Municipal Stormwater Management Plan

For the

Town of Phillipsburg

Prepared by

SCHOOR DEPALMA, INC.
The Concourse at Beaver Brook
1465 Route 31, 4TH Floor
Clinton Township, NJ 08809

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Introduction

This Municipal Stormwater Management Plan (MSWMP) documents the strategy for the Town of Phillipsburg to address stormwater-related impacts. The creation of this plan is required by N.J.A.C. 7:14A-25 Municipal Stormwater Regulations. This plan contains all of the required elements described in N.J.A.C. 7:8 Stormwater Management Rules. The plan addresses groundwater recharge, stormwater quantity, and stormwater quality impacts by incorporating stormwater design and performance standards for new major development, defined as projects that disturb one or more acre of land. These standards are intended to minimize the adverse impact of stormwater runoff on water quality and water quantity and the loss of groundwater recharge that provides baseflow in receiving water bodies. The plan describes long-term operation and maintenance measures for existing and future stormwater facilities.

A "build-out" analysis is not included in this plan because Phillipsburg has less than one-square mile of vacant land or agricultural land.The plan also addresses the review and update of existing ordinances, the Township Master Plan, and other planning documents to allow for project designs that include low impact development techniques. The final component of this plan is a mitigation strategy for when a variance or exemption of the design and performance standards is sought. As part of the mitigation section of the stormwater plan, specific stormwater management measures are identified to lessen the impact of existing development.

Goals

The goals of this MSWMP are to:

- reduce flood damage, including damage to life and property;
- minimize, to the extent practical, any increase in stormwater runoff from any new development;
- reduce soil erosion from any development or construction project;
- assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures;
- maintain groundwater recharge;
- prevent, to the greatest extent feasible, an increase in nonpoint pollution;
- maintain the integrity of stream channels for their biological functions, as well as for drainage;
- minimize pollutants in stormwater runoff from new and existing development to restore, enhance, and maintain the chemical, physical, and biological integrity of the waters of the state, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial, and other uses of water; and
- protect public safety through the proper design and operation of stormwater basins.

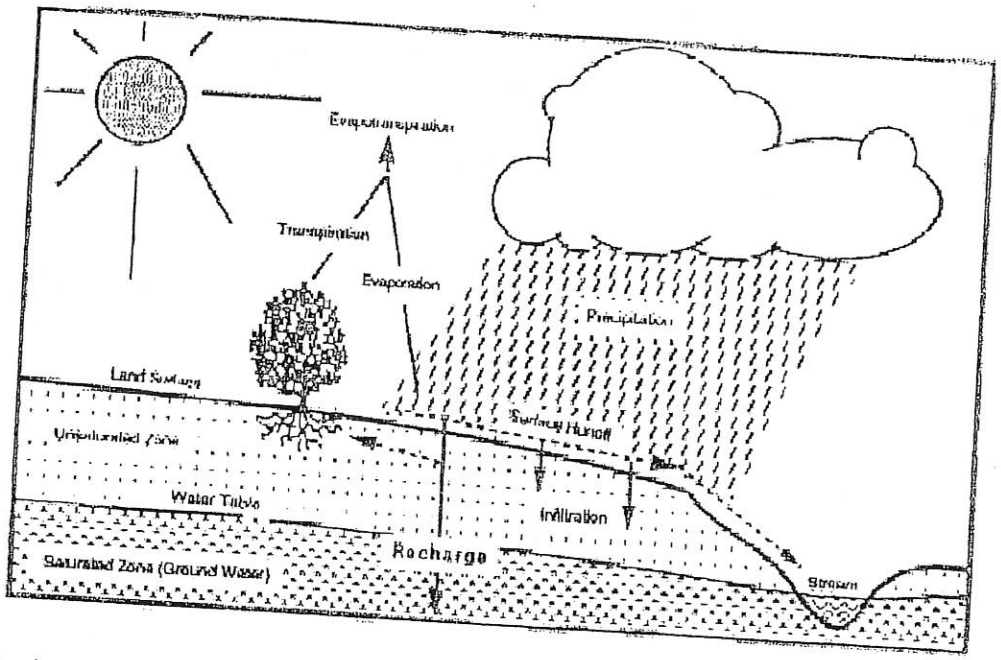
To achieve these goals, this plan outlines specific stormwater design and performance standards for new development. Additionally, the plan proposes stormwater management

controls to address impacts from existing development. Preventative and corrective maintenance strategies are included in the plan to ensure long-term effectiveness of stormwater management facilities. The plan also outlines safety standards for stormwater infrastructure to be implemented to protect public safety.

Stormwater Discussion

Land development can dramatically alter the hydrologic cycle (See Figure C-1) of a site and, ultimately, an entire watershed. Prior to development, native vegetation can either directly intercept precipitation or draw that portion that has infiltrated into the ground and return it to the atmosphere through evapotranspiration. Development can remove this beneficial vegetation and replace it with lawn or impervious cover, reducing the site's evapotranspiration and infiltration rates. Clearing and grading a site can remove depressions that store rainfall. Construction activities may also compact the soil and diminish its infiltration ability, resulting in increased volumes and rates of stormwater runoff from the site. Impervious areas that are connected to each other through gutters, channels, and storm sewers can transport runoff more quickly than natural areas. This shortening of the transport or travel time quickens the rainfall-runoff response of the drainage area, causing flow in downstream waterways to peak faster and higher than natural conditions. These increases can create new and aggravate existing downstream flooding and erosion problems and increase the quantity of sediment in the channel. Filtration of runoff and removal of pollutants by surface and channel vegetation is eliminated by storm sewers that discharge runoff directly into a stream. Increases in impervious area can also decrease opportunities for infiltration, which in turn, reduces stream base flow and groundwater recharge. Reduced base flows and increased peak flows produce greater fluctuations between normal and storm flow rates, which can increase channel erosion. Reduced base flows can also negatively impact the hydrology of adjacent wetlands and the health of biological communities that depend on base flows. Finally, erosion and sedimentation can destroy habitat from which some species cannot adapt.

Figure C-1: Groundwater Recharge in the Hydrologic Cycle



Source: New Jersey Geological Survey Report GSR-32.

In addition to increases in runoff peaks, volumes, and loss of groundwater recharge, land development often results in the accumulation of pollutants on the land surface that runoff can mobilize and transport to streams. New impervious surfaces and cleared areas created by development can accumulate a variety of pollutants from the atmosphere, fertilizers, animal wastes, and leakage and wear from vehicles. Pollutants can include metals, suspended solids, hydrocarbons, pathogens, and nutrients. In addition to increased pollutant loading, land development can adversely affect water quality and stream biota in more subtle ways. For example, stormwater falling on impervious surfaces or stored in detention or retention basins can become heated and raise the temperature of the downstream waterway, adversely affecting cold water fish species such as trout. Development can remove trees along stream banks that normally provide shading, stabilization, and leaf litter that falls into streams and becomes food for the aquatic community.

Background

The Town of Phillipsburg encompasses a 3.34 square mile area in Warren County, New Jersey. Although Warren County has had an 11% population growth from the 1990 census to the 2000 census, Phillipsburg has observed an opposite trend. In recent years, Phillipsburg has not been under significant development pressure. In fact the population of the town has gradually decreased from 16,647 in 1980, to 15,757 in 1990, to 15,166 in 2000. This population decrease has resulted in an insignificant demand for new development; not to mention relatively stable stormwater runoff volumes and occasional

pollutant loads to the waterways of the municipality. Figure C-2 illustrates the waterways in the Town. Figure C-3 depicts the Town boundary on the USGS quadrangle maps.

The New Jersey Department of Environmental Protection (NJDEP) has established an Ambient Biomonitoring Network (AMNET) to document the health of the state's waterways. There are over 800 AMNET sites throughout the state of New Jersey. These sites are sampled for benthic macroinvertebrates by NJDEP on a five-year cycle. Streams are classified as non-impaired, moderately impaired, or severely impaired based on the AMNET data. The data is used to generate a New Jersey Impairment Score (NJIS), which is based on a number of biometrics related to benthic macroinvertebrate community dynamics. There are two waterbodies that border the town, the Delaware River and the Lopatcong Creek and both are considered to be impaired. These data show that the in-stream arsenic, cadmium, chromium and copper concentrations of the Delaware River and in-stream fecal coliform of the Lopactcong Creek frequently exceed the state's criteria. This means that these waterbodies are impaired waterways and the NJDEP is required to develop a Total Maximum Daily Load (TMDL) for these pollutants for each waterway.

A TMDL is the amount of a pollutant that can be accepted by a waterbody without causing an exceedance of water quality standards or interfering with the ability to use a waterbody for one or more of its designated uses. The allowable load is allocated to the various sources of the pollutant, such as stormwater and wastewater discharges, which require an NJPDES permit to discharge, and nonpoint source, which includes stormwater runoff from agricultural areas and residential areas, along with a margin of safety. Provisions may also be made for future sources in the form of reserve capacity. An implementation plan is developed to identify how the various sources will be reduced to the designated allocations. Implementation strategies may include improved stormwater treatment plants, adoption of ordinances, reforestation of stream corridors, retrofitting stormwater systems, and other BMPs.

The New Jersey Integrated Water Quality Monitoring and Assessment Report (305(b) and 303(d)) (Integrated List) is required by the federal Clean Water Act to be prepared biennially and is a valuable source of water quality information. This combined report presents the extent to which New Jersey waters are attaining water quality standards, and identifies waters that are impaired. Sublist 5 of the Integrated List constitutes the list of waters impaired or threatened by pollutants, for which one or more TMDLs are needed.

A map of the groundwater recharge areas are shown in Figure C-4. Wellhead protection areas, also required as part of the MSWMP, are shown in Figure C-5.

Design and Performance Standards

The Town of Phillipsburg will adopt the design and performance standards for stormwater management measures as presented in N.J.A.C. 7:8-5 to minimize the adverse impact of stormwater runoff on water quality and water quantity. It should be noted that the Town of Phillipsburg does not permit groundwater recharge because of the presence of Karst Formations. The design and performance standards include the language for

maintenance of stormwater management measures consistent with the stormwater management rules at N.J.A.C. 7:8-5.8 Maintenance Requirements, and language for safety standards consistent with N.J.A.C. 7:8-6 Safety Standards for Stormwater Management Basins. The ordinances will be submitted to the county for review and approval within 24 months of the effective date of the Stormwater Management Rules.

Non-structural measures to be considered first shall include site design and preventive source controls. To confirm the effectiveness of such measures, applicants must verify that control of stormwater quantity impacts as detailed in the Stormwater Management rules have been achieved. The tests of assuring control of the quantity impacts as detailed in these rules will be incorporated into the Town's Stormwater Ordinance.

The general standards for structural measures are specified in the Stormwater Management rules and will be incorporated into the Town of Phillipsburg's Ordinance. These measures shall be incorporated as needed to meet the soil erosion and runoff quantity standards included in the Town's Stormwater Ordinance. The design standards for the specific structural stormwater management measures are those included in the New Jersey Stormwater Best Management Practices Manual. Other designs or practices may be used if they are approved by the Soil Conservation District. The design and construction of such facilities must comply with the Soil Erosion and Sediment Control Standards as well as any other applicable state regulation including the Freshwater Wetland Protection Act rules, the Flood Hazard Control rules, the Surface Water Quality Standards and the Dam Safety rules. The requirement to be consistent with all other applicable rules will be included in the Town's Stormwater Ordinance. Stormwater runoff quality controls for total suspended solids and nutrient load shall meet the design and performance standards as specified in the Stormwater Management rules. Consistent with the Stormwater Management Rules, the Ordinance allows for an exemption from this requirement where the applicant can demonstrate that it is not practicable to meet the standards (due to Karst Formations) but has taken all possible steps to meet all stormwater management measures.

