



Municipal Stormwater Management Plan

for the

Borough of Ogdensburg

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INTRODUCTION

This Municipal Stormwater Management Plan (MSWMP) documents the strategy for the Borough of Ogdensburg 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.

The plan also addresses the review and update of existing ordinances 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.

GOALS

The goals of this MSWMP are to:

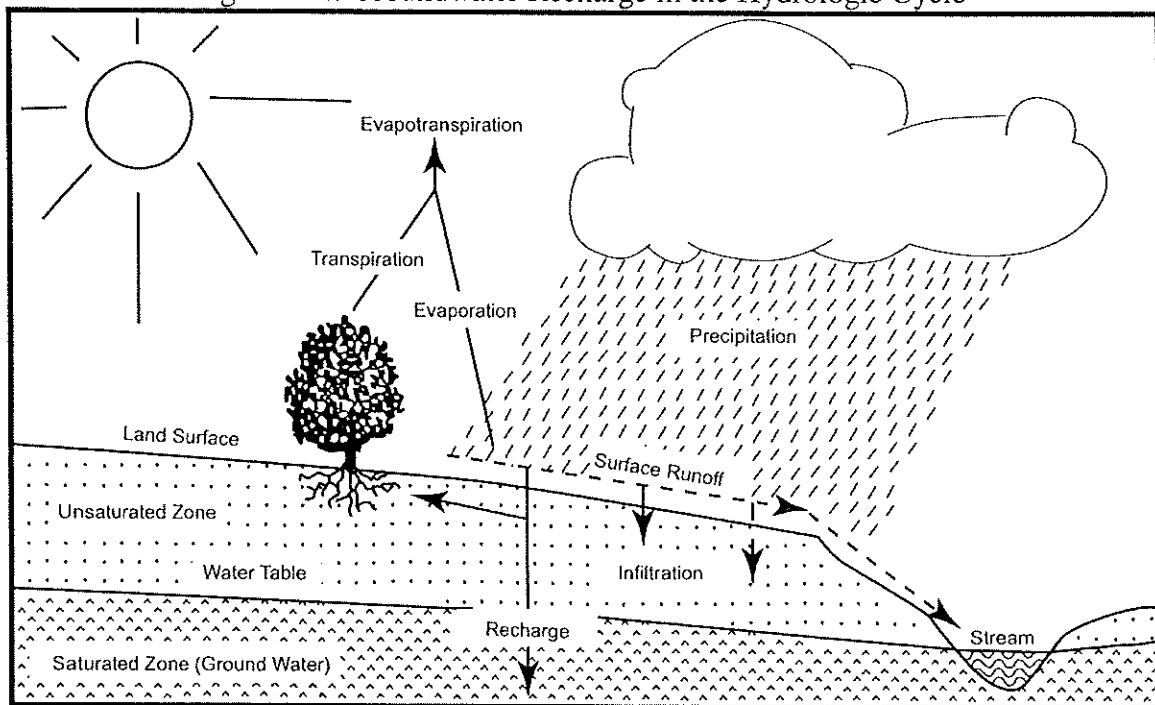
- reduce flood damage, including damage to life and property;
- minimize, to the extent practical, any increase in stormwater runoff from any new development;
- reduce soil erosion from any development or construction project;
- assure the adequacy of existing and proposed culverts and bridges, and other 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 Borough of Ogdensburg encompasses a 2.1 square mile area in Sussex County, New Jersey. The Borough is more densely developed than the typical community in Sussex County and has a significantly higher population density than the county average. However, the population of the Borough has decreased from 2,722 in 1990, to 2,638 in 2000. This represents a decrease by 84 individuals or a 3.1 percent change. Figure C-2 depicts the Borough boundary on the USGS quadrangle maps. Figure C-3 illustrates the waterways in the Borough.

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. In addition to direct biological assessment the NJDEP includes a qualitative assessment of stream habitat quality at each monitoring location. The results of which are used to compute a Habitat Assessment Score. One major river that flows through Ogdensburg is the Wallkill River.

These data show that the benthic macroinvertebrates in the reach of the Wallkill River within the Borough do not meet the state's criteria. The health of the population of benthic macroinvertebrates is an indication of stream water quality. Consequently, this means that this river is an impaired waterway and the NJDEP is required to develop a Total Maximum Daily Load (TMDL), however the NJDEP has assigned a low priority, therefore has not set a deadline for developing a TMDL nor has it identified the pollutant or pollutants for which the TMDL will be developed.

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.

DESIGN AND PERFORMANCE STANDARDS

The Borough 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 and loss of groundwater recharge in receiving water bodies. 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. The tests of assuring control of the quantity impacts as detailed in these rules have been incorporated into the Borough's Stormwater Ordinance

The general standards for structural measures are specified in the Stormwater Management rules and have been incorporated into the Borough of Roseland Ordinance. These measures shall be incorporated as needed to meet the soil erosion, infiltration and runoff quantity standards included in the Borough's Stormwater Ordinance. The design standards for the specific structural stormwater management measures as 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 has been included in the Borough'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. The minimum design and performance standards for infiltration and groundwater recharge specified in the Stormwater Management Rules have been incorporated into the Borough's Stormwater Ordinance and must be met for all applicable development. 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 but has taken all possible steps to meet all stormwater management measures.

