

NEW PALTZ NATURAL RESOURCES INVENTORY

An inventory of natural resources of
the Town and Village of New Paltz

June 2021



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Acronyms Used in This Natural Resources Inventory

ASL – Above Sea Level
BA – Biodiversity Area
CFR – Code of Federal Regulations
CPP – New Paltz Community Preservation Plan
CSTF – New Paltz Climate Smart Task Force
CWOSP – Clean Water Open Space Protection Commission
EnCB – Environmental Conservation Board
EPB – Environmental Policy Board
FEMA – Federal Emergency Management Agency
HPC – Historic Preservation Commission
HREP – Hudson River Estuary Program
IBA – Important Bird Area
NEPA – National Environmental Protection Act
NH – Natural Heritage
NRCS – Natural Resource Conservation Service
NRI – Natural Resources Inventory
NWI – National Wetlands Inventory
NYCRR – New York Codes, Rules and Regulations
NYNHP – New York Natural Heritage Program
NYS – New York State
NYS DEC – New York State Department of Environmental Conservation
NYS DOH – New York State Department of Health
OPRHP – New York State Office of Parks, Recreation and Historic Preservation
SBA – Significant Biodiversity Area
SEQR – State Environmental Quality Review Act
SHPO – State Historic Preservation Office
SPDES – State Pollution Discharge Elimination System
SUNY ESF – State University of New York College of Environmental Science and Forestry
TNC – The Nature Conservancy
TPL – Trust for Public Land
TU – Trout Unlimited
USDA – United States Department of Agriculture
USFWS – United States Fish and Wildlife Service

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Town of New Paltz Town Board

Supervisor Neil Bettez	
Daniel Torres	David Brownstein
Alexandria Baer	Julie Seyfert-Lillis

New Paltz Village Board of Trustees

Mayor Tim Rogers	
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New Paltz Climate Smart Task Force

Janelle Peotter	Amanda Gotto	Lynn Cherry
Liz Elkin	Orelle Feher	Jim O'Dowd
Wendy Rudder	Mark Varian	

Town Environmental Conservation Board

Ingrid Haeckel	Jim Littlefoot	Rich Whitney
Susan Stessin-Cohn	Thomas Nitza	Rose Rudnitski
Kenji Tierney	Jonathan Schwartz	Hope Nitza

Town Clean Water and Open Space Protection Commission

John Gotto	Lynn Bowdery	Tom Weiner
Michael Knutson	Rich Fiesel	Cara Lee

Town Historic Preservation Commission

John Orfitelli	Susan DeMark	Dawn Elliott
Matt Maley	Susan Stessin-Cohn (Historian)	

Village Environmental Policy Board

Ted Nitza	Fiona Bohan	
Greg Van Pukeston	Anabel Evans (Researcher)	Wendy Toman (Researcher)
Don Kerr		

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New York State Hudson River Estuary Program Staff Advisor Nate Nardi-Cyrus
Consultants

Upstate GIS

Rick Lederer-Barnes



Nan Stolzenburg, AICP CEP, Principal Planner



1 SUMMARY

The New Paltz Natural Resources Inventory (NRI) identifies, maps, and describes the many natural resources found in the Town and Village. It is intended to provide information to help guide long-term decision-making related to planning, development, and conservation that will help sustain New Paltz's land and water resources for future generations.

New Paltz (both Town and Village) has a long history of community support and planning for the environmental health of the community. Efforts such as comprehensive plans, open space planning and inventory, historic inventories, and others have been developed and adopted over the years. This NRI dovetails with these previous efforts and provides updated maps and natural resource information in one document. The Town and Village hope this NRI and its online StoryMap version will be the 'go-to' document for natural and cultural resource data.

The NRI StoryMap is an online resource that compiles all the data layers presented in this report into a set of interactive maps. The user can zoom into an area of interest in New Paltz and view what resources are present (or may be present) at a given location. This tool can assist local boards in evaluating project proposals, allow landowners to learn more about their property and the area around them, and conservation organizations can use the tool to assist in identifying areas for further protection. The StoryMap does not replace field surveys that would be necessary for many development or conservation activities but can be used as a starting point when evaluating a potential project, and a guide for determining which sections of this document may be most relevant to review.

For more information see:

<https://arcg.is/1Sf0nu>. This web-based tool helps users find specific information within the Town and Village of New Paltz and view all the natural resource information included in this NRI.



The NRI provides maps and descriptions of the Town and Village's biological, mineral, water, and farmland resources. It also describes features such as topography, scenic and recreation resources, cultural and historic resources, and land uses such as agriculture that contribute to the environment, beauty, and character of the New Paltz landscape. The NRI further describes threats that may adversely impact New Paltz's resources, along with partners that the Town and Village can work with over time to prevent or mitigate adverse impacts to those resources.

To address threats such as climate change, habitat loss, degradation of water resources, and the loss of farmland to development, the NRI summarizes the many conservation measures that have been recommended in other plans over time. These measures aim to protect or link large areas of broadly connected intact habitats; ensure clean, ample water supplies; reduce soil erosion; maintain the present and future viability of

agriculture; and protect scenic landscapes, all of which are goals expressed in the Town's or Village's Comprehensive Plans.

There are many ways this NRI can be used to promote natural resource conservation. The NRI can assist the Town and Village in developing additional policies for stewardship that can be incorporated into future updates to the Town or Village's Comprehensive Plan. It can aid in identifying critical natural resources and priority areas for both land use and for conservation. The Planning Board, Zoning Board of Appeals and environmental boards in the Town and Village, as well as other committees such as the Climate Smart Task Force, can use the NRI during site plan, special use, subdivision, and variance review processes, or in formulation of additional programs.

Those wishing to develop their property in the Town or Village can use the NRI to gain understanding of the natural features of importance and design new land uses in ways that are consistent with those resources. The NRI includes a section that matches natural resource information in this document with regulatory submissions that might be needed for future project approvals.

Landowners, local and regional organizations, and individuals will also find the NRI useful to foster enhanced land management and stewardship. Overall, the NRI is designed to promote best use, stewardship, conservation, and long-term sustainability of natural resources.



2 INTRODUCTION

What is a Natural Resources Inventory?

A Natural Resources Inventory, or NRI, is a conservation tool that identifies, maps, and describes important natural resources in a municipality. The term “natural resources” encompasses a variety of physical, biological, and ecological environmental features such as bedrock, soils, streams, groundwater, wetlands, habitats, plants, and animals. It also includes scenic, cultural, and recreational resources that are closely tied to natural resources.

Both the Town and Village of New Paltz have a long history of planning for and consideration of natural resources in the community. This is evidenced through development of many past plans and studies in New Paltz including those for open spaces, habitats, farmland, historic resources, climate resiliency, and green infrastructure. These efforts are described in more detail below.

New Paltz has had a long-term commitment to protecting the unique natural resources located here. This is further evidenced through creation of the Clean Water and Open Space Protection Commission (Town), New Paltz Climate Smart Task Force (Town and Village), Community Preservation Fund Advisory Board (Town and Village), Environmental Conservation Board (Town), Environmental Policy Board (Village), Historic Preservation Commission (Town and Village), Shade Tree Commission (Village), and the Bicycle and Pedestrian Committee (Town and Village).

This NRI updates and consolidates natural resource information in New Paltz. Together with the online StoryMap (<https://arcg.is/1Sf0nu>), a further goal of New Paltz is to enhance access to information about the unique natural resources in New Paltz not only to elected and appointed officials, but to residents, agencies and organizations, community groups, land development applicants, and researchers.

With assistance from planning and geographic information system (GIS) consultants, the NRI was developed under the leadership of the New Paltz Climate Smart Task Force (CSTF). Members of the CSTF determined the scope of the document and worked with the consultants to develop the maps, data, and narrative along with significant input from the Clean Water and Open Space Protection Commission, Environmental Conservation Board (EnCB), Historic Preservation Commission and other Town and Village boards and committees. The NRI was funded by the New York State Environmental Protection Fund through a grant to the Town and Village from the Hudson River Estuary Program of the New York State Department of Environmental Conservation (NYS DEC).

For more information about NRIs see the Town EnCB page at (<https://www.townofnewpaltz.org/environmental-conservation-board>) and <https://www.townofnewpaltz.org/community-preservation-plan-task-force/pages/plan-maps-and-more> for links to all Town plans included in this NRI.

See also Village EPB page at <https://www.villageofnewpaltz.org/environmental-policy-board/>

Note to Readers: This NRI encompasses lands in both the Town and Village of New Paltz. Throughout this NRI, when “New Paltz” is used the reader shall assume it means BOTH the Town and Village. Otherwise, the text will specify the Town or the Village.

What is Included in the NRI?

This NRI discusses six major groups of natural resources in New Paltz: geology and soils, water resources, habitats and wildlife, climate resiliency, conserved and public land, cultural resources, and threats to resources/conservation partners. While each resource is presented separately, all are linked together and are part of New Paltz's ecosystem and landscape. All contribute to the ecosystem services that are valued and recognized by New Paltz residents. These include such services as plant and animal habitats, drinking water sources, water quality, recreation, climate resilience, cultural opportunities, and flood control.

The NRI includes maps that show the location and extent of natural resources in New Paltz. It also includes associated data and information that defines these resources and describes the features, character, and extent of those resources in the Town and Village.

Descriptive information about the potential threats to natural resources in New Paltz are also included along with a list of conservation partners that work in the Town and Village to promote resource conservation.

How This NRI Relates to Other Plans and Studies in New Paltz.

Most of the natural resource information included in this NRI was obtained from existing sources (for example, adopted plans in New Paltz; published literature; mapped data from the Town, County, State, and other organizations; and locally collected data). Readers are encouraged to view these documents for more information about specific conservation actions those plans recommend. These plans remain in place and are largely relevant especially for planning purposes. For many sections of this NRI, detailed information about natural resources already exists in one or more of those plans and the CSTF did not desire to simply reprint that material. Instead, this NRI should be seen as a companion to, or for some resources an update to, the natural resource conditions described in those plans. Some sections of this NRI highlights information from those other plans and references to them are noted where additional detail can be found elsewhere.

Each chapter identifies the relevant plan and offers a reference and a weblink to that plan for those seeking additional information. This NRI includes a set of updated maps that should serve as a consolidated, definitive reference that in many cases have information which is more current than those printed in previous plans.

New Paltz NRI Components

Geology and Soils

- Topography
- Slopes
- Bedrock
- Surficial Geology
- Soils and Soil Drainage

Water Resources

- Watersheds
- Streams and Riparian Areas
- Floodplains
- Wetlands
- Aquifers and Drinking Water

Habitats and Wildlife

- Regional Biodiversity
- Local Biodiversity
- Forested Habitats
- Meadow Habitats
- Stream Habitats
- Local Species

Climate Resiliency

Conserved and Public Land

Cultural Resources

- Recreation Lands
- Scenic Resources
- Historic Resources
- Open Spaces
- Land Cover
- Zoning
- Agricultural Resources
- Regulated Facilities

Threats to Resources/ Conservation Partners

Relevant plans referenced in this NRI are:

- 1995 Town of New Paltz Comprehensive Plan
- 2003 New Paltz Open Space Inventory
- 2004 Town Historic Resource Survey
- 2006 New Paltz Open Space Plan: A Framework for Conservation
- 2007 Northern Wallkill Biodiversity Plan
- 2007 Town and Village of New Paltz Buildout and Fiscal Analysis
- 2007 Ulster County Open Space Plan: Resource Protection and Management
- 2008 Shawangunk Mountains Regional Open Space Plan
- 2010 Town of New Paltz Farmland Preservation Plan
- 2011 Draft Town of New Paltz Comprehensive Plan: Planning for a Sustainable Future...
- 2017 Draft Habitat Assessment Guidelines
- 2019 New Paltz Habitat Summary Report
- 2020 Community Greenhouse Gas Emissions Inventories: Town and Village of New Paltz
- 2020 Community Preservation Plan
- 2020 Historic Preservation and Landmarks Protected to Date List
- 2020 Woodwell Climate Center Study on Current and Future Flood Risk Under Climate Change in New Paltz, NY
- New Paltz Green Assets Plan

CHAPTER REFERENCES

Haeckel, I., & Heady, L. (2014). Creating a Natural Resources Inventory: A guide for Communities in the Hudson River Estuary Watershed. Cornell University Department of Natural Resources and New York State Department of Environmental Conservation, Hudson River Estuary Program, Natural Resources, Ithaca.

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3 HOW TO USE THE NRI

KEY CONCEPTS

- This NRI offers a local and region-wide perspective on environmental resources found in New Paltz. It is designed to be used by a variety of agencies, organizations, and individuals. The information contained in the NRI forms the foundation for planning and informed decision-making in New Paltz. It is intended to help Town and Village officials make informed decisions about projects that may impact land and environmental resources. The NRI also provides information and maps useful to those seeking subdivision, special use permit, site plan, or other local land use permits. Others will find the NRI critical to understanding local and regional environmental features and their connections to each other and to the community. The NRI is also an educational tool for traditional K-12, which can help engage youth in the natural resources in and around New Paltz.

Remember that whenever "New Paltz" is used without adding Town or Village, it refers to BOTH the Town and Village.

The maps and descriptive information contained in the NRI can be incorporated into all levels of decision-making and planning by:

- landowners who want to manage their land to protect and enhance natural resources;
- the Town and Village Boards, Planning Boards, Zoning Board of Appeals, EnCB, and other municipal officials and committees involved in making conservation decision-making, land use policy, regulatory decisions, and conducting State Environmental Quality Reviews (SEQR). The NRI will also be useful:
 - by informing implementation of the Open Space Plan or the Community Protection Fund (CPF);
 - to assist the Climate Smart Communities Task Force work on climate adaptation and resilience planning and policy development;
 - as a reference document for planning purposes; and
 - to inform future updates to land use regulations that may be developed.
- other municipalities for region-wide planning and intermunicipal cooperation;
- conservation organizations considering new conservation projects in the Town;
- people purchasing, selling, or developing land in Town; and
- the general public interested in learning more about New Paltz.

Although not detailed enough to offer all the specific information that may be needed in a planning review process, the NRI can be useful for environmental review, and will help in the understanding of how a particular proposed project relates to the larger environment on and off-site. It can also provide information that will identify when additional site assessments may be needed. The NRI is designed to be used by a variety of agencies, organizations and individuals and recognizes that different audiences may use the NRI in different ways and for different purposes as described below.

General Public and Landowners

The NRI can be a very useful tool for the general public and landowners who desire to learn about the many natural resources in New Paltz. Together, the maps and the narrative offer in-depth information about what the natural resources in New Paltz are, where they are located, and how they work together. This can be vital information to those people seeking to do conservation planning or land management with wildlife and natural resource protection goals in mind. The NRI can inform and encourage stewardship of nature by the public and landowners. For example, landowners can use the NRI to help them restore streamside vegetation, maintain buffer areas along streams, reduce mowing around aquatic habitats, or other stewardship activities.



A critical purpose of the NRI is to help residents and landowners understand the New Paltz landscape and environment so that there is more appreciation of what and where our unique and important resources are. From this information, forest management plans, agricultural best management practices, and habitat improvement or restoration planning can be effectively developed and carried out.

The maps and narrative contained in the NRI can also help inform those who are purchasing or selling land as well. The NRI can be a resource for them to better understand the features, opportunities, or sensitivities of the property they are interested in. And there are many in our community interested in learning more about the resources around them, so the NRI can be considered a type of 'local field guide' for them to do so.

Through an understanding of where and what New Paltz's natural resources are, activities such as (but not limited to) forest management, land clearing, alteration of stream-side natural vegetation, or mowing/brush-hogging of non-agricultural meadows could be planned to minimize adverse changes or impact.

Elected and Appointed Officials

This NRI will be an important tool to be used by the many committees working on behalf of New Paltz's environment including the EnCB, Climate Smart Community Task Force, CWOSP, and others for on-going conservation planning and stewardship in the community. Because the NRI compiles and inventories natural resources information in one place, that up to this time, was included in a variety of other documents and studies, it will be an important foundation for ongoing proactive conservation measures.

1. **Elected Officials.** Our elected officials regularly make decisions or initiate programs that involve one or more natural resources in the Town and Village. The NRI can inform them on what and where natural resources are that need to be considered. It can provide important details on our resources that should be considered when they make land use policies, conduct local planning activities such as updating the local comprehensive plan, or embark on a capital project that involves use or changes in

land resources. The NRI will be useful to help elected officials implement conservation planning on Town lands, and to continue to be proactive in supporting New Paltz's environment. The Boards can also refer to the NRI for information they will need to complete SEQR analyses that may be required prior to taking certain actions (as per 6 NYCRR Part 617, SEQRA).

2. **Appointed Officials.** Local Boards such as the Clean Water and Open Space Protection Commission (Town), New Paltz Climate Smart Task Force (Town and Village), Community Preservation Fund Advisory Board (Town and Village), Environmental Conservation Board (Town), Environmental Policy Board (Village), Historic Preservation Commission (Town and Village), Shade Tree Commission (Village), and the Bicycle and Pedestrian Committee (Town and Village) will all benefit from having maps and descriptions of natural resources to aid them in carrying out their work. The NRI can be referred to as the most up-to-date and comprehensive collection of natural resource information in the Town and Village.

The NRI can also be used to help in land development project review. In both the Town and Village, local land use laws authorize their Planning Board to review and approve development projects needing subdivision, site plan and special use permit approvals. Both municipalities also have Zoning Boards of Appeals that are authorized to interpret zoning, hear appeals, and issue area or use variances. The NRI can assist both Planning Boards and Zoning Boards of Appeals to conduct any SEQR environmental analysis required during project review.

However, the NRI is a guide, and not a replacement for site-specific survey and inventory information. The maps and narratives can be used to help identify potential natural resources that need to be evaluated both on and near a potential development site. This NRI compiles all maps and background information in one document for ease of use by these boards.

Organizations and Agencies

Many organizations and agencies carry out a variety of activities and projects that relate to New Paltz's natural resources. The NRI can be a useful reference to those as well. These include the Ulster County Environmental Management Council, Ulster County Department of the Environment, Wallkill Valley Land Trust, Open Space Institute, Hudsonia, Cornell Cooperative Extension, SUNY New Paltz, Friends of the Shawangunks, Mohonk Preserve, Ulster County Land Trust, Scenic Hudson, Inc., The Nature Conservancy, and many others. The NRI can be particularly valuable to them to help them understand both the broader ecology and environment of the area and site-specific resources they need to be aware of. One strength of having an NRI is that all the individual natural resources can be understood in the context of and interaction with other natural resources. As such, the NRI can be a particularly important tool for these agencies and organizations.

Applicants

This NRI can be very useful to all applicants seeking permits for a new land use in New Paltz. All site plan, special use permit, and subdivision approvals by a Planning Board, and variances issued by a Zoning Board of Appeals require consistency with local land use laws and an environmental review. In New Paltz, significant development standards are in place to promote protection and conservation of the Town's and Village's natural

resources. This NRI can be a particularly important aid not only to provide information about the environment to enable quality site and project design consistent with those resources, but to provide information they will be required to submit as part of their land development applications.

It is hoped that through use of this NRI, environmental features can be better protected when land is developed by promoting knowledge of what and where these resources are. This will be especially helpful when used in the earliest stages of project planning. It is also hoped that use of the NRI data can help applicants have a more complete application submission to the permitting board so that the project review can be as accurate and timely as possible. This NRI, together with tools such as the online NYS DEC EAF Mapper (<https://gisservices.dec.ny.gov/eafmapper/>) can aid in the accurate preparation of Part I of the required SEQR environmental assessment form.

Using the NRI with Planning Board or Zoning Board of Appeals applications

The following section is designed to further the use of this NRI by applicants seeking a site plan approval, special use permit, subdivision approval, wetlands permit, or other land use approval. The maps and narrative can be very helpful in providing information required for submissions, site designs, SEQR and other processes. Both the Town and Village have several local laws where use of this NRI and its maps would be helpful to project review applicants. The chart below outlines and lists local laws correlated with appropriate sections of this NRI.



Table 1: Table showing how the NRI and its maps can provide supportive information related to various land use regulations in New Paltz.

LOCATION	LOCAL REGULATION ⁽¹⁾	BRIEF DESCRIPTION	NRI SECTION	ASSOCIATED MAP(S)	NOTES
TOWN OF NEW PALTZ	Chapter 44: Agriculture and Open Space Preservation and Acquisition	This provides mechanisms to protect assets of the Town, so residents have “water that is clean, plentiful and sustainable; farm and forestry industries that are strong and sustainable; habitats for diverse plants and animals; recreational opportunities that are harmonious with the land's natural state, historical, cultural and scenic assets and variety; and educational and research opportunities about the natural world and our agrarian economy”	All Sections	All Maps	
TOWN OF NEW PALTZ	Chapter 82: Flood Damage Prevention	This law seeks to reduce potential and/or actual damage due to flood conditions in specific areas.	Section 5.2	Map 10	The formally adopted FIRM Maps are the official maps establishing flood hazard areas. NRI Map 10 should be used for information purposes only.
TOWN OF NEW PALTZ	Chapter 116: Stormwater Management and Erosion and Sediment Control	This establishes minimum stormwater management requirements and controls	Sections 4 and 5	Map 6: Bedrock Geology Map 7: Surficial Geology Map 8: Soil Drainage Map 9: Watersheds and Water Quality Map 11: Wetlands Map 12: Drinking Water	This law requires development of a Stormwater Pollution Prevention Plan that meets NYS requirements. Specific on-site calculations are required, but the NRI maps can generally inform an applicant about the physical resources on the site.
TOWN OF NEW PALTZ	Chapter 121: Subdivision	This establishes the procedures and design standards for subdividing any parcel of land into two or more lots. Applicants would find the NRI helpful especially for helping with submission requirements of Chapter 121-14 and	All Sections, but particularly sections 4,	All maps, but particularly Map 4: Topography Map 5: Steep Slopes	

Table 1: Table showing how the NRI and its maps can provide supportive information related to various land use regulations in New Paltz.

LOCATION	LOCAL REGULATION ⁽¹⁾	BRIEF DESCRIPTION	NRI SECTION	ASSOCIATED MAP(S)	NOTES
		15 and with Article V Design Standards (121-19) related to character of land, preservation of natural features, watercourses, and floodplains.	5, 6, 7 and 10	Map 10: Floodplain and Riparian Areas Map 11: Wetlands Maps 13-17 Habitats Map 22: Important Open Spaces Map 27: Agricultural Parcels and Soils	
TOWN OF NEW PALTZ	Chapter 130: Tree Conservation	This law's purpose is to preserve the many important roles that trees play in the environment along public highway corridors in the Town.	Section 6.1 and Section 10.4	Map 14: Forests Map. This Map will help identify large, unfragmented forested areas that should be preserved.	A 75-ft corridor along all public highways in the commercial and industrial zones of the Town, and 55-ft along all other Town roads are subject to the Tree Conservation Law. The NRI can help all understand the ecological and cultural role these treed areas play.
TOWN OF NEW PALTZ	Chapter 139: Wetlands and Watercourses	This law's purpose is to prevent the despoliation and destruction of wetlands, waterbodies and watercourses, and associated buffer areas, collectively referred to as "regulated areas," recognizing their varying ecological, water quality, and recreational values. The Town of New Paltz regulates activities that may cause a substantial adverse effect on the function served by regulated areas or their benefits to protect the health, safety, and well-being of the citizens of the Town of New Paltz.	Section 5, Section 6.4, Section 7, and Section 10.4	All maps in the NRI show wetlands and watercourses. Map 10: Floodplains and Riparian Areas, Map 11: Wetlands, Map 12: Drinking Water, Map 16: Stream Habitats, Map 17: Important biodiversity Areas and Map 22: Important Open Spaces can be particularly helpful.	

Table 1: Table showing how the NRI and its maps can provide supportive information related to various land use regulations in New Paltz.

LOCATION	LOCAL REGULATION ⁽¹⁾	BRIEF DESCRIPTION	NRI SECTION	ASSOCIATED MAP(S)	NOTES
TOWN OF NEW PALTZ	Chapter 140: Zoning	In addition to other health, safety, general welfare and community purposes, the zoning establishes regulations to create open spaces and recreation areas; protect and enhance existing wooded areas, scenic areas, and waterways; maintain current character and natural beauty; and ensure development is consistent with the Town's Comprehensive Plan.	All Sections	All Maps	In particular, the NRI can provide more specific information required for 140-52 (B) (Site Plan Review Application Requirements) and 140-55 (E) (Special Use Permit)
TOWN OF NEW PALTZ	Chapter 140-132: Steep Slopes	The purpose of this law is to preserve steep slopes to the greatest extent practicable and to regulate their use to protect the public interest by minimizing detrimental effects of disturbance and development of these areas. This section is intended to protect the public from the potential negative impacts of the erosion, siltation, pollution of water supplies, slope failure, increase in downstream runoff, alteration of scenic views, and destruction of potentially significant habitat, which may result from disturbance of steep slopes.	Section 5.2	Map 5	
VILLAGE OF NEW PALTZ	Chapter 105: Environmental Quality Review	This ensures for the evaluation of potential environmental impacts of certain development projects and establishes a local Type I list of actions for SEQR	All Sections	All Maps	
VILLAGE OF NEW PALTZ	Chapter 178: Subdivision of Land	This establishes the procedures and design standards for subdividing any parcel of land into two or more lots. Applicants would find the NRI helpful especially for helping with submission requirements of Article IV 178-17 (Design Standards and Required	All Sections	All Maps but particularly Map 4: Topography Map 5: Steep Slopes Map 10: Floodplain and Riparian Areas	The NRI can be helpful in designing subdivisions that preserve the character of the land, as well as preserve natural cover and existing features (178-17). The NRI can help in the

Table 1: Table showing how the NRI and its maps can provide supportive information related to various land use regulations in New Paltz.

LOCATION	LOCAL REGULATION ⁽¹⁾	BRIEF DESCRIPTION	NRI SECTION	ASSOCIATED MAP(S)	NOTES
		Improvements and Article V Documents to be Submitted), as related to character of land, preservation of natural features, watercourses, and floodplains.		Map 11: Wetlands Maps 13-17 Habitats Map 21: Historic Resources Map 22: Important Open Spaces Map 27: Agricultural Parcels and Soils	identification of features on a parcel which would “enhance the attractiveness of the site or the community as a whole, such as trees, watercourses, ponds, historic places and similar irreplaceable assets” and minimize grading and removal of trees.
VILLAGE OF NEW PALTZ	Chapter 191: Trees	This law’s purpose is to preserve the many important roles that trees play in the environment along public highway corridors in the Village	Section 6.1 and Section 10.4	Map 14: Forests	Trees are protected in a 20’ corridor along streets in the Village and in any buffers established by zoning. The NRI can help all understand the ecological and cultural role these treed areas play.
VILLAGE OF NEW PALTZ	Chapter 212: Zoning	In addition to other health, safety, general welfare and community purposes, the zoning establishes regulations to create open spaces and recreation areas; protect and enhance existing wooded areas, scenic areas, and waterways; maintain current character and natural beauty; and ensure development is consistent with the Town’s Comprehensive Plan.	All Sections	All Maps	In particular, the NRI can provide more specific information required for 212-23 (A) (Site Plan Review Application Requirements) and 212-39 (A) (Special Use Permit)
BOTH TOWN & VILLAGE	6 NYCRR part 617 (SEQRA)	This NYS Law requires that all discretionary actions taken by a municipality be analyzed for potential environmental impacts.	All Sections	All Maps	Together with the NYS DEC EAF Mapper, this NRI can be used to assist applicants in answering Part I of the EAF questions.

(1) This table includes information about those local laws in the Town and Village that have components, text, or requirements related to the natural resources in New Paltz. This table does not reflect all local laws and is intended only to illustrate how the NRI can be used by those seeking permissions for land uses or activities in the municipality.

4 REGIONAL CONTEXT AND BASE MAP

KEY CONCEPTS (MAPS 1-3)

Maps 1-3 present basic information on land cover, protected lands (including the Mohonk Preserve), and waterbodies. They also present an aerial photograph of the Town and a map showing the relationship of New Paltz to the broader region. These maps are provided to introduce location and basic features found in New Paltz.

LOCAL AND REGIONAL CONTEXT

New Paltz is a moderately developed community located in Ulster County in the Mid-Hudson Region of New York State on the eastern side of the Shawangunk Ridge. The community consists of the Village of New Paltz and the surrounding Town of New Paltz. Its major population centers are the Village of New Paltz and the hamlets of Butternut, Springtown, Plutarch, and Ohioville. The majority of the population resides in the central and eastern portion of the Town. The location of New Paltz is midway between New York City to the south and Albany to the north. The New York State Thruway (Route 87) passes through the eastern portion of New Paltz and an interchange within the community provides quick and direct access to either of these or other metropolitan areas. Other major highways include NYS Routes 32, 299 and 208 and County Route 7.

The Town of New Paltz covers 34 square miles. The shape is roughly that of a trapezoid with the incorporated Village of New Paltz occupying an irregular shaped, 1.75 square mile section in the center of the community, on the east bank of the Wallkill River. The Town of New Paltz is about 8 miles in length in the north-south direction and about 6.5 miles wide east west at its farthest points. New Paltz, the largest community in southeastern Ulster County, provides retail functions for the local area and the State University of New York at New Paltz serves as a regional education center.

New Paltz is bounded by the Town of Gardiner on the south, the Towns of Rochester and Marbletown on the west, the Towns of Rosendale and Esopus on the north and the Town of Lloyd on the east.

The major natural features that define New Paltz are the Shawangunk Ridge to the west, the Wallkill River, and the Wallkill River Valley in the central portion of the Town, and the Swarte Kill and wetlands at the eastern boundary with Lloyd. New Paltz has significant forested areas (discussed further in Chapter 6) interspersed with agricultural lands, and low-density residential development. Of the total 34 square miles, approximately 3 square miles are permanently protected from development, with an additional 3.7 square miles part of the Mohonk Preserve.

ABOUT MAPPED FEATURES (MAP 1)

Public and Protected Lands with Public Access: These are lands protected by various organizations and agencies that have trails or other public access allowed. Where land is protected, Map 1 (and subsequent maps) show the entire parcel as being protected. Some protected parcels allow no public access, while others do allow for it. For example, the River to Ridge Trail runs through Open Space Institute properties that also have active agricultural activities on it. Where public access along a trail is allowed, people are allowed only on those trails – not on other locations in the parcel. This mapped layer should not be interpreted to mean that all areas on the parcel have public access.