During construction, Town inspectors will observe the construction of the project to ensure that the stormwater management measures are constructed and function as designed. Adequate long term operation as well as preventative and corrective maintenance of the selected stormwater management measures will be ensured by requiring the design engineer to prepare a maintenance plan for its stormwater management facilities incorporated into the design of the major development. The maintenance plan shall have specific preventative maintenance tasks, schedules and cost estimates as well as the responsible party for corrective and preventative maintenance.

Where the Town assumes maintenance responsibility, preventative maintenance shall be performed on a regular basis and will be appropriate for the particular structural management measure being implemented. These maintenance measures shall be in accordance with N.J.A.C. 7:8-5 and may include: periodic inspections, vegetation management, sediment, debris and trash removal and mosquito control. Corrective maintenance shall be performed on an as needed basis for structure repairs or replacements, removal of outlet and pipe blockages, erosion restoration, snow and ice

removal, etc. The person or persons responsible for maintenance shall keep a detailed log of all preventative and corrective maintenance for the structural management measures incorporated into the design of the development, including a record of all inspections and work orders.

Plan Consistency

The Town of Phillipsburg is not within a Regional Stormwater Management Planning Area and no TMDLs have been developed for waters within the Town; therefore this plan does not need to be consistent with any regional stormwater management plans (RSWMPs) nor any TMDLs. If any RSWMPs or TMDLs are developed in the future, this Municipal Stormwater Management Plan will be updated to be consistent.

The Municipal Stormwater Management Plan is consistent with the Residential Site Improvement Standards (RSIS) at N.J.A.C. 5:21. Phillipsburg will utilize the most current update of the RSIS in the stormwater management review of residential areas. This Municipal Stormwater Management Plan will be updated to be consistent with any future updates to the RSIS.

Phillipsburg's Stormwater Management Ordinance will require all new development and redevelopment plans to comply with New Jersey's Soil Erosion and Sediment Control Standards. During construction, inspectors will observe on-site soil erosion and sediment control measures and report any inconsistencies to the local Soil Conservation District.

Nonstructural Stormwater Management Strategies

In accordance with NJDEP's Stormwater Regulations at N.J.A.C. 7:8-4.2(c)10, since the Town of Phillipsburg is not required to perform a build out analysis it is also not required to perform a review its master plan and ordinances, and therefore, a list of the sections in Phillipsburg's land use and zoning ordinances is not included in the Stormwater Management Plan.

Land Use/Build-Out Analysis

The Town of Phillipsburg does not have a combined total of greater than one square mile of vacant or agricultural lands, therefore, is not required to complete a build-out analysis.

Mitigation Plans

This mitigation plan is provided for a proposed development that is granted a variance or exemption from the stormwater management design and performance standards. Presented is a hierarchy of options. The applicant is required to propose a mitigation project that meets the requirement of item 1 below as the first option. If the applicant is unable to identify a suitable project that meets the requirements of item 1, as determined by the Town of Phillipsburg, then the applicant must propose a project that meets the

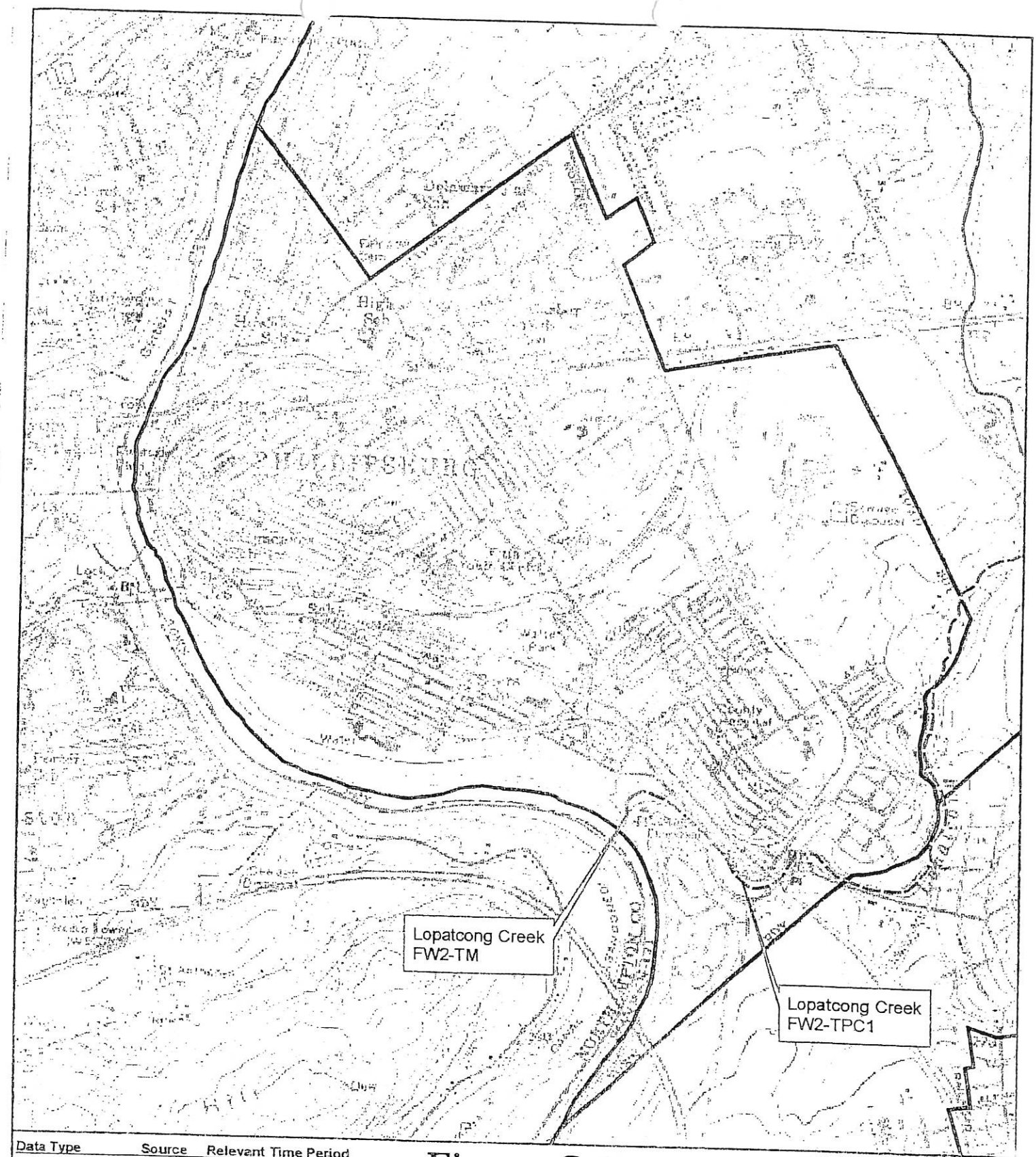
requirements of either item 2 or item 3 below. All mitigation projects proposed by an applicant must be approved by the Town prior to implementation.

1. The mitigation project must be implemented in the same drainage area as the proposed development. The project must provide additional groundwater recharge benefits, if possible or protection from stormwater runoff quality and quantity from previously developed property that does not currently meet the design and performance standards outlined in the Municipal Stormwater Management Plan. The developer must ensure the long-term maintenance of the project, including the maintenance requirements under Chapters 8 and 9 of the NJDEP Stormwater BMP Manual.

2. If a suitable site cannot be located in the same drainage area as the proposed development, the mitigation project may provide mitigation that is not equivalent to the impacts for which the variance or exemption is sought, but that addresses the same issue.

3. Phillipsburg may allow a developer to provide funding or partial funding for an environmental enhancement project. The funding must be equal to or greater than the cost to implement the mitigation outlined above, including costs associated with purchasing the property or easement for mitigation, and the cost associated with the long-term maintenance requirements of the mitigation measure.

APPENDIX "A"



Data Type	Source	Relevant Time Period
USGS Quad	UGSG	Feb-Apr 2002
Municipal Boundary	NJDEP	1989
C1 Waters	NJDEP	2003

This map was developed using Geographic Information System digital data developed under the auspices of the Department of Environmental Protection, Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.

Figure C-2

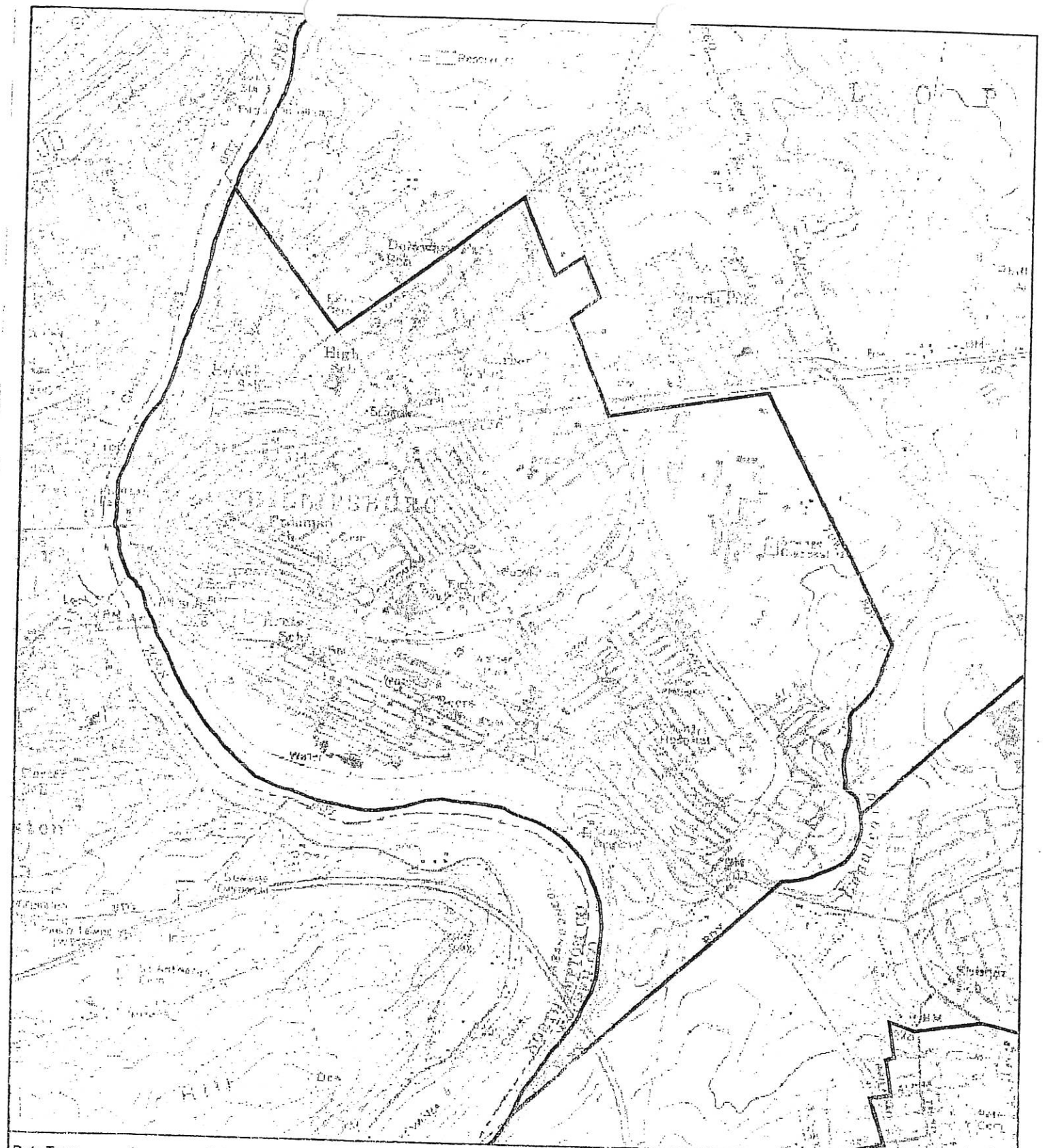
Town and its Waterways

Town of Phillipsburg
Warren County, New Jersey

SCHOOR DEPALMA
Engineers and Consultants

Symbol Legend

- Municipal Boundary
- C1 Waters
- FW2-TM
- FW2-TPC1



Data Type	Source	Relevant Time Period
USGS Quadrangles		Feb-Apr 2002
Municipal Boundary	NJDEP	1989