During construction, Borough 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 Borough 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 Borough is not within a Regional Stormwater Management Planning Area and no TMDLs have been developed for waters within the Township; 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 Borough's Stormwater Management Plan is consistent with the Residential Site Improvement Standards (RSIS) at N.J.A.C. 5:21. The Borough will utilize the most current update of the RSIS in the stormwater management review of residential areas and Borough's Stormwater Management Plan will be updated to be consistent with any future updates to the RSIS.

The Borough's Stormwater Management Ordinance requires all new development and redevelopment plans to comply with New Jersey's Soil Erosion and Sediment Control Standards. During construction, Borough 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

The Borough has reviewed the master plan and ordinances, and has provided a list of the sections in the Borough land use and zoning ordinances that could be modified to incorporate nonstructural stormwater management strategies. These are the ordinances identified for

revision. Once the ordinance texts are completed, they will be submitted to the county review agency for review and approval within 24 months of the effective date of the Stormwater Management Rules. A copy will be sent to the Department of Environmental Protection at the time of submission.

Section 408 R100 Residential District

M. Site Improvements

2. Sidewalks shall be provided at least on one side of all public or private streets, and approved walkways shall be approved wherever else pedestrian traffic is expected to occur. *The Borough has evaluated this ordinance and will consider amending this ordinance to require developers to design sidewalks that discharge stormwater to adjacent lawns or use permeable paving materials to disconnect impervious surfaces and thus promote pollutant removal and groundwater recharge as deemed appropriate by the borough engineer.*

L. Property Line and Street Setbacks

1. (b) A landscaped buffer zone of at least 25' in width shall be maintained along the perimeter of any Multi-family Residential Development Tract. This buffer zone shall be kept in its natural state to the greatest extent practicable. Any newly installed trees constituting said buffer zone shall be a minimum of 6' at planting. *The Borough has evaluated this ordinance and will consider amending this ordinance to encourage the use of native vegetation during the landscape design stages of development. The use of mulch or stone paths shall also be encouraged in order to decrease the impervious area associated with concrete.*

Section 502 – Drainage

G. Drainage inlets shall be located at all intersections, with inlets on both sides of a street at intervals of not more than 400 feet or such shorter distances as required to prevent the flow of surface water from exceeding six (6) cubic feet per second at the drainage inlet. *The Borough has evaluated this ordinance and will consider amending this ordinance to require developers to use natural vegetated swales in lieu of inlets and pipes whenever practicable where deemed appropriate by the Borough engineer.*

Section 508 – Off-Street Parking, Loading Areas and Driveways

C. Paving and Curbing

4. All off-street parking and loading areas shall be provided with curbing or curb stops so that vehicles cannot be driven onto required perimeter landscaped areas, buffer zones and street rights-of-way and so that each parking and loading area has controlled entrances and exits and drainage control. Curbing or wheel stops shall be located to prevent any part of a vehicle from overhanging internal sidewalks or landscaped areas. Parking and loading spaces shall not be an extension of any street right-of-way. *The Borough has evaluated this ordinance and will consider amending this ordinance to require the use of flush curbs with curb stops to be used whenever possible to allow for the discharge of impervious areas into landscaped areas for stormwater management where deemed appropriate by the Borough engineer.*

Section 514 – Curbs and Sidewalks

A. Streets

1. All developments shall be served by paved streets in accordance with the approved subdivision and / or site plan and all such streets shall have an adequate crown. The arrangement of such streets not shown on the Master Plan of official Map, as adopted by the Borough, shall be such as to provide for the appropriate extension of such streets. *When consistent with safety and traffic concerns, the borough will evaluate which traffic calming features, such as circles, rotaries, median and islands can be vegetated or landscaped as deemed appropriate by the Borough engineer.*

5.(g) Street widths of 18 to 22 feet are recommended for low impact designs in low density residential developments. Minimum driveway widths of 9 and 18 feet for one lane and two lanes, respectively are also recommended. The minimum widths of all streets and driveways should be evaluated to demonstrate that the proposed width is the narrowest possible consistent with safety and traffic concerns and requirements as deemed appropriate by the Borough engineer.