Mohonk Preserve: This is an 8,000 acre preserve that protects a large portion of the Shawangunk Ridge region. It is owned and managed by a Board of Directors and multiple staff. The lands and facilities are open for hiking, biking, climbing, horseback riding, running, cross country skiing and snowshoeing for a fee or as a member. The purpose of the Mohonk Preserve is to ‘foster conservation, deepen connections, be inclusive, and nurture resilience to fulfill our mission to protect the Shawangunk Mountains region and inspire people to care for, enjoy and explore their natural world” (Mohonk Preserve Strategic Plan: Vision 2020 and Beyond). The Preserve is a unique landscape that protects a variety of key environments including cliff and talus slopes, ice caves, ravines, pitch pine barrens, historic and prehistoric places, bird habitat and migration routes, streams, swamps, wetlands, and woodland ponds.

Other Protected Land: These are lands that are primarily protected by the Town of New Paltz, the Open Space Institute, and the Wallkill Valley Land Trust.

SUNY New Paltz: The State University of New York (SUNY) New Paltz campus is located in the Village of New Paltz. SUNY New Paltz occupies a large portion of the Village and is a semi-public resource and an important land manager.

Streams, Waterbodies and Wetlands: These features, which represent the surface waters within New Paltz, are shown on Map 1, as well as all subsequent maps, but are further described in Chapter 5.

ABOUT MAPPED FEATURES (MAP 2-3)

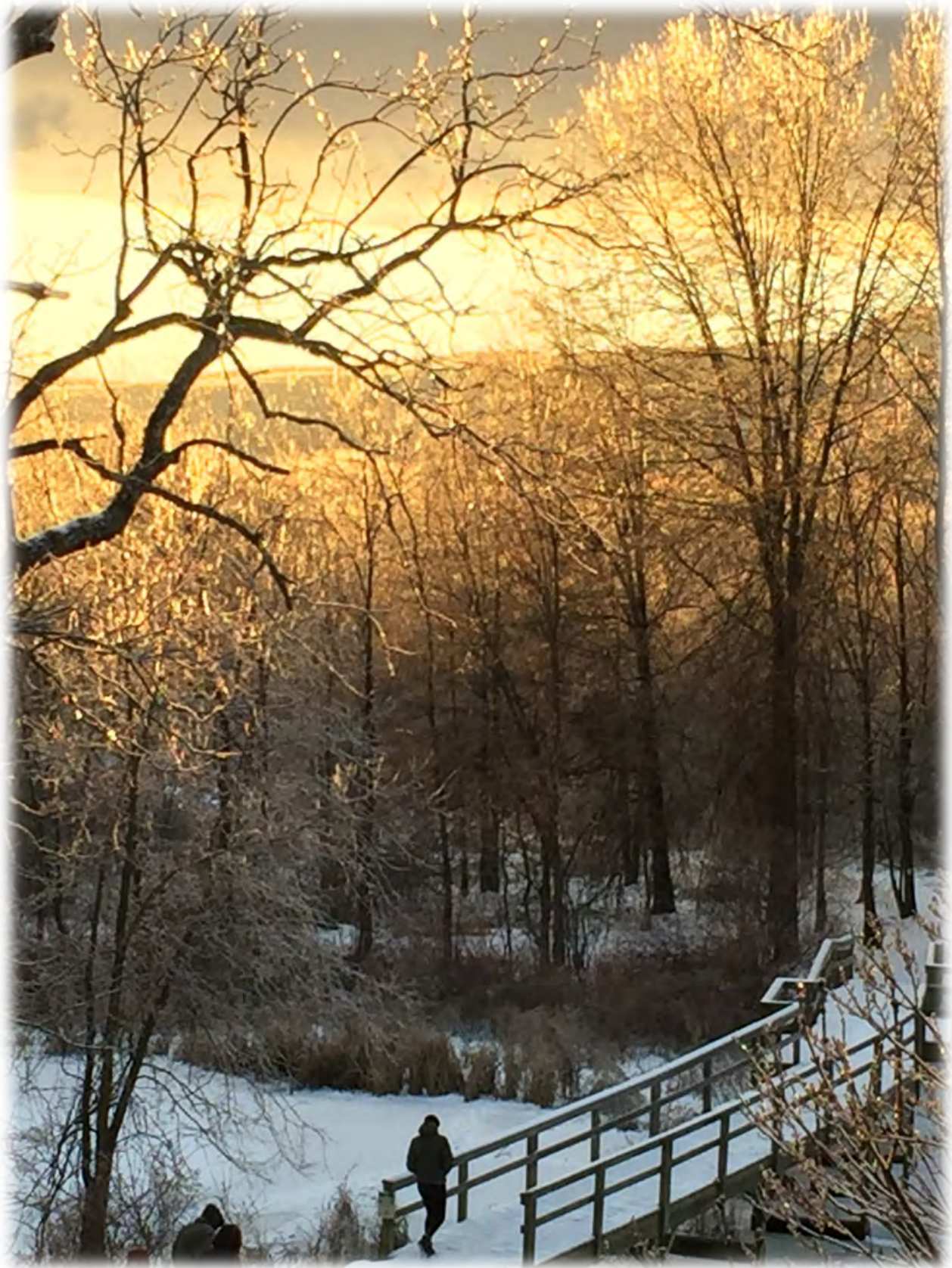
Aerial Image (Map 2): This map provides a bird's-eye view of New Paltz, displaying digital orthoimagery taken in the summer of 2019. Aerial imagery provides the viewer a detailed view of the Town and Village and their features and can help to distinguish different types of vegetation and land use, down to the location of buildings. It can serve as a reference for comparison with features shown on other maps in the Natural Resources Inventory.

Land Cover Classification (Map 3): This mapped layer comes from a 2016 database from the United States Geological Survey. It offers detailed vegetation and land cover patterns and represents natural and semi-natural vegetation classes. Classification of land cover used multi-spectral satellite data at 30-meter resolution. Table 2 describes these land use classifications.

Table 2. Description of Land Use Classifications in the Region Shown on Map 3.

Land Class	Description
Open Water	Areas of open water, generally with less than 25% cover of vegetation or soil.
Developed, Open Space	Areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.
Developed, Low Intensity	Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20% to 49% percent of total cover. These areas most commonly include single-family housing units.
Developed, Medium Intensity	Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50% to 79% of the total cover. These areas most commonly include single-family housing units.

Table 2. Description of Land Use Classifications in the Region Shown on Map 3.	
Land Class	Description
Developed, High Intensity	Highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80% to 100% of the total cover.
Barren Land (Rock/Sand/Clay)	Areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits and other accumulations of earthen material. Generally, vegetation accounts for less than 15% of total cover.
Deciduous Forest	Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species shed foliage simultaneously in response to seasonal change.
Evergreen Forest	Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species maintain their leaves all year. Canopy is never without green foliage.
Mixed Forest	Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. Neither deciduous nor evergreen species are greater than 75% of total tree cover.
Shrub/Scrub	Areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage or trees stunted from environmental conditions.
Grassland/Herbaceous	Areas dominated by graminoid or herbaceous vegetation, generally greater than 80% of total vegetation. These areas are not subject to intensive management such as tilling but can be utilized for grazing.
Pasture/Hay	Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20% of total vegetation.
Cultivated Crops	Areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20% of total vegetation. This class also includes all land being actively tilled.
Woody Wetlands	Areas where forest or shrubland vegetation accounts for greater than 20% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.
Emergent Herbaceous Wetlands	Areas where perennial herbaceous vegetation accounts for greater than 80% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.





Town and Village of New Paltz Natural Resources Inventory

Map 1: Base Map

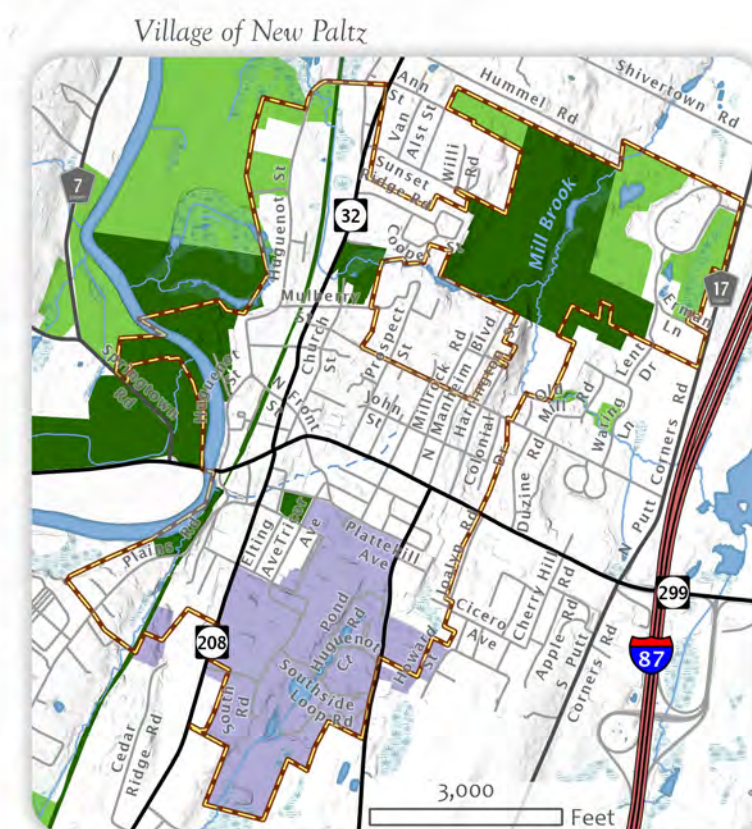


Data Sources - Wetlands: USFWS 2018; Surface Water, Rivers and Streams: Ulster County 2020; Road centerlines: NYS GIS Program Office 2019; Protected lands: Town of New Paltz, Mohonk Preserve, WVL, Ulster County Real Property; Hillshade: Esri Living Atlas 2020

0 2,000 4,000 8,000
Feet

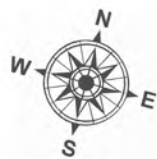
Map prepared by Upstate GIS - June 2021
with Community Planning & Environmental Associates

For Conceptual Planning Purposes Only



- Municipal Boundaries
- Waterbodies
- Streams
- Buried Stream
- Wetlands
- SUNY New Paltz
- Protected Land with Public Access
- Mohonk Preserve
- Other Protected Land

Funding for the grant award is provided by the
New York State Environmental Protection Fund,
NYSDEC Hudson River Estuary Program



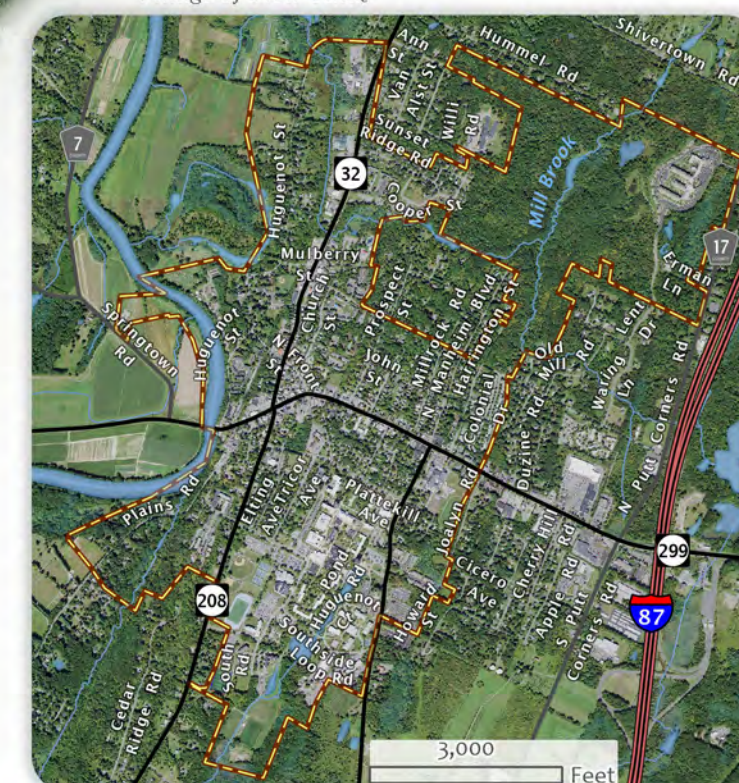
Town and Village of New Paltz Natural Resources Inventory

Map 2: Aerial Image



-  Municipal Boundaries
-  Waterbodies
-  Streams
-  Wetlands

Village of New Paltz



Data Sources - Image: USDA NAIP 2019; Wetlands: USFWS 2018; Surface Water, Rivers and Streams: Ulster County 2020; Road centerlines: NYS GIS Program Office 2019; Hillshade: Esri Living Atlas 2020

0 2,000 4,000 8,000
Feet

Map prepared by Upstate GIS - June 2021
with Community Planning & Environmental Associates

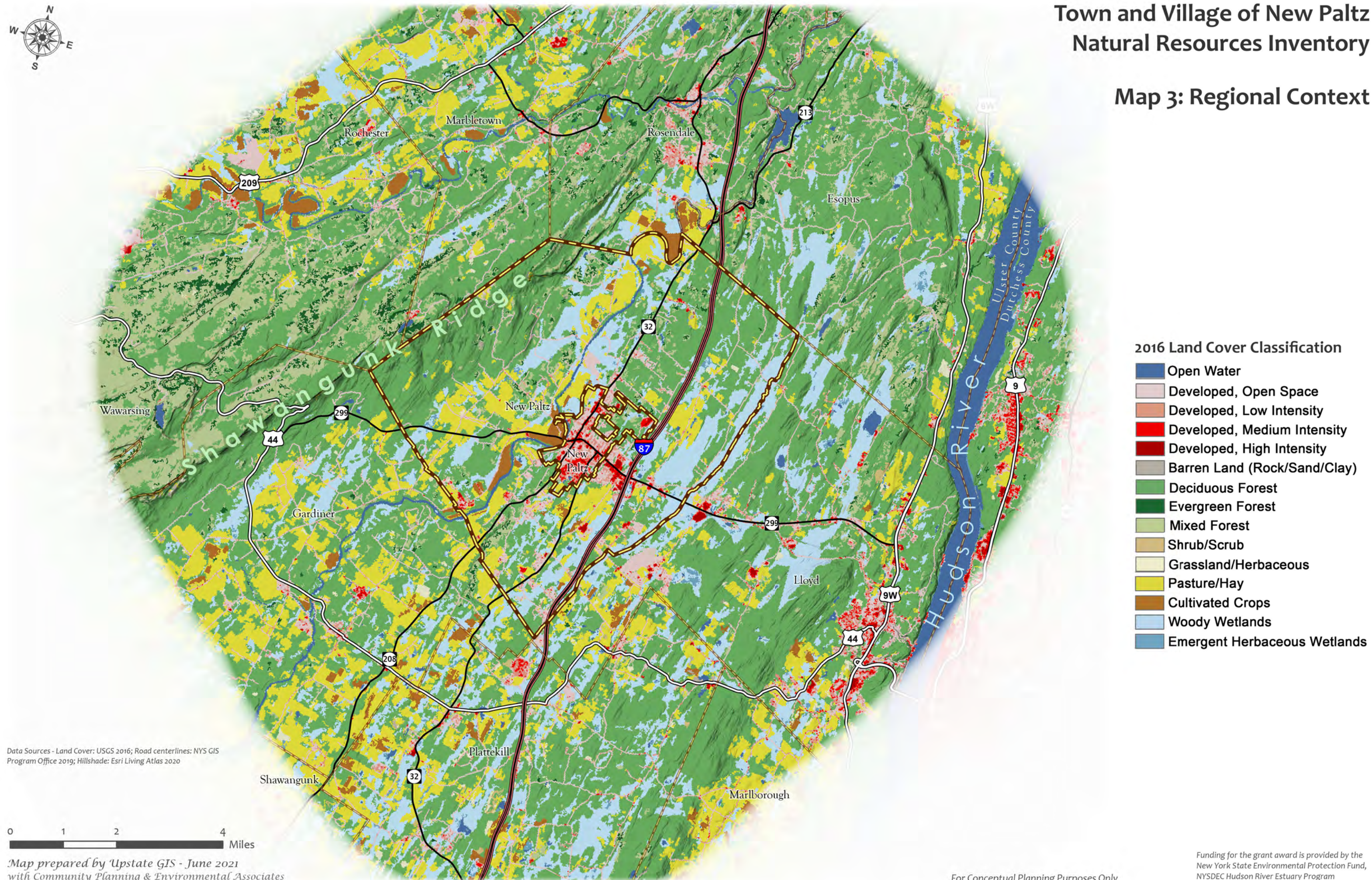
For Conceptual Planning Purposes Only

Funding for the grant award is provided by the New York State Environmental Protection Fund, NYSDEC Hudson River Estuary Program



Town and Village of New Paltz Natural Resources Inventory

Map 3: Regional Context



5 PHYSICAL/GEOLOGICAL RESOURCES

KEY CONCEPTS (MAP 4-8)

The Town and Village of New Paltz are largely shaped by the physical character of the area due to dramatic changes in elevation, slope, and soils. These in turn are influenced by the presence of the Hudson River tributaries including the Wallkill, Swarte Kill, and Kleine Kill rivers and their valleys, and the Shawangunk Ridge. This chapter provides an overview of the topography, geology and soils that contribute to the character of New Paltz.

5.1 TOPOGRAPHY

KEY CONCEPTS (MAP 4)

Topography is the arrangement of hills, valleys, and other elevational surface features of the landscape. Topography strongly influences an area's environment, visual character, settlement patterns, land uses, and recreation opportunities. Disturbances to topographic features, especially on steep slope areas, can impact water quality of nearby streams, wildlife use of an area, and viewsheds. Elevation refers to the height of the land above sea level. Changes in elevation influence ecological systems by determining different microclimates, vegetation, and habitats.

ABOUT MAPPED FEATURES (MAP 4)

Contour Lines on the map show the elevation or height of any location as measured above sea level at 20-foot intervals. The topographic map shows valleys and hills and where contour lines are closer together, steeper slopes. Map 4 shows the dramatic changes in elevation and slope east to west in elevation and steepness in New Paltz.

MORE ABOUT TOPOGRAPHY, ELEVATION, AND CONTOURS IN NEW PALTZ

New Paltz lies within the Hudson-Mohawk Lowlands Physiographic Province. This is one of 13 physiographic provinces located in New York. This lowland area is bounded almost everywhere by uplands. Its low relief is caused by glacial deposits. The highest elevation in town is 1,355 feet above sea level (asl), located at the top of the Shawangunk Ridge. East of the ridge, the Wallkill Valley has the lowest elevation in Town (169 ft asl) and relatively level terrain. Further east from the Wallkill River Valley, both elevation and slope increase to locations just past where the New York State Thruway passes North/South through the Town. In the eastern most portion of the Town, elevation again rises and includes a series of broken north-south trending ridges, with the northeastern corner of New Paltz becoming very hilly and reaching maximum heights of nearly 600 feet.

For more information on Town regulations related to physical and geological resources see <https://ecode360.com/NE1058>

- Steep Slope Protections, Town Zoning Article XV, Section 140-132 to 140-145
- Wetlands and Watercourse Protection, Chapter 139
- Stormwater Management and Erosion and Sediment Control Chapter 116 (Attachment 1)
- Town Zoning Article XI Wallkill River Recreation Overlay District
- Town Subdivision 121-25 Residential Cluster Subdivision Design

For more information on physical and geological resources see the following plans at

<https://www.townofnewpaltz.org/environmental-conservation-board> and <https://www.villageofnewpaltz.org/environmental-policy-board/>

1994 Comprehensive Master Plan for the Village of New Paltz

1995 New Paltz Comprehensive Master Plan.

2011 Draft Town of New Paltz Comprehensive Plan.

The Shawangunk Ridge, with elevations within New Paltz of over 1,000 feet asl, rise steeply from the broad Wallkill Valley. Elevations decrease rapidly as the slopes descend to the Wallkill Valley to the east. The topographic divide where the river valley meets the mountainside is referred to as the break-in-slope; in several places, slopes are more than 60 percent and the elevations drop 300 feet in less than a tenth of a mile (Town Comprehensive Plan 2011).

The Butternut-Canaan Foothills are centered between the ridge and the Wallkill River. The foothills are characterized by moderately-sloping wooded hillsides that descend gradually from the break-in-slope to the Wallkill flats. The river's floodplain widens to over a mile in some places, rising less than 10 feet above the river (Town Comprehensive Plan 2011).

The Platte Kill Gorge is another significant topographic feature in New Paltz. It is a steep ravine on the southern end of town where the Platte Kill enters the Wallkill River floodplain. In some places the sides of the ravine rise nearly 100 feet over a horizontal distance of less than 200 feet.

5.2 STEEP SLOPES

KEY CONCEPTS (MAP 5)

Slope expresses the relationship between the vertical rise of land to its horizontal run, or distance (rise over run). While a topographic map and its contour lines also show areas of steepness, slope can be specifically calculated and mapped as percent slope. Slopes are an important physiographic feature of an area because they can be naturally unstable areas. Gravity, wind, water, or disturbance, whether natural or man-made, can cause soil movement, erosion, or soil slippage. Steep slopes often have poor soils and are vulnerable to damage resulting from erosion. Disturbance of steep slopes can cause increased erosion when next to streams, resulting in decreased water quality.

The percent slope in a given area significantly influences land development potential, and cut and fill activities, roads, driveways, septic system development, removal of vegetation, and grading can have widespread adverse environmental impacts if not conducted carefully. Adverse impacts could include loss of topsoil, degradation of water quality, silting of wetlands, alteration of drainage patterns, obstruction of drainage structures, intensification of flooding, and loss of habitats and biodiversity.

ABOUT MAPPED FEATURES (MAP 5)

The Town of New Paltz defines steep slopes as land having 15% or greater topographical gradient (§139-4 and §140-134) and regulates these areas in Article XV (Steep Slope

What does Shawangunk Mean?

Pronounced SHONG-gum, there is no clear consensus on the origin for the name of the ridge that dominates the New Paltz viewshed. The first documented use of the name was in 1682, though with various spellings. As for the meaning, three possible interpretations of the name have been put forth:

1. Of the south or southerly (based on Algonquian dialects for *Oshaw*, and *oshawan*, or *oshawan-ung* – perhaps referring to the tract lying south of the Millbrook Mountain precipice
2. Edge of the hill or mountain, based on Munsee *wshawyaawunge* or *wshuyuhwungGEHwung*
3. Smoky air, based on *schwawank* according to the Lenape linguist Raymond Whritenour- smoky could mean hazy or foggy, and may have referred to the atmospheric conditions (due perhaps to mountain fire?) on the day Bruyn visited the site to negotiate with the Indians.

(Fried 2005)

Regardless of the historical meaning or origin, Shawangunk has become synonymous with the New Paltz region.

Protection) of Town Zoning. The Town's zoning recognizes that protection of steep slopes "is a matter of concern to the entire Town of New Paltz." Those regulations establish that "steep slopes, including vegetation on rock cliffs, are an important environmental feature that contribute to the character of the Town. Overdevelopment or improperly managed disturbances are detrimental to the character of the Town and can result in public and private expenditures for corrective measures." Map 5 details different categories of steep slope: 15% to 25% and covering 3/10 of an acre or more; > 25% and covering 2/10 of an acre or more; and Cliffs (>100%).

MORE ABOUT STEEP SLOPES IN NEW PALTZ

The majority of steep slopes, especially those greater than 25%, are located on the Shawangunk Ridge. Cliffs, where slope is greater than 100%, are also dramatic topographic features found along the Shawangunk Ridge. The Platte Kill Gorge is another area of steep slopes over 25%. Parts of this gorge located in the adjacent Town of Gardiner have been mapped as a cool ravine habitat. Where the Platte Kill crosses under Route 32, the Platte Kill drops sharply in a series of falls and pools for about 800 feet with a gradient of nearly 80 feet (Spencer 1988). At the northern border of Town along the NYS Thruway, other significant slopes can be found. The Walkkill River valley and the Swarte Kill valley are mostly flat, with the occasional steep slope along the riverbank. The Village has scattered steep slopes, but that topographic feature is more prevalent along the Mill Brook south and east of Mill Brook Pond.

5.3 BEDROCK GEOLOGY

KEY CONCEPTS (MAP 6)

Geology is the study of the earth, the materials of which it is made, the structure of those materials, and the processes acting upon them. As used in this NRI, the term "geology" refers to the bedrock, unconsolidated mineral materials, and soils that constitute the basic physical structure of our landscapes. Bedrock is the hard, solid rock beneath surface layers such as soil and gravel. It is typically consolidated rock that is solid and tightly bound. Bedrock geology affects groundwater and surface water volumes and chemistry, soil conditions, habitats, and vegetation, and influences where and what land uses can occur on the surface.

MORE ABOUT MAPPED FEATURES (Map 6)

Map 6 identifies the major bedrock types in New Paltz. Bedrock types are classified and named based on their geologic origin. In New Paltz, bedrock types include the Martinsburg Formation consisting of interbedded dark-grey, shale and siltstone interbedded with greywacke, a variation of sandstone formed from deposition of muddy, fine sand that has been formed in a deep-sea trench prior to the Taconic Mountain building event. The other major bedrock is the Shawangunk Formation consisting of a coarse-grained sedimentary conglomerate and sandstone. Sedimentary rocks are formed by sediments that accumulate over long periods of time. The Shawangunk conglomerate is formed from quartz gravel and sand, deposited from mountain runoff, and cemented together over millions of years. Sandstone is a sedimentary bedrock consisting of sand or quartz



Example of the Martinsburg Formation within the Village

grains cemented together, sometimes with organic material. Shale is a sedimentary rock formed from the compaction of silt and clay.

MORE ABOUT BEDROCK GEOLOGY IN NEW PALTZ

The geology of New Paltz is summarized in the 1995 “Comprehensive Master Plan” as follows:

“New Paltz is part of the Hudson Lowland area of the Ridge and Valley province. It is underlain by Ordovician strata; mainly shale, with lesser amounts of siltstone and shale which have been folded and faulted twice. During the Pleistocene, Ulster County was covered by a continental glacier, which reached maximum thickness about 27,000 years ago. Preglacial landforms were abraded, scoured, and plucked by the ice sheet, which withdrew approximately 14,000 years ago, covering much of the County with glaciofluvial and glaciolacustrine deposits. Most soils have formed directly in glacial or glacially related deposits since the ice sheet retreated.”

As shown on Map 6, almost the entire town has graywacke and shale bedrock from the Martinsburg Formation. There is a very small area having conglomerate and sandstone in the western portion of Town on the Shawangunk Ridge. A narrow band of quartzite and sandstone bedrock can be found just outside the edge of Town along the Swarte Kill.

Bedrock is the natural feature forming the cliffs found on the Shawangunk Ridge that draws so many visitors to the ‘Gunks’. The Shawangunk Ridge, within New Paltz, consists partially of a bedrock type called the Shawangunk Conglomerate. This is made of quartz sand and pebbles held together strongly by a quartz cement. Because of the high percentage of quartz, this sedimentary rock is very resistant to erosion. Thus, as the other, less resistant, nearby formations were eroded away, this formation remained as a striking, very steep-sided ridge. Deposits on top of the bedrock are generally thin layered or even nonexistent. As a result, much of the surficial geology is simply considered bedrock. Glacial deposits, such as till and kame deposits are also present (Penhollow 2006).



Example of the Shawangunk Conglomerate on the Shawangunk Ridge

5.4 SURFICIAL GEOLOGY AND GLACIAL DEPOSITS

KEY CONCEPTS (MAP 7)

Surficial geology describes the loose material that has been transported and deposited on top of bedrock over time and the organic material that has developed in place. These materials have been deposited through the action of glaciers, by wind, by moving (fluvial) or stationary water (lacustrine), by deposits made at the base of hills by erosion, and by downslope creep (colluvial). Surficial materials also include the peat and muck that has developed from decaying organic material in wetlands.

While the bedrock geology of an area highly influences the physical relief of the landscape and the chemistry of water and soils, the surficial geology describes some of the visible landforms we see today as well as the sediments that lie beneath the ground surface. The surficial geology of the Town of New Paltz, much more so than the Village, is a natural feature that influences

critical elements of the Town's environment such as the water supplies, types of habitats, and soils suitable for agriculture. Surficial geology affects the suitability of areas for septic systems, the flow and quality of surface water and groundwater, and appropriate locations for roads and buildings.

ABOUT MAPPED FEATURES (MAP 7)

Most of the unconsolidated sediments here are remnants of the last glaciation which ended approximately 14,000 years ago. These include glacial till (unsorted material of all sizes), glacial kame (sand and gravel), and outwash (sand and gravel) left by meltwater of the receding glacier, and alluvial deposits left along streams – most notably along the Wallkill River. The features shown on the surficial geology map include:

Recent Alluvium: These are 1-10 meter thick deposits of soil left from modern streams, rivers, and small tributaries. It is oxidized fine sand to gravel, permeable, and generally confined to flood plains within a valley. In larger valleys, it may be overlain by silt and subject to flooding.

Swamp Deposits: Swamp deposits are peat-muck, organic silt, and sand located in poorly drained areas. The deposits are unoxidized, and commonly overlay marl and lake silt, with potential land instability and have a thickness of 2-20 meters.

Kame Deposits: These are mound-like hills of poorly sorted drift, made up mostly of sand and gravel deposited at or near the edge of a glacier define kame deposits. They are deposits that consist of coarse to fine gravel and/or sand, with lateral variability in sorting, texture, and permeability, may be firmly cemented with calcareous cement, and has variable thickness of 10-30 meters.

Lacustrine Silt and Clay: These are generally laminated silt and clay deposits found in lakes that were formed by the glaciers, and are generally calcareous, with low permeability, having potential land instability, and variable thickness (up to 50 meters).

Outwash Sand and Gravel: Outwash sand and gravel deposits are left behind from glacial meltwater streams. They are coarse to fine gravel with sand that is well rounded and stratified, permeable, and with a variable thickness (2-20 meters).

Till: Till is dense, unsorted clay, silt, sand, gravel, and boulders left from glaciers. They have variable texture (boulders to silt), are usually poorly sorted sand-rich deposits resulting from dry-land erosion, with permeability that varies with compaction, and with variable thickness (1-50 meters).