Figure C-3

Township Boundary on USGS Quadrangles

Town of Phillipsburg
Warren County, New Jersey

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Symbol Legend

Municipal Boundary

SCHOOR DEPALMA
Engineers and Consultants

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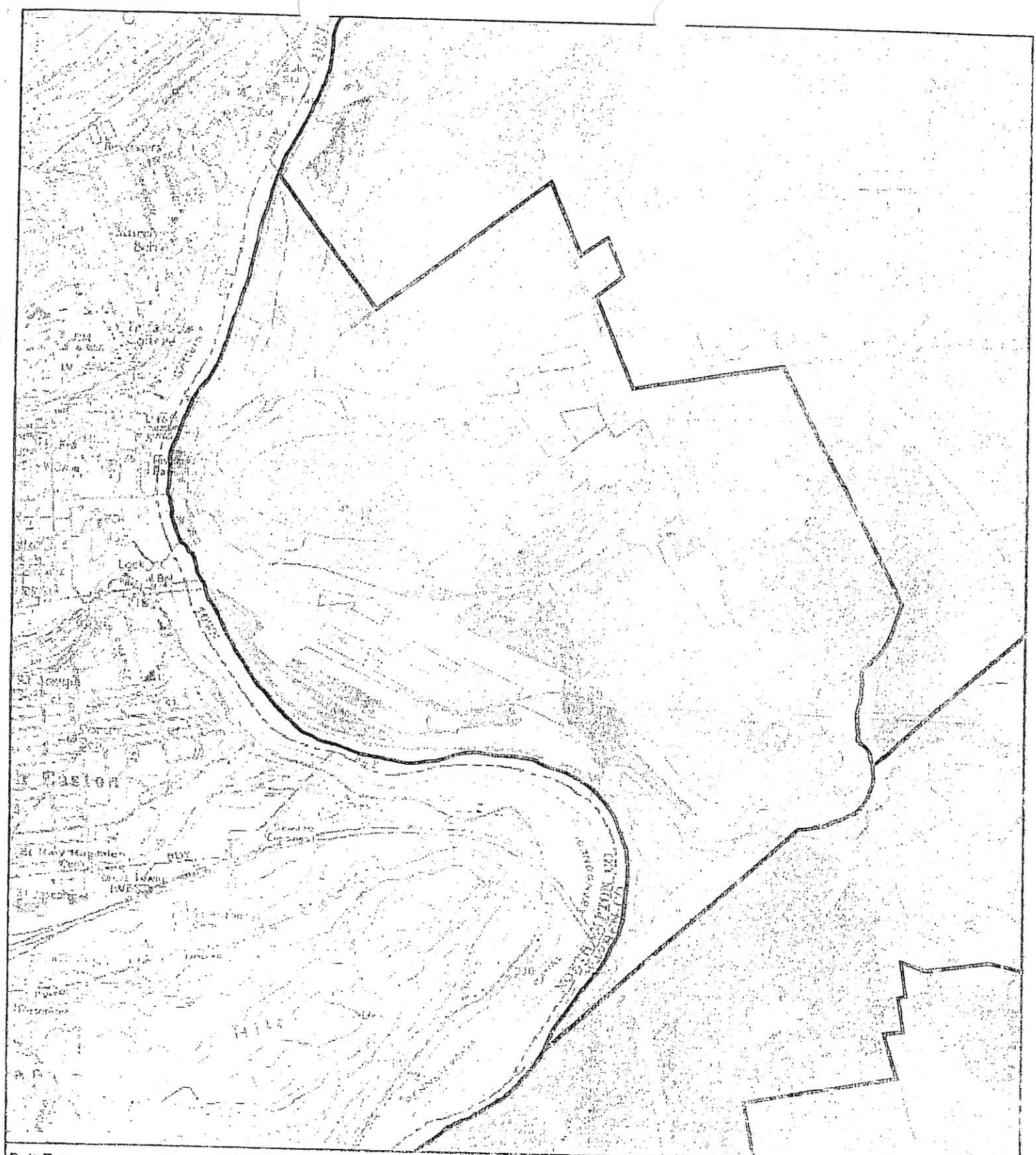

Data Type	Source	Relevant Time Period
USGS Quad	UGSG	Feb-Apr 2002
Municipal Boundary	NJDEP	1989
Groundwater Recharge Areas	NJDEP	Various

Figure C-4

Groundwater Recharge Areas in the Town

Town of Phillipsburg
Warren County, New Jersey

Symbol Legend
- Municipal Boundary

Ground Water Recharge Areas
- 0.00 in/yr
- 0.01 - 9.00 in/yr
- 9.01 - 12.00 in/yr
- 12.01 - 16.00 in/yr
- 16.01 - 22.74 in/yr

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SCHOOR DEPALMA

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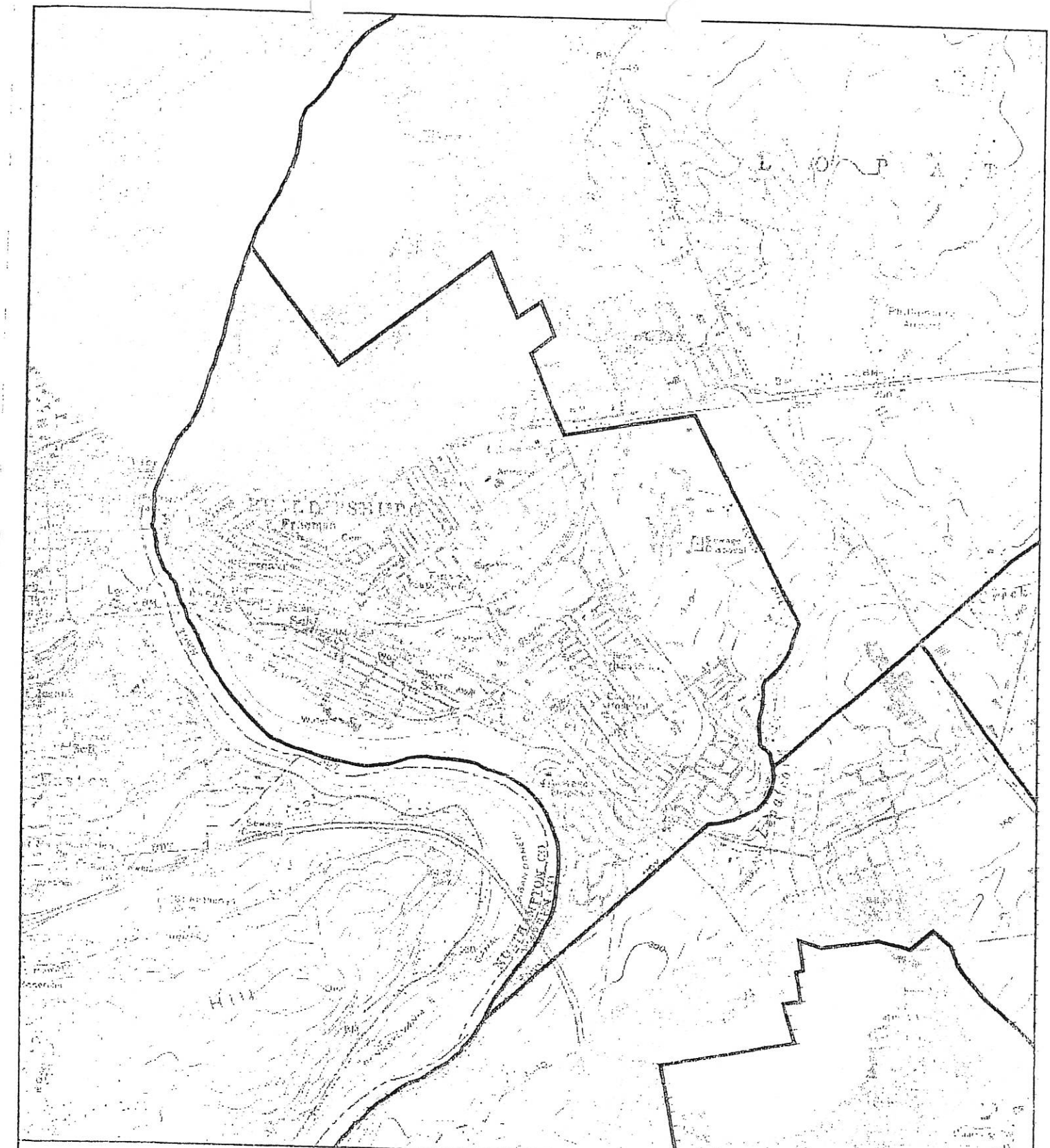

Data Type	Source	Relevant Time Period
USGS Quadrangles	USGS	Feb-Apr 2002
Municipal Boundary	NJDEP	1989
Wellhead Protection Areas	NJDEP	2004 (Updated)