B. Curbs

3. *The Borough has evaluated this ordinance and will consider amending this ordinance to require the use of flush curbs with curb stops whenever possible to allow for the discharge of impervious areas into landscaped areas for stormwater management as deemed appropriate by the Borough engineer.*

LAND USE/BUILD-OUT ANALYSIS

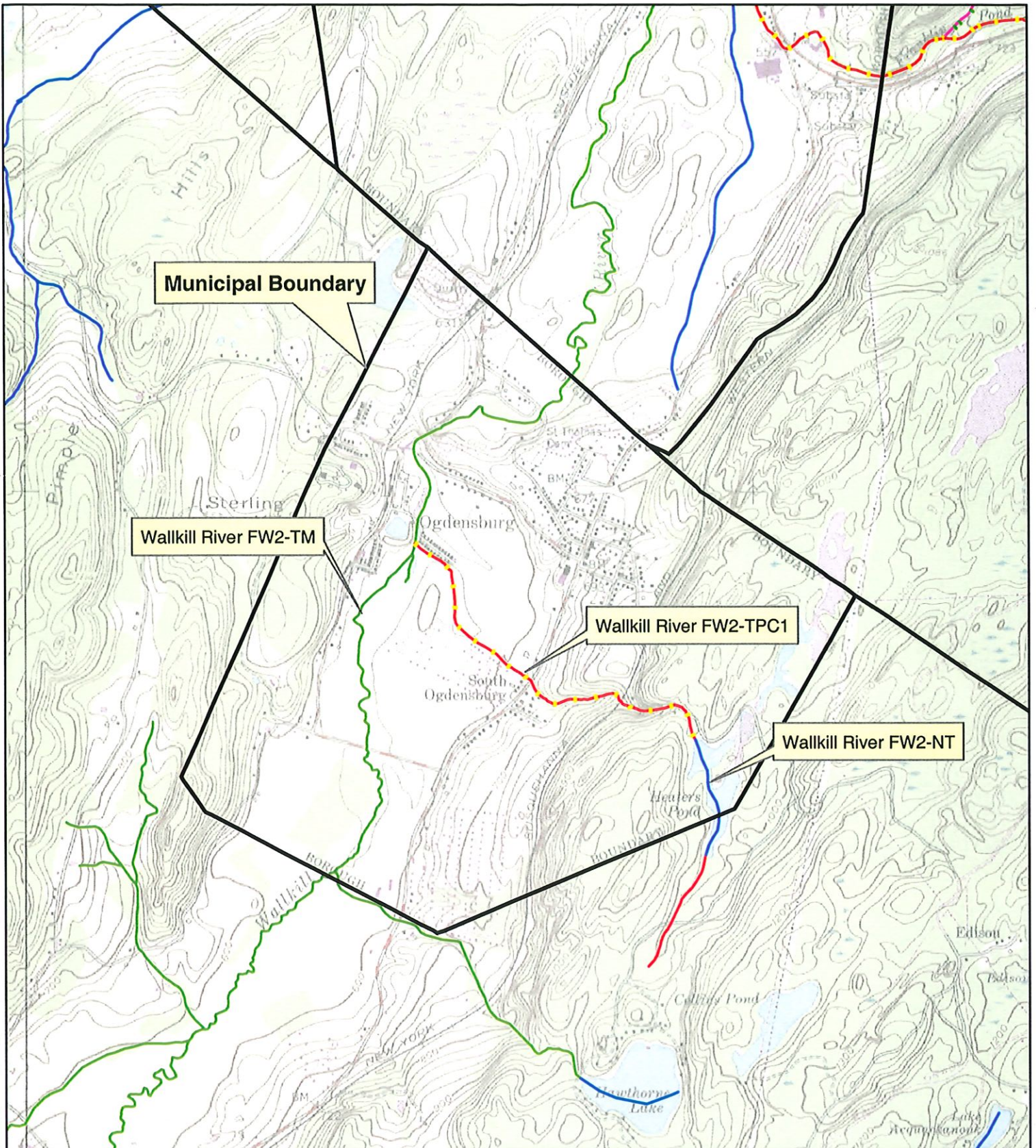
In accordance with the Strategic Growth Plan for Sussex County the Borough of Ogdensburg is listed in the plan as having less than one square mile of vacant land for future growth; therefore, a build-out analysis is not required.

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 Borough of Ogdensburg, 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 Borough of Ogdensburg prior to implementation.

Mitigation Project Criteria

1. The mitigation project must be implemented in the same drainage area as the proposed development. The project must provide additional groundwater recharge benefits, 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. The Borough 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.



