Site 36LA0096		Listed	04/04/1985
	096979	1991-0295-071	Miller, John & Mary, House	Hollinger & Millwood Rds.	Eligible	11/07/1990
	096980	1991-0295-071	Lamb Tavern	Hollinger & Millwood Rds.	Eligible	11/07/1990
	096982	1991-0295-071	Willow Street Pike Historic District	Willow Street Pike	Eligible	11/07/1990
	101687		Herr, Benjamin, Farmstead	501 Penn Grant Rd.	Eligible	07/01/1993
	105311		Harnish, Johannes & Anna, Farmstead	202 Woodfield Crossing	Listed	03/12/1999

Lancaster

MUNICIPALITY	KEYNO	ERNO	PROPERTY NAME	ADDRESS	STATUS	DATE
West Lampeter Township (continued)						
	105349	1994-2489-071	Old Menonist Meetinghouse	Penn Grant Rd. & Hans Herr Drive (Northwest Corner)	Eligible	07/15/1994
	105927		Weber/Weaver Farm	1835 Pioneer Rd.	Listed	05/27/1999
	119422		Rocky Springs Park	1441 Millport Rd.	Eligible	03/14/2002

Lancaster	Eligible	Listed	NHL	Total
Total	271	203	5	479

APPENDIX F

LIST OF PROPERTY OWNERS WITHIN THE PROPOSED RIGHT-OF-WAY

Property Owner	Parcel Number
Thomas W. Matthews 101 Martzall Road Denver, PA 17517	1
Linda L. Boyer 169 Martzell Road Denver, PA 17517	1A
David C. & Cathy J. Santangelo 149 Martzall Road Denver, PA 17517	1B
Samuel J. & Ruth A. Beamsederfer 135 Martzall Road Denver, PA 17517	1C
Kenneth L. & Isabell L. Stewart 119 Martzall Road Denver, PA 17517	1D
Edwin Z. Martin & Willis H. Stauffer 1127 Smokestown Rd. Denver, PA 17517	2
Lester M. & Anna N. High, Jr. 85 Martzall Road Denver, PA 17517	3
Wilfred G. & Joanne G. Martin 67 Martzall Road Denver, PA 17517	4
Galen E. & Peggy A Kunkle 55 Martzall Road Denver, PA 17517	5
Robert P. & Linda K. Strayer 41 Martzall Road Denver, PA 17517	6

Anna S. High 27 Martzall Road Denver, PA 17517	7
Joel Lydell High 11 Martzall Road Denver, PA 17517	8
David K. Borrell, Jr. P.O. Box 23 Denver, PA 17517	10
Warren W. & Anna Martin 1122 Dogwood Dr. Reinholds, PA 17569	12
Cocalico Mennonite Church c/o Amos Hoover 248 Cider Mill Road Ephrata, PA 17522-8603	13
Susan L. Kittler 350 Brunners Grove Rd. Reinholds, PA 17569	14
Anna S. High 27 Martzall Road Denver, PA 17517	15
Michael L. & Lorraine N. Sensenig 302 Brunners Grove Rd. Reinholds, PA 17569	16
Terry L. & Terri K. Patterson 331 Brunners Grove Rd. Reinholds, PA 17569	17
Reinholds V.F.W. Post No. 6759 250 Brunners Grove Rd. Reinholds, PA 17569	18
Thomas E. Stewart 2005 W. 50th St. Westwood Hills, KS 66205	19

Thomas E. Stewart & 20
Gaynor J. Stewart
2005 West 50th St.
Westwood Hills, KS 66205

Steven G. Gerhart & 21
Mary L. Gerhart
185 Brunners Grove Rd.
Reinholds, PA 17569

Kent A. Reich 22
175 Brunners Grove Rd.
Reinholds, PA 17569

Anthony L. & Rachelle L. Hostetter 23
165 Brunners Grove Rd.
Reinholds, PA 17569

Gerald A. & Angela M. DeBalko 24
155 Brunners Grove Rd.
Reinholds, PA 17569

Tracy L. & Jamie L. Sweigart 25
1160 W. Swartzville Rd.
Reinholds, PA 17569

Thomas J. & Michele L. Kauffman 26
1150 W. Swartzville Rd.
Reinholds, PA 17569

Loran Ray Gensemer 27
1134 W. Swartzville Rd.
Reinholds, PA 17569

Joseph G. & Audrey Elsinger 28
1135 W. Swartzville Rd.
Reinholds, PA 17569

Glenn E. & Debra E. Levering 29
1175 W. Swartzville Rd.
Reinholds, PA 17569

Glenn M. & Catherine M. Gerhart 30
45 Blackhorse Rd.
Reinholds, PA 17569

Marvin & Joyce Texter
71 Black Horse Rd.
Reinholds, PA 17569 — 31

Naomi G. Travis
81 Black Horse Road
Reinholds, PA 17569 — 32

Leroy H. & Rose Marie Martin
N. 12479 Hi Line Avenue
Colby, WI 54421 — 33

Jeffrey A. & Deborah L. Trickett
300 N. Ridge Rd.
Reinholds, PA 17569 — 34

Bonnie J. Farrell
410 Tremont Avenue
Montrose Manor
Reading, PA 19607 — 35

Neil C. & Mary Elizabeth Wike
125 Faust Dr.
Reinholds, PA 17569 — 36

Travis J. &Wendy L. Stauffer
50 Briar Lane
Reinholds, PA 17569 — 37

Peter A. & Beth M. Day
590 Holtzman Rd.
Reinholds, PA 17569 — 38

Mark D. & Laura L. Walters
549 Holtzman Rd.
Reinholds, PA 17569 — 39

Thomas R. Rapp
25 Bauman Circle
Reinholds, PA 17569 — 40

Donald S. & Patricia T. Bauman
35 Bauman Circle
Reinholds, PA 17569 — 41

Locust Wood Mobile Home Park, LLC
P.O. Box 251
Morgantown, PA 19543 42

Emily C. DeLong
605 Holtzman Rd.
Reinholds, PA 17569 43

Kenneth L. & Carol S. Brightbill
45 Spruce St.
Mohnton, PA 19540 44

Mark E. & Victoria R. Christensen
210 Indiandale Rd.
Reinholds, PA 17569 45

Vasilios A. & Louise S. Vlachos
219 Indiandale Rd.
Reinholds, PA 17569 46

Raymond E. & Janet M. Ulrich
231 Indiandale Rd.
Reinholds, PA 17569 47

Rodney J. & Debi L. Faust
408 Vinemont Rd.
Sinking Spring, PA 19608 48

Commonwealth of PA
State Game Commission
18th & Herr Sts.
Harrisburg, PA 17103 49

Jeffrey Lee & Marsha L. Zimmerman
411 Vinemont Rd.
Sinking Spring, PA 19608 50

Timothy M. & Carole Z. Wirth
124 Shearers Rd.
Reinholds, PA 17569 51

Craig F. & Lisa R. Krick
138 Shearers Rd.
Sinking Spring, PA 19608 52

Aivars O. & Anna G. Berkis 53
134 Shearers Rd.
Sinking Spring, PA 19608

Stacy A. Hauk 54
135 Shearers Rd.
Sinking Spring, PA 19608

Thomas A. & Dolores A. Derr 55
145 Shearers Rd.
Sinking Spring, PA 19608

Richard J. Summons 57
172 Mail Rte. Rd.
Sinking Spring, PA 19608

Ray L. & Constance Dilliplaine 58
160 Mail Rte. Rd.
Sinking Spring, PA 19608

Chester J. & Diane A. Pilgrim 59
168 Mail Route Road
Sinking Spring, PA 19608

Eugene R. Ulrich II 60
147 Mail Route Rd.
Sinking Spring, PA 19608

Rodney K. & Donna E. Trusty 61
159 Mail Rte. Rd.
Sinking Spring, PA 19608

Rodney K. Trusty 62
159 Mail Rte. Rd.
Sinking Spring, PA 19608

John D. & Paula E. Levandoski 63
126 Bran Rd.
Reading, PA 19608

Gerald W. & Lynda L. Jarsocrak 64
129 Bran Road
Sinking Spring, PA 19608

Lynda L. Jarsocrak 129 Bran Road Sinking Spring, PA 19608	65
Michael S. Heckman RD 8, Manor Golf Club Sinking Spring, PA 19608	66
Bradley A. & Donna Stewart 115 Bran Rd. Sinking Spring, PA 19608	67
Forino Co. 555 Mt. Home Rd. Sinking Spring, PA 19608	68
Richard C. & Vivian D. Faust 201 Chapel Hill Rd. Sinking Spring, PA 19608	69
Warren R. Gift & Marjorie Fackler 117 Chapel Hill Rd. Sinking Spring, PA 19608	70
Richard H. & Willa Mae Shadle 404 Airport Road Ashland, PA 17921	71
Greth Development Group, Inc. 77 Gelsinger Rd. Sinking Spring, PA 19608	72A
Greth Development Group, Inc. 77 Gelsinger Rd. Sinking Spring, PA 19608	72B
Greth Development Group, Inc. 77 Gelsinger Rd. Sinking Spring, PA 19608	72C
Greth Development Group, Inc. 77 Gelsinger Rd. Sinking Spring, PA 19608	72D

Greth Development Group, Inc. 77 Gelsinger Rd. Sinking Spring, PA 19608	72E
Joseph A. & Rose M. Bugay Mary L. Bugay Secoura 5 Gelsinger Rd. Sinking Spring, PA 19608	73
William H. Weber Joan Weber 100 Gelsinger Rd. Sinking Spring, PA 19608	74
Dean & Joan Black 110 Gelsinger Rd. Sinking Spring, PA 19608	75
R. Timothy & Susan L. Achenbach 120 Gelsinger Rd. Sinking Spring, PA 19608	76
R. Timothy & Susan L. Achenbach 120 Gelsinger Rd. Sinking Spring, PA 19608	77
Joseph E., Jr. & Deborah D. Lenart 180 Miller Rd. Sinking Spring, PA 19608	78
Pennsylvania American Water Co. 800 W. Hershey Park Dr. Hershey, PA 17033	79
PPL Electric Utilities Corp.	80