Figure C-5

Wellhead Protection Areas in the Town

Town of Phillipsburg
Warren County, New Jersey

Symbol Legend

Municipal Boundary

Wellhead Protection Areas

2 Year

5 Year

12 Year

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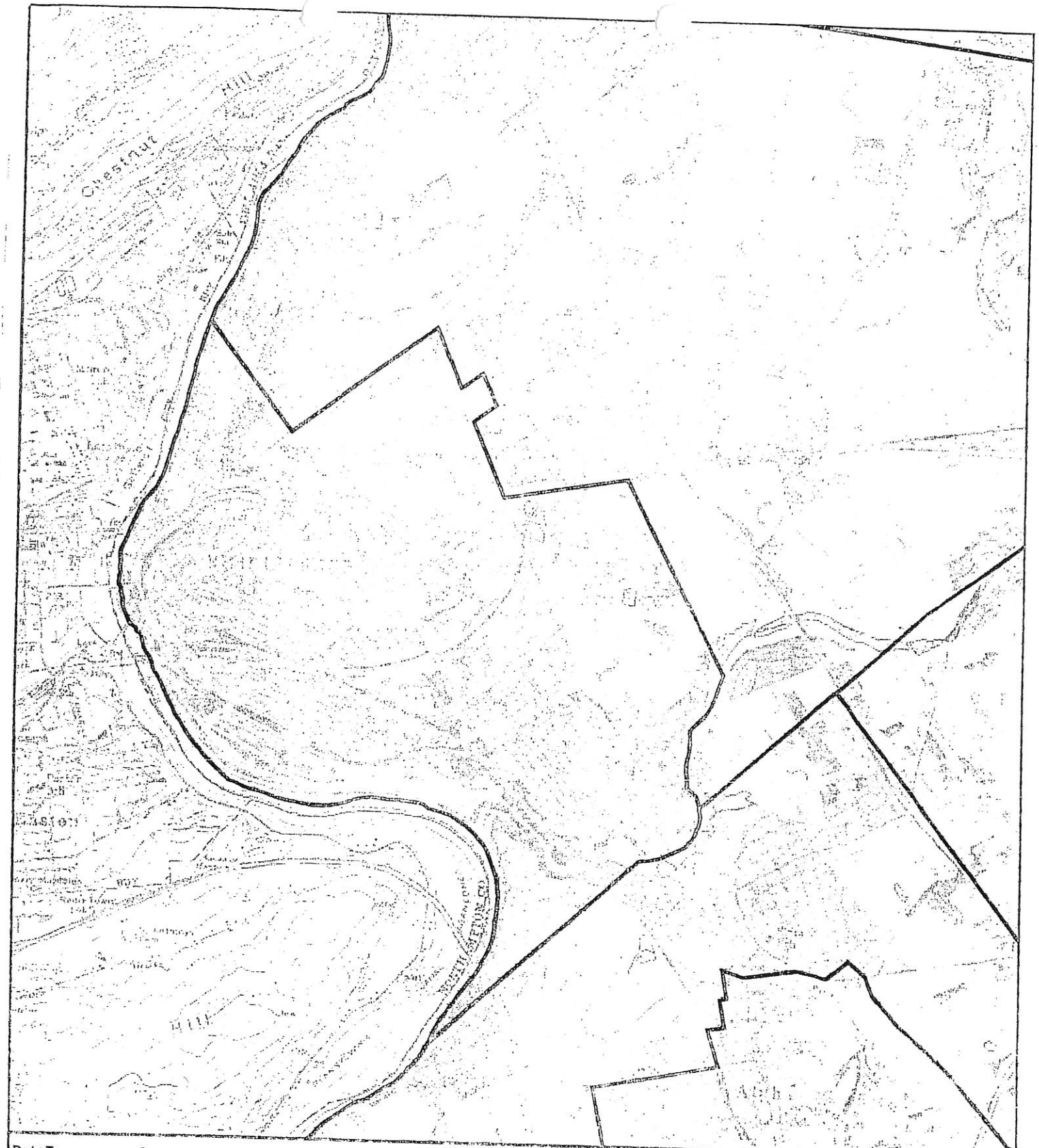
Engineers and Consultants



Data Type	Source	Relevant Time Period
USGS Quad	USGS	Feb-Apr 2002
Municipal Boundary	NJDEP	1989
Land Use/ Land Cover	NJDEP	1995/1997

Figure C-6

Township's Existing Land Use

Town of Phillipsburg
Warren County, New Jersey

Symbol Legend

- Municipal Boundary

Land Use

- AGRICULTURE
- BARREN LAND
- FOREST
- URBAN
- WATER
- WETLANDS

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SCHOOR DEPALMA
Engineers and Consultants

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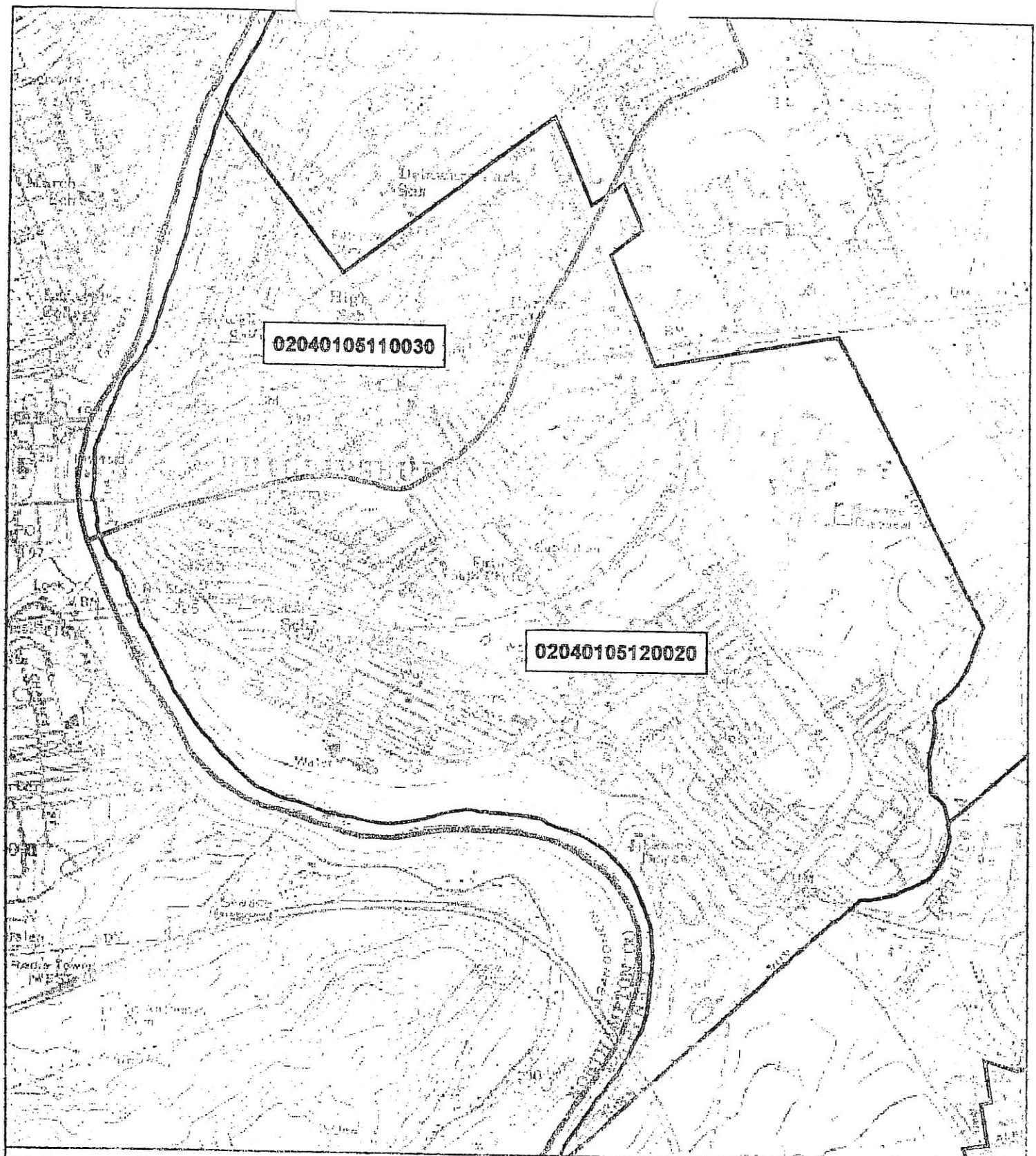

Data Type	Source	Relevant Time Period
USGS Quad	UGSG	Feb-Apr 2002
Municipal Boundary	NJDEP	1989
HUC14	NJDEP	2000

Figure C-7

Hydrologic Units (HUC14) Within the Town

Town of Phillipsburg
Warren County, New Jersey

Symbol Legend

- NJDEP Huc 14
- Municipal Boundary

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SCHOOR DEPALMA
Planners and Consultants

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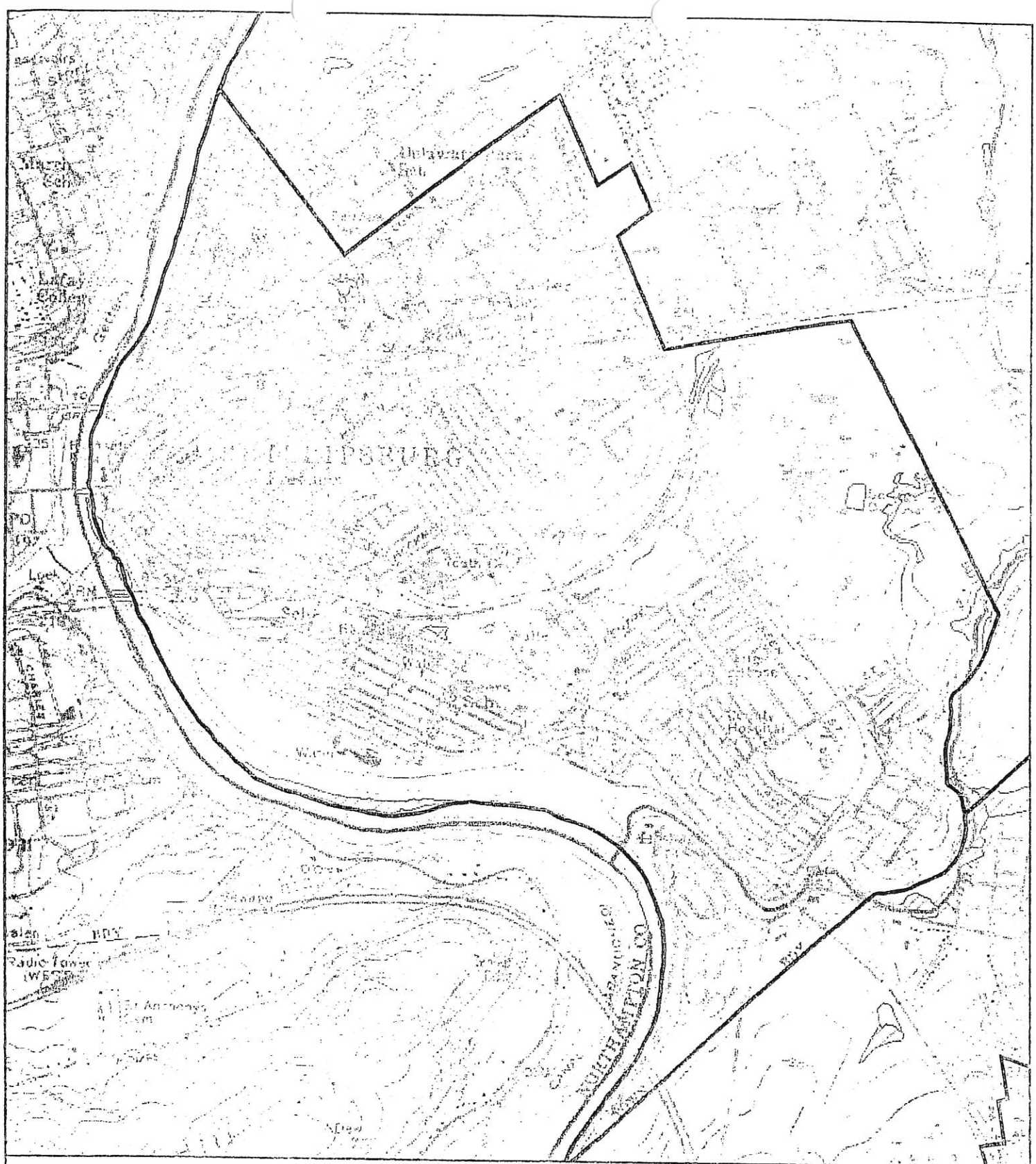