Bedrock: This is exposed rock that is at or near the soil surface (generally within 1 meter). It is important to understand that the bedrock areas shown on the map are not comprehensive of all exposed bedrock in New Paltz. There are many localized areas where bedrock is visible at the surface that are not depicted on this map due the scale of the map and the scale at which the data was originally acquired.

MORE ABOUT SURFICIAL GEOLOGY AND GLACIAL DEPOSITS IN NEW PALTZ

As can be seen in Map 7, glacial till is the most prevalent surficial deposit in New Paltz. Till contains a poorly sorted mixture of clay, silt, sand, and boulders, and is a relatively dense

deposit. Along the Wallkill, there are broad bands of alluvium (material transported and deposited by running water) and lacustrine silt and clay. There are several discrete, but significant areas of exposed bedrock located on the Shawangunk Ridge at the Town boundary as well as in several large areas along the Wallkill River (Map 7).

The major surficial deposit in the Village is also glacial till, with some exposed bedrock where the Wallkill forms a portion of the Village boundary. Outwash sand and gravel can be found along the Mill Brook and Mill Brook Pond. To the east along the Swarte Kill, significant wetland complexes can be found having surficial deposits of glacial till, swamp deposits, or outwash sand and gravel.

Three small areas having Kame deposits are found east of the NYS Thruway. Kame deposits are irregularly shaped hills or mounds made up of sand and gravel. These areas are often used as sources for sand and gravel needed for construction.

Surficial geology directly affects other natural features – especially those related to water resources. There is a strong connection between surficial geology and the location of unconsolidated aquifers. These aquifers (shown on Map 13 and further described in Section 6.5) occur in large sand/gravel deposits.

5.5 SOILS

KEY CONCEPTS (MAP 8)

Soils are organic or unconsolidated mineral materials that have been formed by weathering and organic processes. Soil types are distinguished from each other and classified according to depth, texture, color, chemistry, and their wetness or dryness. Soil characteristics are much influenced by the “parent” materials of origin discussed above—that is, the bedrock, surficial deposits, or organic material from which they are formed—and by topography, climate, hydrology, vegetation, and time.

Soils are at the foundation of most ecosystems, and critical to agriculture. Soils regulate water flow, influence the type and health of vegetation and habitats, dictate agricultural potential, affect forest growth, impact water quality, and support human structures such as buildings, septic systems, and roads. Soil chemistry, texture, and drainage determine where certain habitats occur, and what kinds of plants and animals they will support.

Understanding soils is also important because soil type is an excellent predictor of the occurrence of different habitat types. Soil wetness, drainage, slope, and other physical features highly influence both natural resources and the ability to be used in the built environment. Soils are the foundation for the establishment of natural communities of plants and animals as well as for critical ecological processes, from decomposition and nutrient cycling to the water cycle. Soil characteristics including acidity or alkalinity, drainage, soil texture, depth to bedrock, and slope influence the natural habitats that become established in a particular area.

Soils also play a fundamental role in determining suitability for land uses. Soil characteristics influence stability for structures, erosion risk, vulnerability to flooding, capacity to filter pollutants and wastes, and suitability for agriculture (Farmland soils are further discussed in relation to Map 27, Agricultural Resources). Consideration of soil properties is important for planning and development including designing drainage systems; siting of structures; evaluating the potential for septic systems; assessing requirements for constructing foundations, basements, and roads; and determining the feasibility of excavation among other uses.



Soils can play a key role in shaping the landscape – here poorly drained soils along the Platte Kill quickly transition to well drained soils, that often are well suited for agriculture.

Soils are also critical contributors to combating climate change. Tons of organic carbon are sequestered in soil. When we have quality soil health that increases organic carbon stocks, it would reduce carbon dioxide concentration in the atmosphere (Soils Revealed 2021). Climate change can be directly affected locally by careful land management and use of soil best management practices in land development and agriculture.

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) classifies soil within the US. The information is compiled in Soil Surveys. The “Soil Survey of Ulster County” includes detailed descriptions of each soil type and its suitability for different types of uses and development constraints. Data within the Soil Surveys that are useful for land use planning include the soils’ capability for on-site sewage treatment (septic systems) and identification of soil types that are considered prime farmland or farmland of statewide importance. The National Resources Conservation Service Web Soil Survey web mapper is another tool to learn more information on soils at the site level.

ABOUT MAPPED SOILS (MAP 8)

New Paltz has a far greater variety of soils than most communities of similar size in New York State, which may cause problems for on-site sewage disposal. Soil conditions span the whole drainage range from soils with too rapid percolation (and therefore potential pollution of aquifers) to soils with water movement so slow that septic systems are affected. Shallow depth to bedrock, presence of loose stones and unstable clay and silt soils unable to support heavy structures present other problems.

Soil classification by drainage capacity is a good way to understand both the natural conditions that develop in a given area and the man-made features that can be supported. Both natural habitats and developed areas are highly influenced by soil drainage. Map 8 shows the soil

drainage classifications in New Paltz. Drainage classes refers to the frequency and duration of wet periods. There are seven classes of soil drainage, as defined in the Soil Survey Manual as:

Excessively drained: These are soils where water is removed very rapidly. The occurrence of internal free water commonly is very rare or very deep in excessively drained soils. The soils are commonly coarse-textured and have very high hydraulic conductivity or are very shallow.

Somewhat excessively drained: These are soils where water is removed from rapidly. Internal free water occurrence commonly is very rare or very deep. The soils are commonly coarse-textured and have high saturated hydraulic conductivity or are very shallow.

Well drained: Water is removed from well-drained soils readily but not rapidly. Internal free water occurrence commonly is deep or very deep. Water is available to plants growing in these soils throughout most of the growing season in humid regions. Wetness does not inhibit growth of roots for significant periods during most growing seasons.

Moderately well drained: Water is removed from this soil type somewhat slowly during some periods of the year. Internal free water occurrence commonly is moderately deep and transitory to permanent. The soils are wet for only a short time within the rooting depth of plants during the growing season, but long enough that most mesophytic¹ crops are affected. They commonly have a moderately low or lower saturated hydraulic conductivity in the top layer.

Somewhat poorly drained: Water is removed slowly in somewhat poorly drained soils so that it is wet at a shallow depth for significant periods during the growing season. The occurrence of internal free water commonly is shallow to moderately deep and transitory to permanent. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. These soils commonly have one or more of the following characteristics: low or very low saturated hydraulic conductivity, a high-water table, additional water from seepage, or are in areas with nearly continuous rainfall.

Poorly drained: Poorly drained soils are where water is removed so slowly that the soil is wet at shallow depths periodically during the growing season or remains wet for long periods. The occurrence of internal free water is shallow or very shallow and common or persistent. Free water is commonly at or near the surface long enough during the growing season so that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil, however, is not continuously wet directly below plow-depth. Free water at a shallow depth is usually present. A shallow water table is commonly in poorly drained areas.

Very poorly drained: Water is removed from very poorly drained soil so slowly that free water remains at or very near the ground surface during much of the growing season. The occurrence of internal free water is very shallow and persistent or permanent. Unless the soil is artificially drained, most mesophytic crops cannot be grown in these soils. The soils are commonly level or depressed, and frequently ponded.

The 1995 Town Comprehensive Plan offers additional details on soils found in New Paltz: "New Paltz's soils are extremely diverse and include till derived from underlying bedrock as well as glacial outwash and lakebed deposits. There are four major general soil associations in the community, and each association also includes minor soils. These four groups are the Bath-Nassau Association, located mainly east of Route 32; the Lorstown-Arnot-Mardin found on the eastern slopes of the Shawangunk Ridge; the Churchville-Rhinebeck-Madalin in the south-central area; and the Hoosic-Schoharie-Chenango in the central valley."

¹ Mesophytic plants are those that grow in an environment having a moderate amount of moisture.

MORE ABOUT SOILS IN NEW PALTZ

Some of the high elevation/steep slope areas along the ridges in New Paltz are somewhat excessively drained. Much of the rest of the Ridge, as well as the Wallkill River valley contain predominantly well drained soils. Valley areas are very poorly drained to somewhat poorly drained. Wetland areas overlap those locations having very poorly drained soils.

In addition to soil wetness, depth of soil to bedrock is another important soil characteristic that influences vegetation and land uses such as agriculture and building. Shallow soils pose challenges for building foundations and other structures. Prime agricultural soils are typically deep and well to moderately drained soils (See Map 28 and Section 10.6 for further discussion on agricultural soils).

The Soil Survey is the major information source used by the Ulster County Health Department in determining the extent and location of on-site septic systems. The Soil Survey and the Ulster County Health Department use permeability (water movement through the soil), slope, and depth to bedrock, depth to seasonal high-water table, floodplain location and soil quantity in their decision making. The Ulster County Health Department often requires above ground septic systems in New Paltz.

The NRI Story Map depicts the soil drainage classifications in New Paltz, similar to Map 8, however if the user clicks on a given area additional soil characteristics will be displayed such as depth to bedrock, agricultural soil types and other data where available.



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Town and Village of New Paltz Natural Resources Inventory

Map 4: Topography



- Municipal Boundaries
- Waterbodies
- Streams
- Wetlands
- 100-ft Contours
- 20-ft Contours
- High / Low Elevation Points

Elevation above mean sea level

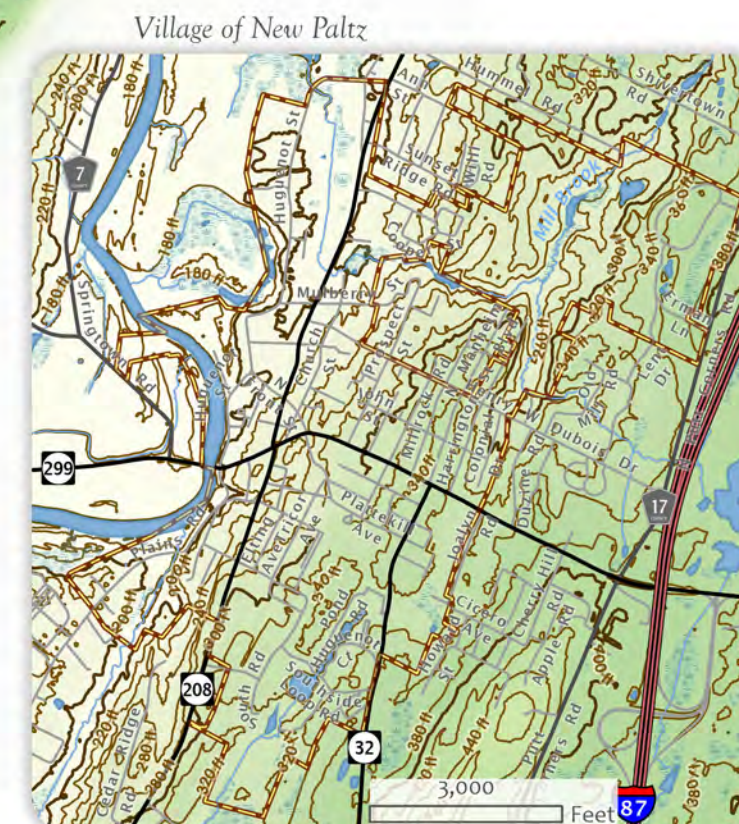


Data Sources - Contours: Ulster County 2016; Elevation: USGS 2015;
Wetlands: USFWS 2018; Surface Water, Rivers and Streams: Ulster
County 2020; Road centerlines: NYS GIS Program Office 2019; Hillshade:
Esri Living Atlas 2020

0 2,000 4,000 8,000
Feet

Map prepared by Upstate GIS - June 2021
with Community Planning & Environmental Associates

For Conceptual Planning Purposes Only



Funding for the grant award is provided by the
New York State Environmental Protection Fund,
NYSDEC Hudson River Estuary Program



Town and Village of New Paltz Natural Resources Inventory

Map 5: Steep Slopes



- Municipal Boundaries
- Waterbodies
- Streams
- Wetlands
- Steep slopes**
 - 15 - 25% and 3/10 acre or more
 - >25% and 2/10 acre or more
 - Cliffs (>100% slope)



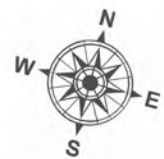
Data Sources - Slopes: Derived from 2m 2015 USGS DEM 2020;
Wetlands: USFWS 2018; Surface Water, Rivers and Streams: Ulster
County 2020; Road centerlines: NYS GIS Program Office 2019; Hillshade:
Esri Living Atlas 2020

0 2,000 4,000 8,000
Feet

Map prepared by Upstate GIS - June 2021
with Community Planning & Environmental Associates

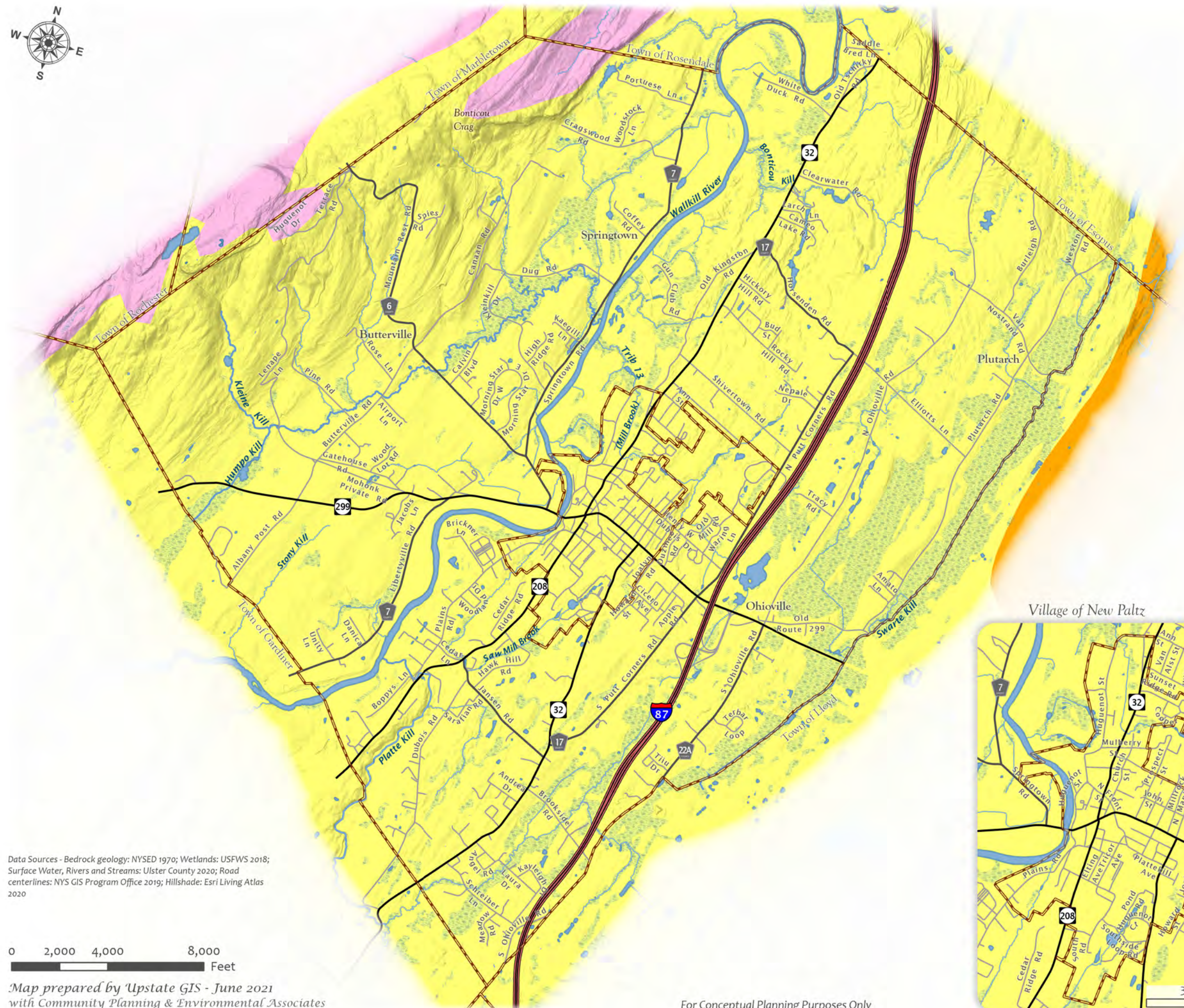
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Town and Village of New Paltz Natural Resources Inventory

Map 6: Bedrock Geology

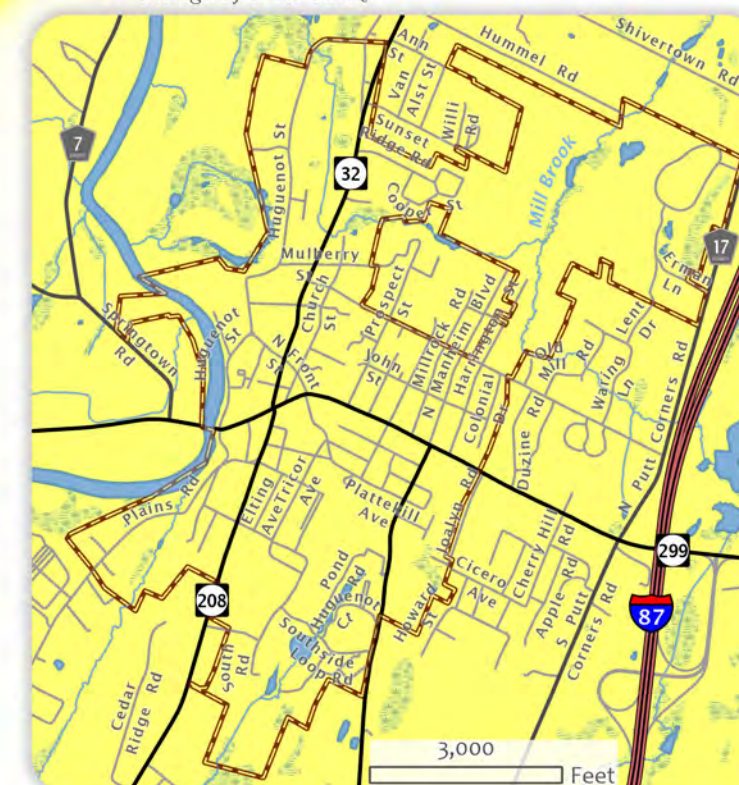


- Municipal Boundaries
- Waterbodies
- Streams
- Wetlands

Bedrock Type

- Martinsburg Formation - graywacke and shale
- Quassaic Quartzite - quartzite and sandstone
- Shawangunk Formation - sandstone, conglomerate

Village of New Paltz



Data Sources - Bedrock geology: NYSED 1970; Wetlands: USFWS 2018; Surface Water, Rivers and Streams: Ulster County 2020; Road centerlines: NYS GIS Program Office 2019; Hillshade: Esri Living Atlas 2020

0 2,000 4,000 8,000
Feet

Map prepared by Upstate GIS - June 2021
with Community Planning & Environmental Associates

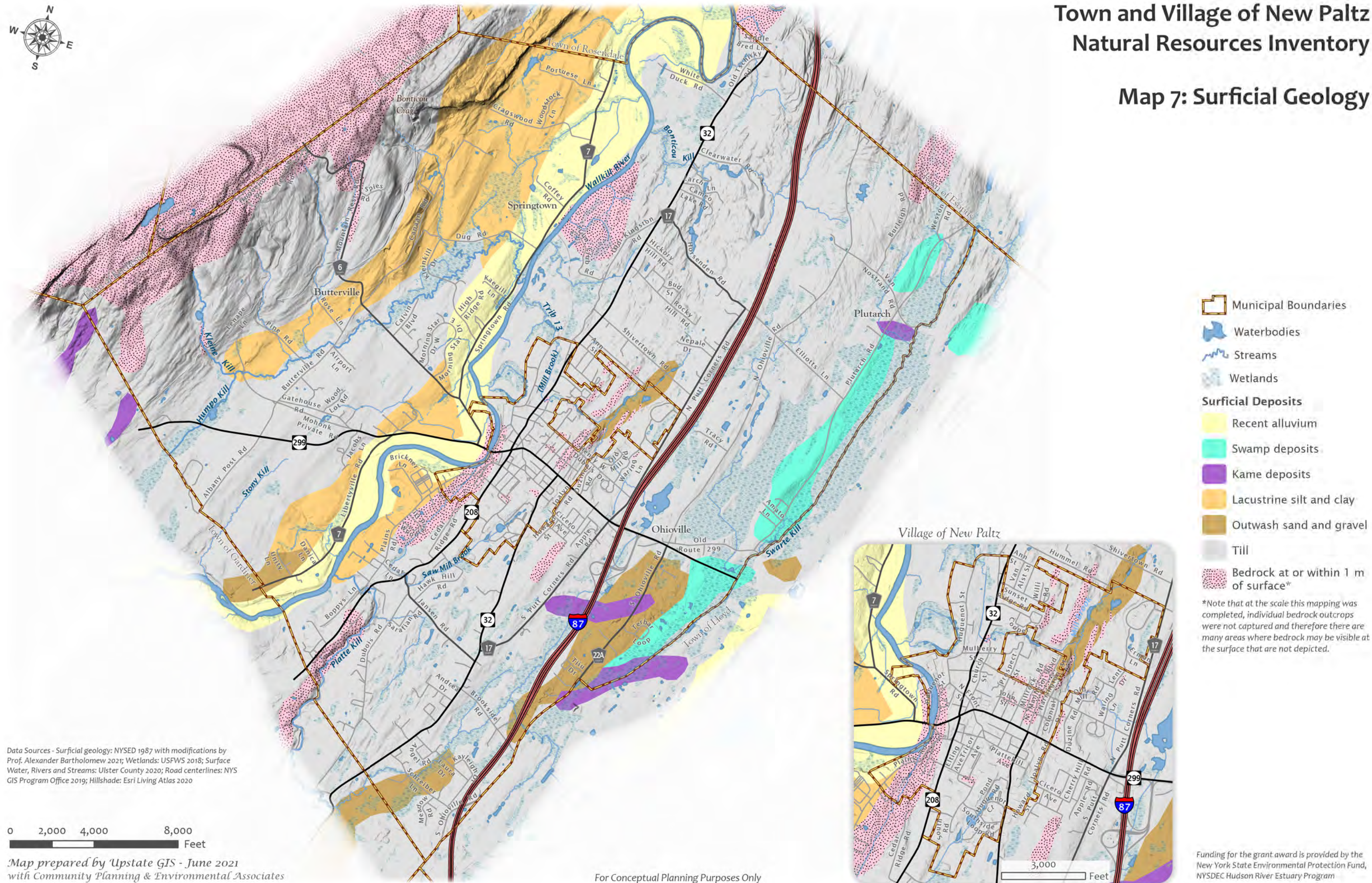
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Town and Village of New Paltz Natural Resources Inventory

Map 7: Surficial Geology





Town and Village of New Paltz Natural Resources Inventory

Map 8: Soil Drainage



Data Sources - Soils: USDA NRCS 2017; Wetlands: USFWS 2018; Surface Water, Rivers and Streams: Ulster County 2020; Road centerlines: NYS GIS Program Office 2019; Protected lands: Town of New Paltz, Mohonk Preserve, WVLT, Ulster County Real Property; Hillshade: Esri Living Atlas 2020

Map prepared by Upstate GIS - June 2021
with Community Planning & Environmental Associates

For Conceptual Planning Purposes Only

- Municipal Boundaries
- Waterbodies
- Streams
- Wetlands
- Drainage Class - Dominant Condition**
- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- No Data

Funding for the grant award is provided by the
New York State Environmental Protection Fund,
NYSDEC Hudson River Estuary Program

6 WATER RESOURCES

KEY CONCEPTS (MAP 9-13)

This chapter discusses the water resources in New Paltz. This includes watersheds, wetlands, streams and stream riparian areas, groundwater, other surface water bodies, and floodplains. Water resources “contribute greatly to agriculture, commerce, outdoor recreation, property values, scenery, and quality of life. Adequate and suitable water is critical for water supply; domestic, municipal, industrial, agricultural and commercial uses; the growth of forests; the support of fish and wildlife; recreational enjoyment; and other uses and is essential to the health, safety and welfare of the economic growth and prosperity of the Town” (Chapter 139 of the Town of New Paltz Code).

Water resources; especially those in wetlands, watercourses, and aquifers; are critical for healthy natural community functions as well as for high quality potable water sources for people.

6.1 WATERSHEDS

KEY CONCEPTS (MAP 9)

Each stream or river drains a certain land area, and that area is called a watershed. Watersheds are divided from each other by ridges and other high points on the land surface. Every place is part of a watershed because all lands drain into one water body or another. Large watersheds such as the Hudson River Watershed are further divided into sub-watersheds (or sub-basins), such as the Wallkill River Watershed or the Rondout Creek Watershed. Watersheds can be regional and span multiple towns, counties or states depending on the stream system.

Understanding streams and the extent and boundaries of watersheds and sub-basins helps us understand sources of water for our streams, wetlands, and ponds. It also helps us understand connections between locations, the direction of water movement over the land, volumes of water reaching any location along a stream, and the fate of rainwater and snowmelt runoff from any location. Knowing how the water flows can also aid in understanding the source of water quality problems.

ABOUT MAPPED FEATURES (MAP 9)

The Watershed Map shows 12 separate watersheds located within the Town of New Paltz. Each watershed is associated with a different stream or set of streams and smaller tributaries. With the exception of the Coxing Kill-Rondout Creek Watershed, all of the watersheds in New Paltz are part of the Wallkill River Watershed, and ultimately, these are all part of the Hudson River watershed.

For more information on water resources see

<https://www.townofnewpaltz.org/environmental-conservation-board>:

2006 Town of New Paltz Wetland and Watercourse Map

2011 Draft Town Comprehensive Plan

2013 Water Supply Report

Wallkill River Watershed Management Plan

Hudson Valley Natural Resource Mapper at

<https://www.dec.ny.gov/lands/112137.html>

NYS DEC Waterbody Inventory/Priority Waterbody List at <https://www.dec.ny.gov/chemical/8459.html>

Current and Future Flood Risk Under Climate Change in New Paltz, NY.

MORE ABOUT WATERSHEDS IN NEW PALTZ

The largest watersheds are associated with the largest waterbodies in the Town: the Wallkill River and the Swarte Kill. There are also multiple smaller watersheds throughout the town as described below.

The northern part of New Paltz, as well as the central “spine,” contains the Wallkill River watershed (including the minor tributaries and overland flow associated with it). The full Wallkill River Watershed encompasses approximately 800 square miles in northern New Jersey and southeastern New York. The majority of the watershed is within both Orange and Ulster counties. Within the watershed, 12 major tributaries drain to a common outlet, Rondout Creek, and then to the Hudson River Estuary. These rivers, creeks and associated wetlands serve as important wildlife habitat, recreational resources, and water supply for agricultural production.



Wallkill River

There are five smaller watersheds that feed into the Wallkill within New Paltz. In the northern part of the Town of New Paltz the Bonticou Kill watershed is located on the east side of the Wallkill, and an unnamed tributary coming off the Shawangunk Ridge is located on the west side of the Wallkill. Near the center of New Paltz Trib 13, also known as Mill Brook, enters the Wallkill on the east, north of the Village, while the Kleine Kill drains much of New Paltz's portion of the Shawangunk Ridge. The Trib 13 watershed covers about half the Village of New Paltz and encompasses the Mill Brook Preserve. Saw Mill Brook enters the Wallkill within the Village, with the watershed encompassing much of the SUNY New Paltz campus.

The Humpo Kill, located in the southwestern portion of New Paltz, is designated as a tributary to the Kleine Kill. Historically, however the Kleine Kill was listed as the tributary while the Humpo Kill extended all the way to the Wallkill. North and west of the Humpo Kill is a small portion of the Lower Shawangunk Kill watershed which drains to the Wallkill in the Town of Gardiner. The Shawangunk Ridge forms the dividing line between the Wallkill and Rondout Creek watershed, with a small portion of the Coxing Kill-Rondout Creek watershed area falling within New Paltz.

The southern portion of the Town is within the Platte Kill Watershed. A significant portion of the eastern part of New Paltz, east of the Thruway to the Town boundary is within the Swarte Kill Watershed.

Table 3 summarizes the area of each of the watersheds within New Paltz. The percentage of three land cover classes – tree canopy, agriculture, and impervious surfaces - is also included. Land cover, including source data information, is discussed in more detail in Section 10.5. A watershed with a high percentage of tree canopy and low impervious surfaces is likely to have better ecological health than those with lower tree canopy percentages and/or higher impervious surfaces. The more agricultural area that exists within a watershed the more important run-off management becomes for maintaining water quality.

Table 3: Watershed Areas within New Paltz

Watershed Name – See Map 9	Acres	Percent of New Paltz	Percent Tree Canopy	Percent Agriculture	Percent Impervious
Wallkill River – minor tribs and overland flow	4,951	23%	57%	18%	6%
Kleine Kill	3,784	17%	77%	9%	3%
Swarte Kill	3,339	15%	64%	5%	6%
Platte Kill	2,565	12%	62%	8%	10%
Bonticou Kill	2,027	9%	82%	<1%	6%
Trib 13 (Mill Brook)	1,876	9%	59%	3%	18%
Saw Mill Brook	1,085	5%	55%	5%	13%
Unnamed Trib	855	4%	69%	17%	3%
Humpo Kill	495	2%	63%	3%	3%
Lower Shawangunk Kill	374	2%	97%	2%	0%
Stony Kill	360	2%	62%	9%	3%
Coxing Kill – Rondout Creek	95	<1%	93%	0%	2%

Watershed Water Quality

For many years, citizen scientists trained by Riverkeeper have taken and processed water samples from throughout the Wallkill River Watershed. Table 3 summarizes recent results.

Table 4: Summary of Water Quality Sampling in the Wallkill River Watershed (Riverkeeper 2021)

Location of Sample	Description	Water Quality (Enterococcus Counts) for safe swimming*
Mill Brook tributary at Route 32	Samples between 6/2012 and 10/2019	Only one day of 47 sampled had acceptable water quality for safe swimming. All other samples had enterococcus counts > 61 (Beach Advisory) ranging from 78 to > 3000 with high levels on both wet and dry days.
Springtown Road Boat Launch	Samples between 5/2012 and 10/2020	Only four days of 52 sampled had acceptable water quality for safe swimming. All other samples had enterococcus counts > 61 (Beach Advisory) ranging from 89 on dry days to > 2420 on wet days.
Saw Mill Brook Tributary	Samples between 5/2012 and 10/2019	Of 47 samples taken, none had acceptable water quality for safe swimming with all counts >61 for enterococcus with higher counts on wet days.
Plains Road Boat Launch	Samples between 5/2012 and 10/2019	Six days of 47 had samples with acceptable water quality for safe swimming with all other samples > 61.