Berks – South Akron 230 kV Line Rearrangement

Randall L. & Lisa J. Martin 232 Wentzel Rd. Mohnton, PA 19540	1

APPENDIX G

LOCAL, STATE, AND FEDERAL GOVERNMENTAL AGENCY REQUIREMENTS

AGENCY	DOCUMENTATION
U. S. Army Corps of Engineers	Regulated Waters/Wetlands encroachment permitting; Bog turtle screening
County Conservation District	Erosion & Sedimentation Control Plans; Bog turtle screening
Dept. of Conservation & Natural Resources – Bureau of Forestry	State Threatened & Endangered Species Report – Plant, Habitats and Geologic Features
PA Dept. of Environmental Protection	Waters/wetland encroachment Permit Applications, Submerged Lands License Agreements, NPDES permitting
PA Dept. of Transportation	Crossing Permits
PA Turnpike Commission	Crossing Permits
PA Historical and Museum Commission	Element of regulated waters/wetland encroachment permitting
PA Public Utilities Commission	Certification Applications
Federal Aviation Administration	FAA Form 7460-1
PA Dept. of Transportation – Bureau of Aviation	Form AV-57
US Fish & Wildlife Service	Federal Threatened & Endangered Species Report
PA Fish & Boat Commission	Threatened & Endangered Species Report – Fish, Reptiles, Amphibians and Invertebrates
PA Game Commission	Threatened & Endangered Species Report – Mammals and Birds
US Environmental Protection Agency	Internal review of certain waters/wetland encroachment permits
National Marine Fisheries Service	Internal review of certain waters/wetland encroachment permits
PA Bureau of Historic Trust	Internal review of certain waters/wetland encroachment permits

APPENDIX H

PPL DESIGN CRITERIA AND SAFETY PRACTICES

The National Electrical Safety Code (NESC) is a set of rules to safeguard people during the installation, operation, and maintenance of electric power lines. The NESC contains the basic provisions considered necessary for the safety of employees and the public. Although it is not intended as a design specification, its provisions establish minimum design requirements. PPL Electric Utilities Corp. (PPL) has developed design specifications and safety rules which meet or surpass all provisions specified by the NESC.

Engineering Design Criteria and Parameters

The NESC includes loading requirements and clearances for the design, construction, and operation of power lines. The "loads" on conductors and supporting structures are the mechanical forces that develop from the weight of the conductors, the weight of ice on the conductors, plus wind pressure on the conductors and supporting structures. Loading requirements are the loads on the conductors and structures that are anticipated assuming certain ice and wind conditions. Loading requirements always contain "safety factors" to allow for unknown or unanticipated contingencies. The clearances and loading requirements contained in the NESC were developed to ensure public safety and welfare.

PPL transmission line design standards meet or surpass the NESC standards. For example, the relative order of grades of construction for conductors and supporting structures is B, C, and N; Grade B being the highest. According to the NESC standards, construction Grades B, C, or N may be used for transmission lines (except at crossings of railroad tracks and limited access highways where Grade B construction is specified). However, PPL designs all of its transmission lines for Grade B construction. The use of Grade B design and construction specifies such things as larger-minimum crossarm dimensions, larger-minimum conductor size, and increased safety factors.

Another example is the design parameters utilized to account for ice and wind loadings on the overhead ground wire (OHGW) and power conductors. The NESC standard ice and wind design magnitudes for the PPL territory are 0.5 inch thickness of radial ice combined with four pounds per square foot horizontal wind pressure (equivalent to 40-mile per hour wind velocity). The conductor sags and tensions used in line designs are the result of various ice and wind combinations, depending on the elevation at the line location and line design voltage. The conductor sags and tensions used in the design of all PPL transmission lines are at least 0.5-inch ice combined with eight pounds wind pressure (equivalent to 57 miles per hour wind velocity). This means that PPL lines are designed to operate safely and reliably during inclement weather even more severe than assumed by the NESC. In addition, PPL transmission lines are designed with more clearance to the ground than required by the NESC. The tables below compare PPL and NESC ground clearances for lines of various voltages.

138 kV

	Vertical Clearance to Ground	
Surface Underneath Conductors	NESC Standard	PPL Design
Roads, streets, alleys	21 Ft.	30 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	21 Ft.	30 Ft.
Spaces accessible to pedestrians only	17 Ft.	30 Ft.
Railroad tracks	31 Ft.	35 Ft.

230 kV

Surface Underneath Conductors	Vertical Clearance to Ground NESC Standard	PPL Design
Roads, streets, alleys	23 Ft.	32 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	23 Ft.	32 Ft.
Spaces accessible to pedestrians only	19 Ft.	32 Ft.
Railroad tracks	31 Ft.	36 Ft.

500 kV

Surface Underneath Conductors	Vertical Clearance to Ground NESC Standard	PPL Design
Roads, streets, alleys	28 Ft.	53 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	28 Ft.	53 Ft.
Spaces accessible to pedestrians only	24 Ft.	53 Ft.
Railroad tracks	38 Ft.	53 Ft.

A relay protection system is used to protect the public safety and welfare as well as equipment and the transmission system. Relay protection is installed for all transmission lines to automatically de-energize the line in the unlikely event that the line or supporting structure fails and the line contacts the ground.

Periodic Maintenance Program on All Transmission Lines

To ensure continued public safety and integrity of service, a periodic maintenance and inspection program is implemented for every transmission line. The program is administered through the use of helicopter patrols, with supplemental foot and structure

climbing patrols. A number of helicopter patrols are performed on all lines annually. The two-man helicopter crew flies parallel, to the left, and above the line so that the observer can look for signs of line damage or deterioration and observe clearances between vegetation and conductors. The observations are included in a report that is forwarded to the appropriate department for corrective action.

Foot and structure climbing patrol programs for a transmission line begin approximately three to five years after the line is energized, unless a helicopter patrol reports a need for earlier action. The frequency of foot patrols varies from once every year to once every several years depending on line type and age.

An assigned foot patroller checks right-of-way conditions, including access roads, bridges, pole washouts, tower footers, vegetation height and clearance to conductors, pole and tower deterioration and, with the use of binoculars, insulators, and condition of hardware. Identified problems are included in a report that is forwarded to the appropriate department for corrective action.

A scheduled line outage is required to perform an overhead patrol because of "hands-on" inspection of hardware. Overhead patrols are conducted on a schedule determined by line age, operating record, and observed general condition. The necessary repairs are also done during the inspection outage.

Personnel Safety Rules

The following are a few of the PPL safety rules that demonstrate the Company's concern for employee safety:

- Work procedures have been developed to allow work to be performed on energized facilities in a safe manner. When lines or apparatus are removed from service to be worked on, the Energy Control Process system is applied. This system provides that a red tag must be physically placed on the control handle of the de-energized equipment. The red tag may be removed only after proper authorization to energize the equipment. Various other tags are used for limited operations and informational purposes.

Employees will not apply or remove a tag or change the status of tagged equipment unless authorized.

- Temporary safety grounds are used on de-energized facilities for employee safety during maintenance, construction, or reconstruction work. Safety grounds are wires connecting the de-energized facility to an electrical ground. If the facility should be energized, the safety grounds will divert the current directly to ground and reduce the likelihood of personal injury. The conductor size and attachment clamps of temporary safety grounds must be capable of conducting anticipated fault currents. Rubber gloves, rubber sleeves, and additional rubber protective equipment are used as required when applying or removing temporary safety grounds to or from the lines or apparatus to be grounded. An approved nonconductive working stick of sufficient length to allow workers to maintain the following required minimum clearances is used to test that the line has been de-energized and to apply temporary safety grounds:

Voltage-kV	Minimum Clearance
138	3'-7"
230	5'-3"
500	11'-3"

Before applying grounds, a test is done to confirm that the line is de-energized. The voltage test device is checked before and after use to assure reliability. When ground pins are used to establish proper ground points, they are driven to a depth of not less than four feet as near vertical as possible.

- Poles or structures are inspected and examined for structural integrity before climbing. If there is any reason to believe that a pole is unsafe, it is stabilized before work is performed. Appropriate safety gear in the form of body belts, safety straps, hard hats, gloves, etc., is worn by linemen during line work activity.

MAGNETIC FIELD MANAGEMENT

PPL Electric Utilities Corporation

APPENDIX I

DECEMBER 2004

TABLE OF CONTENTS

INTRODUCTION

At PPL Electric Utilities Corp. (PPL EU), magnetic field management means investigating and implementing methods at low or no cost to reduce magnetic fields in new or rebuilt transmission and distribution lines. This document explains PPL EU's Magnetic Field Management Program, which is part of PPL EU's larger Electric and Magnetic Fields (EMF) policy.

PPL EU's View

Some people are worried that electric and magnetic fields are harming their health. Others think the scientific research does not show a problem at all, and still others believe there's just too much scientific uncertainty to draw any conclusions.

Here's what we do know now. Various panels of scientists that have reviewed the EMF research generally have drawn two main conclusions. First, the large body of evidence does not demonstrate that EMF are harmful. Second, additional research is recommended to explore questions raised in some studies.

Given these conclusions, PPL EU is taking a reasoned approach in responding to the EMF issue. PPL EU's approach to the EMF issue consists of five elements:

- Providing EMF information to customers and employees
- Providing magnetic field measurements
- Establishing and implementing a magnetic field management program to reduce magnetic fields in new or rebuilt facilities when it can be done at no, or low, cost
- Integrating EMF in the public involvement process that PPL EU undertakes in the siting of transmission lines
- Have supported additional research

EMF Are All Around Us

Electric and magnetic fields occur in nature and in all living things. The earth, for instance, has a magnetic field, which makes the needle on a compass point north.