Data Type	Source	Relevant Time Period
USGS Quad	UGSG	Feb-Apr 2002
Municipal Boundary	NJDEP	1989
Wetlands	NJDEP	1986
Lakes	NJDEP	1986
Streams	NJDEP	1998

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Figure C-9

Wetlands and Water Land Uses within the Town

Town of Phillipsburg
Warren County, New Jersey

Symbol Legend

- Streams
- Lakes
- Wetlands
- Municipal Boundary

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SCHOOR DEPALMA
Engineers and Consultants

Data Type	Source	Relevant Time Period
USGS Quadrangles		Feb-Apr 2002
Municipal Boundary	NJDEP	1989

Figure C-10

Township Boundary on Aerial

Town of Phillipsburg
Warren County, New Jersey

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SCHOOR DEPALMA
Engineers and Consultants

RESOLUTION APPROVING MUNICIPAL STORMWATER MANAGEMENT PLAN

WHEREAS, N.J.A.C. 7:14A-25 requires that municipalities adopt a Stormwater Management Plan; and

WHEREAS, the Planning Board of the Town of Phillipsburg engaged the services of Schoor DePalma, engineers and consultants, to develop an appropriate plan; and

WHEREAS, public notice was properly given for a public hearing which the Planning Board conducted on June 23, 2005, to consider the proposed plan; and

WHEREAS, at the said public hearing, the Board considered the proposed plan consisting of nine pages, plus Appendix A, which plan is attached hereto and incorporated herein; and

WHEREAS, at the aforesaid public hearing, the Board considered the report and comments of Kirk D. Croasman, P.E. of Schoor DePalma; and

WHEREAS, the Board invited comments from the public and having heard none;

NOW, THEREFORE, BE IT RESOLVED that the Planning Board of the Town of Phillipsburg does hereby approve and adopt the above-referenced Stormwater Management Plan.

ON MOTION OF DUFFY AND SECONDED BY RUFE

Roll Call Vote

Ayes:	Duffy, Wyant, Penrose, Rooney, Rufe and Comito.
Nays:	None.
Abstentions:	None.

The foregoing Resolution memorializing the action taken by the Town of Phillipsburg Planning Board was duly adopted at its regular meeting on the 28th day of July _____, 2005, by a vote of a majority of the aforesaid members approving the original Resolution.

Dominic N. Comito

DOMINIC COMITO, CHAIRMAN

Municipal Stormwater Management Plan

For the

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Prepared by

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- reduce flood damage, including damage to life and property;
- minimize, to the extent practical, any increase in stormwater runoff from any new development;
- reduce soil erosion from any development or construction project;
- assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures;
- maintain groundwater recharge;
- prevent, to the greatest extent feasible, an increase in nonpoint pollution;
- maintain the integrity of stream channels for their biological functions, as well as for drainage;
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Stormwater Discussion

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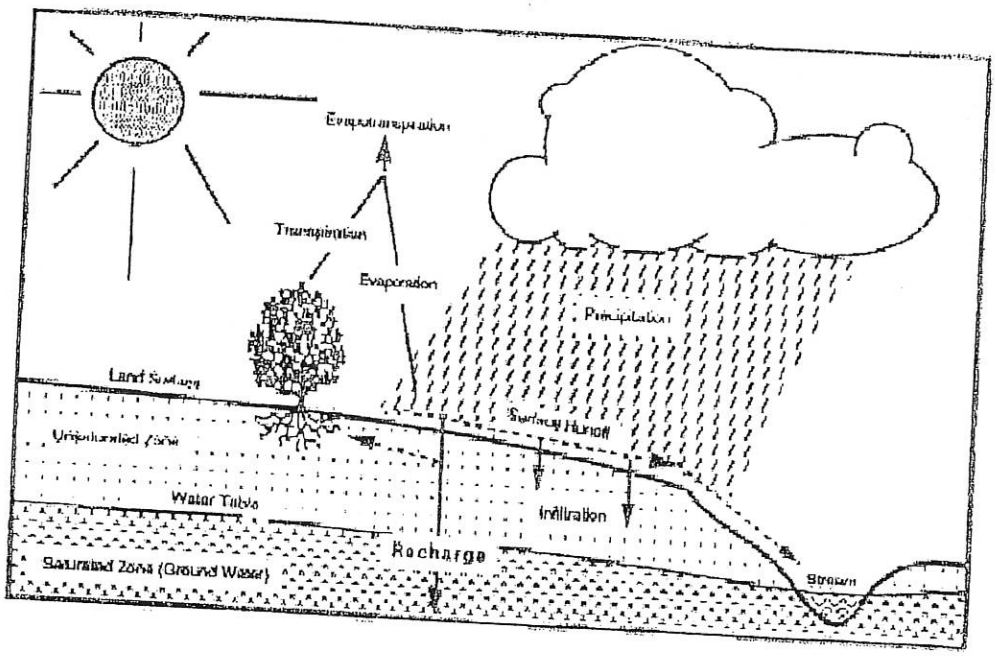


Source: New Jersey Geological Survey Report GSR-32.

In addition to increases in runoff peaks, volumes, and loss of groundwater recharge, land development often results in the accumulation of pollutants on the land surface that runoff can mobilize and transport to streams. New impervious surfaces and cleared areas created by development can accumulate a variety of pollutants from the atmosphere, fertilizers, animal wastes, and leakage and wear from vehicles. Pollutants can include metals, suspended solids, hydrocarbons, pathogens, and nutrients. In addition to increased pollutant loading, land development can adversely affect water quality and stream biota in more subtle ways. For example, stormwater falling on impervious surfaces or stored in detention or retention basins can become heated and raise the temperature of the downstream waterway, adversely affecting cold water fish species such as trout. Development can remove trees along stream banks that normally provide shading, stabilization, and leaf litter that falls into streams and becomes food for the aquatic community.

Background

The Town of Phillipsburg encompasses a 3.34 square mile area in Warren County, New Jersey. Although Warren County has had an 11% population growth from the 1990 census to the 2000 census, Phillipsburg has observed an opposite trend. In recent years, Phillipsburg has not been under significant development pressure. In fact the population of the town has gradually decreased from 16,647 in 1980, to 15,757 in 1990, to 15,166 in 2000. This population decrease has resulted in an insignificant demand for new development; not to mention relatively stable stormwater runoff volumes and occasional

pollutant loads to the waterways of the municipality. Figure C-2 illustrates the waterways in the Town. Figure C-3 depicts the Town boundary on the USGS quadrangle maps.

The New Jersey Department of Environmental Protection (NJDEP) has established an Ambient Biomonitoring Network (AMNET) to document the health of the state's waterways. There are over 800 AMNET sites throughout the state of New Jersey. These sites are sampled for benthic macroinvertebrates by NJDEP on a five-year cycle. Streams are classified as non-impaired, moderately impaired, or severely impaired based on the AMNET data. The data is used to generate a New Jersey Impairment Score (NJIS), which is based on a number of biometrics related to benthic macroinvertebrate community dynamics. There are two waterbodies that border the town, the Delaware River and the Lopatcong Creek and both are considered to be impaired. These data show that the in-stream arsenic, cadmium, chromium and copper concentrations of the Delaware River and in-stream fecal coliform of the Lopactcong Creek frequently exceed the state's criteria. This means that these waterbodies are impaired waterways and the NJDEP is required to develop a Total Maximum Daily Load (TMDL) for these pollutants for each waterway.

A TMDL is the amount of a pollutant that can be accepted by a waterbody without causing an exceedance of water quality standards or interfering with the ability to use a waterbody for one or more of its designated uses. The allowable load is allocated to the various sources of the pollutant, such as stormwater and wastewater discharges, which require an NJPDES permit to discharge, and nonpoint source, which includes stormwater runoff from agricultural areas and residential areas, along with a margin of safety. Provisions may also be made for future sources in the form of reserve capacity. An implementation plan is developed to identify how the various sources will be reduced to the designated allocations. Implementation strategies may include improved stormwater treatment plants, adoption of ordinances, reforestation of stream corridors, retrofitting stormwater systems, and other BMPs.

The New Jersey Integrated Water Quality Monitoring and Assessment Report (305(b) and 303(d)) (Integrated List) is required by the federal Clean Water Act to be prepared biennially and is a valuable source of water quality information. This combined report presents the extent to which New Jersey waters are attaining water quality standards, and identifies waters that are impaired. Sublist 5 of the Integrated List constitutes the list of waters impaired or threatened by pollutants, for which one or more TMDLs are needed.

A map of the groundwater recharge areas are shown in Figure C-4. Wellhead protection areas, also required as part of the MSWMP, are shown in Figure C-5.

Design and Performance Standards

The Town of Phillipsburg will adopt the design and performance standards for stormwater management measures as presented in N.J.A.C. 7:8-5 to minimize the adverse impact of stormwater runoff on water quality and water quantity. It should be noted that the Town of Phillipsburg does not permit groundwater recharge because of the presence of Karst Formations. The design and performance standards include the language for

maintenance of stormwater management measures consistent with the stormwater management rules at N.J.A.C. 7:8-5.8 Maintenance Requirements, and language for safety standards consistent with N.J.A.C. 7:8-6 Safety Standards for Stormwater Management Basins. The ordinances will be submitted to the county for review and approval within 24 months of the effective date of the Stormwater Management Rules.

Non-structural measures to be considered first shall include site design and preventive source controls. To confirm the effectiveness of such measures, applicants must verify that control of stormwater quantity impacts as detailed in the Stormwater Management rules have been achieved. The tests of assuring control of the quantity impacts as detailed in these rules will be incorporated into the Town's Stormwater Ordinance.

The general standards for structural measures are specified in the Stormwater Management rules and will be incorporated into the Town of Phillipsburg's Ordinance. These measures shall be incorporated as needed to meet the soil erosion and runoff quantity standards included in the Town's Stormwater Ordinance. The design standards for the specific structural stormwater management measures are those included in the New Jersey Stormwater Best Management Practices Manual. Other designs or practices may be used if they are approved by the Soil Conservation District. The design and construction of such facilities must comply with the Soil Erosion and Sediment Control Standards as well as any other applicable state regulation including the Freshwater Wetland Protection Act rules, the Flood Hazard Control rules, the Surface Water Quality Standards and the Dam Safety rules. The requirement to be consistent with all other applicable rules will be included in the Town's Stormwater Ordinance. Stormwater runoff quality controls for total suspended solids and nutrient load shall meet the design and performance standards as specified in the Stormwater Management rules. Consistent with the Stormwater Management Rules, the Ordinance allows for an exemption from this requirement where the applicant can demonstrate that it is not practicable to meet the standards (due to Karst Formations) but has taken all possible steps to meet all stormwater management measures.

During construction, Town inspectors will observe the construction of the project to ensure that the stormwater management measures are constructed and function as designed. Adequate long term operation as well as preventative and corrective maintenance of the selected stormwater management measures will be ensured by requiring the design engineer to prepare a maintenance plan for its stormwater management facilities incorporated into the design of the major development. The maintenance plan shall have specific preventative maintenance tasks, schedules and cost estimates as well as the responsible party for corrective and preventative maintenance.