*Enterococcus count per 100 ml

Overall, very few samples taken in the Wallkill River Watershed met EPA guidelines for safe swimming. According to the Wallkill River Report (Riverkeeper 2021), “results from the Wallkill River Watershed are among the worst that Riverkeeper and our partners have observed in the Hudson River tributaries”. Bacteria levels are much higher after rainfall, which causes runoff. However, even in dry weather, bacterial counts usually exceeded safe swimming threshold by 10 times. Sources of the enterococcus bacteria stem from excess nutrients in the water from sewer overflows and failures, inadequate sewage treatment, urban or farm runoff, septic system failures and contaminated sediments. According to Riverkeeper (2021), the primary sources of nutrients in the Wallkill River are from wastewater treatment plants and agriculture.

Perennial and Intermittent Streams are defined in Chapter 139 of the Town of New Paltz Code:

INTERMITTENT WATERCOURSE

A regulated area that comprises a stream, creek, or brook, through which surface water travels in a well-defined channel on a seasonal basis, but not continuously throughout the year, as well as the associated bank, as defined herein. For the purposes of this chapter, intermittent watercourses are those where water stands or flows for at least three consecutive months in a twelve-month period, except that waterways specifically designed and constructed to serve a stormwater conveyance or treatment function, such as grassy swales, drainage ditches, and other structures engineered to concentrate and convey stormwater from development and only retain water for a short duration after a rainstorm or spring snow-melt, are not considered intermittent watercourses.

PERENNIAL WATERCOURSE

A regulated area that comprises a river, stream, creek, or brook, through which surface water travels on a continual basis, as well as the associated bank as defined herein.

6.2 STREAM CLASSIFICATIONS

KEY CONCEPTS (MAP 10)

Streams are one of the major surface water features in New Paltz. They are among the most recognizable and important natural resources, and they play critical roles in our environment. Map 10 shows the locations of most of the larger streams and rivers in New Paltz as well as those smaller streams having year-round flow (called perennial streams). Although most smaller and intermittent flowing streams are not mapped, they should not be discounted and are an important natural resource that provide valuable habitats used by many kinds of wildlife. Smaller streams also supply essential water, organisms, and organic materials to the larger stream systems they are part of.

ABOUT MAPPED FEATURES (MAP 10)

NYS DEC Water Classification: In New York State, streams are classified based on “existing or expected best usage of each water or waterway segment”. The stream classifications range from “AA” (drinking, bathing, fishing, and fish propagation and survival) to “D” (fishing, but waters will not support fish propagation). The box below explains each water classification. The NYS DEC water quality classification maps are not precisely drawn but outline the boundaries for regulatory purposes.

Each classification may be modified by addition of the T or TS symbol to indicate suitability for supporting trout or trout spawning. (Note that these classifications were prepared by New York State based on limited information, and do not necessarily reflect up-to-date or site-specific habitat conditions.)

Waters classified as AA, A, B, C(T) or C(TS) are considered “protected streams” in New York and are subject to certain use restrictions: disturbances to the bed or banks of these streams require a State permit. Streams that are further designated as (T) are deemed to have good water quality and cool water temperatures suitable for trout habitat and (TS) indicates streams suitable for trout spawning. Trout spawning streams have good water quality, cool temperatures, high dissolved oxygen levels, and relatively unsilted stream bottoms suitable for spawning.

NYS DEC Waterbody Classes

<u>Class</u>	<u>Best Use</u>
AA	drinking (with disinfection), bathing, fishing
A	drinking (with disinfection and treatment), bathing, fishing
B	bathing, fishing
C	fishing (fish reproduction and survival)
D	fishing (fish survival)

Standards

T	sufficient dissolved oxygen to support trout
TS	suitable for trout spawning

MORE ABOUT STREAMS IN NEW PALTZ

The major streams/rivers in New Paltz are the Swarte Kill, the Kleine Kill, and the Wallkill River. Other important small tributaries of the Wallkill in New Paltz include the Platte Kill, Tributary 13 (Mill Brook), Humpo Kill (tributary to the Kleine Kill), Stony Kill, Bonticou Kill and the Saw Mill Brook (which runs through the SUNY NP campus) and drains to the Wallkill at Sojourner Truth Park. Map 10 shows locations of those water bodies and stream classifications foreach. The meandering Wallkill River flows from south to north through the Town and drains a wide linear strip extending from east of the Thruway to the north-south oriented Shawangunk Ridge. The 95-mile-long river begins in Lake Mohawk in northern New Jersey and flows north through New Jersey into New York. After traversing the Town, it empties into Sturgeon Pool and then Rondout Creek, which ultimately enters the Hudson River Estuary. The Wallkill's many tributaries and



intermittent streams connect the river flats to the foothills, ridge woodlands and wetlands.

The eastern edge of the Town is characterized by a large area of north-south trending wetland complex and streams, including the Swarte Kill, which forms the eastern boundary of the Town. Like the Wallkill River, the Swarte Kill also empties into Sturgeon Pool.

The upper reach of the Kleine Kill and the tributary that feeds the Mountain Rest Road reservoirs, are the only two stream segments in

New Paltz with the “A” water quality classification. In the southern portion of Town, the Platte Kill watershed contains streams of classification ‘B(T)’. Both the Swarte Kill and the Wallkill River are classified as ‘B’, and the remainder of the mapped streams are mostly Class ‘C’ Streams.

Priority Water Bodies in New York State and Water Quality

In addition to the stream classifications, NYS DEC has established water quality standards for pollutants and other factors such as dissolved oxygen and turbidity to protect specific uses, such as drinking water supply, swimming, aquatic life, or secondary recreation. Waterbodies that do not meet the standards for their “best uses” may be listed as “impaired” by NYS DEC. NYS DEC conducts a waterbody inventory program and monitors water quality and trends throughout the state. For that program, streams are assessed for invertebrates, water and sediment chemistry, and sediment toxicity to identify those impaired streams, lakes, and ponds most in need of improvement.

The NYS DEC’s Lower Hudson River Basin Waterbody Inventory and Priority Waterbodies List (August 2018) identifies water quality issues in the Wallkill River. In addition to monitoring and reporting done by NYS DEC, extensive water quality monitoring of the Wallkill River has been conducted by Riverkeeper and local volunteers (Riverkeeper 2019). Silt/sedimentation and nutrients (phosphorus) are the primary pollutants in the Wallkill. Riverkeeper data indicates unacceptable levels of e-coli. In 2008, DDT levels measured in the Wallkill were found to be the highest of all Hudson River tributaries tested. Common sources of excess sediment include cropland, urban construction sites, and streambank erosion.

The Wallkill River was assessed by NYS DEC in 2018. The River from Sturgeon Pond to Tuthill was identified as being ‘impaired’ due to nutrients (phosphorus) and agriculture, point source discharges, and urban/storm runoff. In the Village, a 2017 assessment also indicated slightly toxic sediments along the Mill Brook (Tributary 13). The “Wallkill River Watershed Conservation and Management Plan” (2005), developed by the Wallkill Watershed Alliance, recommends that the protection of stream banks from erosion with riparian plantings and structural reinforcement should be a high priority in Ulster County. The Wallkill Watershed Alliance is a local organization formed to advocate for the restoration of the Wallkill River and its watershed and is actively involved in programming to improve water quality (www.wallkillalliance.org).

The Kleine Kill was also most recently sampled in 2017 and showed a slightly toxic sediment assessment (sample in the vicinity of Dug Road).

New Paltz NPN
To The Editor: 1-22-1992
DRAINAGE DITCH
About 1907 David C. Storr, who was the most progressive developer New Paltz ever had, purchased from Cornelia Broadhead the large homestead farm including lands situated north of the New Paltz Turnpike between North Oakwood Terrace and Charles Street (now Grove Street) on which is now located the Episcopal Church. This was part of the water shed for a small brook which ran across Main Street, the lands of S. Bruyn DuBois to the ice pond of Perry Deyo on the southerly side of Center Street near the western end thereof, then running through the Village municipal land to Hasbrouck Avenue, over the premises of Asa Yeaple and the northerly part of Millham’s Cooperage lot and then under the Wallkill Valley railroad to the Wallkill River.
During the construction of the first concrete road in Ulster County from New Paltz to the Hudson in 1920 this drain was blocked. The Village wanted to open this drain but S. Bruyn DuBois, who lived on the south side of Main Street, strenuously objected.
Early one Sunday morning the Village began the work and rushed to a finish before early evening.
The New York State civil law provides that no legal process, which includes injunction, may be served on Sunday.
Peter H. Harp

A brief history of the buried stream depicted on some of the NRI maps, including Map 10

6.3 FLOODPLAINS AND RIPARIAN AREAS

KEY CONCEPTS (Map 11)

"Floodplains" are the areas along streams or other waterbodies that flood. Floodplains have important ecological functions, especially when natural vegetation is intact. Floodplains feed the stream ecosystem, help prevent erosion along stream banks, soak up water to recharge groundwater, slow water flow during floods, and reduce downstream flooding. They also tend to be very productive biological areas, are ecologically diverse and, along with other streamside (riparian) areas, serve as important wildlife habitat and travel corridors.

Floodplains are important for the storage and conveyance of floodwater. To protect these areas, communities have established regulations that manage the types of development that may occur within them. The Town and Village of New Paltz have adopted Flood Damage Prevention laws, the purpose of which is to minimize the threat of damage or injury from flooding and maintain eligibility within the National Flood Insurance Program.

Riparian areas are lands along watercourses and waterbodies. They are different from surrounding lands because of unique soil and vegetation strongly influenced by the presence of water (Natural Resource Conservation Service 2020). They have essential ecological functions, and the well-being of the streams they are adjacent to depends in large part on the condition of the riparian areas. Floodplains and riparian areas can overlap.



The floodplain along the Wallkill is very wide and often will flood in times of snow melt.

ABOUT MAPPED FEATURES (Map 11)

Map 11 shows three flood hazard areas, also known as ‘floodplains’ mapped by the Federal Emergency Management Agency as well as additional areas subject to flooding as modelled by Woodwell Climate Research Center. The official, regulatory map showing flood hazard boundaries is called a Flood Insurance Rating Map (FIRM). FIRM's are filed with the Town and Village Clerks. FIRM's are the closest proximation available to identify floodplain locations but have limitations. They do not necessarily show natural floodplains and omit floodplains of smaller tributaries. Their underlying data also date from 1984, underestimates total flood risk, do not consider pluvial flooding, do not include small streams, and do not incorporate future changes in the climate (Woodwell Climate Research Center 2020). The FIRM's were created specifically for the National Flood Insurance Program and indicate where flood insurance must be purchased to obtain a federally-backed mortgage. Addition information on flood hazards has also been developed in New Paltz through a study done to evaluate future flood risks (Woodwell Climate Research Center 2020).

Flood zones: Flood zones are all the floodplain areas that flood. Different types of flood zones exist, and they are distinguished from each other based on specific statistical intervals of flooding. Flood zone types include the floodway, areas having a 0.2% annual flood risk (500-year floodplain), and areas having a 1% chance of annual flood risk (100-year floodplain). Floodways are the channel of a river or other watercourse and the adjacent land areas where water is deepest and fastest during a flood (Federal Emergency Management Agency 2020).

Modeled 100-Year Flood Depth: Map 11 depicted the modeled 100-year flood depth as determined by Woodwell (2020) through analyzing data for elevation, rainfall, streamflow, infiltration rates and land friction. The modeled flood depth accounts for flooding both from riverine flooding (rivers and streams) and pluvial flooding (standing water not associated with riverine flooding). As shown, the areas of New Paltz presumed to be subject to flooding during a 100-year storm event extend far beyond the FEMA mapped 100-year floodplain.

Riparian Areas: Riparian areas include streambanks, floodplains, non-floodplain areas along the bank, and adjacent wetlands. The Town has acknowledged the importance of riparian areas in New Paltz by including and protecting riparian area functions within Chapter 139 of the Town Code. These functions are summarized as follows (Town of New Paltz 2020):

- Provide irreplaceable and important travel corridors and transitional habitats to many wetland/watercourse-dependent species, including many amphibians, reptiles, birds, and mammals;
- Serve as visual and noise barriers;
- Maintain essential water temperatures in streams by allowing warming in spring and shading in summer;
- Control flooding by slowing overland runoff and absorbing stormwaters, trapping sediments, and removing excess nutrients from reaching wetlands, waterbodies, and watercourses;
- Protect against adverse impacts of stormwater-borne water pollutants such as fertilizers, herbicides, pesticides, heavy metals, and viral/bacterial agents;
- Provide unique wetland to upland transitional communities with their own distinctive flora and fauna; and
- Serve as areas valued for passive recreation, outdoor education, and scientific research.

The New York Natural Heritage Program has identified and mapped “riparian buffers” along many of the larger streams throughout the state, including many streams not included in the FEMA flood zone mapping. Map 11 shows those locations.

The mapped riparian areas partially overlap with the FEMA 100-yr flood zones and extend beyond the FEMA zones at some locations (e.g., to include adjacent wetlands). Mapped riparian areas include the estimated 50-year flood zone (based on U.S. Geological Survey stream gage data and topography) and adjacent wetlands and are considered to be the area’s most important for protecting, improving, and maintaining the integrity of streams.

MORE ABOUT FLOODPLAINS AND RIPARIAN AREAS IN NEW PALTZ

Significant areas designated as ‘floodway’ are found only along the Wallkill River. The Town of New Paltz Flood Damage Prevention Law prohibits development in the floodway. The Wallkill has a broader 100-year floodplain that, in the northern segments, covers a good deal of the valley area. There are also small, scattered locations considered 500-year floodplain within the 100-year area, mostly where there are slight differences in elevation. The Swarte Kill is the other stream having a mapped floodplain. It has a narrow band of 100-year floodplain along most of its length. There is also a significant flood hazard area mapped along the Kleine Kill.



Following being nearly flooded during Hurricane Irene, the Carmine Liberta Bridge spanning the Wallkill was raised and the conduit holding the water and electrical lines was replaced to better protect these vital connections between the Village and western part of the town.

Within the Village, there are some areas of both floodway and 100-year floodplain on the western boundary with the Town and along the Wallkill River. There is a small section in the Village with mapped 500-year floodplains near Huguenot Street and Old Kingston Road.

Many of the riparian areas are narrow bands of land, especially along the Kleine Kill and other smaller tributaries. Others are more extensive, such as along the Wallkill River in the central portion of Town. Riparian areas also have significant overlap with the Town’s wetlands, especially at the large wetland complex between Route 87 and the Swarte Kill, from Elliotts Lane south to Old Route 299. Intact vegetated riparian areas are important wildlife corridors in the Town that help connect the Shawangunk Ridge to the Wallkill River and areas eastward. Notably, these are found along the Kleine Kill corridor, Tributary 13, the Platte Kill, and some other small tributaries. In areas where riparian areas are not vegetated, there may be opportunities for restoration through the Trees for Tribs program. The Trees for Tribs program

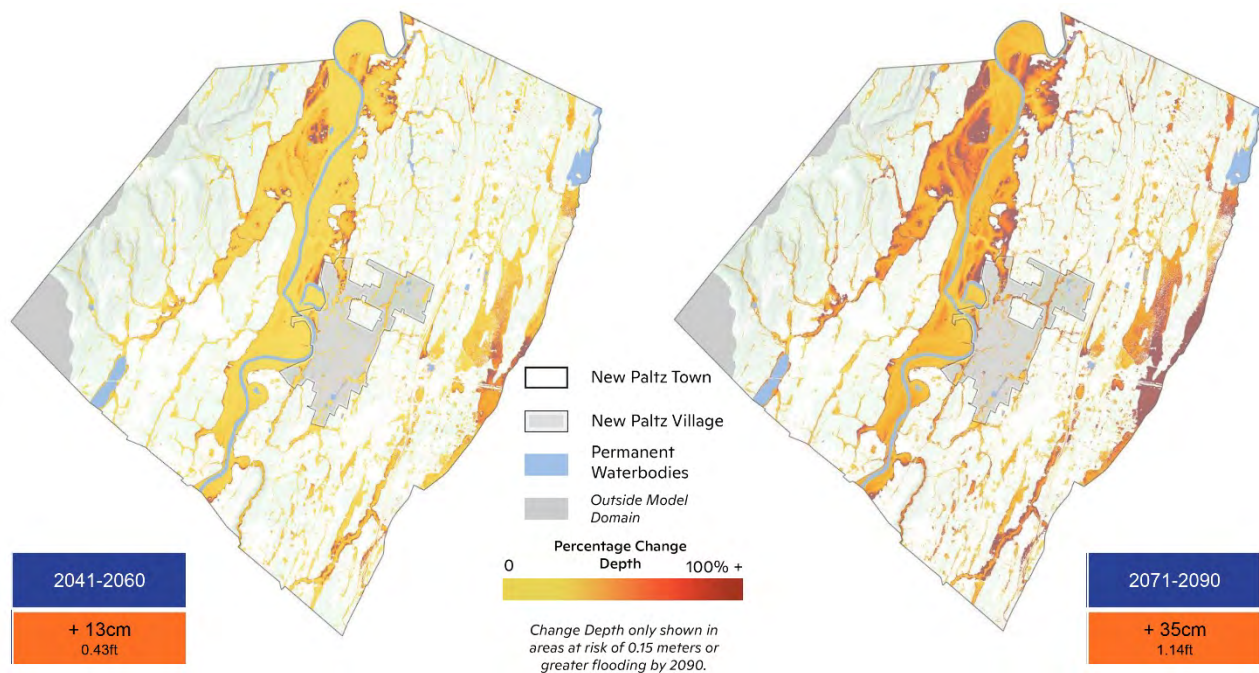
is a statewide effort to reforest New York's tributaries. Coordinated by the NYS DEC, the Trees for Tribs program seeks to plant trees and shrubs along streams to create forested riparian buffers to help decrease erosion, improve wildlife, and stream habitat, and protect water quality. There are several such plantings on public land/parks in New Paltz.

Floodplain forests are particularly important wildlife habitats. The New York Natural Heritage Program has mapped state-significant occurrences of floodplain forest in New Paltz along the Wallkill. Floodplain forests are relatively rare because they were historically cleared for agriculture. Map 17 shows the occurrences of floodplain forests in New Paltz. The remaining floodplain forests are sporadically located on the east side of the Wallkill River north of the Dug Road area in Springtown to the Town border. They can be seen in the Nyquist-Harcourt sanctuary and along the rail trail.

Future Flood Potential

New Paltz has experienced several significant flood events, especially in 2011 with Hurricane Irene. Other devastating floods occurred in 1955 during Hurricanes Diane and Connie. Numerous destructive floods have occurred along the Wallkill River in the past and these have become increasingly frequent in recent decades. When the Wallkill floods, roads are covered, and people need to take wide detours to get to the Village. Emergency responses are hampered. Areas around Springtown Road have regularly flooded and stranded residents as a result.

Because of increased flooding concerns, the Woodwell Climate Research Center study evaluated present and future flood risk in New Paltz. That study estimates future rainfall and streamflow for two time periods (2041 – 2060 and 2071 – 2090) using regional climate and hydrologic models. According to the Woodwell study (2020), it is estimated that there will be significant increases in flood risk across New Paltz over time. They estimate more areas will be flooded to a greater depth.



Maps from Woodwell Climate Research Center that depict the predicted increase in flood depth for 100-year flood events. In 2041-2060 the average flood depth is predicted to increase by 13 cm or 0.43 feet and in 2071-2090 that increase is calculated to be 35 cm or 1.14 feet.

Areas within the 100-year flood event showed potential increases by 7% and 20% by mid and late 21st century, respectively. The number of buildings that could be flooded under these projections increases by 12% and 34% by the mid and late 21st century, respectively. The study estimates that there are also increases for the 500-year events, but the changes are smaller in magnitude than for the 100-year events.

6.4 WETLANDS

KEY CONCEPTS (MAP 12)

A wetland is a vegetated area having soils that remain saturated for a prolonged period during the growing season. Some wetlands are permanently flooded, while some have little or no standing water for some or even most of the year. Wetlands are known by many names and include swamps, marshes, wet meadows, vernal pools, bogs, and similar areas.

While wetlands were once thought of as wastelands and were routinely filled in or drained, now their important ecological role is more deeply understood. Wetlands provide critical habitats for plants and animals, but also benefit the broader environment and human communities by controlling flooding, filtering water to remove pollutants, sequestering carbon, providing wildlife habitat, and providing a host of other services.

Wetlands come in many forms and sizes—large, small, forested, shrubby, herbaceous, some with permanent standing water, some with temporary standing water, and some with little or no standing water. However, a wetland is a permanent feature even if the standing water or soil saturation comes and goes. Federal and New York State wetland statutes specifically define wetlands, and this is summarized as being areas having (1) hydrophytic vegetation (water-loving plants), (2) hydric (wet) soils, and (3) indicators of prolonged wetness (wetland hydrology).

ABOUT MAPPED FEATURES (MAP 12)

Map 12 depicts state regulated wetlands, federally identified wetlands (National Wetland Inventory, or NWI), and other places mapped as “probable wetlands,” and “possible wetlands.” In addition to the State and NWI wetland maps, the Town of New Paltz completed a Wetland and Watercourse Map in 2006 to guide the development of the Town’s Wetlands Law. The map associated with the Town’s Wetlands Law is the official wetland map for the town. Map 12 is a reference and can be used as a guide but should not be relied on for legal determinations.

Wetland resources are further explained as follows:

NYS DEC Wetland: These are wetlands typically 12.4 acres in size or larger and regulated by New York State. On Map 12, NYS DEC wetlands are depicted as the “top” layer. As such there may be other mapped wetland types in the same location.

USFWS NWI Wetland: These are wetlands identified in the National Wetlands Inventory (NWI) by the U.S. Fish and Wildlife Services. The NWI was completed through a remote analysis of aerial imagery, soils, and topography, but not verified on the ground. NWI wetland maps were developed as habitat maps. Federal wetlands (those identified in the NWI and less than 12.4 acres in size) are regulated by the federal Clean Water Act of 1972 through the U.S. Army Corps of Engineers. A useful link for more information about NWI wetlands is:

https://www.dec.ny.gov/docs/remediation_hudson_pdf/wetlandsfs.pdf

Probable wetlands: These are areas, outside the NYS DEC and NWI mapped wetlands, where the mapped soils (from the county soil survey) are described as “poorly drained” or “very poorly drained” and therefore are likely wet much of the year and contain wetlands.

Possible wetlands: These are in areas, outside the NYS DEC and NWI mapped wetlands, where the mapped soils are described as “somewhat poorly drained” and therefore may be wet or contain wetlands.

Vernal pools: These are seasonal wetlands that are small, shallow, and have no inlet or outlet. They are usually found in woodlands and are filled each spring by rain and snow melt and then dry up during the summer. Vernal pools support several wildlife species and are especially important breeding and nursery habitats for several amphibian species. Not all vernal pools in New Paltz are mapped. Vernal pools are defined in Chapter 139 as “a regulated area that comprises a seasonally flooded, isolated pool of standing water that is devoid of naturally occurring fish and that persists, in a year of average precipitation, for at least two months”. Vernal pools provide are essential breeding habitats for the spotted salamander, marbled salamander, Jefferson salamander, blue-spotted salamander, wood frog, and other species.

Chapter 139 specifies that quality vernal pools must satisfy any of the following criteria set forth below:

- (a) There is evidence of a naturally occurring confined basin depression, with no permanently flowing outlet, and evidence of nonincidental breeding by one or more species of obligate vernal pool species (wood frog, spotted salamander, Jefferson salamander, marbled spotted salamander, Jefferson salamander, marbled salamander, fairy shrimp, clam shrimp, fingernail clams). Acceptable evidence of nonincidental breeding includes:

- [1] Frog breeding choruses and/or mated pairs;
- [2] Salamander mating and/or spermatophores;
- [3] Egg masses;
- [4] Larvae (tadpole or salamander larvae);
- [5] Transforming juveniles:
 - [a] Frogs: tail remnants evident;
 - [b] Salamanders: gill remnants evident;
- [6] Young of the year (metamorphs);
- [7] The presence of fairy shrimp, clam shrimp or their eggs;
- [8] Fingernail clams; or

(b) There is evidence of:

- [1] A naturally-occurring confined basin depression with no permanently flowing outlet; and
- [2] Standing water that dries up during the year or which, for other reasons, does not contain reproducing fish; and
- [3] Nonincidental presence of two or more species of facultative vernal pool species (blue-spotted salamander, spring peeper, gray tree frog, Fowler's toad, pickerel frog, leopard frog, four-toed salamander, red-spotted newt, spotted turtle, wood turtle, painted turtle, snapping turtle); or

(c) There is evidence of a naturally-occurring confined basin depression with no permanently flowing outlet and evidence of standing water that dries up during the year or which, for other reasons, does not contain reproducing fish, for which:

- [1] Sufficient accessible critical terrestrial habitat exists to support vernal pool-breeding amphibians; and
- [2] The conditions of either Subsection (4)(a) or (b) of this definition is likely to be satisfied.

Note that both the NYS Freshwater Wetland maps and the NWI maps are known to generally underestimate wetland area. Many wetlands are larger than shown on the map, and many smaller and drier wetlands tend to be missed in the inventory process. The Probable and Possible wetlands were included to capture some of the potential unmapped wetlands. Thus, the wetlands shown on Map 11 are a minimum and not definitive. A process known as wetland delineation is required to definitively identify wetland locations and boundaries.

MORE ABOUT WETLANDS IN NEW PALTZ

There are approximately 3,150 acres of mapped wetlands in New Paltz with 1,632 acres regulated by NYS DEC (12.4 acres or larger) and an additional 1,519 acres of NWI mapped wetland areas outside of the NYS DEC wetlands. There are also approximately 2,100 acres of probable wetlands and 2,800 acres of possible wetlands.

Two vernal pools are mapped and located in the northwest corner and in the southwestern corner of Town in the Shawangunk Ridge. However, there are more vernal pools, especially on the Shawangunk Ridge and in the northeast corner of Town east of the NYS Thruway, but they have not been specifically mapped (LaBruna and Klemens 2007). The vernal pools in the Shawangunk area include small pools and their surrounding habitats that support a variety of amphibian species, including regionally rare salamanders such as the spotted salamander, Jefferson salamander, and longtail salamander (Penhollow 2006). In addition to those vernal pools mapped, the northeast corner of Town, east of the NYS Thruway has many unmapped vernal pools within the basin and ridge topography created by the underlying folded shale bedrock. The ecological importance of vernal pools is recognized by New Paltz through Chapter 139 (Wetlands and Watercourse regulations) and detailed in the box above.

Lands east of the Thruway have outstanding wetland resources unique in the Hudson Valley region. These areas, identified as the Esopus/Lloyd Wetlands and Ridges Significant Biodiversity Area (see Map 14) has intricate topography of ridges and valleys coupled with relatively low development intensity. This has enabled the persistence of a rich complex of upland and wetland habitats. At least one population of the NY Endangered northern cricket frog persists in this area



Part of the Swarte Kill wetland complex

of New Paltz, relying on calcareous vegetated wetlands as well as the intervening upland forest areas for overwintering. Ongoing research is still documenting the northern cricket frog's habitat needs, and in recent years has found that it can disperse farther into uplands than previously thought. Local planning to maintain large, connected wetland and forest ecosystems and reduce polluted runoff near wetlands will help to conserve these valuable resources.

There are other significant concentrations of identified and potential wetlands within the floodplains of the Wallkill River, Swarte Kill and their associated tributaries. Wetlands associated with floodplains are known to have other positive benefits including mitigating flooding and enhancing water quality (see Streams and Watersheds for more information). Their importance as wildlife habitats is evidenced by inventories of box turtles, wood turtles, and spotted turtles utilizing wetlands during at least part of their lifecycle (LaBruna and Klemens 2007).

As can be seen on Map 12, the major wetlands in New Paltz are associated with stream systems in the lower, flatter locations in Town. The largest mapped wetlands in Town can be found along the Swarte Kill, an approximately 1,546-acre Class 1 NYS DEC regulated wetland complex following along, and extending beyond, the eastern town boundary. The Wallkill River valley also contains a number of mapped and probable wetlands. Humpo Marsh is also a significant wetland in Town.

The geology and surface geology of the Shawangunk Ridge are not conducive to the formation of many large wetlands and as shown in Map 12, these wetlands are mostly absent from that part of Town. However, the Shawangunk Ridge has many areas of isolated depressions that are wet, and these are important ecological components of that area.

A series of smaller, NWI and probable wetlands are found on the ridge located between the Wallkill and the NYS Thruway. Wetlands are very abundant east of the Thruway in the Esopus-Lloyd Wetlands and Ridges Significant Biodiversity Area. This includes the Swarte Kill and several other large wetlands, as well as many vernal pools. There are also many possible or probable wetlands along other smaller tributaries in valley areas, in other isolated depressions, and on seepy hillsides.

Wetlands in the Village of New Paltz

Hudsonia completed a report (Stevens 2006) that field-verified wetlands in the Village. Map 12 shows several NWI wetlands (39 acres) and both probable (95 acres) and possible (139 acres) wetlands, as well as a small portion (8 acres) of NYS DEC regulated wetlands. Remote sensing and field observation (Stevens 2006) delineated over 40 wetlands within the Village boundaries. Over half (23) are considered NWI wetlands and connected to navigable waters so would be regulated under federal laws. Other wetlands were identified but found not to be connected to navigable waters, so would not be federally regulated. Many of the wetlands found in the village were small, vegetated swales designed or functioning to collect runoff. Other wetlands were located in outlying areas of the Village. Most of the wetlands have been impacted by human activity such as damming, ditching, filling, land clearing or agriculture but remain important to continued biological health. Stevens (2006) offers a variety of recommendations to maintain or restore full functioning of wetlands in the Village.

Three state-regulated wetlands were also found in the Village. The Wallkill oxbow wetlands were found to be habitat for two endangered plant species (the grass *Diarrhena obovate* and the dodder *Cuscuta obtusiflor*). A high-quality intermittent woodland pool and a "sprawling diverse wetland in the northeast lobe of the Village" were also documented. The wetland in the northeastern lobe had "beaver ponds, forested and shrub swamps, perennial and intermittent streams, and a seepage clay meadow and pond complex with an unusual plant community and

high potential for supporting rare species of plants and animals.” The pond at the Mill Brook Preserve is identified as an NWI wetland, with other lands upstream identified as probable wetlands. There are a series of beaver ponds found upstream from this pond that creates a major wetland complex in that location.