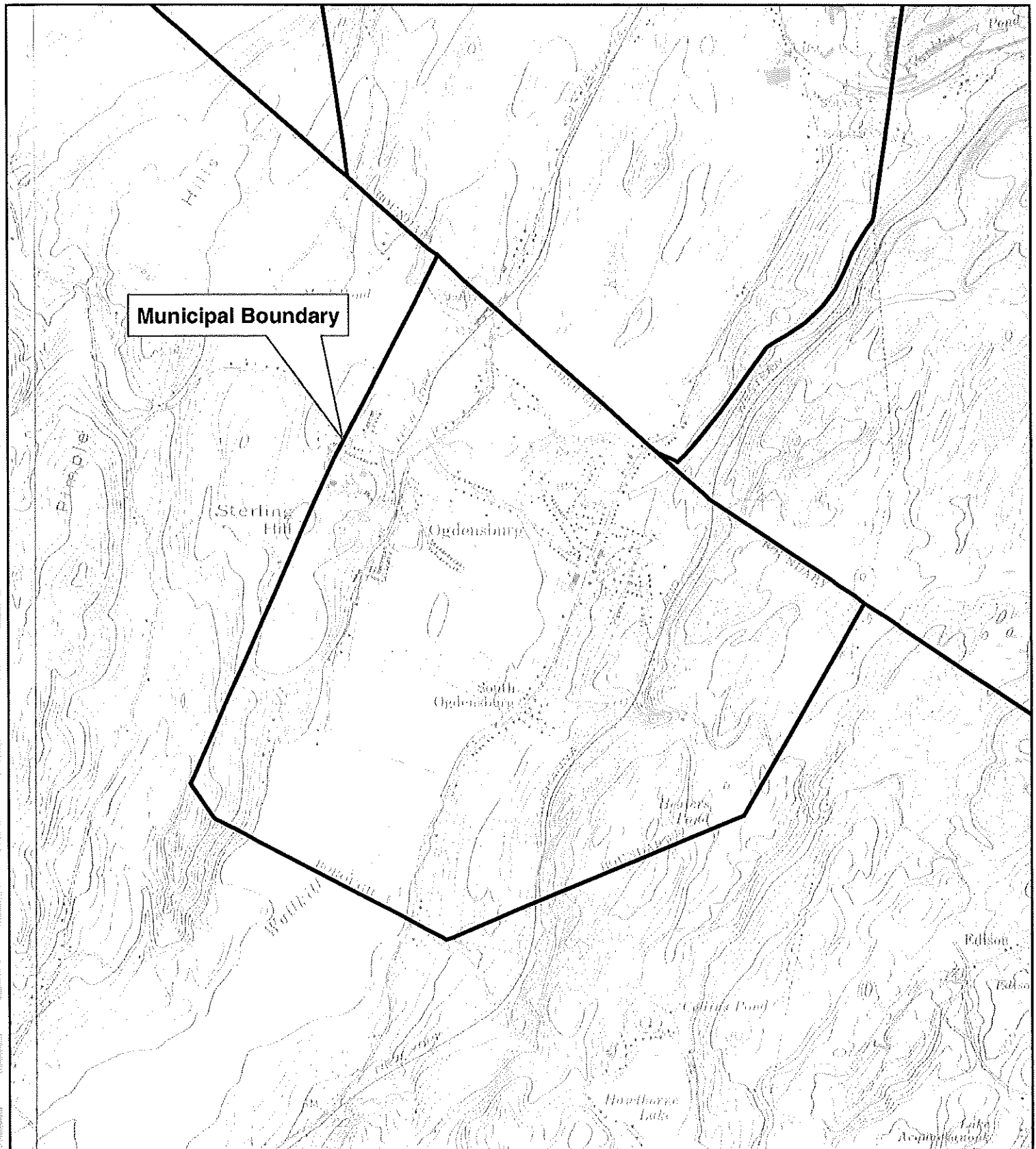
Data Type	Source	Relevant Time Period
USGS Quad	UGSG	Feb-Apr 2002
Municipal Boundary	NJDEP	1989
C1 Waters	NJDEP	2003

Symbol Legend	
	Municipal Boundary
C1 Waters	
	FW2-NT
	FW2-TM
	FW2-TPC1
	FW2-TP

0 1,000 2,000 Feet

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
Borough and its Waterways
Borough of Ogdensburg
Sussex County, New Jersey

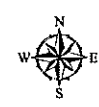


Data Type	Source	Relevant Time Period
USGS Quadrangles		Feb-Apr 2002
Municipal Boundary	NJDEP	1989