Where the Town assumes maintenance responsibility, preventative maintenance shall be performed on a regular basis and will be appropriate for the particular structural management measure being implemented. These maintenance measures shall be in accordance with N.J.A.C. 7:8-5 and may include: periodic inspections, vegetation management, sediment, debris and trash removal and mosquito control. Corrective maintenance shall be performed on an as needed basis for structure repairs or replacements, removal of outlet and pipe blockages, erosion restoration, snow and ice

removal, etc. The person or persons responsible for maintenance shall keep a detailed log of all preventative and corrective maintenance for the structural management measures incorporated into the design of the development, including a record of all inspections and work orders.

Plan Consistency

The Town of Phillipsburg is not within a Regional Stormwater Management Planning Area and no TMDLs have been developed for waters within the Town; therefore this plan does not need to be consistent with any regional stormwater management plans (RSWMPs) nor any TMDLs. If any RSWMPs or TMDLs are developed in the future, this Municipal Stormwater Management Plan will be updated to be consistent.

The Municipal Stormwater Management Plan is consistent with the Residential Site Improvement Standards (RSIS) at N.J.A.C. 5:21. Phillipsburg will utilize the most current update of the RSIS in the stormwater management review of residential areas. This Municipal Stormwater Management Plan will be updated to be consistent with any future updates to the RSIS.

Phillipsburg's Stormwater Management Ordinance will require all new development and redevelopment plans to comply with New Jersey's Soil Erosion and Sediment Control Standards. During construction, inspectors will observe on-site soil erosion and sediment control measures and report any inconsistencies to the local Soil Conservation District.

Nonstructural Stormwater Management Strategies

In accordance with NJDEP's Stormwater Regulations at N.J.A.C. 7:8-4.2(c)10, since the Town of Phillipsburg is not required to perform a build out analysis it is also not required to perform a review its master plan and ordinances, and therefore, a list of the sections in Phillipsburg's land use and zoning ordinances is not included in the Stormwater Management Plan.

Land Use/Build-Out Analysis

The Town of Phillipsburg does not have a combined total of greater than one square mile of vacant or agricultural lands, therefore, is not required to complete a build-out analysis.

Mitigation Plans

This mitigation plan is provided for a proposed development that is granted a variance or exemption from the stormwater management design and performance standards. Presented is a hierarchy of options. The applicant is required to propose a mitigation project that meets the requirement of item 1 below as the first option. If the applicant is unable to identify a suitable project that meets the requirements of item 1, as determined by the Town of Phillipsburg, then the applicant must propose a project that meets the

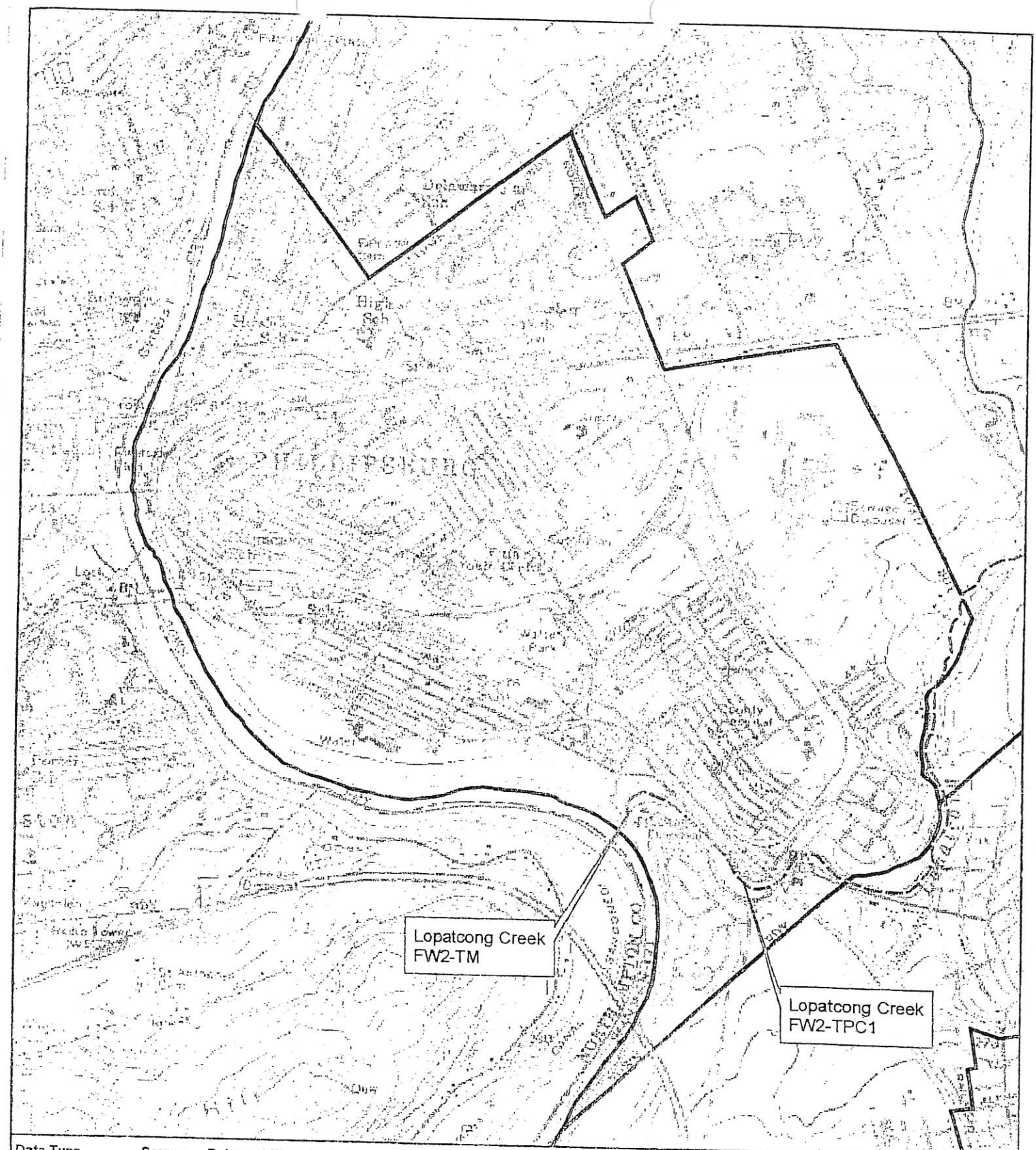
requirements of either item 2 or item 3 below. All mitigation projects proposed by an applicant must be approved by the Town prior to implementation.

1. The mitigation project must be implemented in the same drainage area as the proposed development. The project must provide additional groundwater recharge benefits, if possible or protection from stormwater runoff quality and quantity from previously developed property that does not currently meet the design and performance standards outlined in the Municipal Stormwater Management Plan. The developer must ensure the long-term maintenance of the project, including the maintenance requirements under Chapters 8 and 9 of the NJDEP Stormwater BMP Manual.

2. If a suitable site cannot be located in the same drainage area as the proposed development, the mitigation project may provide mitigation that is not equivalent to the impacts for which the variance or exemption is sought, but that addresses the same issue.

3. Phillipsburg may allow a developer to provide funding or partial funding for an environmental enhancement project. The funding must be equal to or greater than the cost to implement the mitigation outlined above, including costs associated with purchasing the property or easement for mitigation, and the cost associated with the long-term maintenance requirements of the mitigation measure.

APPENDIX "A"



Data Type	Source	Relevant Time Period
USGS Quad	UGSG	Feb-Apr 2002
Municipal Boundary	NJDEP	1989
C1 Waters	NJDEP	2003

Figure C-2

Town and its Waterways

Town of Phillipsburg
Warren County, New Jersey

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SCHOOR DEPALMA
Engineers and Consultants

Symbol Legend

- Municipal Boundary
- C1 Waters
- FW2-TM
- FW2-TPC1

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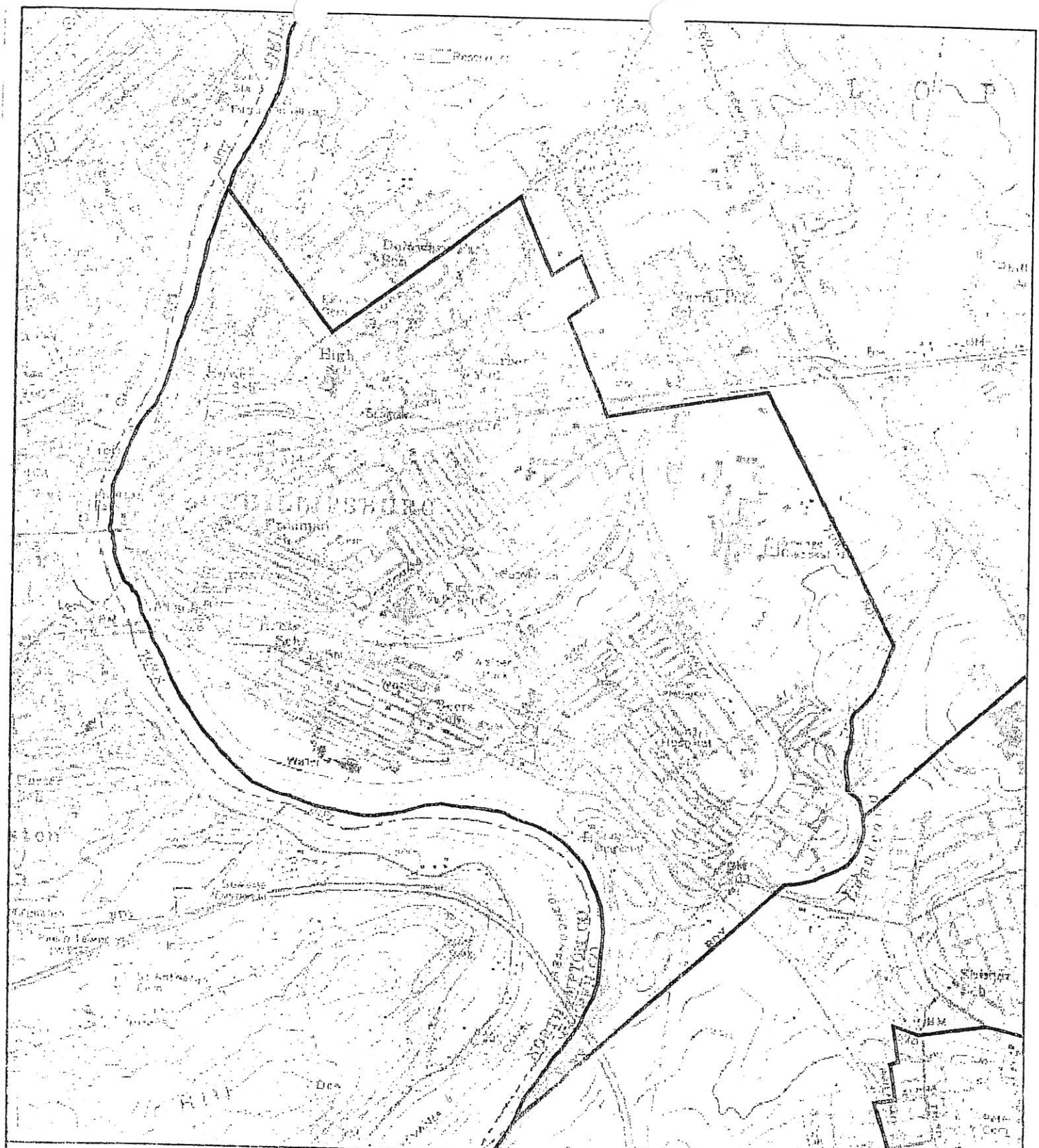