Wetlands in the Village support a very high level of plant biodiversity. Wetland habitats included hardwood swamp, woodland pools, shrubby and herbaceous wet meadows, wooded and shrubby seeps, beaver ponds, constructed ponds, seepage meadows, shrub swamp, and open water. The calcareous nature of some of the wetlands identified suggests the possibility of habitat for certain rare species of plants and animals (Stevens 2006). A large variety of plants ranging from shrub swamp (e.g., buttonbush and willows) to emergent marsh (e.g., rice-cutgrass, blujoint, carex sp, water-smartweed, halberd-leaved earthumb, spiny coontail, purple loosestrife, watermeal, bulb-bearing water-hemlock) to wooded swamp (e.g., silver maple, green ash, and dogwoods) were found.



Spotted salamander found in the Mill Brook Preserve, located within Village

In addition to identification of bullfrog, green frog, green heron, great blue heron, beaver, painted turtle, spotted sandpiper within these wetlands, the high-quality nature of the wetland habitats are likely to support a myriad of other species such as, but not limited to wood frog, spotted salamander, Jefferson salamander, and marbled salamander, northern cricket frog, wood turtle, spotted turtle, pied-billed grebe, wood duck, American black duck, Cecropia and Polyphemus moths, sedge wren, ribbon snake, great blue heron, river otter, blue-spotted and four-toed salamanders, red-shouldered hawk, American woodcock, and barred owl.

6.5 AQUIFERS AND DRINKING WATER

KEY CONCEPTS (MAP 13)

An aquifer is an underground layer of rock or unconsolidated material (such as sand or gravel) where water can easily move and be stored. This layer is also known as ‘saturated rock’ and the water found there is also called ‘groundwater’. Groundwater resides beneath the ground surface in spaces between sediment particles, and in rock fissures and seams. Groundwater is fed and replenished by rainwater, snowmelt, and other surface water that moves from the surface through soils and rocks to reach these underground spaces. Surface waters (streams, lakes, ponds) are fed directly by rain and snow, but most are also fed by groundwater that reaches the surface. At times of drought when there is no stream flow from runoff, water in streams comes from groundwater sources.

A key concept is that groundwater and surface waters are interconnected. There is a complex interaction between surface and bedrock geology, surface water and groundwater, and land uses that influence drinking water. Although we know quite a lot about water resources in New Paltz, more research needs to be done to understand stream flow, precipitation patterns (considering potential climate changes), groundwater levels, and the combined effect on the future availability of water (Town of New Paltz 2011).

Groundwater resources exist throughout the Town. For those not on public water, groundwater is the primary source of drinking water for people. Preserving and improving water quality are

vital to the region's people and our natural resources. High-quality drinking water supplies are critical to public health. Good water quality is necessary for recreation, since contact with polluted water is a health risk. Healthy habitat areas need clean water as an essential to maintaining biological diversity.

ABOUT MAPPED FEATURES (MAP 13)

Water Lines: These are the approximate locations of municipally maintained water lines in New Paltz. The water system is managed by the Village of New Paltz Department of Public Works and there are several major water line extensions to the Town.

Water Districts: These are the areas within the Town of New Paltz that receive water from the Village water system.

Mountain Rest Road Reservoirs Watershed: This is the watershed for a series of four small Village-owned reservoirs created to supply water as a backup supply to the primary potable water source from the Catskill Aqueduct.

Unconsolidated Aquifers: These aquifers are those in upstate NY that consist of sand and gravel and yield large supplies of water to wells. Bedrock aquifers, although significant in some areas, are not addressed on this map. The source data is 1:250,000 and is at the same scale as the NYS Geological Survey surficial and bedrock geology maps on which they were based. Together these maps form a consistent set of geologic and groundwater maps for use in regional management of the groundwater resources of the State.

MORE ABOUT DRINKING WATER AND GROUNDWATER IN NEW PALTZ

Drinking water within the Town of New Paltz is provided by both surface water and groundwater sources. The Village of New Paltz's water system serves the Village, the SUNY New Paltz campus, and adjacent four water districts in the Town of New Paltz.

The Village owns a water treatment plant that draws water from the New York City Catskill Water Aqueduct. The Village and a small portion of the Town rely primarily on New York City's Catskill Aqueduct, diverting from an 8-inch tap and pump house located approximately 2,200 feet south of the water treatment plant on Mountain Rest Road. In February 2020, an underground fuel line serving the heating system for the Village's water treatment plant on Mountain Rest Road leaked and contaminated the reservoir. The public water system was shut down for nearly a week while the problem was addressed. As of February 13, 2020, the Village water system was usable for drinking water once again.

Town residents outside the water districts obtain drinking water from private wells. As such, source water protection is managed in part by New York City and in part locally. Withdrawals are pumped from the tap connection at an elevation of 478 ft to the plant elevation at approximately 590 ft. The Town has been developing alternative water sources by drilling additional backup wells near Plains Road. As of January 2021, this is an ongoing project, and the Town is finalizing agreements for construction with DEP.

According to the Village's Master Plan (1994) and confirmed by the Village personnel, backup water supply consisting of four small ponds fed by tributaries of the Kleine Kill and surface runoff yields less than a one-week supply. The Village currently blends raw water sources, relying on the Catskill diversions for roughly 75% to 80% of its capacity, supplemented by these local ponds (Village of New Paltz Backup Water Supply Investigation, 2013).

The largest unconsolidated aquifer in New Paltz is associated with, and coincident with the Wallkill River. Another large aquifer is located just east of the Shawangunk Ridge. South of

Ohioville, another aquifer is associated with the wetland complex near the Swarte Kill. Three other unconsolidated aquifers are located within the Village, one of which is associated with the Mill Brook Preserve area.

Local sources of pollution that influence drinking water sources in New Paltz are:

Domestic wastewater: The Village of New Paltz has a municipal sewage collection and treatment system that serves some areas of the Town. However, much of the Town is served by onsite wastewater treatment systems, also known as septic systems. Proper function and treatment of an onsite system depend on the properties of the surrounding soil as well as proper system maintenance. The NYS DEC, the NYS Department of Health (NYS DOH), and the Ulster County Health Department regulate and permit onsite wastewater treatment systems. The sewage treatment plant is located in a flood hazard area and is thus vulnerable to flooding. If the treatment facility were to flood, this not only impacts the functioning of the treatment facility but would be a major source of water pollution.

Land use near wellheads and aquifers: The primary issue facing the quality of ground water is the lack of protective measures to ensure its integrity. The Town's Zoning Law permits agricultural and residential uses over much of the aquifer system. The New Paltz Golf Course also overlies the aquifer. These uses present a risk of contamination from sources such as septic systems, fertilizer and pesticide application, hazardous waste spills, leaking underground storage tanks and road salt runoff. Some of these contaminants come from point sources (a specific location or pipe), or from non-point sources (pollution caused by rainfall or snowmelt moving over the ground that picks up natural and human-made pollutants).

Stormwater and Sedimentation: During a rain event, rainwater either soaks into the ground or runs across it as stormwater runoff. As areas become more developed, more stormwater runs off impervious surfaces and into local waterways carrying sediments, as well as other pollutants including fertilizers, pesticides, road salt, oil, heavy metals, and pathogenic bacteria and viruses. High water flows within streams and creeks cause erosion and degradation of riparian habitat. Within the Town, stormwater runoff is directed to local creeks and wetlands or, in limited areas, to the public stormwater system.

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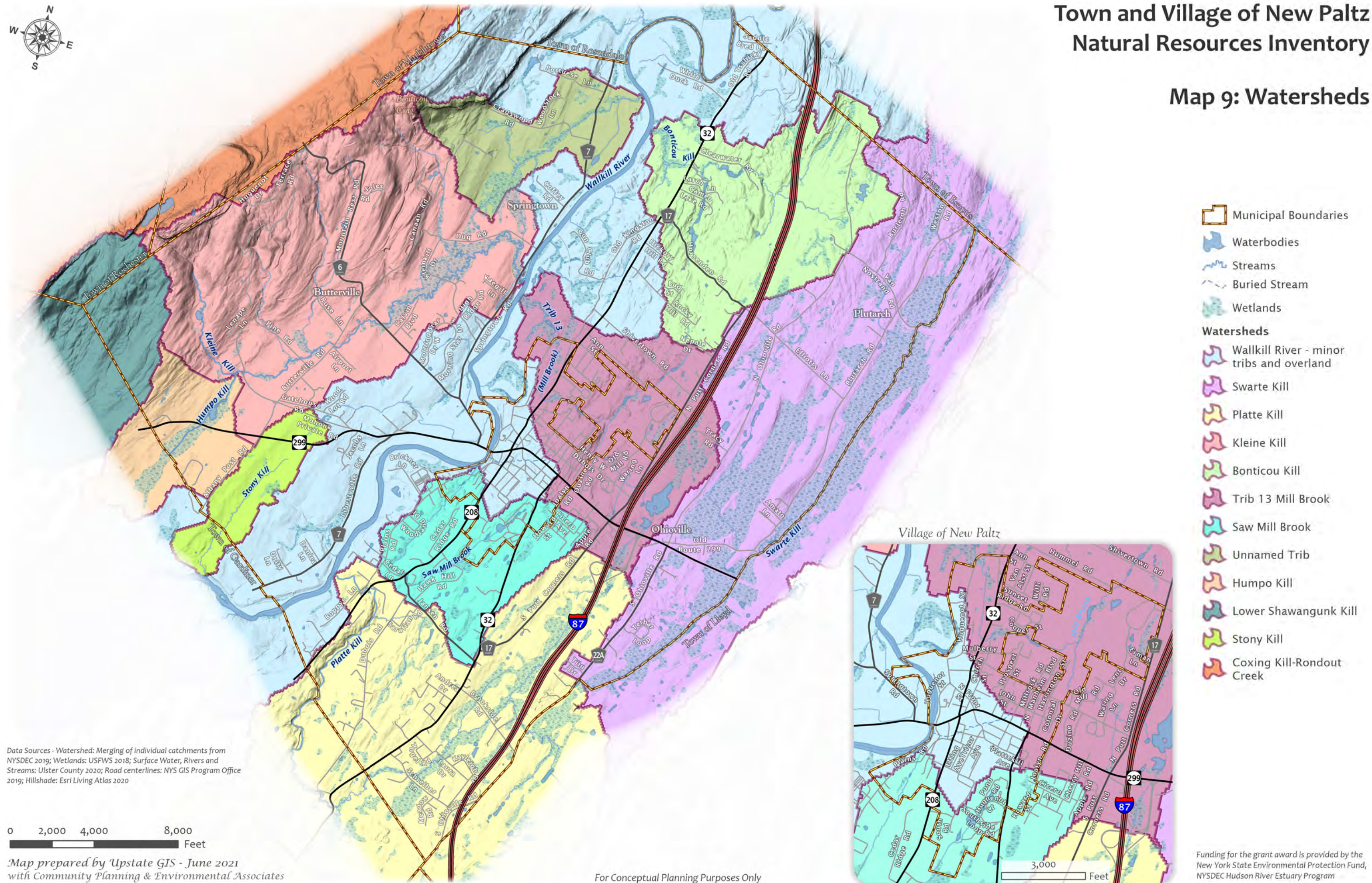
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Town and Village of New Paltz Natural Resources Inventory

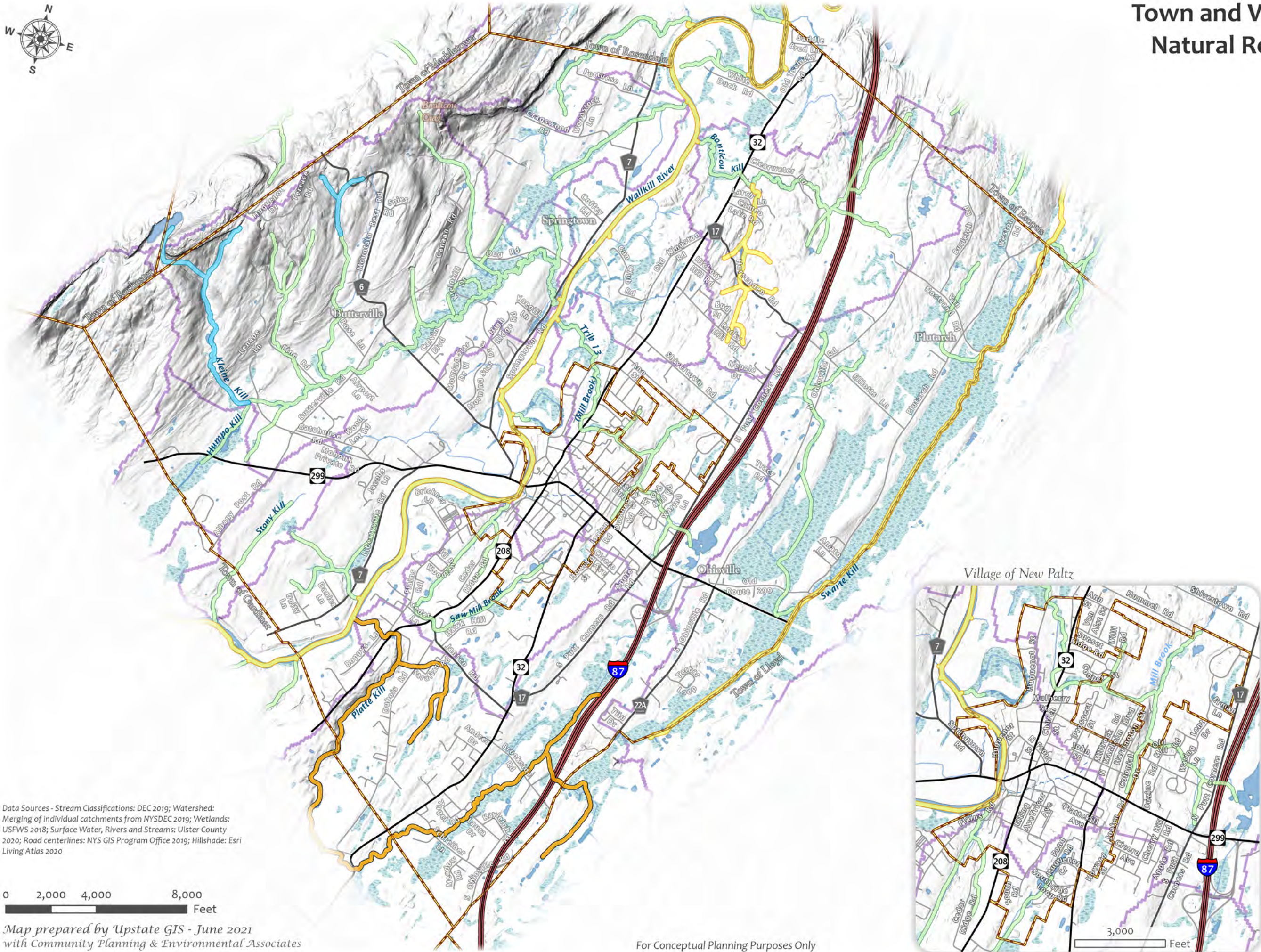
Map 9: Watersheds





Town and Village of New Paltz Natural Resources Inventory

Map 10: Stream Classifications



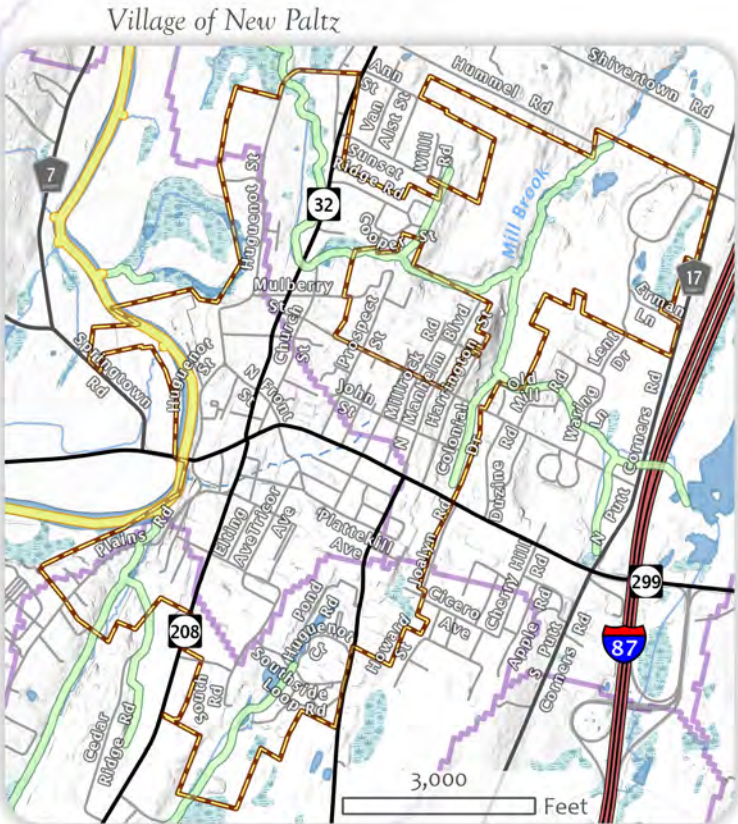
- Municipal Boundaries
- Waterbodies
- Streams
- Buried Stream
- Wetlands
- DEC Water Classification (best use)
 - AA (drinking water)
 - B (recreation)
 - B(T) (recreation / trout)
 - C (non-contact uses)
- Watersheds

Data Sources - Stream Classifications: DEC 2019; Watershed: Merging of individual catchments from NYSDEC 2019; Wetlands: USFWS 2018; Surface Water, Rivers and Streams: Ulster County 2020; Road centerlines: NYS GIS Program Office 2019; Hillshade: Esri Living Atlas 2020

0 2,000 4,000 8,000
Feet

Map prepared by Upstate GIS - June 2021
with Community Planning & Environmental Associates

For Conceptual Planning Purposes Only

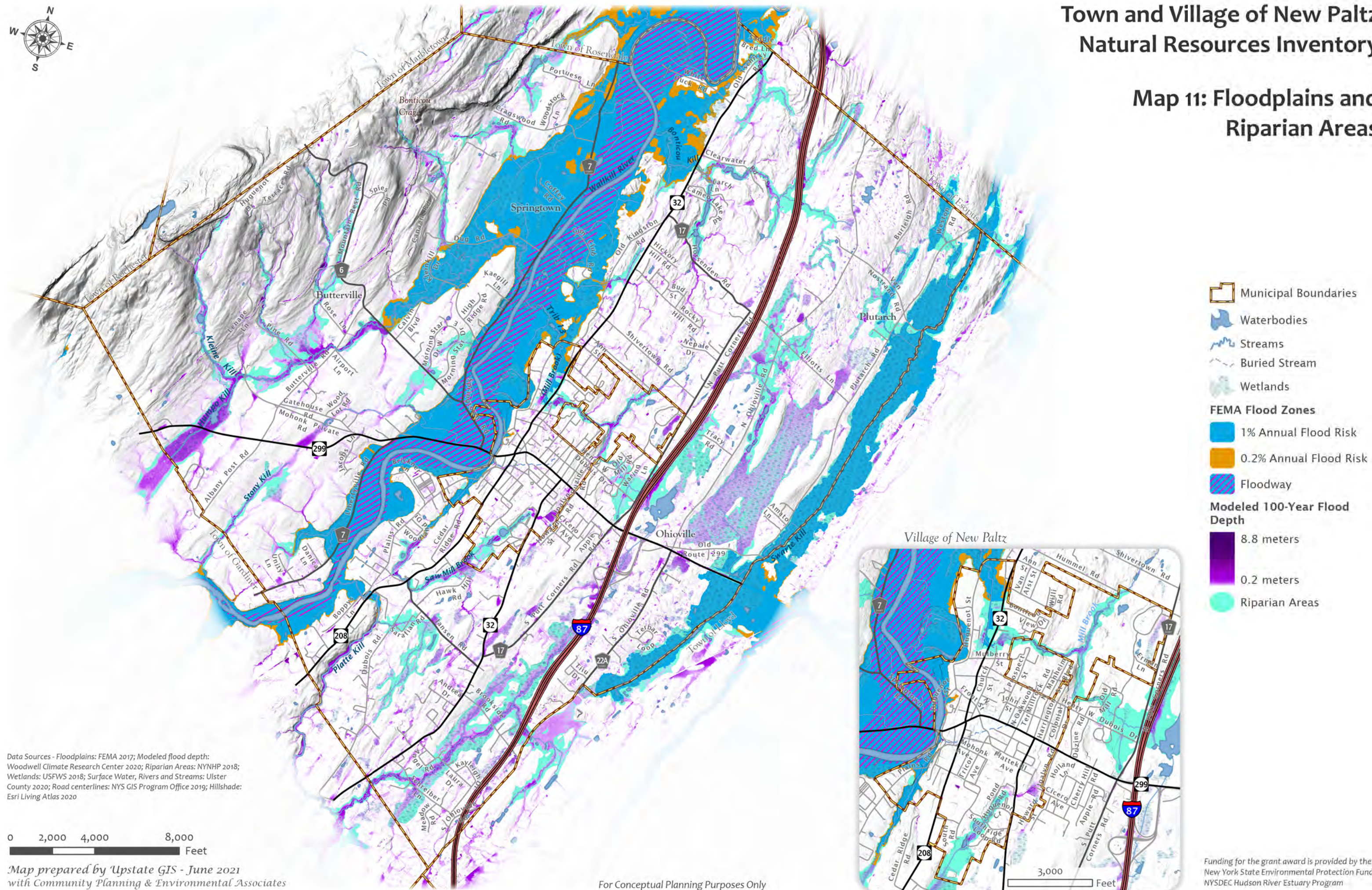


Funding for the grant award is provided by the New York State Environmental Protection Fund, NYSDEC Hudson River Estuary Program



Town and Village of New Paltz Natural Resources Inventory

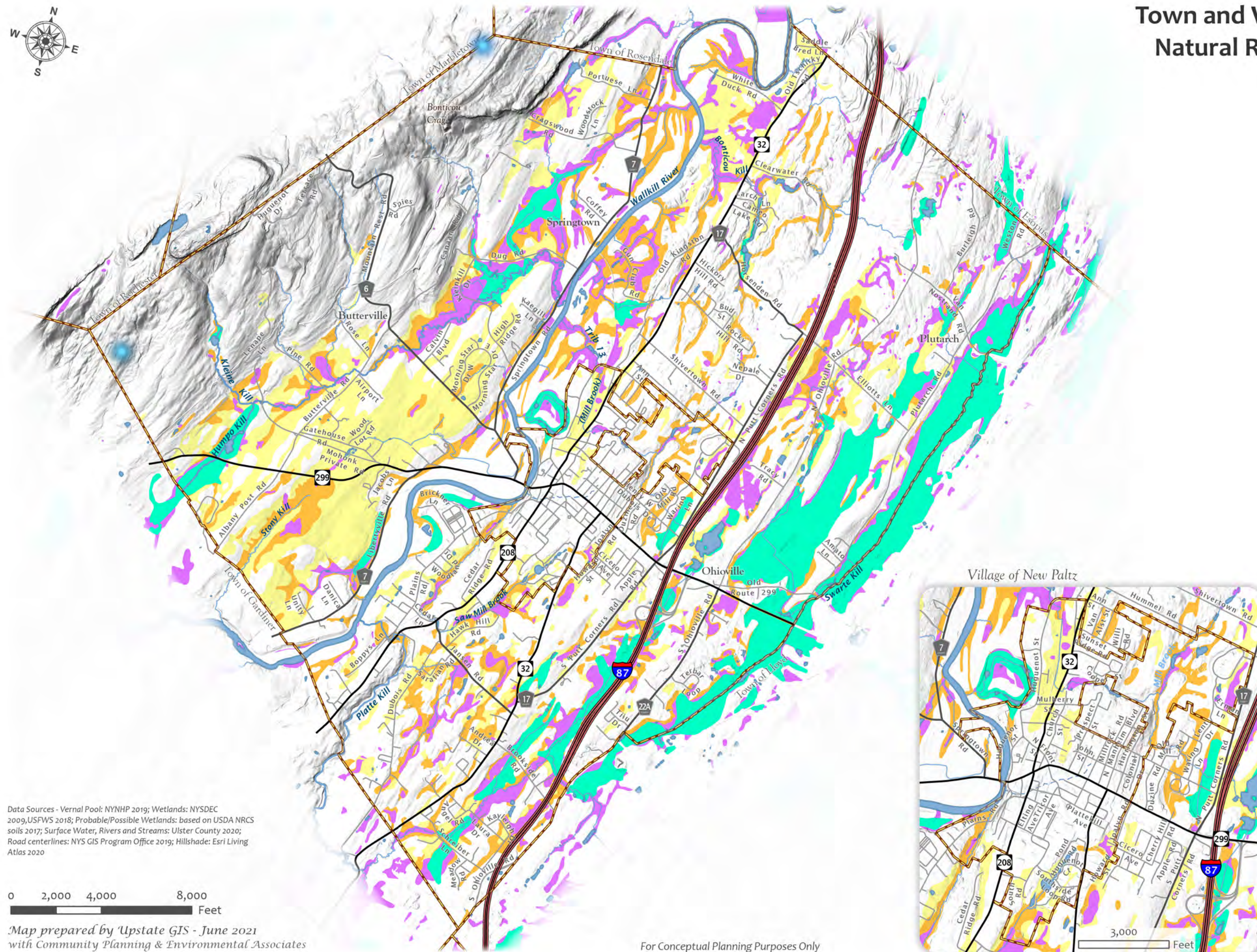
Map 11: Floodplains and Riparian Areas





Town and Village of New Paltz Natural Resources Inventory

Map 12: Wetlands

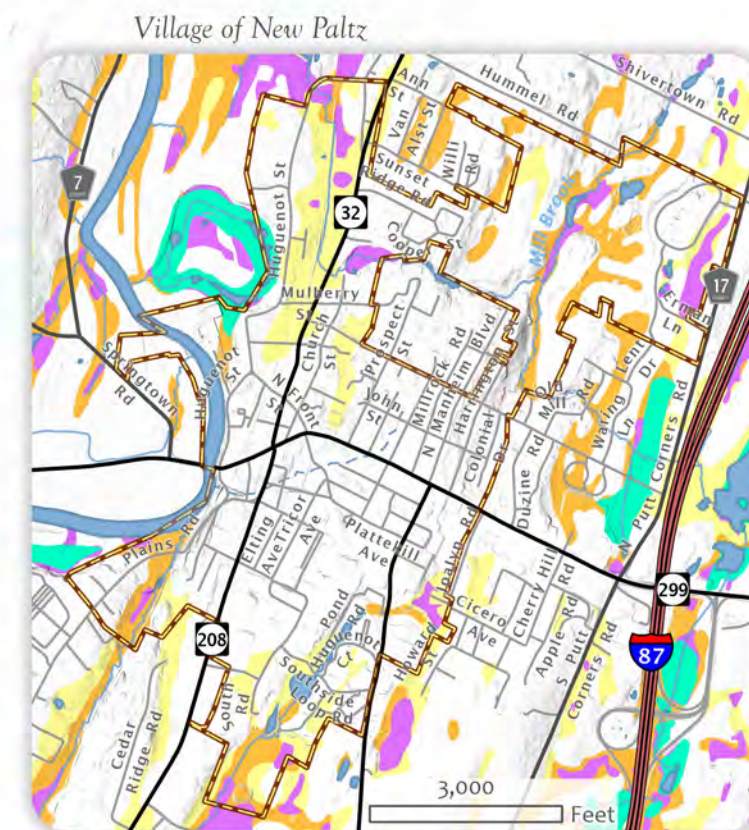


Data Sources - Vernal Pool: NYNHP 2019; Wetlands: NYSDEC 2009, USFWS 2018; Probable/Possible Wetlands: based on USDA NRCS soils 2017; Surface Water, Rivers and Streams: Ulster County 2020; Road centerlines: NYS GIS Program Office 2019; Hillshade: Esri Living Atlas 2020

0 2,000 4,000 8,000
Feet

Map prepared by Upstate GIS - June 2021
with Community Planning & Environmental Associates

For Conceptual Planning Purposes Only



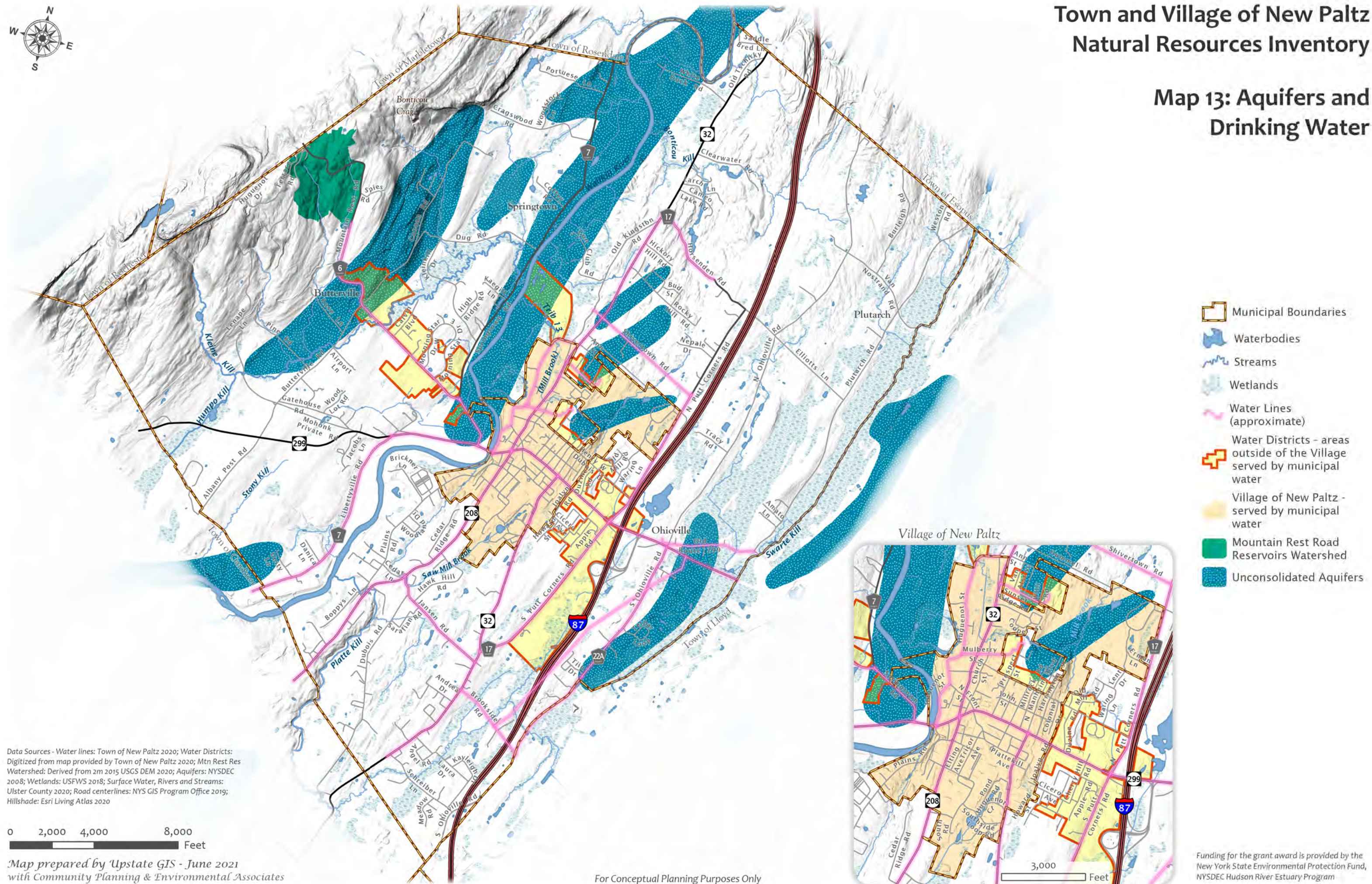
- Municipal Boundaries
- Waterbodies
- Streams
- Buried Stream
- NYSDEC Wetlands
- USFWS NWI Wetlands
- Probable Wetlands
- Possible Wetlands
- Vernal Pool

Funding for the grant award is provided by the
New York State Environmental Protection Fund,
NYSDEC Hudson River Estuary Program



Town and Village of New Paltz Natural Resources Inventory

Map 13: Aquifers and Drinking Water



7 HABITATS AND WILDLIFE

KEY CONCEPTS (MAPS 14-19)

New Paltz contains a high level of biological diversity of both regional and local significance. This chapter discusses habitats that occur in New Paltz, such as matrix forests, meadows, and stream habitats, as well as the variety of other habitat areas that are contained throughout New Paltz, such as wetlands. Species known to occur in New Paltz, and associated areas of important habitat are also included and discussed.