Figure C-3

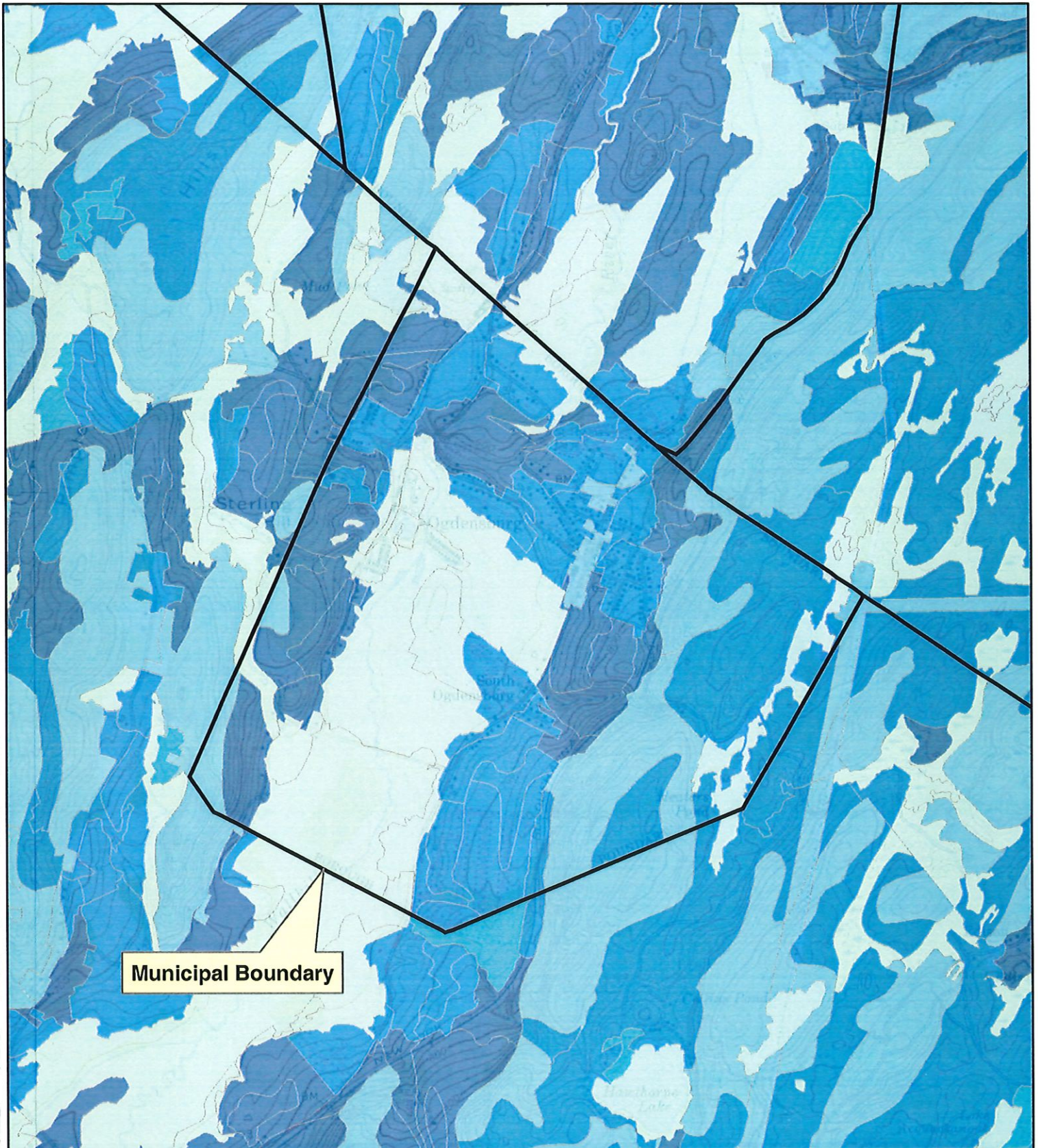
Municipal Boundary on USGS Quadrangles

**Borough of Ogdensburg
Sussex County, New Jersey**



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.