Electric fields and magnetic fields of a different type also surround every wire that carries electricity. In everyday life, these EMF arise from several basic sources, including power lines, electrical appliances, home and building wiring, other utility lines and cables, and currents flowing on water pipes. Though they often occur together, EMF are made up of two separate components:

Electric Fields

Electric fields are produced by the voltage—or electrical pressure—on a wire. The higher the voltage, the higher the electric field. As long as a wire is energized—has voltage present—an electric field is present (see Figure 1). In other words, an appliance, or an electric power line, doesn't actually have to be turned on to create an electric field. It just has to be plugged in. Electric fields diminish with distance and can be blocked or partially shielded by objects such as trees and houses.

Magnetic Fields

Magnetic fields are created by the current or flow of electricity through a wire. Generally speaking, the higher the current, the higher the magnetic field. Because they only occur when current is flowing, magnetic fields are present only when the power is turned on (see Figure 1). Magnetic fields also diminish with distance, but—unlike electric fields—are not blocked by common objects. In recent years, public and scientific interest has turned toward the magnetic field component of EMF because of some scientific studies regarding these fields.

Figure 1

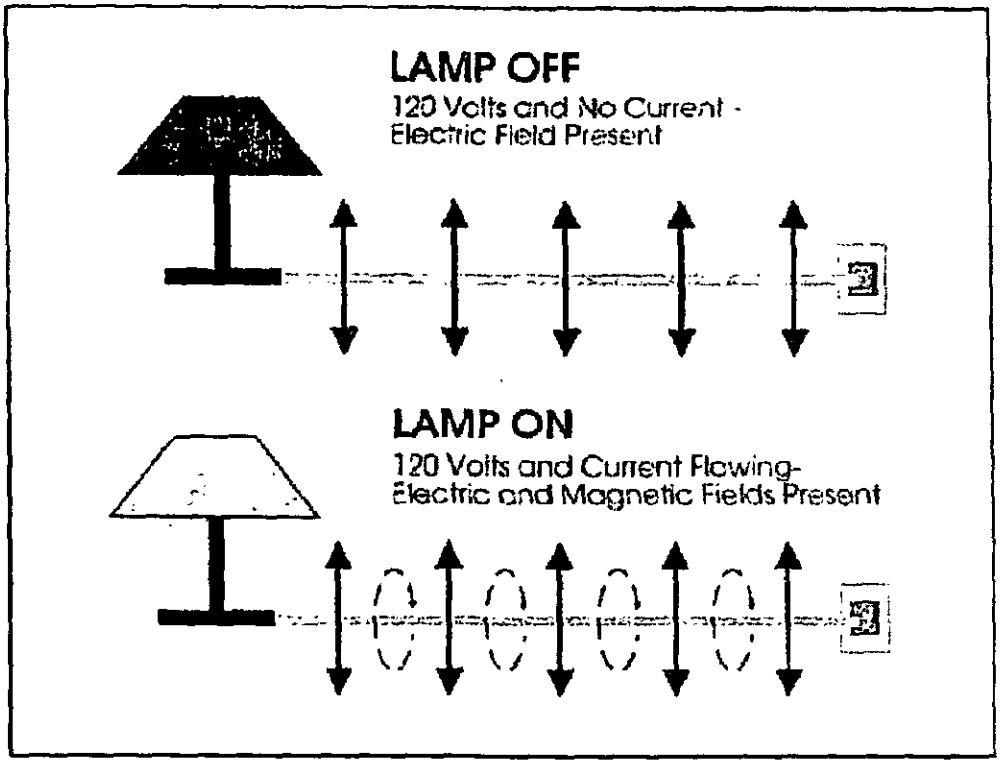

LAMP OFF
120 Volts and No Current -
Electric Field Present
LAMP ON
120 Volts and Current Flowing-
Electric and Magnetic Fields Present

Figure 2

Magnetic field strengths decrease with distance Magnetic fields are measured in milligauss	Source: "EMF In Your Environment", U.S. Environmental Protection Agency 1992 At 6 inches	At 1 foot	At 2 feet
Clothes dryer 	2 to 10	* to 3	*
Microwave oven 	100 to 300	1 to 200	1 to 30
Toaster 	5 to 20	* to 7	*
Power drill 	100 to 200	20 to 40	3 to 6
Can opener 	500 to 1500	40 to 300	3 to 30
Mixer 	30 to 600	5 to 100	* to 10
Hair dryer 	1 to 700	* to 70	* to 10
Color television 	Data not available	* to 20	* to 8

FIGURE 2 * The magnetic field measurement at this distance from the operating appliance could not be distinguished from background measurements taken before the appliance had been turned on.

Measuring Magnetic Fields

Magnetic fields usually are measured in a unit called a milligauss. Magnetic field levels found in the living areas of homes typically range from less than 1 milligauss to about 4 milligauss according to the U.S. Environmental Protection Agency. They can be higher in some cases. The levels next to appliances can exceed 1,000 milligauss (1 gauss). Figures 2 and 3 show how the strength of the field falls off as you move away from the source, just as the heat of a campfire grows weaker as you walk away from it. For overhead power lines, the strength of the magnetic fields is dependent upon a number of factors that will be explained later. Those factors produce a magnetic field that drops off rapidly as you move away from the power line.

Figure 3

Sample Magnetic Field Levels in Milligauss				
Type of Overhead Power Line	**Distance from the line**			
	Under the line	**50 ft.**	**100 ft.**	**200 ft.**
220 kV and 500 kV	5-400	5-250	1-75	0.5-20
69 kV and 138 kV	3-80	0.5-2.5	0.1-10	0.1-3
12 kV and below	0.4-20	0.1-1	-	-

The magnetic field values provided in this table represent a general range of values associated with the types of overhead power lines listed and are provided for illustration. There will be circumstances in which there will be magnetic field levels above or below the range of values provided due to variations in such factors as height of the wires, current flow and so on.

DEVELOPMENT OF PPL EU's MAGNETIC FIELD MANAGEMENT PROGRAM

One element of our response to EMF concerns expressed by some of our customers is PPL EU's Magnetic Field Management Program. The program was initiated in March 1991 because PPL EU believes it makes good sense, as a matter of policy, to respond to the concerns expressed by some of our customers and to reduce magnetic fields in new and rebuilt facilities where it can be done with either no-cost or low-cost design changes.

This document updates the original program which has been revised several times since 1991. These guidelines were developed by PPL EU's EMF Working Group.

VARIABLES THAT AFFECT MAGNETIC FIELDS

Magnetic fields from transmission and distribution lines are a function of a number of design variables. The following parameters affect the magnetic field levels produced by transmission and distribution lines:

- Current
- Height of conductors above ground
- Configuration of conductors
- Distance from the line

EFFECT OF PHASE CURRENT ON MAGNETIC FIELDS

At power frequencies (i.e., 60 hertz), the magnetic field level is a function of the current or flow of electricity through a wire. Keeping all other parameters the same, the magnetic field is proportional to the current. Hence, if the current increases by 25 percent, the resulting magnetic field level will increase by 25 percent.

The overall load current on any line varies with the demand for power. It's usually highest during daytime hours and lowest at night. There also are weekly, monthly, seasonal and yearly variations.

The difference in the currents between each phase in a multiphase line also can affect the magnetic field. This difference is called phase unbalance. For a constant load, a statistical analysis of this phase unbalance can be made to determine its effect on the magnetic field. Close to the line, there is very little effect. However, the phase unbalance slows the rate at which the magnetic field decreases with distance from the line.

EFFECT OF CONDUCTOR CONFIGURATION ON MAGNETIC FIELDS

In the transmission and distribution of power, utilities like PPL EU presently use both three-phase and single-phase lines. Each phase on a three-phase power line has either a single conductor or a bundle of two or more conductors. In a three-phase system, the ground-level magnetic field is a result of the fields produced by the currents in each of the phases. Placing the three phases as close together as possible (compaction) creates some field cancellation, and the ground-level magnetic field is reduced. However, appropriate phase separation is required for the reliable operation of the line. In addition, the arrangement of the phases can create some; field cancellation and reduction of the ground-level magnetic field.

EFFECT OF DISTANCE FROM THE MAGNETIC FIELD SOURCE

Magnetic field strength diminishes with the vertical and lateral distances from the magnetic field source. Increasing the height of the conductors above ground is useful for magnetic field reduction at ground level, but may result in increased structure costs and increased aesthetic impact of the structures. Another possible method of increasing the distance to the magnetic field source is to increase the right-of-way requirements. By keeping buildings off increased rights of way, thereby requiring the public to live and work further away from lines, exposure to magnetic fields produced by the lines can be reduced. Increases in right of way are not always practical and may increase costs significantly, however.

SUMMARY OF PPL EU's
MAGNETIC FIELD MANAGEMENT PROGRAM

Under its Magnetic Field Management Program, PPL EU has changed the way it builds and rebuilds some of its transmission and distribution lines. These design changes reduce magnetic field levels (assuming balanced circuit loadings and phase currents) by up to 69 percent in most of the company's new transmission lines. These guidelines now are being applied to new and reconstructed transmission facilities, based on this program.

The distribution component of the program focuses on 12 kV lines, the company's standard distribution voltage. It concentrates on the three-phase, primary 12 kV lines, since these are the most heavily loaded facilities and often are located in densely populated areas. The guidelines in this program are being applied to these three-phase, primary 12 kV lines.

A maximum 3-5 percent change in estimated cost was used as the limit for the guidelines since this value is consistent with low cost, is within estimating accuracy and is likely to have little impact on overall line costs.