For more information on habitats and wildlife resources see

<https://www.townofnewpaltz.org/environmental-conservation-board>:

New Paltz Habitat Summary Report

A habitat is the place where an organism or population lives or where a biological community occurs. It is defined by both its biological (plants, animals, fungi, bacteria, etc.) and non-biological components and their interactions with each other. The non-biological components include features such as sunlight, moisture, slope, soils, soil or water chemistry, and bedrock substrates.

A healthy ecosystem has a diversity of native species of plants and animals. These can only be maintained with equally diverse habitats to support them. The sizes of habitats, their spatial relationships to each other, and their connectedness across the larger landscape all contribute to an area's health and biological diversity. Habitats are essential components of the ecosystems that make the world habitable for us and the living world around us.

This chapter profiles some of the significant habitats in New Paltz. These include forest, meadow, wetland, and stream habitats. The information included comes from publicly available sources relevant to New Paltz and the region, such as Ecological Communities of New York State, the Biodiversity Assessment Manual for the Hudson River Estuary Corridor, the New Paltz Habitat Summary (Nardi-Cyrus, 2019), and the Hudson River Estuary Wildlife and Habitat Conservation Framework (Penhollow et al. 2006). Significant biodiversity areas, important bird areas, and stream habitats are also mapped and described. Map 14 gives a regional perspective of some of the major habitats in New Paltz, while Map 15 details priority biodiversity areas specific to New Paltz. This Chapter also provides information on forests, large meadows and agricultural fields, stream habitats, and significant ecosystems and rare species.

7.1 REGIONAL BIODIVERSITY

KEY CONCEPTS (MAP 14)

The variety of habitats in New Paltz, and their locations, are largely the result of the underlying geologic and hydrologic conditions described in earlier chapters.

New Paltz is included in several biodiversity areas and ecosystems of regional and statewide significance. Map 14 illustrates how the town and village relate to these larger landscape-scale features which include Matrix Forest Blocks, Forest Linkage Zones, an Important Bird Area, and Significant Biodiversity Areas. These large, contiguous areas contribute to habitat connectivity and ecosystem resilience throughout the Hudson Valley. They cross political and property boundaries and benefit from the conservation partnerships with many involved stakeholders that exist.

ABOUT MAPPED FEATURES (MAP 14)

Important Bird Areas: The National Audubon Society and their partners have identified over 2,800 areas important for birds in the United States encompassing 417,403,683 acres (National Audubon Society 2006). These are sites that provide an essential habitat to one or more species for breeding, wintering, or migrating birds.

Matrix Forest Blocks: These are large contiguous areas of forest whose size and natural conditions allow for the maintenance of ecological processes, viable ecological communities, and plants and animals that cannot necessarily persist in smaller or poorer-quality forests. They are considered important habitat for interior forest species and represent the best example of viable matrix forest. Matrix Forest Blocks were delineated by The Nature Conservancy (TNC) and the New York Natural Heritage Program (NYNHP).

Forest Linkage Zone: These are areas, delineated by TNC and NYNHP, that link Matrix Forest Blocks, and are thus important for maintaining ecosystem health, ecological connections, and travel corridors.

Significant Biodiversity Areas: These are locations of high concentration of biological diversity or value for the regional biodiversity in the Hudson River estuary watershed. Significant Biodiversity Areas (SBAs) were identified by the NYS DEC Hudson River Estuary Program and Cornell University. As a set, the 23 SBAs account for much of the range in biodiversity found in the region but should not be interpreted as the only important areas within the region. SBAs are defined by unique topography, geology, hydrology, and biology that distinguish them from neighboring areas.

MORE ABOUT REGIONAL BIODIVERSITY IN NEW PALTZ

Important Bird Areas: The western corner of New Paltz at the boundary with Gardiner and Rochester was designated by Audubon as part of the Northern Shawangunk Mountains Important Bird Area (IBA). This is part of a larger area encompassing the Shawangunk Ridge. It is designated as an IBA because this area has ‘one of the most unusual pine barrens in the northeast and a largely unfragmented chestnut-oak forest’ (Audubon.org/important-bird-areas/northern-shawangunk-mountains). The area supports 27 rare plants, nine rare insects, and three other rare natural communities. According to the NY Gap Analysis Project (GAP) land cover data (USGS 2016), approximately 85% of the site is forested.

Matrix Forest Blocks: The Matrix Forest Block in New Paltz can be found in the northeastern portion of Town and includes a wide area of land just east of the New York State Thruway and extending beyond the Town boundary south to Route 299, north into the Town of Esopus and east to Route 9W. This large, forested area is easily visible on Map 2 (Aerial Image).

This forest block is the nearly 26,000-acre Shaupeneak matrix forest block. This matrix forest is crucial for regional habitat connectivity and is a critical link to the mid-Hudson Valley region’s larger, forested mountain and ridge areas in the Catskills, Shawangunk’s, Taconics, and Hudson Highlands. In New Paltz, the Shaupeneak matrix forest block is linked to the Northern Shawangunk matrix forest block via the forested northern and western sections of Town (Nardi-Cyrus 2019). Other parts of the Shawangunk Ridge south of New Paltz are also designated matrix forests. These large forests support breeding populations of forest-interior species, including numerous forest songbirds, raptors, and far-ranging animals like black bear, fisher, and bobcat.

Forest Linkage Zone: The Linkage Zone in New Paltz connects several large forests together. The Linkage Zone extends from the Northern Gunk Matrix Forest Block in Wawarsing and

Gardiner, along the Shawangunk Ridge through a large area of western and northern New Paltz, and east to connect with the Shaupeneak Matrix Forest Block situated east of the NYS Thruway. These forested areas have important habitat values as wildlife travel corridors, maintaining of biodiversity of the area, and protecting water quality.

Smaller forests are also found in New Paltz. Although they have limited habitat value for sensitive forest species and suffer greater impacts from development, they are very important to link larger forests together. For example, the patches of forest between the Thruway and Route 32, between

Shivertown and Clearwater roads (Map 14), support the Linkage Zone that connects the Matrix Forest Blocks in and near New Paltz. Regardless of size or habitat values, all forests and trees in the town help to manage stormwater, sequester carbon, moderate temperature, and improve air quality, among other ecosystem benefits.



Part of the Forest Linkage Zone that links the Northern Shawangunk matrix forest to the Shaupeneak matrix forest block

Significant Biodiversity Areas (SBA) in New Paltz: New Paltz contains parts of two Significant Biodiversity Areas (SBA): the Shawangunk Ridge SBA and the Esopus/Lloyd Wetlands and Ridges SBA. Map 14 also shows SBAs that occur outside of New Paltz and contribute to the biodiversity of the larger Mid-Hudson region. Map 14 shows the following SBA's within New Paltz:

Shawangunk Ridge SBA: The Shawangunk Ridge SBA, located in the eastern portion of Town and extending to the east and south of New Paltz, contains an unusual diversity of plant communities and a high diversity of associated plant and animal species. The high diversity in the area is due in part to the wide range of topography and geological substrate. The area contains communities that range from wetland to ridgetop, slope, and cliff. The forested habitats are important as a migration corridor for raptors, other migratory birds, and wide-ranging mammals. The forest here is dominated by the matrix chestnut oak forest, where chestnut oak, red oak, huckleberry, and mountain laurel are the most abundant tree and shrub species.

"The Shawangunk Ridge is the northernmost ridge in the Appalachian Ridge and Valley physiographic province. There is a high diversity of vegetative communities on the ridge containing species and communities typically found north of this region alongside species and communities typically found to the south or restricted to the Coastal Plain. This results in an unusual area where many regionally rare plants and animals are found at or near the limits of their ranges. Other rare species found in the habitat area are those adapted to the harsh conditions on the ridge" (Penhollow et al. 2006)

Penhollow et al. (2006) also describe the regionally significant upland communities of chestnut oak and mixed oak forest, pine barrens including globally and state rare dwarf pine

ridges, hemlock northern hardwood forest, state-rare pitch pine-oak-heath rocky summit and cliff, and talus slope and cave communities. A variety of wetlands, small lakes, streams, and bogs occur in the area and also contain regionally significant communities.

Northern copperhead and eastern hognose snake occur at several locations in this area, as does the five-lined skink. Turtles inhabiting the ridge include spotted turtles in the ponds and wetlands, and wood turtles in wooded riparian habitat all along the ridge. The diversity of relatively unfragmented, undisturbed, deciduous and coniferous forests, and wetlands on the ridge supports a variety of nesting bird species and also serves as an important corridor for many migrating species. There are several area-sensitive, large mammal species in the area including black bear, bobcat, and fisher.

Esopus/Lloyd Wetlands and Ridges SBA: Another similarly large forest is within the Esopus/Lloyd Wetlands and Ridges SBA, an area designated, in part, because its forests harbor rare amphibian species. This forest has been identified by TNC as the Shaupeneak Matrix Forest Block because of its large size and limited fragmentation. See also description of the Esopus/Lloyd Wetlands and Ridges in Section 7.2.

This area contains wetland and upland habitat that is of particular importance to amphibian species and breeding waterfowl. Upland communities include ridges, ledges, and a mature hemlock-northern hardwood forest.

The Esopus/Lloyd Wetlands and Ridges also includes significant wetland communities that support threatened amphibian species and many species of waterfowl. In addition to the mature hemlock-northern hardwood forest, this SBA also includes red maple hardwood swamp, Appalachian oak-hickory forest, and beech-maple mesic forest. Wetlands in this biodiversity area are home to the state-listed northern cricket frog.

Map 14 and the above description describe regionally significant biodiversity areas. See Map 15 and Section 7.2 for more complete description of significant local biodiversity areas in New Paltz.

7.2 NEW PALTZ PRIORITY BIODIVERSITY AREAS

KEY CONCEPTS (MAP 15)

This section provides biodiversity information specific to New Paltz based on known occurrences of rare plants, rare animals, and significant natural communities. While recognizing that the Hudson River estuary corridor itself is a significant biodiversity area within the context of New York State, New England, and the mid-Atlantic portions of the U.S. (Penhollow et al. 2006), local data can be most useful in helping New Paltz in its conservation goals. Locations identified by the New York Natural Heritage Program (called Important Areas and Significant Natural Communities), and important biodiversity areas identified as part of the Northern Wallkill region are presented and discussed in this section.

ABOUT MAPPED FEATURES (MAP 15)

Northern Wallkill Biodiversity Areas: The following biodiversity areas have been locally identified and described:

- Libertyville Road Grassland Biodiversity Area
- Humpo Marsh Biodiversity Area
- Kleine Kill Grassland Biodiversity Area

- Mohonk Uplands Biodiversity Area
- Springtown Biodiversity Area
- Bonticou Crag Biodiversity Area
- Wallkill Oxbow Biodiversity Area
- Cameo Lake Biodiversity Area
- Northern Swarte Kill Biodiversity Area (Lloyd and New Paltz)
- Central Swarte Kill Wetland Biodiversity Area (Lloyd and New Paltz)



Fields along Butternut Road, within the Kleine Kill Grassland Biodiversity Area

MORE ABOUT NEW PALTZ PRIORITY BIODIVERSITY AREAS

Extensive work has been done locally to identify, inventory and understand locally important habitats that contribute to the unique biodiversity in New Paltz. The Northern Wallkill Biodiversity Areas (LaBruna and Klemens 2007) along with the Town of New Paltz Open Space Plan, the New Paltz Community Preservation Plan and other efforts have identified these biodiversity areas. In some cases, classifications overlap with each other. The descriptions below summarized known information. Map 15 shows the Northern Wallkill Biodiversity Areas. The descriptions for each are presented below and are directly from the MCA document (LaBruna, D. T. and M. W. Klemens. 2007. Northern Wallkill Biodiversity Plan: Balancing Development and Environmental Stewardship in the Hudson River Estuary Watershed. MCA Technical Paper No. 13, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York).

1. **Libertyville Road Grassland Biodiversity Area** -

The Libertyville Road Grassland Biodiversity Area offers grassland birds surrogate habitat in the form of agricultural fields. Although this area is small in size, we observed a high concentration of grassland birds here, including bobolink (*Dolichonyx orizivorous*), eastern meadowlark (*Sturnella magna*), and field sparrow (*Spizella pusilla*). Similar to Humpo Marsh Biodiversity Area (see below), this area offers the potential for collaboration between New Paltz and Gardiner as grassland bird species may occur on the Gardiner side of the border.

2. **Humpo Marsh Biodiversity Area** - For a small area, and possibly owing to its proximity to Mohonk Preserve, the Humpo Marsh Biodiversity Area contains a high amount of bird diversity representing a variety of habitat types. Seventy-eight bird species have been observed in the Humpo Marsh.

The Libertyville Road Grassland Biodiversity Area is contained within a larger area known as the Stony Kill Woods. This larger area is important for its wildlife habitat, water resource, large forest, and scenic resources. The Stony Kill Woods is a large block of forest and early successional habitat. The Stony Kill stream is a tributary of the Wallkill River. This larger area is an important stepping-stone habitat between protected lands in the Shawangunk Ridge and the Wallkill River. It is part of the Butternut-Canaan Foothills priority area in the Town of New Paltz Open Space Plan, is a core habitat identified by Ulster County, and home to birds of conservation concern.

Medium development-sensitivity habitat (MDS) species such as American redstart (*Setophaga ruticilla*), eastern bluebird (*Sialia sialis*), great crested flycatcher (*Myiarchus*

crinitus), pied-billed grebe (*Podilymbus podiceps*) (a state-listed species), swamp sparrow (*Melospiza georgiana*), warbling vireo (*Vireo gilvus*), wood duck (*Aix sponsa*), wood thrush (*Hylocichla mustelina*), and yellow-throated vireo (*Vireo flavifrons*); the grassland bird species bobolink, eastern meadowlark, field sparrow, and vesper sparrow (*Poocetes gramineus*) (a state-listed species); and several high development-sensitivity habitat (HDS) bird species including least bittern (*Ixobrychus exilis*) (a state-listed species), willow flycatcher (*Empidonax traillii*), pileated woodpecker (*Dryocopus pileatus*), scarlet tanager (*Piranga olivacea*), and northern waterthrush (*Seiurus noveboracensis*) were observed.

3. **Kleine Kill Grassland Biodiversity Area** - The Kleine Kill Grassland Biodiversity Area is important because it consists of agricultural field habitat that grassland birds utilize in the absence of natural grasslands. This area contains several grassland bird species, including bobolink, eastern meadowlark, field sparrow, savannah sparrow (*Passerculus sandwichensis*), and eastern kingbird (*Tyrannus tyrannus*), found in abundance, as well as over a dozen MDS bird species including the American kestrel (*Falco sparverius*), and prairie warbler (*Dendroica discolor*), among others. Additionally, this biodiversity area provides habitat for the MDS eastern box turtle (*Terrapene carolina*) the HDS wood turtle (*Clemmys insculpta*), both of which are state-listed.

4. **Mohonk Uplands Biodiversity Area** - This Biodiversity Area consists of uplands in the Mohonk Preserve region of the Shawangunk Ridge. It contains habitat for three HDS herpetofauna species; northern spring salamander (*Gyrinophilus porphyriticus*), Jefferson salamander complex (*Ambystoma jeffersonianum* complex), and wood turtle, the latter two of which are state listed. Two MDS herpetofauna species were found here, the northern red salamander (*Pseudotriton ruber*) and northern black racer (*Coluber c. constrictor*). This area also contains quality habitat for several HDS bird species including Louisiana waterthrush (*Seiurus motacilla*), pileated woodpecker, scarlet tanager, and worm-eating warbler (*Helminthos vermivorum*). The MDS bird species found

Northern Wallkill Biodiversity Areas 2, 3, 4 and 6 are within the Shawangunk Ridge and are areas important for wildlife habitat, large forest, steep slopes, water resources, and scenic value. The Shawangunk Ridge is one of the highest priority areas for biodiversity conservation identified in the New York State Open Space Conservation Plan. These areas are within a statewide forest linkage zone connecting the globally significant forests of Minnewaska State Park and the Shaupeneak forest block east of the NYS Thruway. It is an outstanding core habitat area mapped by Ulster County, and an important bird area mapped by Audubon NY. The area supports headwaters of the Wallkill River and the Village public water supply.



Duck Pond, located in the Mohonk Uplands Biodiversity Area

here numbered over a dozen and include yellow-billed cuckoo (*Coccyzus americanus*), brown thrasher (*Toxostoma rufum*), and yellow-throated vireo (*Vireo flavifrons*), among others. The Mohonk Uplands Biodiversity Area is strategically located adjacent to the Mohonk Preserve. As such, it serves as the ecological “gateway” to the Preserve, providing an important habitat connection function that links the wildlife of Mohonk Preserve to the rest of New Paltz and Lloyd.

5. Springtown Biodiversity Area - The complex of wetlands and uplands in the Springtown Biodiversity Area provides habitat to several HDS birds, including the black-billed cuckoo (*Coccyzus erythrophthalmus*), pileated woodpecker, scarlet tanager, willow flycatcher, and wormeating warbler. Amongst the nearly twenty MDS bird species it hosts are the barred owl (*Strix varia*), eastern wood-pewee (*Contopus virens*), and rose-breasted grosbeak (*Pheucticus ludovicianus*). This area also provides habitat for three HDS herpetofauna species (wood turtle, spotted turtle (*Clemmys guttata*), and Jefferson salamander complex), as well as three MDS herpetofauna species (box turtle, marbled salamander (*Ambystoma opacum*), and northern red salamander). All of these herpetofauna species are state-listed, with the exception of the last. This biodiversity area encompasses a portion of the Kleine Kill and abuts the Wallkill River. Situated as the central area connecting Bonticou Crag, Wallkill River Oxbow Grassland, and the Mohonk Uplands Biodiversity Areas, it serves an important role in maintaining habitat connections between them.

6. Bonticou Crag Biodiversity Area - The ridgelines along Bonticou Crag offer high quality habitat to several herpetofauna species including the HDS species the timber rattlesnake (*Crotalus horridus*) and Jefferson salamander complex, as well as the MDS eastern box turtle, marbled salamander, and northern black racer. All of these species are state-listed with the exception of the last. As many reptiles are known to travel along ridgelines, and because these ridgelines run north into Rosendale, we suggest to New Paltz the possibility of a future partnership with this neighbor to the north to maintain habitat connections for these development-sensitive species.

7. Wallkill Oxbow Grassland Biodiversity Area -

Where the Wallkill River forms an oxbow in northwestern New Paltz, the Wallkill Oxbow Grassland Biodiversity Area consists of agricultural field habitat that grassland bird species, including bobolink, eastern kingbird, eastern meadowlark, field sparrow, savannah sparrow, and vesper sparrow (a state-listed species), utilize in the absence of natural grasslands. Because grassland-surrogate agricultural fields extend past the town line into Rosendale, an opportunity exists to extend habitat protection across the border. As birds do not observe such political boundaries, and because grassland habitat is lacking in the region, an intermunicipal collaboration could be of great benefit to grassland birds. In addition to grassland birds, six HDS bird species were observed, including: American bittern (a state-listed species), Canada warbler, northern waterthrush, pileated woodpecker, scarlet tanager, and worm-eating warbler. Twenty MDS bird species were also observed, including bank swallow (*Riparia riparia*), spotted sandpiper (*Actitis macularia*), and tree swallow (*Tachycineta bicolor*), among others. In addition, two state-listed, HDS herpetofauna species were observed in this biodiversity area -- the wood turtle and Jefferson salamander complex.

The Wallkill River and Kleine Kill corridor is another important biodiversity area. These are greenways that include intact habitat blocks that form a major wildlife corridor connecting the Wallkill River flats to the Shawangunk foothills and ridge, including core habitats mapped by Ulster County. The corridor includes significant upland and floodplain forests and wetlands supporting numerous species of conservation concern. It is an area identified as a priority in the Town of New Paltz Open Space Plan.

The Cameo Lake Biodiversity Area is within the larger Clearwater Woods. This large forest offers a swath of relatively unfragmented habitat and serves as an important stepping-stone in the statewide forest linkage zone connecting the Shawangunk Ridge and the Shaupeneak forest block. It is also identified as a priority in the Town of New Paltz Open Space Plan, and the northern half of this forest block provides habitat to forest birds and reptiles of conservation concern.

8. Cameo Lake Biodiversity Area - This biodiversity area offers a large swath of relatively unfragmented habitat. Six HDS bird species, including the black-billed cuckoo, Louisiana waterthrush, pileated woodpecker, red-shouldered hawk (a state-listed species), scarlet tanager, and worm-eating warbler; nineteen MDS bird species, including Swainson's thrush (*Catharus ustulatus*), swamp sparrow (*Melospiza georgiana*), and veery (*Catharus fuscescens*), among others; as well as two grassland bird species, the eastern kingbird and field sparrow. In addition, this area provides habitat for two state-listed reptiles, the eastern box turtle, and the wood turtle, MDS and HDS species, respectively.

9. Northern Swarte Kill Biodiversity Area - The Swarte Kill is the dividing line between New Paltz and Lloyd. At the northern end of this dividing line, mainly on the New Paltz (western) side but also including a portion of the Lloyd (eastern) bank, is the Northern Swarte Kill Biodiversity Area. Despite being fragmented by several roads (North Ohioville Road, Van Nostrand Road, Burleigh Road, Plutarch Road, and Elting Corners Road), this area has retained much bird biodiversity, perhaps due to a low incidence of subdivision-style sprawl development. The HDS bird species observed here include the Louisiana waterthrush, magnolia warbler, pileated woodpecker, red-shouldered hawk (a state-listed species), scarlet tanager, and willow flycatcher. Nearly a dozen MDS bird species were also observed, including American woodcock (*Scolopax minor*), ovenbird, and wood duck, among others. Two grassland species were also observed, the eastern kingbird and field sparrow. In addition, the state-listed HDS Jefferson salamander complex was observed here, as well as the MDS northern red salamander and MDS, state-listed marbled salamander.

Within the Northern Swarte Kill Biodiversity Area is the Plutarch Woods and Wetlands. This northeast corner of New Paltz is part of a much larger swath of unfragmented habitat extending into neighboring towns. It is part of the Esopus-Lloyd Wetlands and Ridges Significant Biodiversity area, part of the globally significant Shaupeneak matrix forest identified as a priority in the Town of New Paltz Open Space Plan and includes core habitats mapped by Ulster County. It supports species of conservation concern associated with large forests and forested wetlands including forest-dwelling amphibians.



10. Central Swarte Kill Wetland Biodiversity Area - Like the Northern Swarte Kill Biodiversity Area, the Central Swarte Kill Wetland Biodiversity Area encompasses land in both New Paltz and Lloyd and, as such, provides another opportunity for intermunicipal cooperation in conservation and land use planning. Despite the influences of being adjacent to or intersected by several major roads, (including Route 299, New Paltz Road, I-87, Ohioville Road, and South Street), this wetland provides habitat for the Jefferson salamander complex and the spotted turtle, both of which are HDS, state-listed species. In addition to three grassland species found here (eastern kingbird, field sparrow, and savannah sparrow), multiple HDS bird species were observed, including Canada warbler, Louisiana waterthrush, pileated woodpecker, scarlet tanager, and willow flycatcher. The MDS bird species observed here number over a dozen and include spotted sandpiper, blue-headed vireo (*Vireo solitarius*) and swamp sparrow (*Melospiza georgiana*), among others.

The Swarte Kill wetlands is a major complex that overlies a large aquifer. It is part of the Esopus-Lloyd Wetlands and Ridges Significant Biodiversity Area, is part of the Shaupeneak globally-significant matrix forest block, is a priority area identified in the New Paltz Open Space Plan and in the New York State Open Space Plan and contains high-ranking core habitat areas identified by Ulster County. It is notable for its size and variety and habitat for numerous wetland-dependent wildlife species, including the threatened cricket frog.



Focal Species of the Northern Wallkill Region (LaBruna and Clemens 2007)

Development-Associated Focal Species

Amphibians

Northern two-lined salamander	<i>Eurycea bislin eata</i>
Redback salamander	<i>Plethodon cinereus</i>
American toad	<i>Bufo americanus</i>
Northern spring peeper	<i>Pseudacris crucifer</i>
Bullfrog	<i>Rana catesbeiana</i>
Green frog	<i>Rana clamitans</i>

Reptiles

Common snapping turtle	<i>Chelydra serpentina</i>
Painted turtle	<i>Chrysemys picta species</i>
Northern water snake	<i>Nerodia sipedon</i>
Northern brown snake	<i>Storeria d. dekayi*</i>
Eastern garter snake	<i>Thamnophis s. sirtalis</i>

Birds

Canada goose	<i>Branta canadensis</i>
Mute swan	<i>Cygnus olor</i>
Cattle egret	<i>Bubulcus ibis</i>
Killdeer	<i>Charadrius vociferus</i>
Rock dove	<i>Columba livia</i>
Blue jay	<i>Cyanocitta cristata</i>
American crow	<i>Corvus brachyrhynchos</i>
European starling	<i>Sturnus vulgaris</i>
Brown-headed cowbird	<i>Molothrus ater</i>
House finch	<i>Carpodacus mexicanus</i>
House sparrow	<i>Passer domesticus</i>
Northern mockingbird	<i>Mimus polyglottos</i>
House wren	<i>Troglodytes aedon</i>

**This species from NYS DEC data only; all others recorded by MCA only or by both MCA and NYS DEC.*

The following table inventories the Natural Heritage Rare, threatened, and endangered species list for the Town and Village (LaBruna and Klemens 2007).