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

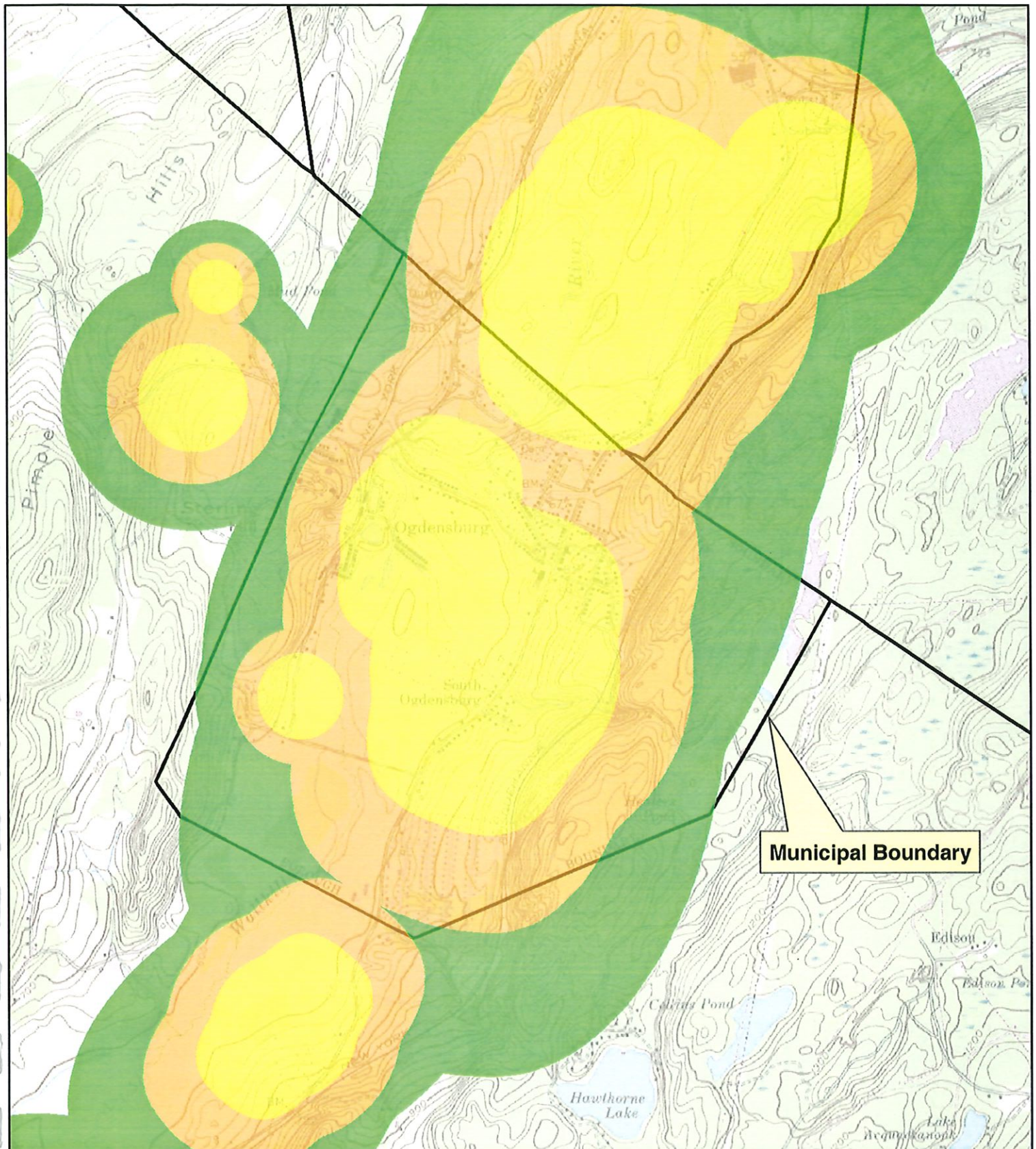
Groundwater Recharge Areas in the Borough

Borough of Ogdensburg
Sussex 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