The magnetic field calculations used in this document for the design of PPL EU's overall magnetic field management plan assume balanced load conditions among the phases and a fixed level of current, not necessarily representative of specific transmission or distribution lines. These levels were calculated using the Electric Power Research Institute's ENVIRO computer program. Under actual operating conditions, the magnetic field levels that result may vary due to such things as actual load per circuit, overall current on each phase conductor and the electrical configuration and operation of each line.

MAGNETIC FIELD MANAGEMENT PROGRAM GUIDELINES

The guidelines for magnetic field management are noted below, with discussion points for each.

OVERHEAD LINES

NEW OR REBUILT TRANSMISSION LINES

1. **Balance transmission circuit loads and phase currents as much as possible.**
   - PPL EU should continue to make every effort to balance loadings between the two circuits of a double circuit line when planning new or rebuilt facilities to maximize the effects of reverse phasing.
   - PPL EU should continue the practice of balancing single-phase loads across the three phases of the distribution system. (Unbalanced phase currents on the distribution system are reflected through to the transmission system.)
     - Unbalanced phase currents result in higher magnetic fields that do not drop off as quickly with distance as do the fields resulting from balanced phase currents.
     - For a 5 percent phase current unbalance, the magnetic field 50 feet from the centerline of a single circuit 138 kV line could be more than twice the value than if the same line had balanced phase circuits.
   - Balanced phase currents on each three-phase distribution circuit also reduce magnetic fields from the distribution circuits themselves. In addition, they reduce magnetic fields on the transmission system from which the distribution system circuits are supplied and connected through substations.
   - Apart from magnetic field considerations, balanced phase currents on each three-phase distribution circuit also reduce line losses and improve the system voltage.

2. **Continue with the present practice of using long-span construction as the PPL EU 138/69 kV standard**

- Structure designs for short-span and long-span construction are illustrated on Charts I and II, respectively.
  - Short-span design does not significantly reduce magnetic fields when compared to long-span design even though it is more compact than long-span design. Comparison of the magnetic field values from Chart III indicates essentially the same values. Therefore, short-span design should not be used solely to reduce magnetic fields.
  - PPL EU will continue to use long-span construction for 138/69 kV double-circuit lines and for single-circuit/future-double-circuit lines.
  - For single-circuit/future-double-circuit lines, PPL EU will continue to install two conductors on the top positions and one in the middle position as shown in Chart IV.
    - This arrangement minimizes magnetic fields as shown in Chart V by placing the three initial conductors higher on the structure, which increases the ground clearances, and by placing the conductors in a triangular configuration.

3. **Compact design structures are not a low-cost alternative and should be used for magnetic field reduction only in special applications.**

Chart VI illustrates the compact design structure.

- The compact design increases the initial installation costs by 79 percent when compared to the long-span design but reduces the magnetic field from 9 mG to 3 mG (about 67 percent) at the edge of the 100-foot-wide right of way as shown on Chart III.

4. **Reverse phase new or rebuilt double-circuit transmission lines for all voltage levels.**

- Reverse phasing was adopted by PPL EU in March 1991 for double-circuit 138/69 kV transmission lines and in April 1992 for all other double circuit transmission lines. Reverse phasing is shown in Chart VII. Reverse phasing will reduce the magnetic fields when the current flow on both circuits is in the same

direction. Calculated values contained here are based on balanced and equal phase currents on both circuits.

- Reverse phasing reduces the magnetic field of a double circuit 138 kV single pole transmission line from 29 mG to 9 mG (about 69 percent) at the edge of the 100-foot-wide right of way as shown on Chart III.
- Reverse phasing reduces the magnetic field of a double circuit 230 kV single pole transmission line from 49 mG to 16 mG (about 67 percent) at the edge of the 150-foot-wide right of way as shown on Chart VIII.
- Reverse phasing reduces the magnetic field of a double-circuit 500 kV single pole transmission line from 37 mG to 21 mG (about 43 percent) at the edge of the 200-foot-wide right of way as shown on Chart IX.

- When new or rebuilt double-circuit lines require tapping existing double-circuit lines, PPL EU will review the existing lines to determine if reverse phasing can be provided at low cost.
- Computer modeling is required to develop the optimum phasing and overall conductor arrangements for lines added to, or rebuilt in, multiple-line corridors.
  - Merely adding a reverse-phase double-circuit line to an existing transmission line corridor or reverse phasing a rebuilt line in the multiple-line corridor will not necessarily produce lower magnetic field levels at the edge of the corridor right of way.
  - The corridor must be computer modeled with all the lines, existing phase conductor locations and currents. Then, magnetic field calculations must be made varying the phase arrangements of the new or reconstructed line to determine the appropriate phasing arrangement.
  - Current flow direction on a line also must be considered. For example, a reverse-phased line should have the current flowing in the same direction on both circuits. If the current flow is in the opposite direction for one circuit, reverse phasing will not produce the lowest magnetic field and another phase arrangement that produces lower fields may need to be utilized.

5. **Increase the minimum ground clearance for all new transmission lines.**

138/69 kV Transmission Lines

- Increasing the minimum line design ground clearance from 25 feet to 30 feet may add up to about 5 percent to the installed cost of a new double-circuit single pole 138/69 kV line. For a given project, such cost may be substantially less, however. In fact, PPL EU frequently uses higher-than-minimum ground clearances due to such features as road crossings, line crossings and site-specific terrain. With long-span reverse-phase design, the, magnetic field is reduced from 9 mG to 7 mG (about 22 percent) at the edge of a 100-foot-wide right of way as shown in Chart X.
  - In the actual design of transmission lines to include higher minimum ground clearances, there may be limited segments (such as highway crossings, severe slopes and transmission line crossing locations) where National Electrical Safety Code (NESC) minimum ground clearances may need to be used. The NESC minimum ground clearances are less than the increased ground clearance discussed previously.

230 kV Transmission Lines

- Increasing the minimum line design ground clearances from 27 feet to 32 feet may add up to about 5 percent to the cost of a single-circuit single-pole line (current standard). For a given project, such cost may be substantially less, however. In fact, PPL EU frequently uses higher-than-minimum ground clearances due to such features as road crossings, line crossings and site-specific terrain. By increasing the clearances, the magnetic field is reduced from 30 mG to 28 mG (about 7 percent) at the edge of a 150-foot-wide right of way.
- Increasing clearances from 27 feet to 32 feet could theoretically add up to about 2.8 percent to the cost of a double-circuit single-pole line (current standard) and reduce the magnetic field of a reverse-phase line from 16 mG to 15 mG (about 6 percent) at the edge of a 150-foot-wide right of way. Chart XI is a summary of this data.
- Studies are required for each new 230 kV line to determine optimum structure types, ground clearances, configurations and designs to reduce field levels. Such

studies could include analysis of reduction measures such as additional minimum ground clearances, increasing conductor tensions, using reduced phase spacing (a "Delta" configuration on a single-circuit line), installing the second circuit initially, and/or adding a second set of conductors that are reverse phased and operated in parallel with the first set (bundled/split phase).

500 kV Transmission Lines

- Increasing ground clearances from 33 feet to 53 feet may add up to about 4.5 percent to the cost of a single-circuit "H-frame" line (current standard). For a given project, such cost may be substantially less, however. In fact, PPL EU frequently uses higher-than-minimum ground clearances due to such features as road crossings, line crossings and site-specific terrain. By increasing the clearances, the magnetic field is reduced from 42 mG to 35 mG (about 17 percent) at the edge of a 200-foot-wide right of way.
- Increasing ground clearances from 33 feet to 53 feet could theoretically add up to 2.8 percent to the cost of a double-circuit "H-frame" line (current standard) and reduces the magnetic field of a reverse-phase line from 21 mG to 16 mG (about 24 percent) at the edge of a 200-foot-wide right of way. Chart XII is a summary of this data.
- Studies are required for each new 500 kV line to determine optimum structure types, ground clearances, configurations and designs to reduce field levels. Such studies could include analysis of reduction measures such as additional minimum ground clearances, increasing conductor tensions, using reduced-phase spacing (a "Delta" configuration on a single circuit line), installing the second circuit initially, and/or adding a second set of conductors that are reverse phased and operated in parallel with the first set (bundled/split phase).

RECONDUCTORING OR ADDING ADDITIONAL CIRCUITS TO EXISTING TRANSMISSION LINES

When reconductoring or adding additional circuits to existing transmission lines, PPL EU will evaluate low-cost or no-cost options for magnetic field management on a case-by-case basis.

When reconductoring existing transmission lines or adding additional circuits, low-cost alternatives may not exist; however, the following steps will be taken:

- For a single-circuit line, the use of a Delta arrangement or other modifications on the existing structure, with reduced-phase spacing, will be evaluated.
- For double-circuit lines, application of reverse phasing may reduce the magnetic field under the line and within the right of way and will be evaluated.
- For single- and double-circuit lines, evaluate using higher conductor tensions that can increase the minimum line design ground clearance.

DISTRIBUTION LINES

At the 12 kV distribution level, new main three-phase lines will continue to be constructed with five feet of additional ground clearance.