Data Type	Source	Relevant Time Period
USGS Quadrangles		Feb-Apr 2002
Municipal Boundary	NJDEP	1989

Figure C-3

Township Boundary on USGS Quadrangles

Town of Phillipsburg
Warren County, New Jersey

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Symbol Legend

Municipal Boundary

SCHOOR DEPALMA
Engineers and Consultants

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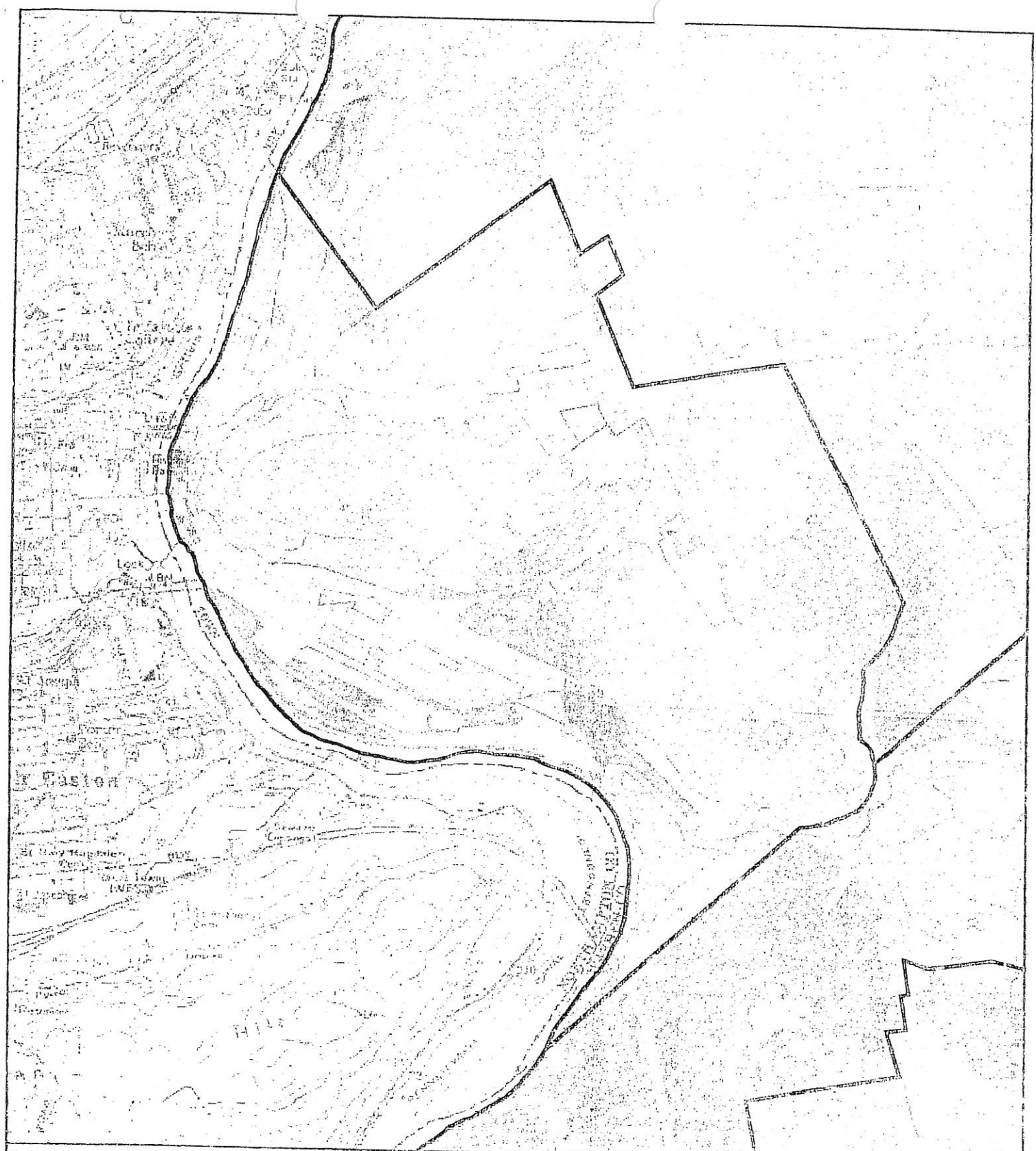

Data Type	Source	Relevant Time Period
USGS Quad	UGSG	Feb-Apr 2002
Municipal Boundary	NJDEP	1989
Groundwater Recharge Areas	NJDEP	Various

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Figure C-4

Groundwater Recharge Areas in the Town

Town of Phillipsburg
Warren County, New Jersey

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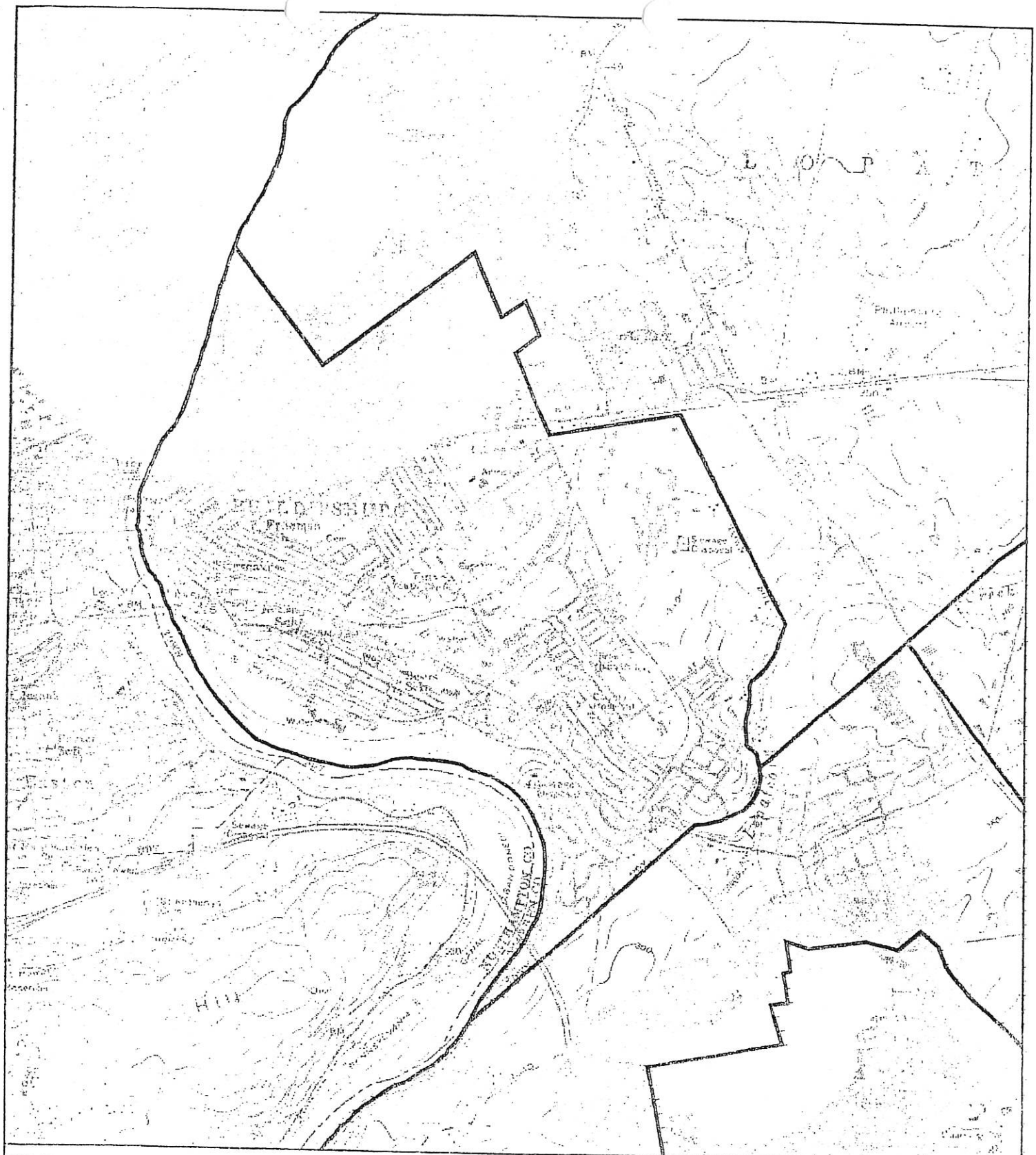
SCHOOR DEPALMA

Symbol Legend

- Municipal Boundary

Ground Water Recharge Areas

- 0.00 in/yr
- 0.01 - 9.00 in/yr
- 9.01 - 12.00 in/yr
- 12.01 - 16.00 in/yr
- 16.01 - 22.74 in/yr



Data Type	Source	Relevant Time Period
USGS Quadrangles	USGS	Feb-Apr 2002
Municipal Boundary	NJDEP	1989
Wellhead Protection Areas	NJDEP	2004 (Updated)