Town and Village of New Paltz - Natural Resources Inventory – June 2021

		<u>Federal Status</u>	<u>State Status</u>	<u>WCS/MCA Development- Sensitivity Level</u>	<u>Grassland Dependen</u>
Amphibians					
Jefferson salamander complex	<i>Ambystoma jeffersonianum complex</i> [†]		SC	HDS	
Spotted salamander	<i>Ambystoma maculatum</i>			LDS	
Marbled salamander	<i>Ambystoma opacum</i>		SC	MDS	
Northern dusky salamander	<i>Desmognathus fuscus</i>			LDS	
Mountain dusky salamander	<i>Desmognathus ochrophaeus</i>			LDS	
Northern spring salamander	<i>Gyrinophilus porphyriticus</i>			HDS	
Northern slimy salamander	<i>Plethodon glutinosus</i>			LDS	
Northern red salamander	<i>Pseudotriton ruber</i>			MDS	
Northern cricket frog	<i>Acris crepitans</i>		E	HDS	
Gray treefrog	<i>Hyla versicolor</i>			LDS	
Wood frog	<i>Rana sylvatica</i>			LDS	
Reptiles					
Spotted turtle	<i>Clemmys guttata</i>		SC	HDS	X
Wood turtle	<i>Clemmys insculpta</i>		SC	HDS	
Bog turtle	<i>Clemmys muhlenbergii</i> *	T	E	HDS	X
Eastern box turtle	<i>Terrapene carolina</i>		SC	MDS	
Northern five-lined skink	<i>Eumeces fasciatus</i> *			HDS	
Northern black racer	<i>Coluber c. constrictor</i>			MDS	
Black rat snake	<i>Elaphe obsoleta</i>			LDS	
Eastern ribbon snake	<i>Thamnophis s. sauritus</i>			HDS	X
Northern copperhead	<i>Agkistrodon contortrix mokasen</i> *			HDS	
Timber rattlesnake	<i>Crotalus horridus</i> *		T	HDS	

Town and Village of New Paltz - Natural Resources Inventory – June 2021

Birds		<u>Federal Status</u>	<u>State Status</u>	<u>Watchlist Status</u>	<u>Development- Sensitivity Level</u>	<u>Grassland Dependent</u>
Pied-billed grebe	<i>Podilymbus podiceps</i>		T		MDS	
American black duck	<i>Anas rubripes</i>			D	MDS	
Wood duck	<i>Aix sponsa</i>				MDS	
American bittern	<i>Botaurus lentiginosus</i>		SC		HDS	
Least bittern	<i>Ixobrychus exilis</i>		T		HDS	
Green heron	<i>Butorides virescens</i>				LDS	
Virginia rail	<i>Rallus limicola</i>				MDS	
Common moorhen	<i>Gallinula chloropus</i>				LDS	
American woodcock	<i>Scolopax minor</i>			D	MDS	
Spotted sandpiper	<i>Actitis macularia</i>					
Sharp-shinned hawk	<i>Accipiter striatus</i>		SC		MDS	
Cooper's hawk	<i>Accipiter cooperii</i>		SC		MDS	
Red-shouldered hawk	<i>Buteo lineatus</i>		SC		HDS	
Broad-winged hawk	<i>Buteo platypterus</i>				MDS	
Peregrine falcon	<i>Falco peregrinus</i>		E		LDS	
American kestrel	<i>Falco sparverius</i>				MDS	
Barred owl	<i>Strix varia</i>					
Yellow-billed cuckoo	<i>Coccyzus americanus</i>				MDS	
Black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>				HDS	
Pileated woodpecker	<i>Dryocopus pileatus</i>				HDS	
Northern flicker	<i>Colaptes auratus</i>				LDS	
Eastern kingbird	<i>Tyrannus</i>				MDS	X
Great crested flycatcher	<i>Myiarchus crinitus</i>				MDS LDS	
Least flycatcher	<i>Empidonax minimus</i>					
Eastern wood-pewee	<i>Contopus virens</i>				MDS	
Willow flycatcher	<i>Empidonax traillii</i>			D	HDS	
Alder flycatcher	<i>Empidonax alnorum</i>				HDS	

Town and Village of New Paltz - Natural Resources Inventory – June 2021

		<u>Federal Status</u>	<u>State Status</u>	<u>Watchlist Status</u>	<u>Development- Sensitivity Level</u>	<u>Grassland Dependent</u>
Birds (continued)						
Common raven	<i>Corvus corax</i>				MDS	
Bobolink	<i>Dolichonyx oryzivorus</i>				HDS	X
Eastern meadowlark	<i>Sturnella magna</i>				MDS	X
Orchard oriole	<i>Icterus spurius</i>				MDS	
Baltimore oriole	<i>Icterus galbula</i>				LDS	
Vesper sparrow	<i>Pooecetes gramineus</i>		SC		MDS	X
Savannah sparrow	<i>Passerculus sandwichensis</i>				MDS	X
Fie ld sparrow	<i>Spizella pusilla</i>				MDS	X
Swamp sparrow	<i>Melospiza georgiana</i>				MDS LDS	
Eastern towhee	<i>Pipilo erythrophthalmus</i>					
Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>				MDS	
Indigo bunting	<i>Passerina cyanea</i>				LDS	
Scarlet tanager	<i>Piranga olivacea</i>				HDS	
Tree swallow	<i>Tachycineta bicolor</i>				MDS	
Bank swallow	<i>Riparia</i>				MDS	
Red-eyed vireo	<i>Vireo olivaceus</i>				LDS MDS	
Warbling vireo	<i>Vireo gilvus</i>					
Yellow-throated vireo	<i>Vireo flavifrons</i>				MDS	
Blue-headed vireo	<i>Vireo solitarius</i>				MDS	
White-eyed vireo	<i>Vireo griseus</i>				MDS	
Black-and-white warbler	<i>Mniotilta varia</i>				LDS	
Worm-eating warbler	<i>Helmitheros vermivorum</i>			D	HDS	
Blue-winged warbler	<i>Vermivora pinus</i>			D	MDS	
Northern parula	<i>Parula americana</i>					
Black-throated blue warbler	<i>Dendroica caerulescens</i>				HDS	
Magnolia warbler	<i>Dendroica magnolia</i>				HDS	
Chestnut-sided warbler	<i>Dendroica pensylvanica</i>				MDS	

Birds (continued)		<u>Federal Status</u>	<u>State Status</u>	<u>Watchlist Status</u>	<u>Development-Sensitivity Level</u>	<u>Grassland Dependent</u>
Blackburnian warbler	<i>Dendroica fusca</i>				HDS	
Black-throated green warbler	<i>Dendroica virens</i>				MDS	
Prairie warbler	<i>Dendroica discolor</i>			D	MDS	
Ovenbird	<i>Seiurus aurocapilla</i>				MDS	
Northern waterthrush	<i>Seiurus noveboracensis</i>				HDS	
Louisiana waterthrush	<i>Seiurus motacilla</i>				HDS	
Yellow-breasted chat	<i>Icteria virens</i>		SC		HDS	
Hooded warbler	<i>Wilsonia citrina</i>				HDS	
Canada warbler	<i>Wilsonia canadensis</i>			D	HDS MDS	
American redstart	<i>Setophaga ruticilla</i>					
Brown thrasher	<i>Toxostoma rufum</i>				MDS	
Winter wren	<i>Troglodytes</i>				MDS	
Marsh wren	<i>Cistothorus palustris</i>				MDS	
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>				LDS	
Wood thrush	<i>Hylocichla mustelina</i>			D	MDS	
Veery Swainson's thrush	<i>Catharus fuscescens</i>				MDS	
	<i>Catharus ustulatus</i>					
Eastern bluebird	<i>Sialia sialis</i>				MDS	

**Federal and State Status: E=Endangered, T=Threatened,
SC=Special Concern Audubon Watchlist Status: D=Declining**

WCS/MCA Development-Sensitivity Level: LDS=Low Development-Sensitivity, MDS=Medium Development-Sensitivity, HDS= High Development-Sensitivity

†Includes hybrids of this species with blue spotted salamander (*Ambystoma laterale*). The single *Ambystoma laterale* record from NYS DEC data is questionable and most likely a juvenile *Ambystoma jeffersonianum* complex as the closest confirmed *Ambystoma laterale* are in Green County and the Stewart Airport vicinity in Orange County.

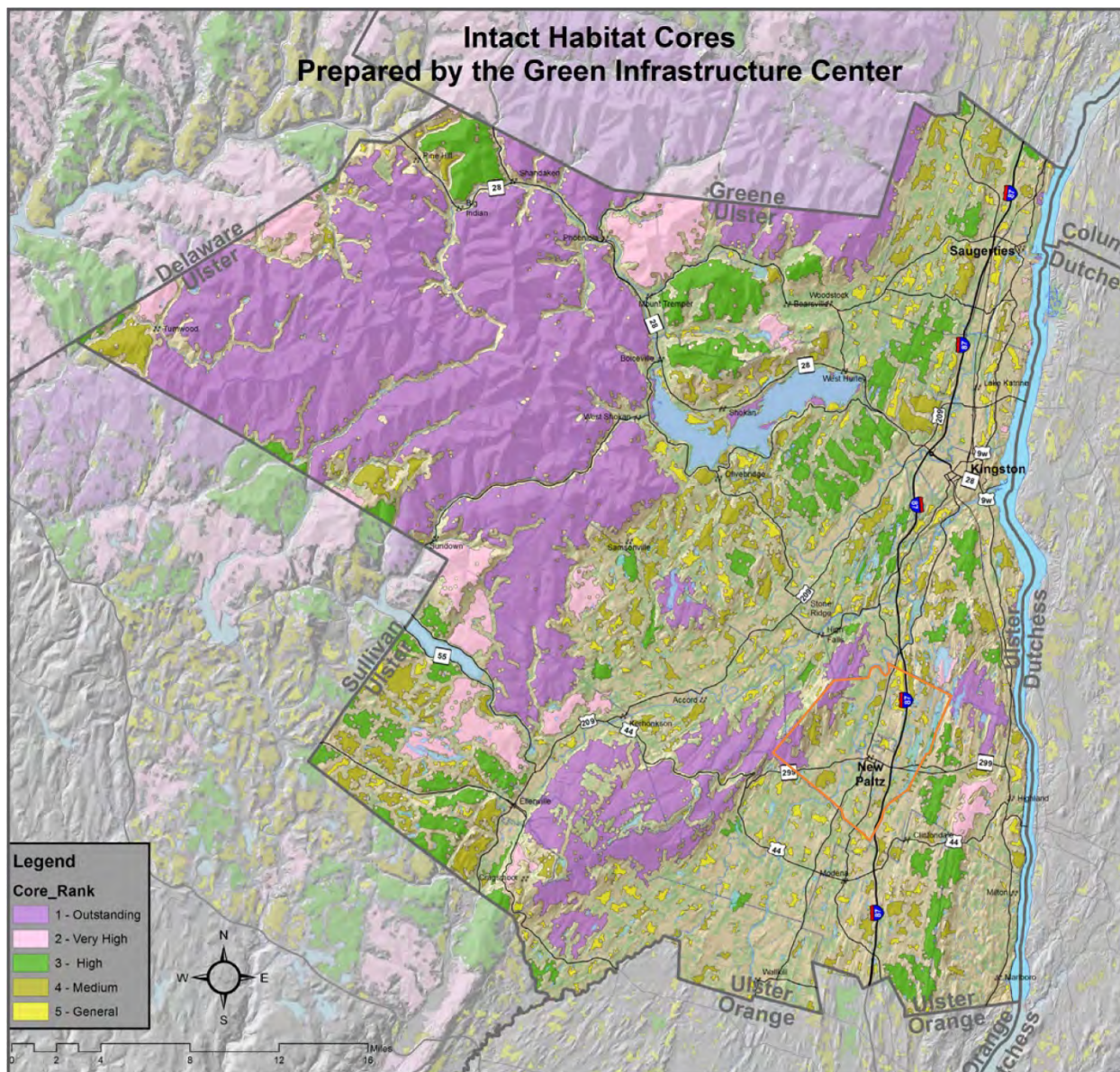
*This species from NYS DEC data only; all others recorded by MCA only or by both MCA and NYS DEC



Ulster County Intact Habitat Cores

Ulster County was included as a case study by the Green Infrastructure Center (GIC, 2015) to map green infrastructure. This mapping effort was devised to show an area's resilience can be identified by showing highest-value habitats. "Green infrastructure includes all the interconnected natural systems in a landscape, such as intact forests, woodlands, wetlands, parks, and rivers, as well as agricultural soils. Natural systems are part of our 'infrastructure' because they provide support for people (clean air, drinking water and agricultural soils), as well as services to the built environment" (GIC, 2015). The higher the quality green infrastructure a community has, the more resilient it will be. A resilient ecosystem is one that can withstand more impacts, changes, or disruptions due to both human and natural reasons. The Ulster County GIC Case Study provides a system for identifying significant areas of forest habitat or ranking the natural resources found in the area.

In New Paltz, intact habitat cores were identified, mapped, and ranked. To do this, the GIC mapped a variety of natural resource layers – most of which are also included as individual maps in this NRI. These included development patterns, core geometry, water quality and quantity, and rare species habitat. A diversity ranking was developed based on elevation, acreage of interior habitats that support rare or threatened species, the total number of rare or threatened species, and the number of species in a core of different global and subnational ranks identified by the New York Natural Heritage Program. Scores for each element were combined to create an overall diversity rank. Lower ranks represent better potential interior biological diversity.



Ulster County Habitat Cores from Green Infrastructure Center's 2013 Ulster County report. The approximate New Paltz boundary has been outlined in orange.

The Ulster County Parcel Viewer (<https://ulstercountyny.gov/maps/parcel-viewer/>) includes the habitat core ranks in New Paltz. This shows that the Town has interior core habitats covering all five core ranks (1-5). The largest, along the Shawangunk Ridge is ranked (1), or outstanding. There are scattered interior core habitats throughout the town ranking high (3), medium (4) and general (5). These areas overlap with many of the important biodiversity areas discussed earlier in this chapter.

7.3 LARGE FORESTS

KEY CONCEPTS (MAP 16)

Large forests provide numerous benefits including wildlife habitat, clean water, climate moderation, forest products, and modulating impacts of climate change. In general, larger forests provide higher quality habitat and greater benefits than smaller ones. Large forests are critical to support those plant and animal species that require interior parts of large, unbroken forests. Forest interiors are important habitats because they provide more consistent light, air, soil, moisture, and air flow conditions than edges of forests (Kiviat and Stevens 2001). Forest edges have different microclimates than forest interiors and are often occupied, in part, by non-native invasive plants. Forest edge species are less likely to inhabit the undisturbed interior (Harper et al. 2005). Large forests serve to increase diversity for many kinds of wildlife. For example, scarlet tanager, black-throated blue warbler, worm-eating warbler, and Louisiana water thrush all depend on the protective interior environments of forests (Mowbray 1999; Raffa et al. 2009).

In addition to providing a host of ecological services, large forests contribute to climate change protection through carbon sequestration. Forests are major sources of storage of large reservoirs of carbon. Preventing deforestation and degradation of our forested areas can help our forests continue to absorb tons of carbon dioxide (Canadell and Raupach 2008). Sequestering carbon in forests is climate-smart but forests also influence the amount of sunlight that is reflected back into the atmosphere and the amount of water that is evaporated – both factors in climate change.

Habitat “fragmentation” refers to the dividing of a contiguous habitat area into smaller patches by, for example, roads, driveways, yards, utility corridors, or other developed features. Fragmentation of forests into smaller blocks increases the area of forest edge habitat where there are higher light and noise levels, drier conditions, and where invasion by non-native plant species and by edge-adapted predators is more likely.

ABOUT MAPPED FEATURES (MAP 16)

Forest Condition Index: The NYS DEC Hudson River Estuary Program and the New York Natural Heritage Program developed the Forest Condition Index to assess the conditions of forests in the Hudson River Watershed (Conley et al. 2019). Using the 2016 land cover data and other region-wide data, it identifies forest patches > 100 acres in size and estimates the condition of each forest patch relative to other patches in the Hudson River estuary watershed. Measures of forest condition considered in the Index include size, the degree of forest fragmentation, habitat connectivity in the surrounding area, stressors (such as nearby roads), habitat and ecosystem values (such as presence of rare species or significant ecosystems), and carbon sequestration value. Forest patches were assigned points based on 22 different metrics, with the highest possible score being 228 points. The Forest Condition Index is one method to estimate the condition and relative importance of any given area of forested land; however, condition is dependent on many features that interact differently in different places. For instance, forests having different ages and compositions in vegetation may vary in the species they support, their hydrological properties, their ability to sequester carbon, and other features even – if the forest condition indices are similar.

Core Forest Areas: As part of the Forest Condition Index forest cores were also identified. These are areas within the forest patches that are at least 100 meters from the forest patch edge. The core forest areas are typically undisturbed areas that are important for biodiversity.

Forests < 100 acres: Using the Ulster County land cover data Map 16 shows areas of forest that are less than 100 acres in size, and thus are not included in the Forest Condition Index. These smaller forest areas can provide linkages between the larger forest patches, provide microclimates for sensitive species, and aid in erosion control and enhancing water quality.

MORE ABOUT FORESTS IN NEW PALTZ

Map 16 shows the forested areas of New Paltz and the Forest Index Condition calculated (as percentile value) for each. In this map, the darker the green color, the higher the patch scored in the Forest Condition Index. The highest scoring patches in New Paltz occur on the Shawangunk Ridge and in the northeast corner of the Town of New Paltz. The Forest Index Condition map illustrates the truly exceptional nature of the Ridge. The northern Shawangunk Ridge has forest patch scores in the top 5% of all Hudson Valley forests and in the top 1% for habitat diversity. The forested area in the northeast of New Paltz corresponds with the Matrix Forest seen on Map 14 and scored in the top 10% of scores for the region. There are forest patches along the Wallkill and Swarte Kill that fall within the 70%-90% index scores for the entire Hudson Valley Region. Remaining areas within New Paltz scored less than 70% in the Forest Condition Index.

Overall, approximately 14,420 acres, or two-thirds of New Paltz has tree cover. Approximately 12,800 acres are in large forest patches (over 100 acres) and within those are approximately 7,260 acres of core forest.



7.4 LARGE MEADOWS AND AGRICULTURAL FIELDS

KEY CONCEPTS (MAP 17)

“Meadow” refers to non-forested and non-wetland areas dominated by herbaceous (non-woody) vegetation. Meadows include shrub/scrub, grasslands/herbaceous, pasture/hay and cultivated crops land cover types. Meadows of all sizes provide habitat for a wide variety of plants and animals. Many species of invertebrates (insects, spiders, mollusks, earthworms), reptiles, amphibians, birds, and mammals rely on the open habitats of meadows. Many meadows are part of active agricultural operations and contribute to rural character and scenic values found in New Paltz. Vacant agricultural fields may be meadows for several years before succession to woody vegetation begins the process of re-forestation. Agricultural practices can significantly impact the presence of meadows and the species that inhabit them.

Large meadows have special value for grassland breeding birds that need the deep interior meadow habitats for protection from predators. Birds that depend on grasslands for nesting include grasshopper sparrow, savannah sparrow, vesper sparrow, bobolink, and eastern meadowlark. Meadows support a number of state-listed species of special concern including butterflies and snakes.

Some ground-nesting birds require large meadows with appropriate kinds of vegetation to sustain local populations. Grassland breeding bird populations have been declining dramatically in the Northeast due to loss of suitable habitat with intensification of agriculture, abandonment of farmland and transition of meadows to shrubland and forest, and conversion of meadows to developed uses.

ABOUT MAPPED FEATURES (MAP 17)

Large Meadows: Map 17 details meadows that are 10 acres or larger. These include both dry upland meadows and wet meadows (wetlands) that have standing water or saturated soils for part of the growing season. Meadows also include agricultural fields (hayfields for example), and vacant agricultural fields kept open by mowing, as well as scrub and shrub land. Meadow areas were identified as those areas having ‘low vegetation’ (excluding areas later refined as recreation fields) and scrub and shrub as classified by Ulster County’s land cover data (Delaware River Basin Mapping 2015).

Grassland Biodiversity Areas: Map 17 highlights the Northern Wallkill Biodiversity Areas that are specifically related to grassland habitat. These areas are the Liberty Road Grassland, the Kleine Kill Grassland, and the Wallkill River Oxbow Grassland. These important grassland habitats are described in detail in Section 7.2.

MORE ABOUT LARGE MEADOWS and AGRICULTURAL FIELDS IN NEW PALTZ

Large meadows are scattered throughout New Paltz. Approximately 2,460 acres of large meadow are located within New Paltz. They are found predominantly in the Wallkill River valley, the foothills of the Shawangunk Ridge and eastern New Paltz where agricultural operations remain active. The presence of meadows is highly influenced by agricultural practices in the Town. The largest blocks of large meadow are located in the Wallkill valley and in the Butternville-Canaan foothills. The northern large meadow area in the Wallkill valley, as well as the large meadows in the Butternville-Canaan foothills are areas that have been



identified as important Grassland Biodiversity Areas as part of the Northern Wallkill Biodiversity Plan (2007).

The following description of grassland and meadow habitats in New Paltz is from the Habitat Summary for New Paltz (Nardi-Cyrus 2019):

“Farmland, both active and recently abandoned, encompasses many different unique habitats including meadows, grasslands, shrublands, and young forest. New York State has lost more than half a million acres of these habitats since the 1980s, much of that area converted to development (American Farmland Trust 2019). These regularly overlooked habitat types are transitional and relatively short-lived, typically requiring periodic natural disturbance or maintenance to avoid becoming mature forest.”

“Grassland and meadow habitat can support a variety of life, including rare plants, butterflies, reptiles, and birds, in addition to providing agricultural uses and scenic values. The quantity and quality of grasslands for wildlife have rapidly decreased in the Northeast during the last century due to increased human population, changes in agricultural technology, and abandonment of family farms. This continuing trend threatens populations of grassland birds that have adapted to the agricultural landscape.”

The 2000-2005 NYS Breeding Bird Atlas documented many priority grassland birds, including NYS-Threatened sedge wren and Species of Greatest Conservation Need – High Priority bobolink, breeding in these open habitats. Other notable observations include species who are not necessarily breeding but who use grasslands during another part of their life history. Examples include winter foraging by northern harrier (NY-Threatened) and summer foraging and possible breeding by NY- Special Concern vesper sparrow. Non-avian priority species that use both open habitats and associated forests and wetlands include NY-Species of Greatest Conservation Need Fowler’s toad and NY-Threatened purple milkweed.

Many of the largest patches of grassland habitat are protected, especially those located adjacent to the Shawangunk Ridge. These patches are at the northern edge of a mostly

contiguous successional landscape that includes the Shawangunk Grasslands National Wildlife Refuge, a critical resource for grassland dependent species. Much of the remaining open habitat in New Paltz is along the Wallkill River and in eastern portions of town where it is in active agricultural cultivation (e.g., row crops, livestock, and orchards). Many of the largest agricultural patches, west of the Wallkill River, were identified in the Northern Wallkill Biodiversity Plan.

7.5 STREAM HABITATS

KEY CONCEPTS (MAP 18)

Streams, their floodplains, adjacent wetlands, and other streamside habitats that occur along their channels provide important ecosystem services to communities, including clean water, flood management, and recreational opportunities like fishing and kayaking. In addition, Hudson River tributary streams and their associated shoreline and floodplain areas provide some of the most productive wildlife habitat in the region.

Stream habitats refer to more than the stream channel itself. Streambanks, floodplains, non-floodplain areas along the bank, and adjacent wetlands are all part of a stream habitat complex. This corridor is known as a riparian area. All are interrelated and contribute to the types and quality of habitats in the stream channel itself. Each component offers different habitats for different species.

The stream channel offers different habitats based on the flow of water, depth of water, and stream bed. One stream may have many different microhabitats depending on the presence of deeper pools, rocky riffles, or long runs of flowing water. Pools with slower moving water may have silty substrates and support submerged vegetation; swift water areas may have a gravelly substrate that some fish species require for spawning; and riffles have highly oxygenated water which improves the habitat for many sensitive aquatic species. Other types of microhabitats in a stream include backwater areas, and banks having overhanging, shady vegetation.

The vegetation of streambanks and the wider corridor around them determines the stability of the stream channel, the stream water temperature, the kinds of stream and streamside habitats, and the quality of organic material available to feed the stream food web.

Streams support a variety of mammals, birds, amphibians, reptiles, and many invertebrates. Coldwater streams are especially important to native coldwater fish such as brook trout and slimy sculpin, and the non-native brown trout and rainbow trout (Cohen 2017). All the streams and rivers in New Paltz are part of the Hudson River Estuary watershed. Its health is directly tied to the health of its tributaries and their watersheds (Nardi-Cyrus 2019 and Penhollow et al. 2006).

Streams may flow year-round (perennial) or intermittently (defined in Chapter 139 of the Town of New Paltz Code as flowing continuously for at least three months of the year). Perennial streams provide essential water sources for wildlife throughout the year and are critical habitat for many plant, vertebrate, and invertebrate species. Intermittent streams also provide important habitat and nutrient cycling services themselves, and are vital sources of water, nutrients, organisms, and structural material that feed perennial streams, lakes, ponds, and wetlands (Hudsonia 2008).

ABOUT MAPPED FEATURES (MAP 18)

Riparian Areas: These are the lands that occur along watercourses and water bodies and include floodplains and streambanks. The plants and animals located here are highly influenced by the presence of water (National Resource Conservation Service 2020).

Important Areas for American Eel: The American Eel is a migratory fish species that enters Hudson River tributaries as tiny glass eels and returns to the Atlantic Ocean in adulthood for spawning. The areas shown on the map depict the streams and associated buffers that are important for protecting American Eel habitat.

Stream Passage Features (Culverts, Dams and Other Barriers): A variety of barriers for fish passage exist in area streams and rivers. Impediments to fish passage include dams, culverts that are placed too high, or water control features. Improperly located or sized bridges and culverts can be barriers as well. They can act as partial or total barriers as well as alter stream flow and are often major disruptors to the proper functioning of a stream ecosystem. These can disrupt natural flows, create water impoundments, and increase water flow velocities which can lead to stream bed scouring and damage to stream banks. The movement of organisms within rivers and streams is an important ecological process that can be significantly affected by road crossings (NAACC 2020). When passages are closed or limited, migratory fish and other aquatic species like the wood turtle are unable to move about in the stream and are unable to travel up to higher stream reaches. Map 18 identifies bridges and culverts that have been assessed as to whether they allow for full, reduced or no passage through them. Some places identified on Map 18 have a 'no score' assigned meaning that there is a known culvert or bridge at that location but that it has not yet been accessed as to whether it is a barrier or not.



NYS DEC Trout Streams: These are the stream designation for trout and trout spawning streams designated by the New York State Department of Environmental Conservation. See Map 9 and Section 6.2 for more detailed descriptions. Trout streams are those having coldwater conditions. Coldwater streams are those that have flowing waters with maximum daily temperatures over a seven-day period generally not exceeding 68 degrees Fahrenheit (20 degrees Celsius). Those with other ecological features—fast-flowing, clean, well-oxygenated—can support year-round trout populations.

MORE ABOUT STREAM HABITATS IN NEW PALTZ

Fish: Both the Swarte Kill and the Wallkill River are known habitats for the American eel (Nardi-Cyrus 2019). American eel is a fish species that begins life in the Atlantic Ocean and migrates to the headwaters of North American tributary streams as tiny "glass eels." This species is in decline throughout much of its range, and though eels are able to bypass certain

dams, culverts, and other aquatic barriers, they rely on aquatic connectivity along streams to complete their life cycle and return to the sea to spawn.

Brook trout have been found by Mohonk Preserve biologists in the headwater streams of the Kleine Kill. They are our only native trout species and are an indicator of high quality coldwater stream habitat.

The Platte Kill in the southeastern corner of New Paltz is also currently identified as a coldwater stream suitable for supporting trout. The Platte Kill Gorge is a unique habitat due to its steep slopes and shady microclimate predominated by eastern hemlock along with American beech, ash, sycamore, maple, oaks, white pine, black cherry, and others. The gorge has high plant diversity that includes wildflowers, ferns, shade-tolerant understory woody plants such as maple-leaved viburnum, dogwoods, and American hornbeam (Spencer 2008). Eastern red cedar dominates the upper edges of the gorge near the cleared fields. Past water quality testing has shown stream quality in the gorge is slightly impacted, but generally with high species diversity especially of macroinvertebrates indicating good water quality (Nolan 2006).

Stream Barriers: There is a growing awareness about adverse impacts caused by stream barriers. Numerous barriers to fish passage including bridges, suspended culverts, road crossings, and dams exist in New Paltz (NAACC 2020).

The Hudson River Estuary Program has been conducting surveys of culverts throughout the region to identify those that are too small to carry expected flood flows or are perched above the streambed. The survey results are provided to local, county, and state agencies to help them prioritize culverts for replacement so that risk to infrastructure is reduced and stream continuity is restored. Map 18 includes those results for New Paltz.

As seen on Map 18, there are numerous locations where fish passage is either reduced or fully impaired. These impact not only fish passage but can impact stream and habitat quality by changing water flow, stream bottom substrates, water depth and other stream characteristics. Many fishes and aquatic species need to travel to different parts of a stream. Feeding, spawning, nursery areas, drought refuge, shelter from predators, and overwintering are often at different locations. Clear movement from one location to another is essential to maintaining fish populations. Similarly, invertebrates, amphibians, reptiles, and other animals also need to move freely to take advantage of various stream habitats and materials in different seasons, life history stages, and stream conditions. Instream barriers such as dams and perched culverts prevent these essential migrations and reduce the accessibility of stream habitats.

Eight dams are documented in New Paltz. These are located on smaller tributaries in Town. Within the Town of New Paltz, there are no dams on the Swarte Kill, Platte Kill, or Wallkill River. One dam is located on the Kleine Kill and several others exist on smaller streams on the Shawangunk Ridge near Butternville and along Mountain Rest Road. One dam is located within the Village of New Paltz on the SUNY New Paltz campus. There is also a dam on Mill Pond in the Mill Brook Preserve, and there are probably other unmapped dams throughout New Paltz.

Riparian Areas: Riparian areas were described in Map 11 and Section 6.3 and are shown again on Map 18. Riparian areas occur along both small and large streams. Some flood frequently, while others do not flood at all. Plant communities found in riparian areas are frequently associated with wetlands (see Map 12). Significant riparian area habitats can be found throughout the Wallkill River valley and along the Swarte Kill. Riparian areas not only

provide important ecological and hydrological functions, but when vegetated with mature plant species, provide shading and nutrients to the stream ecosystems. They are important corridors for wildlife travel and are used by many species.

7.6 FISH, WILDLIFE AND PLANT SPECIES

KEY CONCEPTS (MAP 19)

New Paltz has diverse topography, a mostly intact hydrologic system, and geologic features that provide habitat in the form of streams, rivers, ponds (including beaver ponds), vernal pools and freshwater wetlands, and large forests and meadows. The region's diverse topography further contributes to the array of habitat types which also include mixed secondary forest (both young and mature), shrubland, rocky outcrops, rocky ridgelines, and surrogate grasslands in the form of agricultural fields (LaBruna and Klemens 2007).

ABOUT MAPPED FEATURES (MAP 19)

Significant ecosystems and rare species are included on Map 19 and have been identified based on data available from New York State.

Important Areas: Important Areas include the lands and waters needed to support the continued presence and quality of:

- known populations of rare animals and rare plants,
- known locations of rare ecological communities, and/or
- high-quality examples of common ecological communities.

Important Areas include the specific locations where the animals, plants, or ecological communities have been observed, as well as:

- habitat to support rare animal and plant populations;
- areas which may be used by rare animals for breeding, nesting, feeding, roosting, or over-wintering sites;
- areas that support natural processes critical to maintaining these plant and animal habitats or critical to maintaining significant ecological communities (e.g., stream buffers).

In New Paltz, four different Important Areas have been identified: bat foraging areas, rare plant areas, terrestrial animal areas, and wetland areas.

Significant Natural Communities: Map 19 shows the significant natural communities (Edinger et al. 2014) in New Paltz. These features represent occurrences of rare or high-quality natural communities (ecological communities) as recorded by the New York Natural Heritage Program. An occurrence is one natural community type at one location. Significant natural communities in New Paltz are:

Chestnut Oak Forest: A hardwood forest that occurs on well-drained sites in glaciated portions of the Appalachians. Dominant trees include chestnut oak, and red oak, along with white oak, black oak, and red maple. They are often found in areas having summits and rocky outcrops.