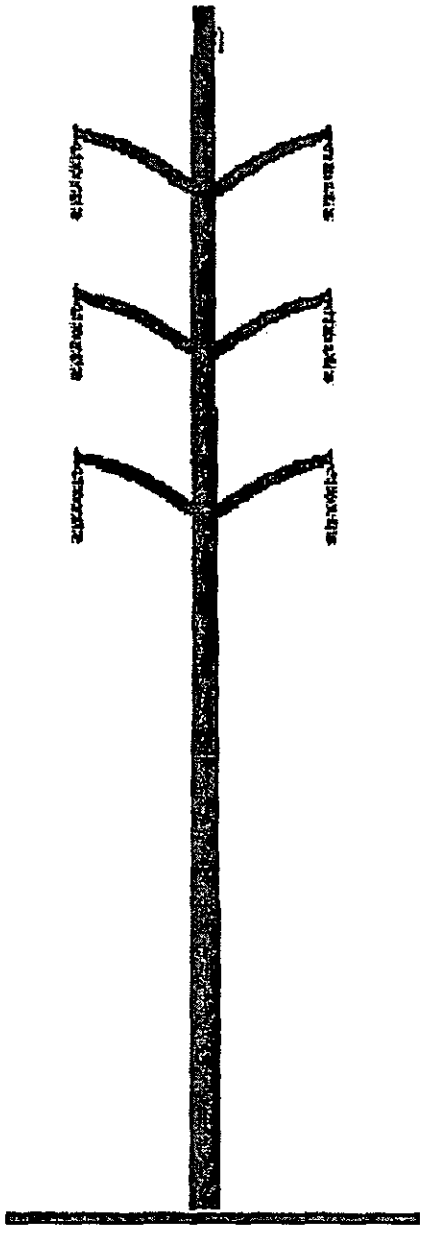
- Main lines are the most heavily loaded sections of a distribution line and therefore have the highest magnetic fields associated with them.
- Increasing the ground clearance by five feet reduces the magnetic field under the line from 14 mG to 11 mG using the standard eight-foot crossarm design. These values are based on increasing pole heights from 45 feet to 50 feet and a typical operating current of 300 amps per phase.
- Chart XIII is a summary of this data. Increasing ground clearance by five feet could theoretically add about 5 percent to the cost of a typical distribution line.

UNDERGROUND TRANSMISSION LINES

Underground transmission lines are required due to environmental or land use factors or restrictions on available clearances, PPL EU will evaluate options for magnetic field management techniques on a case-by-case basis.

- The phase arrangement that produces the lowest field will be determined.
- The depth of burial of the line will be determined considering the cost of excavation and the location of other buried utilities in the area.
- The use of steel pipe ferromagnetic shielding that reduces magnetic fields will be evaluated.

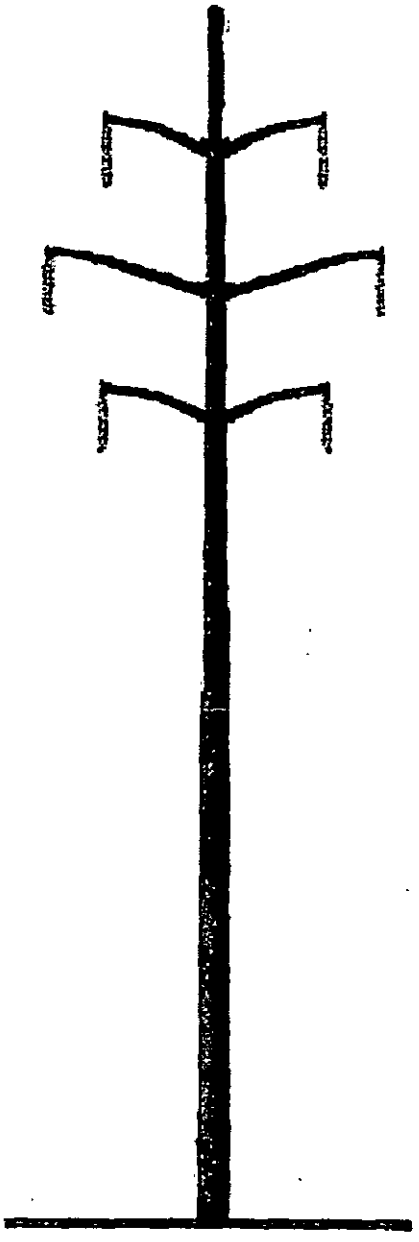
Short-Span Construction



- More compact design
- Should not be used solely to reduce magnetic fields
- Typical conductor data:

  1 3/8" HS steel overhead ground wire - 7.3 feet sag
  6-556.5 KCMIL 24/7 ACSR power conductors - (PARAKEET) 10.0 feet sag
  Average span - 400 feet

Long-Span Construction Remains
PPL EU 138 kV Standard



- **Lower cost alternative**
- **Reduces magnetic fields due to higher structures**
- **Typical conductor data:**

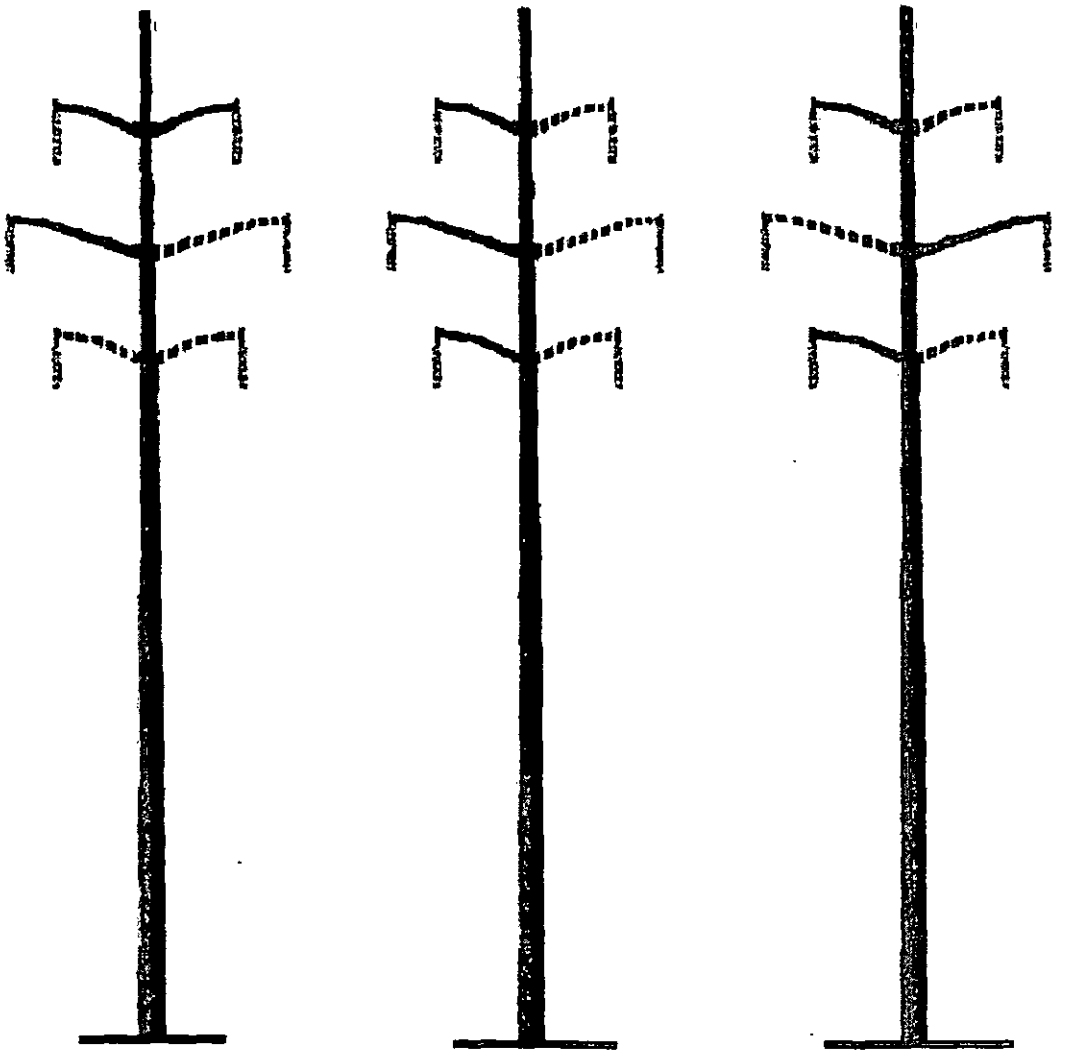
  1 3/8" HS steel overhead ground wire - 17.3 feet sag
  6-556.5 KCMIL 24/7 ACSR power conductors - (PARAKEET) 23.0 feet sag
  Average span - 600 feet

138/69 kV REVERSE-PHASE TRANSMISSION LINES CALCULATED MAGNETIC FIELDS AT 400 AMPERES

TYPE CONSTRUCTION	MAGNETIC FIELD IN MILLLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
SHORT SPAN (CHART I)	30
SHORT SPAN (REVERSE PHASE)	8
LONG SPAN (CHART II)	29
LONG SPAN (REVERSE PHASE)	9
COMPACT (CHART VI)	14
COMPACT (REVERSE PHASE)	3

The edge of right of way is 50 feet from the line centerline.
The 400 ampere phase current is balanced between phases.
Calculations are based on a minimum ground clearance of 25 feet.
LONG SPAN, SHORT SPAN and COMPACT are double-circuit lines.