Municipal Boundary

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 Borough

**Borough of Ogdensburg
Sussex County, New Jersey**

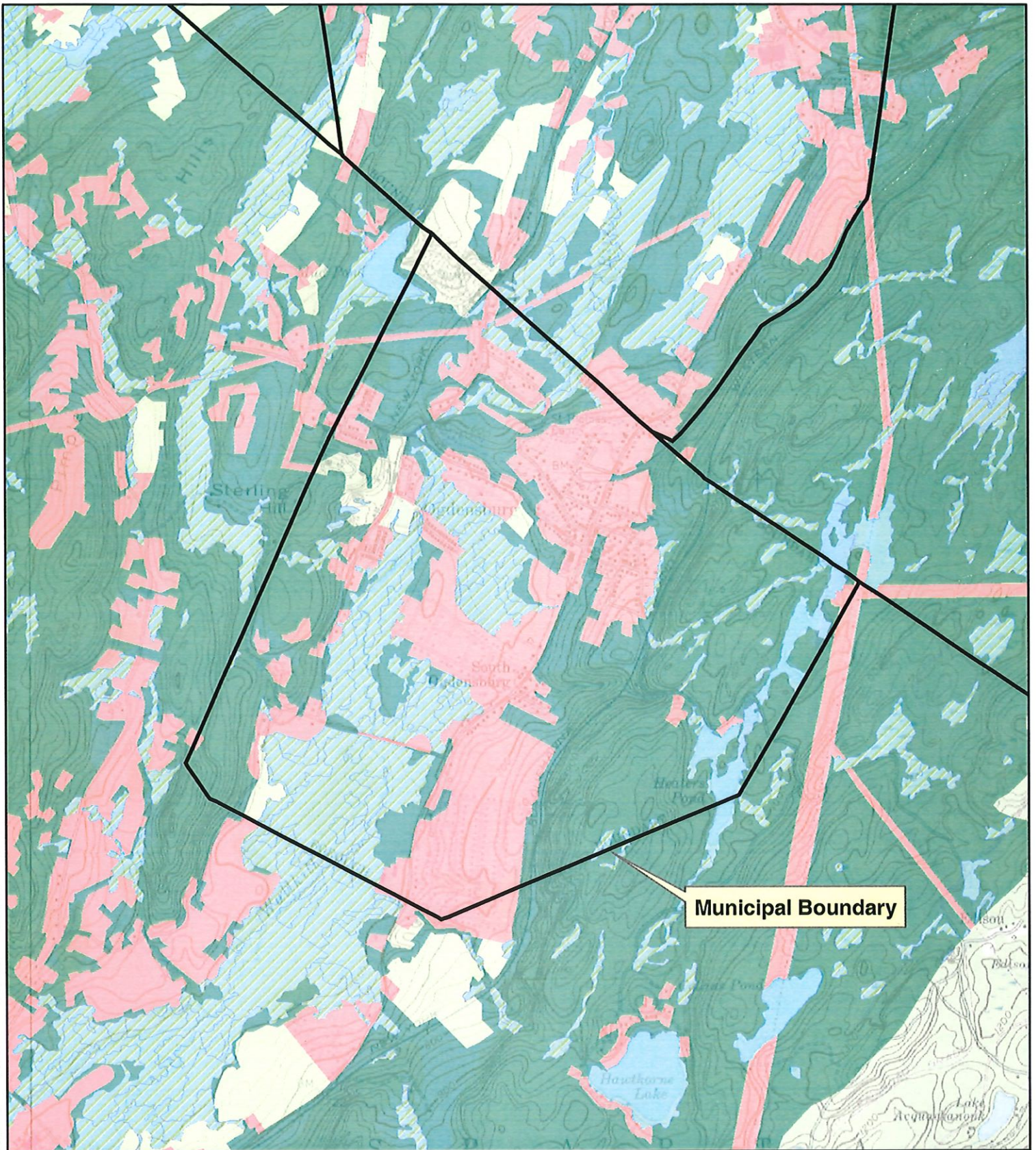
Symbol Legend

- Municipal Boundary
- Wellhead Protection Areas**
- 2 Year
- 5 Year
- 12 Year



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.





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



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Figure C-6

Borough's Existing Land Use

Borough of Ogdensburg
Sussex County, New Jersey



Symbol Legend

Municipal Boundary

Land Use

AGRICULTURE

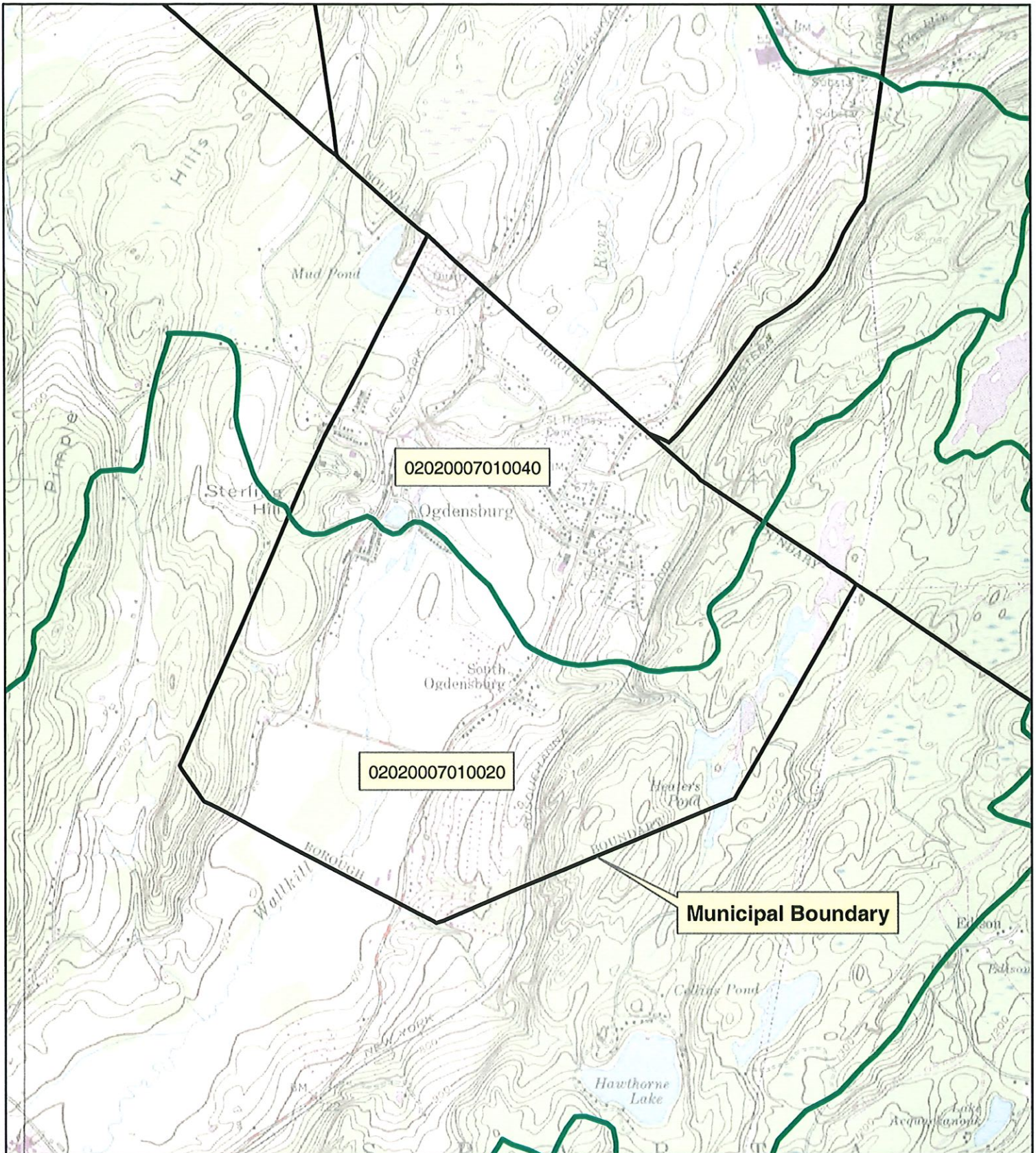
BARREN LAND

FOREST

URBAN

WATER

WETLANDS



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



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Figure C-7 Hydrologic Units (HUC14) Within the Borough