Figure C-5

Wellhead Protection Areas in the Town

Town of Phillipsburg
Warren County, New Jersey

Symbol Legend

- Municipal Boundary

Wellhead Protection Areas

- 2 Year
- 5 Year
- 12 Year

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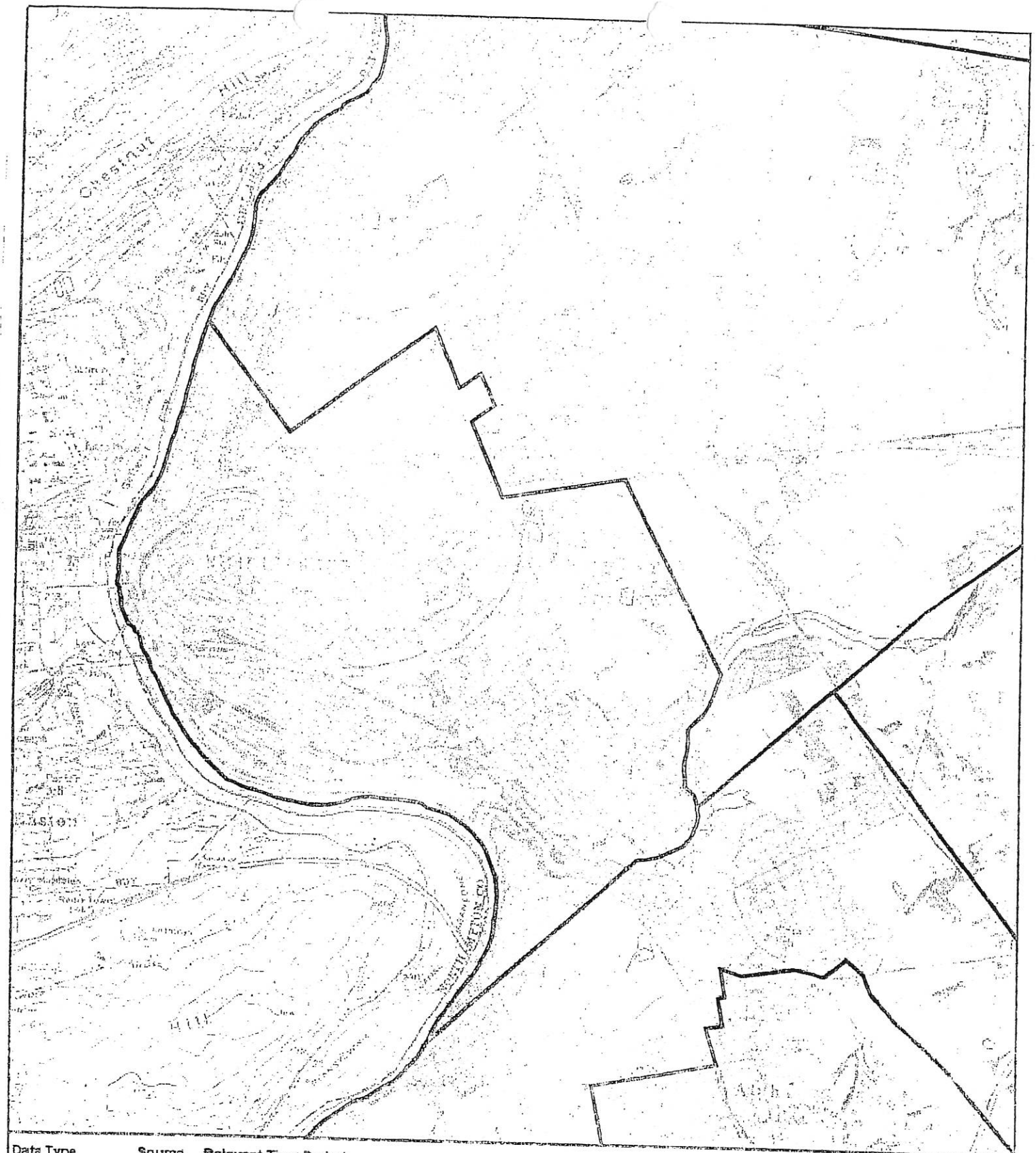

Data Type	Source	Relevant Time Period
USGS Quad	USGS	Feb-Apr 2002
Municipal Boundary	NJDEP	1989
Land Use/ Land Cover	NJDEP	1995/1997

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Figure C-6

Township's Existing Land Use

Town of Phillipsburg
Warren County, New Jersey

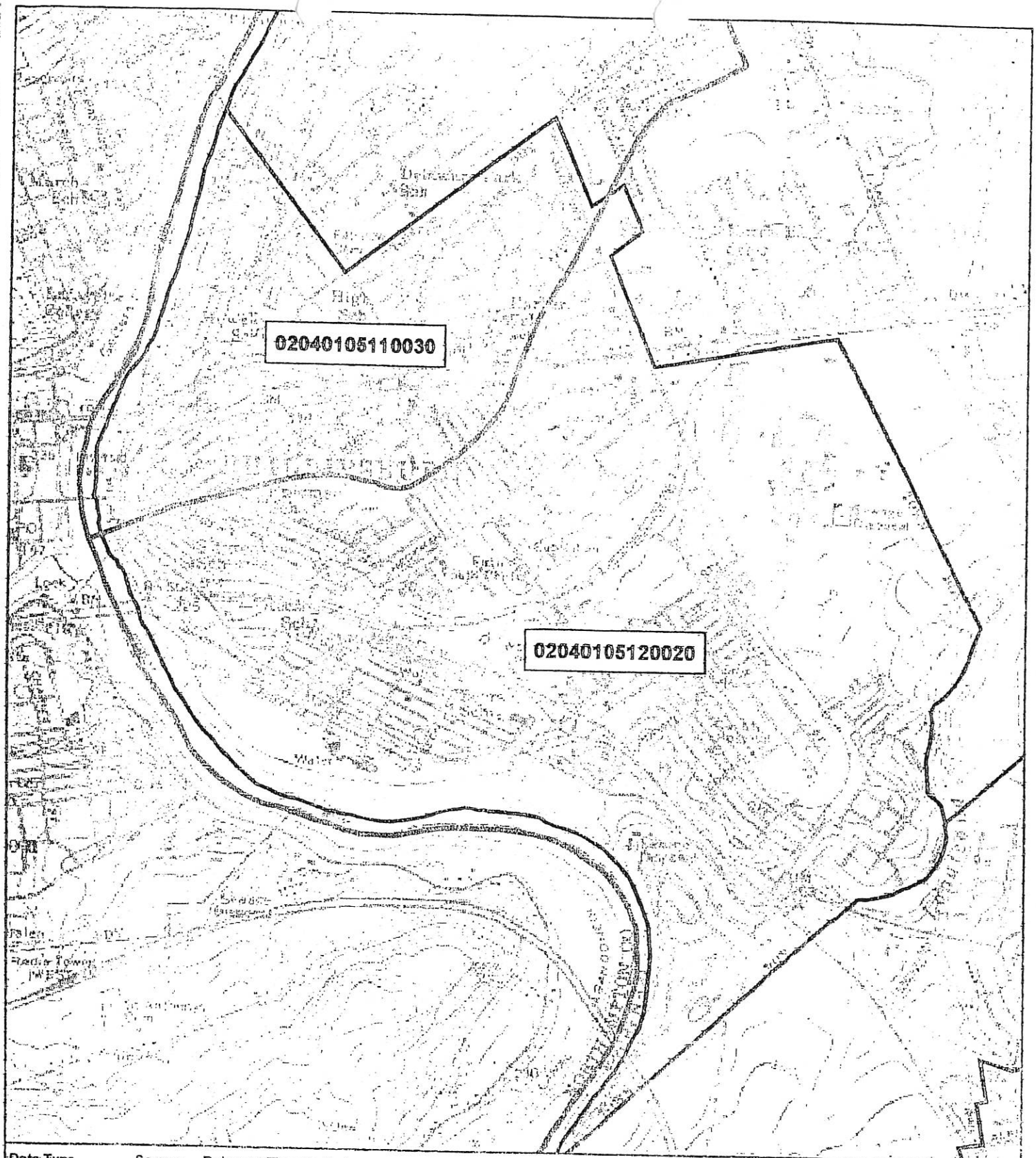
SCHOOR DEPALMA
Engineers and Consultants

Symbol Legend

- Municipal Boundary

Land Use

- AGRICULTURE
- BARREN LAND
- FOREST
- URBAN
- WATER
- WETLANDS



Data Type	Source	Relevant Time Period
USGS Quad	UGSG	Feb-Apr 2002
Municipal Boundary	NJDEP	1989
HUC14	NJDEP	2000

Figure C-7

Hydrologic Units (HUC14) Within the Town

Town of Phillipsburg
Warren County, New Jersey

Symbol Legend

- NJDEP Huc 14
- Municipal Boundary

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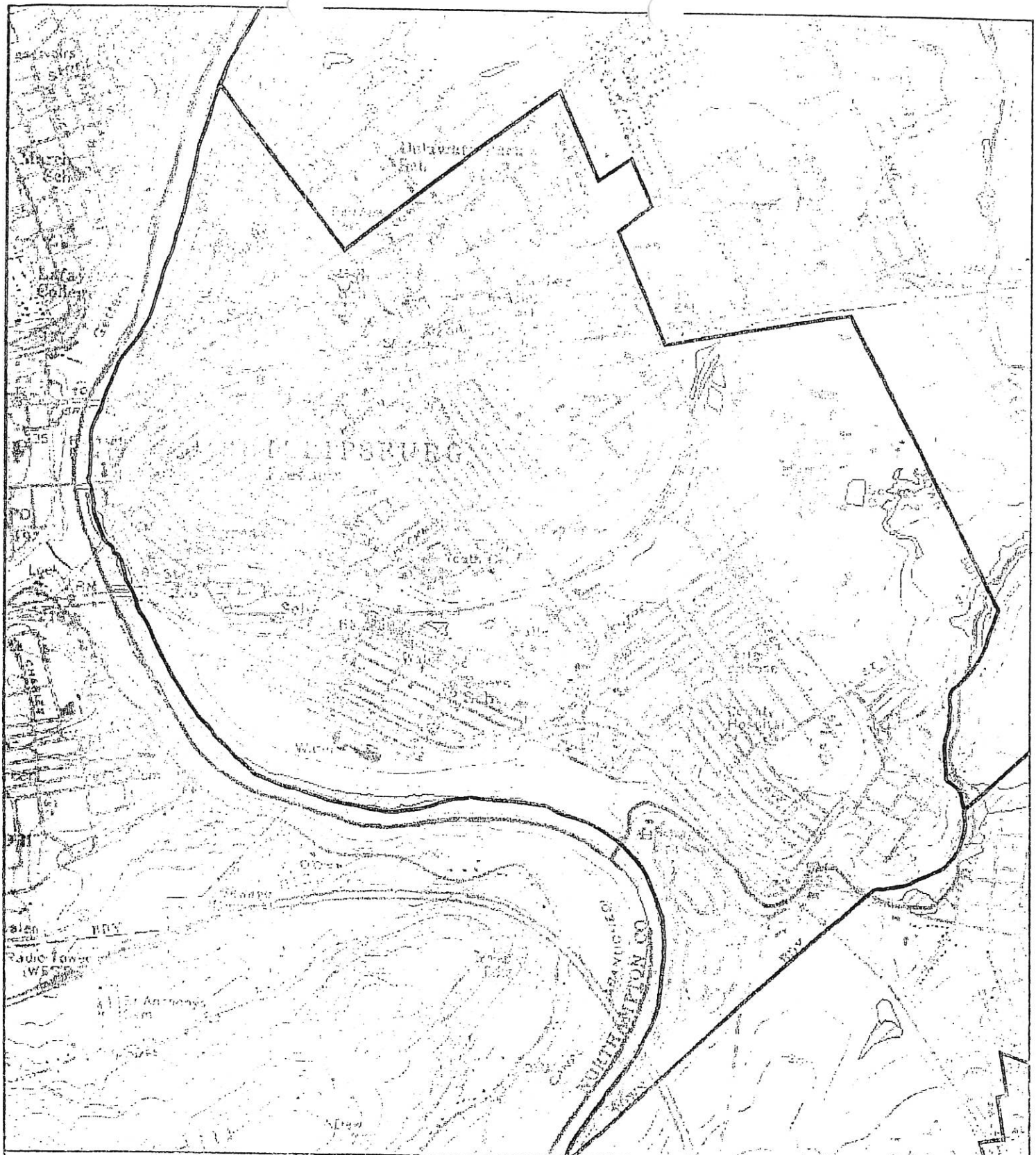
Engineers and Consultants



Data Type	Source	Relevant Time Period
USGS Quad	UGSG	Feb-Apr 2002
Municipal Boundary	NJDEP	1989
Wetlands	NJDEP	1986
Lakes	NJDEP	1986
Streams	NJDEP	1998

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Figure C-9

Wetlands and Water Land Uses within the Town

Town of Phillipsburg
Warren County, New Jersey

Symbol Legend

- Streams
- Lakes
- Wetlands
- Municipal Boundary

N W E S

SCHOOR DEPALMA Engineers and Consultants

Data Type	Source	Relevant Time Period
USGS Quadrangles		Feb-Apr 2002
Municipal Boundary	NJDEP	1989

Figure C-10

Township Boundary on Aerial

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Town of Phillipsburg
Warren County, New Jersey

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