Typical Single-Circuit Structure Designs



Top/Middle Vertical Top/Middle/Bottom

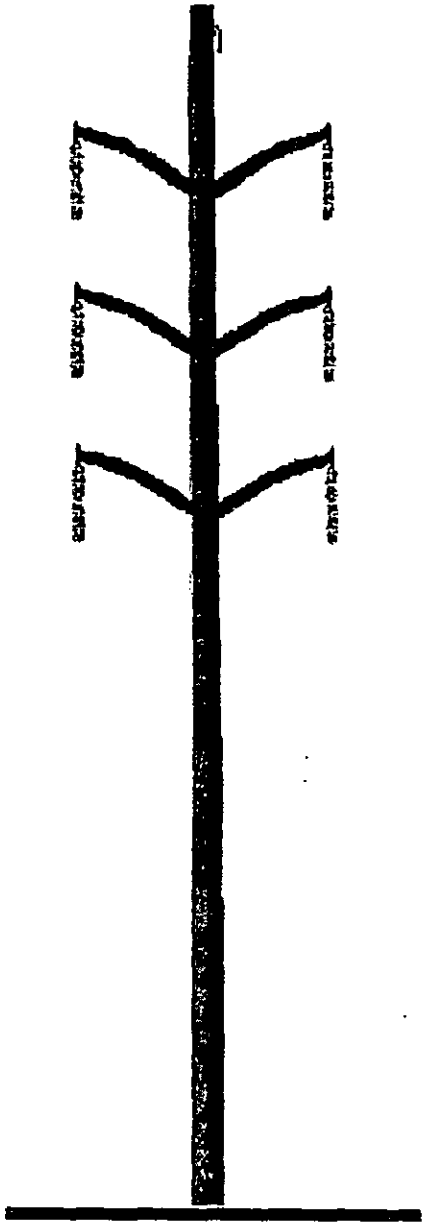
initial single circuit
future second circuit

138/69 kV SINGLE CIRCUIT TRANSMISSION LINES
CALCULATED MAGNETIC FIELDS AT 400 AMPERES

TYPE CONSTRUCTION	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
TOP/MIDDLE/BOTTOM	20
VERTICAL	17
TOP/MIDDLE	12

The edge of right of way is 50 feet from the line centerline.
The 400 ampere phase current is balanced between phases.
Calculations are based on a minimum ground clearance of 25 feet.

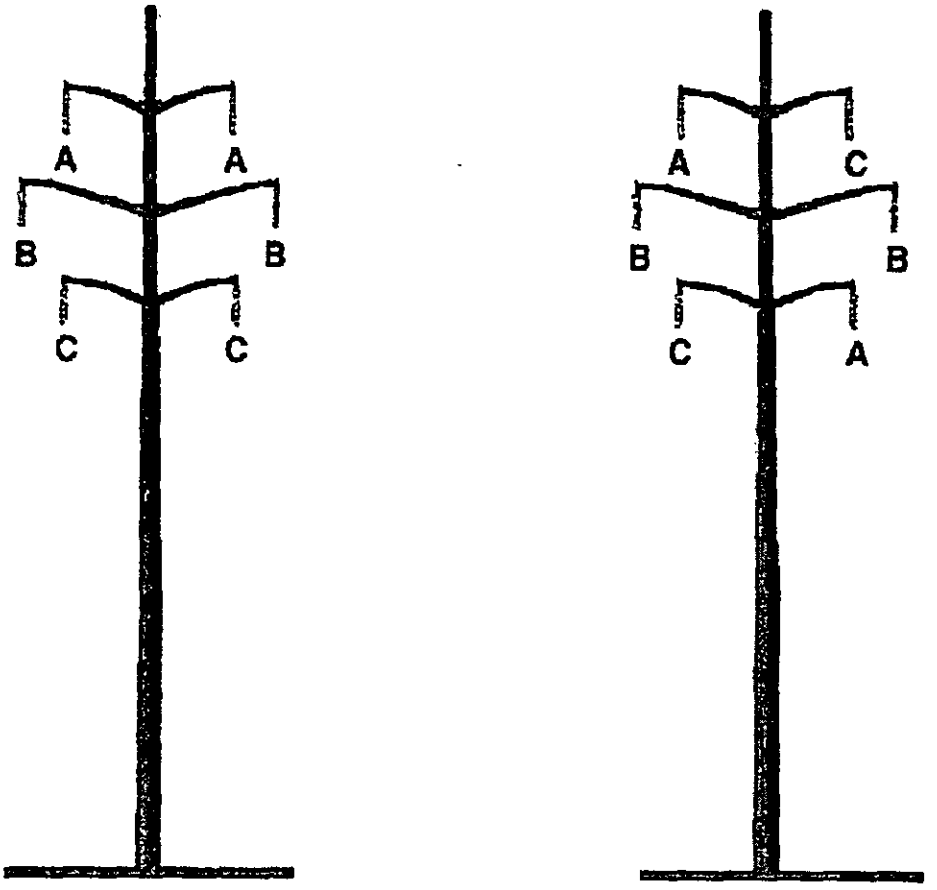
Compact Design Structure



- **Minimize magnetic fields due to compact design**
- **Not a low-cost alternative**
- **Typical conductor data:**

  1 3/8" HS steel overhead ground wire - 9.0 feet sag
  6-556.5 KCMIL 24/7 ACSR power conductors - (PARAKEET) 9.0 feet sag
  Average span - 300 feet

Reverse Phasing of Double-Circuit Transmission Lines



From: → → → → To:

Reverse phasing also can be one of the following phase arrangements:

A	B		B	A		B	C		C	A		C	B	
C	C	or	C	C	or	A	A	or	B	B	or	A	A	
B	A		A	B		C	B		A	C		B	C	

CHART VIII

230 kV REVERSE-PHASE TRANSMISSION LINES CALCULATED MAGNETIC FIELDS AT 800 AMPERES

TYPE CONSTRUCTION	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
DOUBLE CIRCUIT POLE	49
DOUBLE CIRCUIT POLE (REVERSE-PHASE)	16

The edge of right of way is 75 feet from the line centerline.
The 800 ampere phase current is balanced between phases.
Calculations are based on a minimum ground clearance of 27 feet.

CHART IX

500 kV REVERSE-PHASE TRANSMISSION LINES CALCULATED MAGNETIC FIELDS AT 1100 AMPERES

TYPE CONSTRUCTION	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
DOUBLE CIRCUIT POLE	37
DOUBLE CIRCUIT POLE (REVERSE PHASE)	21

The edge of right of way is 100 feet from the line centerline.
The 1,100 ampere phase current is balanced between phases.
Calculations are based on a minimum ground clearance of 33 feet.

CHART X

INCREASED 138/69 kV MINIMUM GROUND CLEARANCE CALCULATED MAGNETIC FIELDS AT 400 AMPERES

TYPE CONSTRUCTION	MINIMUM GROUND CLEARANCE FEET	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
SINGLE CIRCUIT TOP/MIDDLE	25	12
SINGLE CIRCUIT TOP/MIDDLE	30	10
LONG SPAN	25	29
LONG SPAN	30	26
LONG SPAN (REVERSE PHASE)	25	9
LONG SPAN (REVERSE PHASE)	30	7

The edge of right of way is 50 feet from the line centerline.
The 400 ampere phase current is balanced between phases.

INCREASED 230 kV MINIMUM GROUND CLEARANCE CALCULATED MAGNETIC FIELDS AT 800 AMPERES

TYPE CONSTRUCTION	MINIMUM GROUND CLEARANCE FEET	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
SINGLE CIRCUIT TOP/MIDDLE	27	30
SINGLE CIRCUIT TOP/MIDDLE	32	28
DOUBLE CIRCUIT POLE	27	49
DOUBLE CIRCUIT POLE	32	46
DOUBLE CIRCUIT POLE (REVERSE PHASE)	27	16
DOUBLE CIRCUIT POLE (REVERSE PHASE)	32	15

The edge of right of way is 75 feet from the line centerline.
The 800 ampere phase current is balanced between phases.

INCREASED 500 kV MINIMUM GROUND CLEARANCE CALCULATED MAGNETIC FIELDS AT 1,100 AMPERES

TYPE CONSTRUCTION	MINIMUM GROUND CLEARANCE FEET	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
SINGLE CIRCUIT "H" STRUCTURE	33	42
SINGLE CIRCUIT "H" STRUCTURE	53	35
DOUBLE CIRCUIT POLE	33	37
DOUBLE CIRCUIT POLE	53	31
DOUBLE CIRCUIT POLE (REVERSE PHASE)	33	21
DOUBLE CIRCUIT POLE (REVERSE PHASE)	53	16

The edge of right of way is 100 feet from the line centerline.
The 1,100 ampere phase current is balanced between phases.

12 kV DISTRIBUTION LINES
CALCULATED MAGNETIC FIELDS AT 300 AMPERES

TYPE CONSTRUCTION	POLE HEIGHT FEET	MAGNETIC FIELD IN MILLIGAUSS*	
		AT CENTERLINE	AT 30 FEET FROM CENTERLINE
STANDARD CROSSARM	45	14	7
STANDARD CROSSARM	50	11	6

* Field level under the line at mid-span based on 300 amps, balanced loading, one meter above ground level.

Siting/Magnetic Field Management.doc/mlt

APPENDIX J

LIST OF GOVERNMENTAL AGENCIES, MUNICIPALITIES AND OTHER PUBLIC ENTITIES RECEIVING APPLICATIONS

1. Pennsylvania Historical and Museum Commission
   Bureau for Historic Preservation
   Commonwealth Keystone Building, Second Floor
   400 North Street
   Harrisburg, Pennsylvania 17120-0053
   Attn: Mr. Douglas C. McLearen, Chief

2. Pennsylvania Department of Transportation
   Commonwealth Keystone Building
   400 North Street, 8th Floor
   Harrisburg, Pennsylvania 17120
   Attn: The Honorable Allen D. Biehler, P.E., Secretary

3. Department of Environmental Protection
   P.O. Box 2063
   Market Street State Office Building
   Harrisburg, Pennsylvania 17105-2063
   Attn: Office of Field Operations

4. Berks County Commissioners
   Berks County Service Center
   633 Court Street, 13th Floor
   Reading, PA 19601
   Attn: Ms. Judith L. Schwank, Chair

5. Berks County Planning Commission
   Berks County Service Center
   633 Court Street, 14th Floor
   Reading, PA 19601
   Attn: Mr. James L. Mason, Chairman

6. Lancaster County Commissioners
   50 North Duke Street
   PO Box 83480
   Lancaster, Pennsylvania 17608-3480
   Attn: Mr. Richard Shellenberger, Chairman

7. Lancaster County Planning Commission
50 N. Duke Street
PO Box 83480
Lancaster, Pennsylvania 17608-3480
Attn: Mr. James R. Cowhey, Executive Director

8. Brecknock Township Board of Supervisors
889 Alleghenyville Road
Mohnton, PA 19540
Attn: Mr. Jeffrey Fiant, Chairman

9. Brecknock Township Planning Commission
889 Alleghenyville Road
Mohnton, PA 19540
Attn: Mr. John R. Burger, Chairman

10. Spring Township Board of Supervisors
2800 Shillington Road
Reading, PA 19608
Attn: Mr. Alan S. Kreider, Chairman

11. Spring Township Planning Commission
2800 Shillington Road
Reading, PA 19608
Attn: Mr. James R. Oswald, Chairman

12. East Cocalico Township
100 Hill Road
Denver, PA 17517
Attn: Ms. Karen L. Koncle, Township Manager

13. East Cocalico Township Planning Commission
100 Hill Road
Denver, PA 17517
Attn: Mr. G. Sidni Schlegel, Chairman

14. Met-Ed, A FirstEnergy Company
2800 Pottsville Pike
PO Box 16001
Reading, PA 19612
Attn: Ronald P. Lantzy, Regional President

CERTIFICATE OF SERVICE

A-110500F0385

I hereby certify that a true and correct copy of the Application and accompanying exhibits and appendices have been served upon the following persons, in the manner indicated, in accordance with the requirements of § 1.54 (relating to service by a participant).