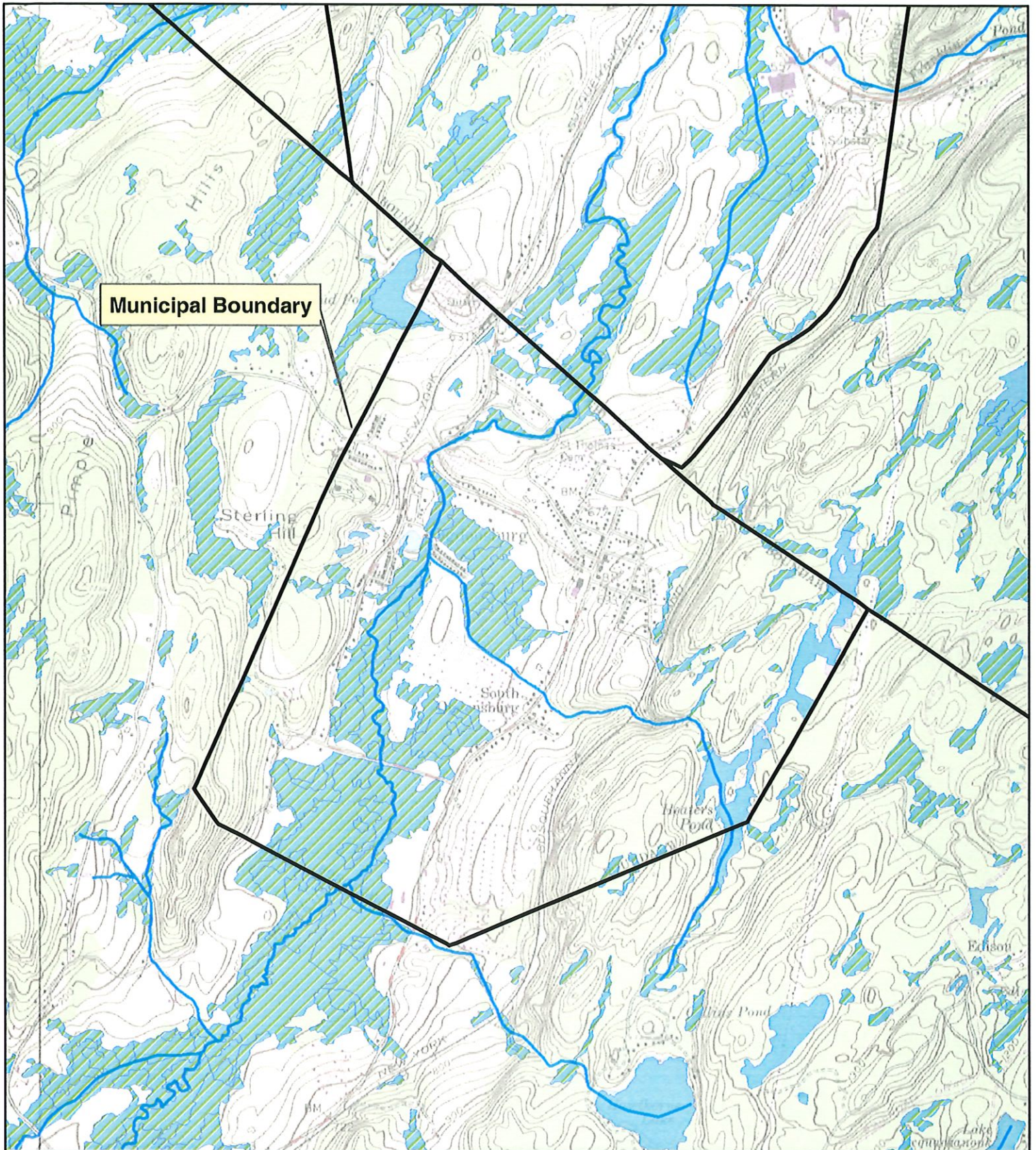
**Borough of Ogdensburg
Sussex County, New Jersey**



Symbol Legend

	NJDEP Huc 14
	Municipal Boundary





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 Borough

**Borough of Ogdensburg
Sussex County, New Jersey**

Symbol Legend

- Streams
- Lakes
- Wetlands
- Municipal Boundary