VIA CERTIFIED MAIL RETURN RECEIPT REQUESTED

PA Historical and Museum Commission
ATTN: Mr. Douglas C. McLearen, Chief
Bureau of Historic Preservation
Commonwealth Keystone Bldg., 2nd Floor
400 North Street
Harrisburg, PA 17120-0053

Pennsylvania Department of Transportation
ATTN:Hon. Allen D. Biehler, P.E., Secretary
Commonwealth Keystone Building
400 North Street, 8th Floor
Harrisburg, PA 17120

Department of Environmental Protection
ATTN: Office of Field Operations
P.O. Box 2063
Market Street State Office Building
Harrisburg, PA 17105-2063

Berks County Commissioners
ATTN: Ms. Judith L. Schwank, Chair
Berks County Service Center
633 Court Street, 13th Floor
Reading, PA 19601

Berks County Planning Commission
ATTN: Mr. James L. Mason, Chairman
Berks County Service Center
633 Court Street, 14th Floor
Reading, PA 19601

Lancaster County Commissioners
ATTN: Mr. Richard Shellenberger, Chairman
50 North Duke Street
P.O. Box 83480
Lancaster, PA 17608-3480

Lancaster County Planning Commission
ATTN: James R. Cowhey, Executive Director
50 North Duke Street
P.O. Box 83480
Lancaster, PA 17608-3480

Brecknock Township Board of Supervisors
ATTN: Mr. Jeffrey Fiant, Chairman
889 Alleghenyville Road
Mohnton, PA 19540

Brecknock Township Planning Commission
ATTN: Mr. John R. Burger, Chairman
889 Alleghenyville Road
Mohnton, PA 19540

Spring Township Board of Supervisors
ATTN: Mr. Alan S. Kreider, Chairman
2800 Shillington Road
Reading, PA 19608

Spring Township Planning Commission
ATTN: Mr. James R. Oswald, Chairman
2800 Shillington Road
Reading, PA 19608

East Cocalico Township
ATTN: Karen L. Koncle, Township Manager
100 Hill Road
Denver, PA 17517

East Cocalico Township Planning Commission
ATTN: Mr. G. Sidni Schlegel, Chairman
100 Hill Road
Denver, PA 17517

Met-Ed, A FirstEnergy Company
ATTN: Ronald P. Lantzy, Regional President
2800 Pottsville Pike
PO Box 16001
Reading, PA 19612

SECRETARY'S BUREAU
2006 NOV -9 P 12:09

Date: November 9, 2006

John H. Isom

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the Notice of the Application and relevant maps have been served upon the following persons, in the manner indicated, in accordance with the requirements of § 1.54 (relating to service by a participant).

VIA CERTIFIED MAIL RETURN RECEIPT REQUESTED

Thomas W. Matthews
101 Martzall Road
Denver, PA 17517
(Parcel 1)

Linda L. Boyer
169 Martzall Road
Denver, PA 17517
(Parcel 1A)

David C & Cathy J. Santangelo
149 Martzall Road
Denver, PA 17517
(Parcel 1B)

Samuel J. & Ruth A. Beamsederfer
135 Martzall Road
Denver, PA 17517
(Parcel 1C)

Kenneth L. & Isabell L. Stewart
119 Martzall Road
Denver, PA 17517
(Parcel 1D)

Edwin Z. Martin &
Willis H. Stauffer
1127 Smokestown Road
Denver, PA 17517
(Parcel 2)

Lester M. & Anna N. High, Jr.
85 Martzall Road
Denver, PA 17517
(Parcel 3)

Wilfred G. & Joanne G. Martin
67 Martzall Road
Denver, PA 17517
(Parcel 4)

Galen E. & Peggy A. Kunkle
55 Martzall Road
Denver, PA 17517
(Parcel 5)

Robert P. & Linda K. Strayer
41 Martzall Road
Denver, PA 17517
(Parcel 6)

Anna S. High
27 Martzall Road
Denver, PA 17517
(Parcel 7)

Joel Lydell High
11 Martzall Road
Denver, PA 17517
(Parcel 8)

David K. Borrell, Jr.
PO Box 23
Denver, PA 17517
(Parcel 9)

Warren W. & Anna Martin
1122 Dogwood Drive
Reinholds, PA 17569
(Parcel 12)

Cocalico Mennonite Church
c/o Amos Hoover
248 Cider Mill Road
Ephrata, PA 17522-8603
(Parcel 13)

Susan L. Kittler
350 Brunners Grove Road
Reinholds, PA 17569
(Parcel 14)

Anna S. High
27 Martzall Road
Denver, PA 17517
(Parcel 15)

Michael L. & Lorraine N. Sensenig
302 Brunners Grove Road
Reinholds, PA 17569
(Parcel 16)

Terry L. & Terri K. Patterson
331 Brunners Grove Road
Reinholds, PA 17569
(Parcel 17)

Reinholds V.F.W. Post No. 6759
250 Brunners Grove Road
Reinholds, PA 17569
(Parcel 18)

Thomas E. Stewart
2005 West 50th Street
Westwood Hills, KS 66205
(Parcel 19)

Thomas E. Stewart & Gaynor J. Stewart
2005 West 50th Street
Westwood Hills, KS 66205
(Parcel 20)

Steven G. Gerhart & Mary L. Gerhart
185 Brunners Grove Road
Reinholds, PA 17569
(Parcel 21)

Kent A. Reich
175 Brunners Grove Road
Reinholds, PA 17569
(Parcel 22)

Anthony L. & Rachelle L. Hostetter
165 Brunners Grove Road
Reinholds, PA 17569
(Parcel 23)

Gerald A. & Angela M. DeBalko
155 Brunners Grove Road
Reinholds, PA 17569
(Parcel 24)

Tracy L. & Jamie L. Sweigart
1160 West Swartzville Road
Reinholds, PA 17569
(Parcel 25)

Thomas J. & Michele L. Kauffman
1150 West Swartzville Road
Reinholds, PA 17569
(Parcel 26)

Loran Ray Gensemer
1134 West Swartzville Road
Reinholds, PA 17569
(Parcel 27)

Joseph G. & Audrey Elsinger
1135 West Swartzville Road
Reinholds, PA 17569
(Parcel 28)

Glenn E. & Debra E. Levering
1175 West Swartzville Road
Reinholds, PA 17569
(Parcel 29)

Glenn M. & Catherine M. Gerhart
45 Blackhorse Road
Reinholds, PA 17569
(Parcel 30)

Marvin & Joyce Texter
71 Black Horse Road
Reinholds, PA 17569
(Parcel 31)

Naomi G. Travis
81 Black Horse Road
Reinholds, PA 17569
(Parcel 32)

Leroy H. & Rose Marie Martin
N. 12479 Hi Line Avenue
Colby WI 54421
(Parcel 33)

Jeffrey A. & Deborah L. Trickett
300 N. Ridge Road
Reinholds, PA 17569
(Parcel 34)

Bonnie J. Farrell
410 Tremont Avenue
Montrose Manor
Reading, PA 19607
(Parcel 35)

Neil C. & Mary Elizabeth Wike
125 Faust Drive
Reinholds, PA 17569
(Parcel 36)

Travis J. & Wendy L. Stauffer
50 Briar Lane
Reinholds, PA 17569
(Parcel 37)

Peter A. & Beth M. Day
590 Holtzman Road
Reinholds, PA 17569
(Parcel 38)

Mark D. & Laura L. Walters
549 Holtzman Road
Reinholds, PA 17569
(Parcel 39)

Thomas R. Rapp
25 Bauman Circle
Reinholds, PA 17569
(Parcel 40)

Donald S. & Patricia T. Bauman
35 Bauman Circle
Reinholds, PA 17569
(Parcel 41)

Locust Wood Mobile Home Park, LLC
PO Box 251
Morgantown, PA 19543
(Parcel 42)

Emily C. DeLong
605 Holtzman Road
Reinholds, PA 17569
(Parcel 43)

Kenneth L. & Carol S. Brightbill
45 Spruce Street
Mohnton, PA 19540
(Parcel 44)

Mark E. & Victoria R. Christensen
210 Indiandale Road
Reinholds, PA 17569
(Parcel 45)

Vasilios A. & Louise S. Vlachos
219 Indiandale Road
Reinholds, PA 17569
(Parcel 46)

Raymond E. & Janet M. Ulrich
231 Indiandale Road
Reinholds, PA 17569
(Parcel 47)

Rodney J. & Debi L. Faust
408 Vinemont Road
Sinking Spring, PA 19608
(Parcel 48)

Commonwealth of PA
State Game Commission
18th & Herr Streets
Harrisburg, PA 17103
(Parcel 49)

Jeffrey Lee & Marsha L. Zimmerman
411 Vinemont Road
Sinking Springs, PA 19608
(Parcel 50)

Timothy M. & Carole Z. Wirth
124 Shearers Road
Reinholds, PA 17569
(Parcel 51)

Craig F. & Lisa R. Krick
138 Shearers Road
Sinking Spring, PA19608
(Parcel 52)

Aivars O. & Anna G. Berkis
134 Shearers Road
Sinking Spring, PA 19608
(Parcel 53)

Stacy A. Hauk
135 Shearers Road
Sinking Spring, PA 19608
(Parcel 54)

Thomas A. & Dolores A. Derr
145 Shearers Road
Sinking Spring, PA 19608
(Parcel 55)

Richard J. Summons
172 Mail Route Road
Sinking Spring, PA 19608
(Parcel 57)

Ray L. & Constance Dilliplaine
160 Mail Route Road
Sinking Spring, PA 19608
(Parcel 58)

Chester J. & Diane A. Pilgrim
168 Mail Route Road
Sinking Spring, PA 19608
(Parcel 59)

Eugene R. Ulrich II
147 Mail Route Road
Sinking Spring, PA 19608
(Parcel 60)

Rodney K. & Donna E. Trusty
159 Mail Route Road
Sinking Spring, PA 19608
(Parcel 61)

Rodney K. Trusty
159 Mail Route Road
Sinking Spring, PA 19608
(Parcel 62)

John D. & Paula E. Levandoski
126 Bran Road
Reading, PA 19608
(Parcel 63)

Gerald W. & Lynda L. Jarsocrak
129 Bran Road
Sinking Spring, PA 19608
(Parcel 64)

Lynda L. Jarsocrak
129 Bran Road
Sinking Spring, PA 19608
(Parcel 65)

Michael S. Heckman
RD 8, Manor Golf Club
Sinking Spring, PA 19608
(Parcel 66)

Bradley A. & Donna Stewart
115 Bran Road
Sinking Spring, PA 19608
(Parcel 67)

Forino Co.
555 Mt. Home Road
Sinking Spring, PA 19608
(Parcel 68)

Richard C. & Vivian D. Faust
201 Chapel Hill Road
Sinking Spring, PA 19608
(Parcel 69)

Warren R. Gift & Marjorie Fackler
117 Chapel Hill Road
Sinking Spring, PA 19608
(Parcel 70)

Richard H. & Willa Mae Shadle
404 Airport Road
Ashland, PA 17921
(Parcel 71)

Greth Development Group, Inc.
77 Gelsinger Road
Sinking Spring, PA 19608
(Parcel 72A)

Greth Development Group, Inc.
77 Gelsinger Road
Sinking Spring, PA 19608
(Parcel 72B)

Greth Development Group, Inc.
77 Gelsinger Road
Sinking Spring, PA 19608
(Parcel 72C)

Greth Development Group, Inc.
77 Gelsinger Road
Sinking Spring, PA 19608
(Parcel 72D)

Greth Development Group, Inc.
77 Gelsinger Road
Sinking Spring, PA 19608
(Parcel 72E)

Joseph A. & Rose M. Bugay
Mary L. Bugay Secoura
5 Gelsinger Road
Sinking Spring, PA 19608
(Parcel 73)

William H. Weber
Joan Weber
100 Gelsinger Road
Sinking Spring, PA 19608
(Parcel 74)

Dean & Joan Black
110 Gelsinger Road
Sinking Spring, PA 19608
(Parcel 75)

R. Timothy & Susan L. Achenbach
120 Gelsinger Road
Sinking Spring, PA 19608
(Parcel 76)

R. Timothy & Susan L. Achenbach
120 Gelsinger Road
Sinking Spring, PA 19608
(Parcel 77)

Joseph E., Jr. & Deborah D. Lenart
180 Miller Road
Sinking Spring, PA 19608
(Parcel 78)

Pennsylvania American Water Co.
800 West Hershey Park Drive
Hershey, PA 17033
(Parcel 79)

Randall L. & Lisa J. Martin
232 Wentzel Road
Mohnton, PA 19540
(Parcel 1 – Berks-S. Akron)

Date: November 9, 2006

John H. Isom

POST & SCHELL PC
ATTORNEYS AT LAW

ORIGINAL

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12th Floor
Harrisburg, PA 17101-1601
717-731-1970 Main
717-731-1985 Fax
www.postschell.com

John H. Isom
jisom@postschell.com
717-612-6032 Direct
File #: 2507-129180

DOCUMENT FOLDER

2006 NOV -9 PM 12:17
PA PUC
SECRETARY'S BUREAU

November 9, 2006

VIA CERTIFIED MAIL RETURN RECEIPT REQUESTED

RE: Application of PPL Electric Utilities Corporation Filed Pursuant to 52 Pa. Code Chapter 57, Subchapter G, for Approval of the Siting and Construction of the Proposed South Lebanon – Berks 230 kV Transmission Line in Spring Township, Berks County and East Cocalico Township, Lancaster County, Pennsylvania and the Berks – South Reading 230 kV Line Rearrangement in Brecknock Township, Berks County, Pennsylvania – Docket No. A-110500F0385

Dear Sir or Madam:

PPL Electric Utilities Corporation ("PPL") has filed with the Pennsylvania Public Utility Commission ("Commission") the above-captioned Application requesting Commission approval to construct the proposed South Lebanon - Berks 230 kV and the rearrangement of the Berks-South Reading 230 kV Transmission Line.

The South Lebanon - Berks 230 kV Transmission Line will be approximately 6.8 miles in length and will be built within the existing right-of-way currently occupied by the Berks-South Akron #1 69 kV Transmission Line in Spring Township, Berks County and East Cocalico Township, Lancaster County. In addition, the Berks-South Reading 230 kV Transmission Line will be reestablished by connecting the Berks portion of the South Akron - Berks 230 kV line and the South Reading portion of the South Lebanon-South Reading 230 kV Line at the point where they intersect in Brecknock Township, Berks County.

The purpose of this project is to alleviate reliability concerns by reinforcing the 230 kV bulk power systems in northern Lancaster and southwestern Berks Counties. This project is required to meet reliability guidelines established by the Reliability*First* Corporation (RFC), a member of the North American Electric Reliability Council (NERC). This project was identified by a coordinated effort of PPL Electric and PJM Interconnection LLC's ("PJM") Regional Transmission Expansion Plan ("RTEP") to maintain reliable electrical service on the PJM transmission system.

The majority of right-of-way width for the proposed South Lebanon - Berks 230 kV and Berks-South Reading 230 kV Transmission Lines will be 150 feet. In most instances, the route PPL has selected for the lines will occupy existing PPL Electric transmission line rights-of-way.

As required by Commission regulations, we have enclosed a map showing the route of either the South Lebanon - Berks 230 kV or Berks - South Reading 230 kV Transmission Lines across your property.

You are not required to appear or participate in this matter, but you may request Commission permission to intervene.

If you have any questions, please contact John Levitski, PPL's Regional Community Relations Director in the Lancaster Region at (717) 560-2533 A copy of the entire Application will be available for public examination during regular business hours at the following locations:

Spring Township Municipal Building
2800 Shillington Road
Reading, PA 17517

and

East Cocalico Township Municipal Building
100 Hill Road
Denver, PA 17517

Sincerely,

John H. Isom
Counsel for PPL Electric Utilities Corporation

JHI/jl
Enclosures

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA PUBLIC UTILITY COMMISSION
P. O. BOX 3265, HARRISBURG PA 17105-3265

IN REPLY PLEASE
REFER TO OUR FILE
Secretary
717-772-7777

November 16, 2006

A-110500F0385

JOHN H ISOM ESQUIRE
ANDREW S TUBBS ESQUIRE
POST & SCHELL PC
17 NORTH SECOND STREET
12TH FLOOR
HARRISBURG PA 17101-1601

DOCUMENT
FOLDER

Dear Mr. Isom:

Receipt is acknowledged of the Application of PPL Electric Utilities Corporation for approval of the siting and construction of the *proposed South Lebanon-Berks 230 kV Transmission Line in Spring* Township, Berks County and East Cocalico Township, Lancaster County, PA and the Berks-South Reading 230 kV Line Rearrangement in Brecknock Township, Berks County, PA, which has been captioned and docketed to the above number.

Receipt is also acknowledged of the Certificate of Service served upon all parties of record.

You will be directed by the Office of Administrative Law Judge with respect to the hearing notice and publication thereof.

Sincerely,

James J. McNulty
Secretary

JJM:ddt

Cc: Paul E. Russell

DOCKETED
NOV 16 2006

COMMONWEALTH OF PENNSYLVANIA

DATE: November 16, 2006

SUBJECT: A-110500 F0385

TO: Office of Administrative Law Judge

DOCUMENT FOLDER

FROM: James J. McNulty, Secretary ddt

APPLICATION OF PPL ELECTRIC UTILITIES CORP.

We attach hereto a copy of the Application of PPL Electric Utilities Corporation filed pursuant to 52 Pa Code, Chapter 57, Subchapter G, for approval of the siting and construction of the proposed South Lebanon-Berks 230 kV Transmission Line in Spring Township, Berks County, and East Cocalico Township, Lancaster County, Pennsylvania, and the Berks-South Reading 230 kV Line Rearrangement in Brecknock Township, Berks County, Pennsylvania, which has been captioned and docketed to the above number.

This matter is being assigned to your Office for appropriate action and to be set for hearing.

Attachment

cc: FUS
LAW
CEEP

ddt

DOCKETED
NOV 16 2006