Hemlock-Northern Hardwood Forest: A mixed forest that typically occurs on middle to lower slopes of ravines, on cool, mid-elevation slopes, and on moist, well-drained sites at the margins of swamps. Canopy cover in a hemlock-northern hardwood forest can be quite dense that shades the ground. Common tree species include eastern hemlock, sugar maple, red maple, yellow birch, black birch, red oak, American beech, white ash, chestnut oak white oak, and white pine. Under the canopy, the shrub layer includes saplings of the canopy trees along with species such as witch hazel, hobblebush, maple-leaf viburnum, and others.

Floodplain Forest: Floodplain forests provide shade that helps maintain cool stream water temperatures and contribute organic matter that supports the overall stream ecology. They are one type of riparian vegetation and provide habitat and movement corridors for wildlife, and help to absorb and dampen floodwaters, and are used by many kinds of resident and transient wildlife. Floodplain forests are adapted to periodic flooding. Species include silver maple, ashes, cottonwood, red maple, and others.

Important Areas for Bat Foraging: The northern third of the Town is included in this important area. The Rosendale Limestone Cave Complex SBA (about 2.5 miles north of New Paltz), hosts one of the top 10 overwintering sites in the U.S. for the federally endangered Indiana bat (Penhollow et al. 2006). In the summer, bats often use forested areas, such as those in New Paltz, for shelter and to forage for insect prey. Female bats roost in trees and snags in maternity colonies to raise their young each summer (Nardi-Cyrus 2019).

Important Areas for Rare Wetland

Animals: These areas are found along the Humpo Kill (a tributary of the Kleine Kill), in a small area east of the Wallkill River just outside the Village of New Paltz along Huguenot Street and including a portion of the Nyquist Harcourt Sanctuary, and extensively along the wetland complex from the NYS Thruway east to the Swarte Kill. The pied-billed grebe is the only rare wetland animal species modeled for Humpo Marsh, but the red-headed woodpecker was also modeled for that wetland under the rare terrestrial animal species model.



Nyquist Harcourt Sanctuary includes important areas for rare wetland animals

Important Areas for Rare Plants: An Important Areas for Rare Plants is located at the New Paltz/Marbletown/Rochester boundary on the Shawangunk Ridge. Another Important Area for Rare Plants is located just outside the Town boundaries in the towns of Lloyd and Esopus, but not within New Paltz.

Important Areas for Rare Terrestrial Animals: Most of the area west of the Wallkill River, and in locations along Clearwater Road, and from Shiverstown Road north to Horsenden Road are included in this important area. There are several rare animal species that are present, or could be present, within these areas as outlined below.

MORE ABOUT SIGNIFICANT ECOSYSTEMS AND RARE SPECIES IN NEW PALTZ

This section presents information on known occurrences of rare species and significant communities. However, it is noted that more occurrences of these species or communities may be present, but they have not been formally surveyed by biologists. It also includes information from the Northern Wallkill Biodiversity Plan (See Section 7.2 for more information) (LaBruna and Klemens 2007) and from information developed by the New Paltz Environmental Conservation Board (EnCB 2019).

Both common and rarer species are found in the New Paltz area, including those that are declining throughout the Northeast and those that are on state and federal wildlife endangered, threatened, and special concern lists. Species such as the marbled salamander and box turtle are found here and are near the northern limit of their natural range in the lower Hudson Valley (LaBruna and Klemens 2007).

“The Wallkill Valley is critical for dispersal of wildlife, including area-sensitive mammals such as bear and bobcat, moving between ridgelines. But these valleys, because of their agricultural land use history, also support a unique assemblage of wildlife dependent on early-successional habitats (i.e., grassland, shrubland). Examples include spotted turtles, grassland songbirds (e.g., eastern meadowlark, bobolink, savannah sparrow, and vesper sparrow), ribbon snakes, blue-spotted salamanders, and a host of other species that are disappearing as large blocks of land, formerly kept open by agriculture, give way to sprawling subdivisions. While some farms and high intensity or large-scale farming practices cause damage to habitats and ecosystems, other farms (e.g., small-scale family and artisanal farms or farms using best management practices) can support species that are disappearing as urban areas sprawl into rural countryside” (LaBruna and Klemens 2007).

The Shawangunk Ridge supports an exceptional example of a higher elevation forest bird community with particularly good representation of a pine woods community. Characteristic forest bird species breeding includes the sharp-shinned hawk, black-billed cuckoo, northern flicker, eastern wood-pewee, least flycatcher, yellow-throated vireo, common raven, winter wren, blue-gray gnatcatcher, hermit thrush, wood thrush, black-throated blue warbler, pine warbler, cerulean warbler, black-and-white warbler, worm-eating warbler, Louisiana waterthrush, Canada warbler, scarlet tanager, and rose breasted grosbeak. There are also shrub species inhabiting this site including the whip-poor-will, golden-winged warbler, prairie warbler, and eastern towhee, among others. Peregrine Falcons currently breed in one location on a cliff (Nardi-Cyrus 2019). Pink Lady's Slipper (*Cypripedium acaule* Aiton) is found within the Mohonk Preserve lands on the Shawangunk Ridge. This native plant is on the NY State Protected List.



Pink Lady's Slipper

Map 19 shows three large floodplain forest stands along the Wallkill River extending in patches from the Dug Road area north along the River to just south of White Duck Road along a small tributary stream there. Chestnut Oak forests are dominant along the Shawangunk Ridge. The Shawangunk Ridge has a few locations intermixed with Hemlock-Northern Hardwood forest.

NEW PALTZ HABITAT SUMMARY AND OTHER FISH, WILDLIFE AND PLANT INFORMATION

The New York Natural Heritage Program (NYNHP) maintains a database of rare plants, rare animals, and significant ecosystems for the entire state. There are known occurrences of rare species in New Paltz in their database, including the bald eagle, diadromous fishes, eastern box turtle, northern long-eared bat, northern cricket frog, peregrine falcon, pied-billed grebe, red-headed woodpecker, sedge wren, and wood turtle. Additionally, NYNHP has identified areas of importance for sustaining populations of rare animals, including rare bats, based on existing records and the species' habitat requirements.

See Appendix for habitat profiles of key wildlife species of conservation concern found in New Paltz

The New Paltz Habitat Summary (2019) provides the following information about plants and animals in New Paltz:

- Numerous vernal pools in New Paltz support many animals including forest amphibians documented in New Paltz such as wood frog and NY-Special Concern marbled salamander. These pool-breeding amphibians depend on vernal pools to breed and later disperse to the surrounding forested uplands as adults.
- A variety of other high priority species are known to occur in New Paltz's wetlands including red-headed woodpecker, pied-billed grebe, and four-toed salamander, among others. The NY-Endangered southern dodder and a variety of other rare wetland plants are also listed in this section.
- The 2000-2005 NYS Breeding Bird Atlas documented numerous forest-interior bird species of conservation concern in the town, including many NY-Species of Greatest Conservation Need such as scarlet tanager, worm-eating warbler, and wood thrush. Two NY-Special Concern raptors were also documented in New Paltz: red-shouldered hawk and sharp-shinned hawk. Note that the New York State Wildlife Action Plan (2015) identifies species of greatest conservation need but should not be confused with State-listed threatened and endangered species. For more information on this see <https://www.dec.ny.gov/animals/7179.html>.
- New Paltz's forests also provide important summer foraging habitat for NY-Threatened northern long-eared bat and two NY-Species of Greatest Conservation Need (tri-colored bat and little brown bat).
- Rare forest plants have been documented in New Paltz including the NY-Endangered downy wood mint.
- The 2000-2005 NYS Breeding Bird Atlas documented many priority grassland birds, including NYS-Threatened sedge wren and Species of Greatest Conservation Need – High Priority bobolink, breeding in these open habitats. Other notable observations include species who are not necessarily breeding but who use grasslands during another part of their life history. Examples include winter

foraging by northern harrier (NY-Threatened) and summer foraging and possible breeding by NY- Special Concern vesper sparrow. Non-avian priority species that use both open habitats and associated forests and wetlands include NY-Species of Greatest Conservation Need Fowler's toad and NY-Threatened purple milkweed.

- Shrublands and young forests support 19 species of conservation concern including five species of warbler and reptiles including the NY-Species of Greatest Conservation Need northern black racer and NY-Special Concern eastern box turtle (see Table below).

The New Paltz Habitat Summary included a list of species of conservation concern in New Paltz. The tables below detail that information. Other sources of information about species in New Paltz can be found in the New York State Breeding Bird Atlas and the Herpetological Atlas, from the Mohonk Preserve, the MCA study, and others.



The following is an excerpt from the New Paltz Habitat Summary (Nardi-Cyrus 2019) listing species of conservation concern found in New Paltz. Glossary of acronyms used for data sources can be found in the New Paltz Habitat Summary.

			NYS Conservation Status					
Common Name	Scientific Name	General Habitat	Hudson River Valley Priority Bird	Species of Greatest Conservation Need xx = high priority	Special Concern	Threatened	Endangered	Data Source
Mammals								
little brown bat	<i>Myotis lucifugus</i>	cave, forest, wetland		xx				NYS DEC
northern long-eared bat	<i>Myotis septentrionalis</i>	cave, forest		xx		US NY		NYS DEC
tri-colored bat	<i>Perimyotis subflavus</i>	cave, forest, stream		xx				NYS DEC
Birds								
Acadian flycatcher	<i>Empidonax virescens</i>	forest	x					MP
American bittern	<i>Botaurus lentiginosus</i>	wetland	x	x	x			MP
American black duck	<i>Anas rubripes</i>	wetland	x	xx				MP
American goldfinch	<i>Spinus tristis</i>	young forest, shrubland	x					NYBBA
American kestrel	<i>Falco sparverius</i>	meadow	x	x				NYBBA
American redstart	<i>Setophaga ruticilla</i>	forest	x					NYBBA
American woodcock	<i>Scolopax minor</i>	young forest, shrubland	x	x				NYBBA
bald eagle	<i>Haliaeetus leucocephalus</i>	lake, stream, forest	x	x		NY		NYNHP
Baltimore oriole	<i>Icterus galbula</i>	forest	x					NYBBA
barn owl	<i>Tyto alba</i>	grassland	x	xx				MP
bay-breasted warbler	<i>Setophaga castanea</i>	forest	x	xx				NWBP
belted kingfisher	<i>Megaceryle alcyon</i>	lake, stream	x					NYBBA
Blackburnian warbler	<i>Dendroica fusca</i>	forest	x					MP

			NYS Conservation Status					
Common Name	Scientific Name	General Habitat	Hudson River Valley Priority Bird	Species of Greatest Conservation Need xx = high priority	Special Concern	Threatened	Endangered	Data Source
Birds – cont.								
blackpoll warbler	<i>Setophaga striata</i>	forest	x					MP
black-and-white warbler	<i>Mniotilta varia</i>	forest	x					NYBBA
black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>	young forest, shrubland	x	x				NYBBA
black-crowned night-heron	<i>Nycticorax</i>	wetland	x	x				MP
black-throated blue warbler	<i>Dendroica caerulescens</i>	forest	x	x				NYBBA
black-throated green warbler	<i>Dendroica virens</i>	forest	x					NYBBA
blue-winged warbler	<i>Vermivora pinus</i>	young forest, shrubland	x	x				NYBBA
bobolink	<i>Dolichonyx oryzivorus</i>	grassland	x	xx				NYBBA
broad-winged hawk	<i>Buteo platypterus</i>	forest	x					NYBBA
brown thrasher	<i>Toxostoma rufum</i>	young forest, shrubland	x	xx				NYBBA
chestnut-sided warbler	<i>Setophaga pensylvanica</i>	young forest, shrubland	x					NYBBA
chimney swift	<i>Chaetura pelagica</i>	urban	x					NYBBA
Canada warbler	<i>Wilsonia canadensis</i>	young forest, shrubland	x	xx				NWBP
cerulean warbler	<i>Dendroica cerulea</i>	forest	x	x	x			NYBBA
common loon	<i>Gavia immer</i>	open water	x	x	x			MP
common nighthawk	<i>Chordeiles minor</i>	mixed/urban	x	xx	x			MP
cooper's hawk	<i>Accipiter cooperii</i>	forest	x		x			NYBBA
downy woodpecker	<i>Picoides pubescens</i>	forest	x					NYBBA

			NYS Conservation Status					
Common Name	Scientific Name	General Habitat	Hudson River Valley Priority Bird	Species of Greatest Conservation Need xx = high priority	Special Concern	Threatened	Endangered	Data Source
Birds – cont.								
eastern kingbird	<i>Tyrannus</i>	young forest, shrubland	x					NYBBA
eastern meadowlark	<i>Sturnella magna</i>	grassland	x	xx				NYBBA
eastern towhee	<i>Pipilo erythrophthalmu</i>	young forest, shrubland	x					NYBBA
eastern wood-pewee	<i>Contopus virens</i>	forest	x					NYBBA
field sparrow	<i>Spizella pusilla</i>	young forest, shrubland	x					NYBBA
golden-winged warbler	<i>Vermivora chrysoptera</i>	young forest, shrubland	x	xx	x			MP
grasshopper sparrow	<i>Ammodramus savannarum</i>	grassland	x	xx	x			MP
great egret	<i>Ardea alba</i>	wetland		x				MP
greater yellowlegs	<i>Tringa melanoleuca</i>	mudflat	x	x				MP
horned lark	<i>Eremophila alpestris</i>	grassland	x	xx	x			MP
Kentucky warbler	<i>Oporornis formosus</i>	forest	x	xx				MP
least bittern	<i>Ixobrychus exilis</i>	wetland	x	x		NY		NWBP
least flycatcher	<i>Empidonax minimus</i>	forest	x					MP
Louisiana waterthrush	<i>Seiurus motacilla</i>	forest	x	x				NYBBA
northern flicker	<i>Colaptes auratus</i>	forest	x					NYBBA
northern harrier	<i>Circus cyaneus</i>	grassland	x	x		NY		MP
northern saw-whet owl	<i>Aegolius acadicus</i>	forest	x					MP
olive-sided flycatcher	<i>Contopus cooperi</i>	young forest, shrubland	x	xx				MP
osprey	<i>Pandion haliaetus</i>	open water, wetland	x		x			NYBBA

			NYS Conservation Status					
Common Name	Scientific Name	General Habitat	Hudson River Valley Priority Bird	Species of Greatest Conservation Need xx = high priority	Special Concern	Threatened	Endangered	Data Source
Birds – cont.								
peregrine falcon	<i>Falco peregrinus</i>	cliff	x	x			NY	NYNHP
pied-billed grebe	<i>Podilymbus podiceps</i>	wetland	x	x		NY		NYBBA
prairie warbler	<i>Dendroica discolor</i>	young forest, shrubland	x	x				NYBBA
purple finch	<i>Carpodacus purpureus</i>	forest	x					NYBBA
purple martin	<i>Progne subis</i>	wetland	x					NYBBA
red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	forest	x	xx	x			NYNHP
red- shouldered hawk	<i>Buteo lineatus</i>	forest	x	x	x			NYBBA
rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>	forest	x					NYBBA
ruffed grouse	<i>Bonasa umbellus</i>	young forest, shrubland	x	x				HUD
rusty blackbird	<i>Euphagus carolinus</i>	wetland, agriculture	x	xx				MP
savannah sparrow	<i>Passerculus sandwichensis</i>	grassland	x					NYBBA
scarlet tanager	<i>Piranga olivacea</i>	forest	x	x				NYBBA
sedge wren	<i>Cistothorus platensis</i>	grassland	x	xx		NY		NYBBA
sharp-shinned hawk	<i>Accipiter striatus</i>	forest	x		x			NYBBA
sora	<i>Porzana carolina</i>	wetland	x					MP
veery	<i>Catharus fuscescens</i>	forest	x					NYBBA
vesper sparrow	<i>Poocetes graminues</i>	grassland	x	xx	x			NWBP
whip-poor-will	<i>Caprimulgus vociferus</i>	young forest, shrubland	x	xx	x			MP

			NYS Conservation Status					
Common Name	Scientific Name	General Habitat	Hudson River Valley Priority Bird	Species of Greatest Conservation Need xx = high priority	Special Concern	Threatened	Endangered	Data Source
Birds – cont.								
willow flycatcher	<i>Empidonax trailli</i>	young forest, shrubland	x					NYBBA
wood thrush	<i>Hylocichla mustelina</i>	forest	x	x				NYBBA
worm-eating warbler	<i>Helmintheros vermivorum</i>	forest	x	x				NYBBA
yellow- breasted chat	<i>Icteria virens</i>	young forest, shrubland	x	xx	x			MP
yellow-billed cuckoo	<i>Coccyzus americanus</i>	young forest, shrubland	x					NYBBA
yellow- throated vireo	<i>Vireo flavifrons</i>	forest	x					NYBBA
Reptiles								
eastern box turtle	<i>Terrapene c. carolina</i>	forest, young forest		xx	x			NWBP
eastern hogshead snake	<i>Heterodon platirhinos</i>	forest		xx	x			
eastern rat snake	<i>Pantherophis alleghaniensis</i>	forest		x				NYARA
eastern ribbon snake	<i>Thamnophis sauritus</i>	lake, stream, wetland		x				
northern black racer	<i>Coluber c. constrictor</i>	forest, shrubland, meadow		x				NWBP
northern copperhead	<i>Agkistrodon contortrix mokasen</i>	forest, rocky summit, wetland		x				
snapping turtle	<i>Chelydra serpentina</i>	wetland, stream, forest, lake		x				NYARA
spotted turtle	<i>Clemmys guttata</i>	wetland		xx	x			NWBP
timber rattlesnake	<i>Crotalus horridus</i>	forest, rocky summit		xx		NY		NYNHP
wood turtle	<i>Clemmys insculpta</i>	stream		xx	x			NWBP

			NYS Conservation Status					
Common Name	Scientific Name	General Habitat	Hudson River Valley Priority Bird	Species of Greatest Conservation Need xx = high priority	Special Concern	Threatened	Endangered	Data Source
Amphibians								
four-toed salamander	<i>Hemidactylum scutatum</i>	wetland		xx				NYARA
Fowler's toad	<i>Bufo fowleri</i>	forest, meadow		x				MP
Jefferson/ blue-spotted salamander complex	<i>Ambystoma jeffersonianum x laterale</i>	vernal pool, forest			x			NWBP
marbled salamander	<i>Ambystoma opacum</i>	vernal pool, forest		x	x			NWBP
<u>northern cricket frog</u>	<i>Acris crepitans</i>	wetland		xx			NY	NYNHP
Fish								
American eel	<i>Anguilla rostrata</i>	coast, stream		xx				NYS DEC
brook trout	<i>Salvelinus fontinalis</i>	stream		x				MP
Insects								
<u>arrowhead spiketail</u>	<i>Cordulegaster obliqua</i>	forest		x				MP
Plants								
<u>Appalachian sandwort*</u>	<i>Minuartia glabra</i>	rocky summit, forest						MP
<u>arctic rush</u>	<i>Oreojuncus trifidus</i>	rock/cliff				NY		NYNHP
<u>beakgrass</u>	<i>Diarrhena obovata</i>	forest				NY		HUD
<u>downy wood- mint</u>	<i>Blephilia ciliata</i>	forest, rocky summit					NY	MP
<u>mountain spleenwort</u>	<i>Asplenium montanum</i>	cliff				NY		NYNHP

Common Name	Scientific Name	General Habitat	NYS Conservation Status					Data Source
			Hudson River Valley Priority Bird	Species of Greatest Conservation Need xx = high priority	Special Concern	Threatened	Endangered	
purple milkweed	<i>Asclepias purpurascens</i>	meadow, wetland, rocky summit				NY		MP
reflexed sedge	<i>Carex retroflexa</i>	forest				NY		JBNHS
rough avens	<i>Geum virginianum</i>	forest, wetland				NY		NYNHP
southern arrowwood	<i>Viburnum dentatum</i> var. <i>venosum</i>	coast				NY		MP
southern dodder	<i>Cuscuta obtusiflora</i> var. <i>glandulosa</i>	wetland, coast					NY	HUD
two-ranked moss*	<i>Pseudotaxiphyllum distichaceum</i>	forest						NYNHP
Natural Communities								
acidic talus slope woodland								NYNHP
chestnut oak forest								NYNHP
cliff community								NYNHP
dwarf pine ridges								NYNHP
floodplain forest								NYNHP
hemlock-northern hardwood forest								NYNHP
ice cave talus community								NYNHP
pitch pine-oak-heath rocky summit								NYNHP
vernal pool								NYNHP

			NYS Conservation Status					
Common Name	Scientific Name	General Habitat	Hudson River Valley Priority Bird	Species of Greatest Conservation Need xx = high priority	Special Concern	Threatened	Endangered	Data Source
Historical Records								
Allegheny woodrat	<i>Neotoma magister</i>	forest, cave, rocky summit		xx				NYNHP
American bumble bee	<i>Bombus (Thoracobombus) pensylvanicus</i>	meadow		xx				NYNHP
dragon's mouth orchid	<i>Arethusa bulbosa</i>	wetland				NY		NYNHP
golden club	<i>Orontium aquaticum</i>	coast				NY		NYNHP
hyssop-skullcap	<i>Scutellaria integrifolia</i>	meadow, wetland					NY	NYNHP
large twayblade	<i>Liparis liliifolia</i>	wetland, forest					NY	NYNHP
prairie wedgegrass	<i>Sphenopholis obtusata</i>	coast, stream					NY	NYNHP
puttyroot	<i>Aplectrum hyemale</i>	forest					NY	NYNHP
riverbank quillwort	<i>Isoetes riparia</i>	wetland, coast					NY	NYNHP
scarlet indian-paintbrush	<i>Castilleja coccinea</i>	grassland, wetland, forest					NY	NYNHP

*Listed by NYNHP as a rare species in New York State.

**Apparently extirpated from New York State.

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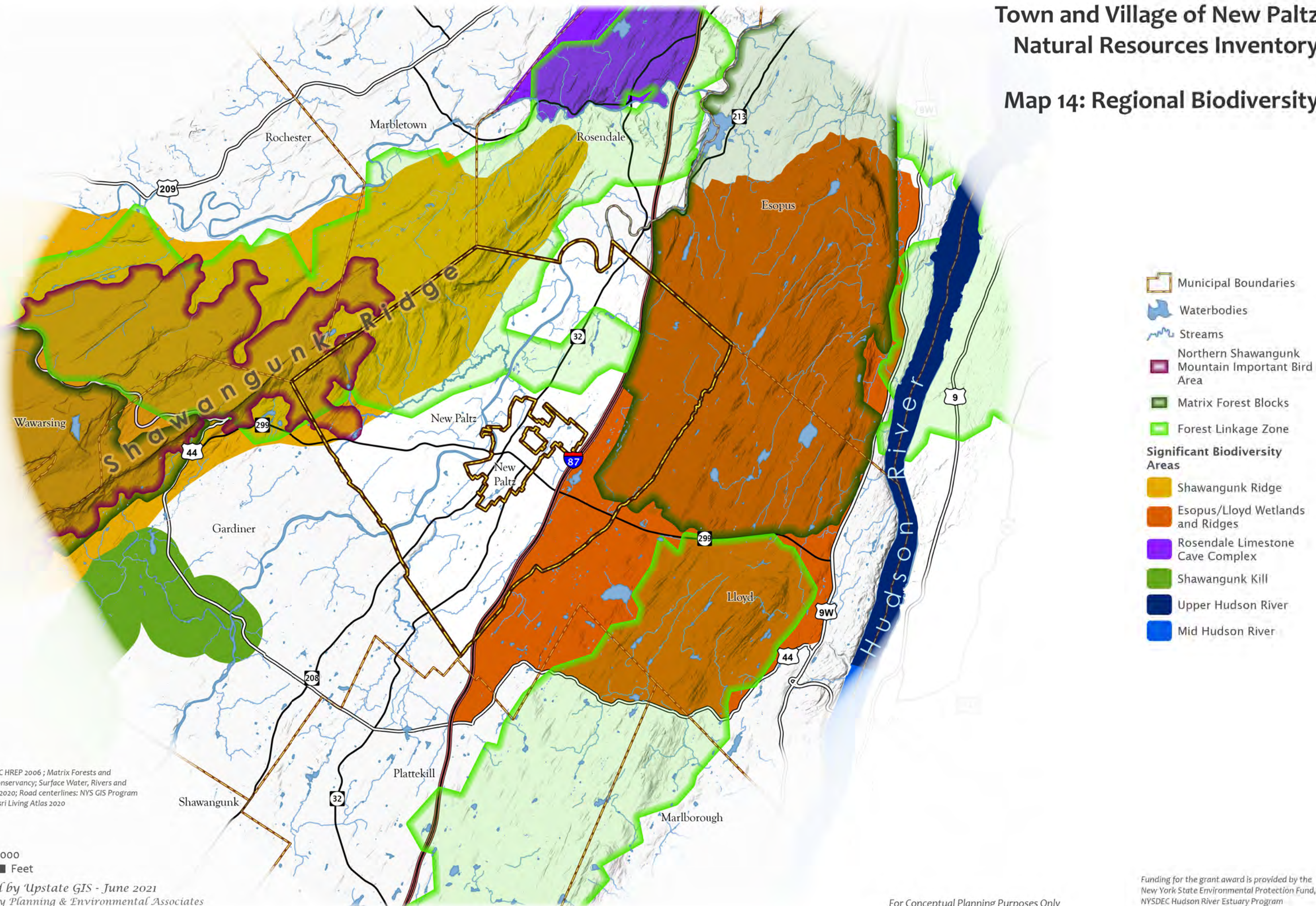
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Town and Village of New Paltz Natural Resources Inventory

Map 14: Regional Biodiversity



Data Sources - SBAs: DEC HREP 2006 ; Matrix Forests and Linkages: The Nature Conservancy; Surface Water, Rivers and Streams: Ulster County 2020; Road centerlines: NYS GIS Program Office 2019; Hillshade: Esri Living Atlas 2020

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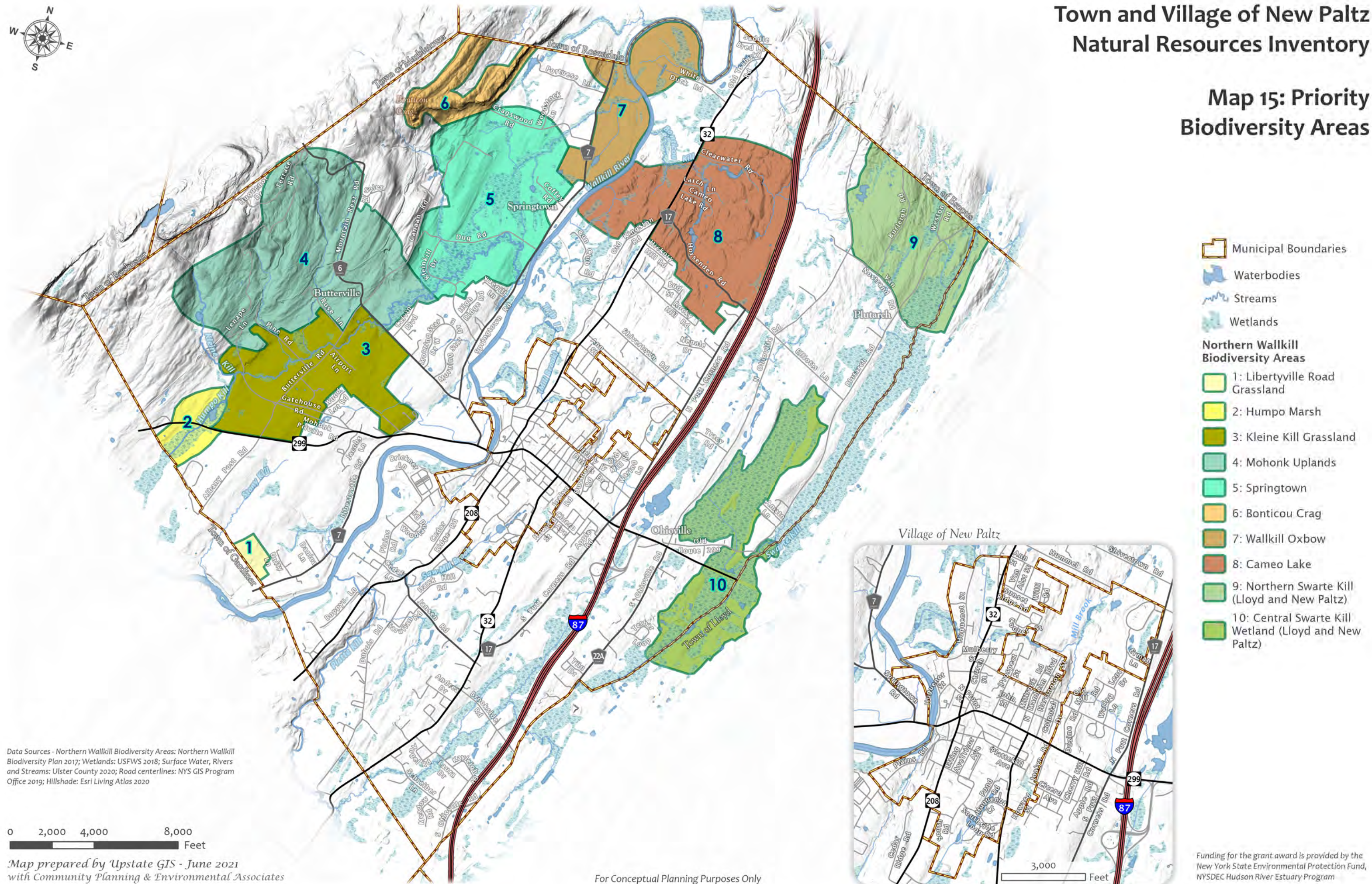
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Town and Village of New Paltz Natural Resources Inventory

Map 15: Priority Biodiversity Areas





Town and Village of New Paltz Natural Resources Inventory

Map 16: Forests



- Municipal Boundaries
- Waterbodies
- Streams
- Wetlands
- Core Forest Area
- Forest Condition Index
 - Top 5 %
 - 90-95%
 - 70-90%
 - < 70%
- Forests < 100 acres



Data Sources - Forest Condition Index and Core Forest Areas: NYNHP 2019; Tree cover: Ulster County 1-m land cover 2013; Wetlands: USFWS 2018; Surface Water, Rivers and Streams: Ulster County 2020; Road centerlines: NYS GIS Program Office 2019; Hillshade: Esri Living Atlas 2020

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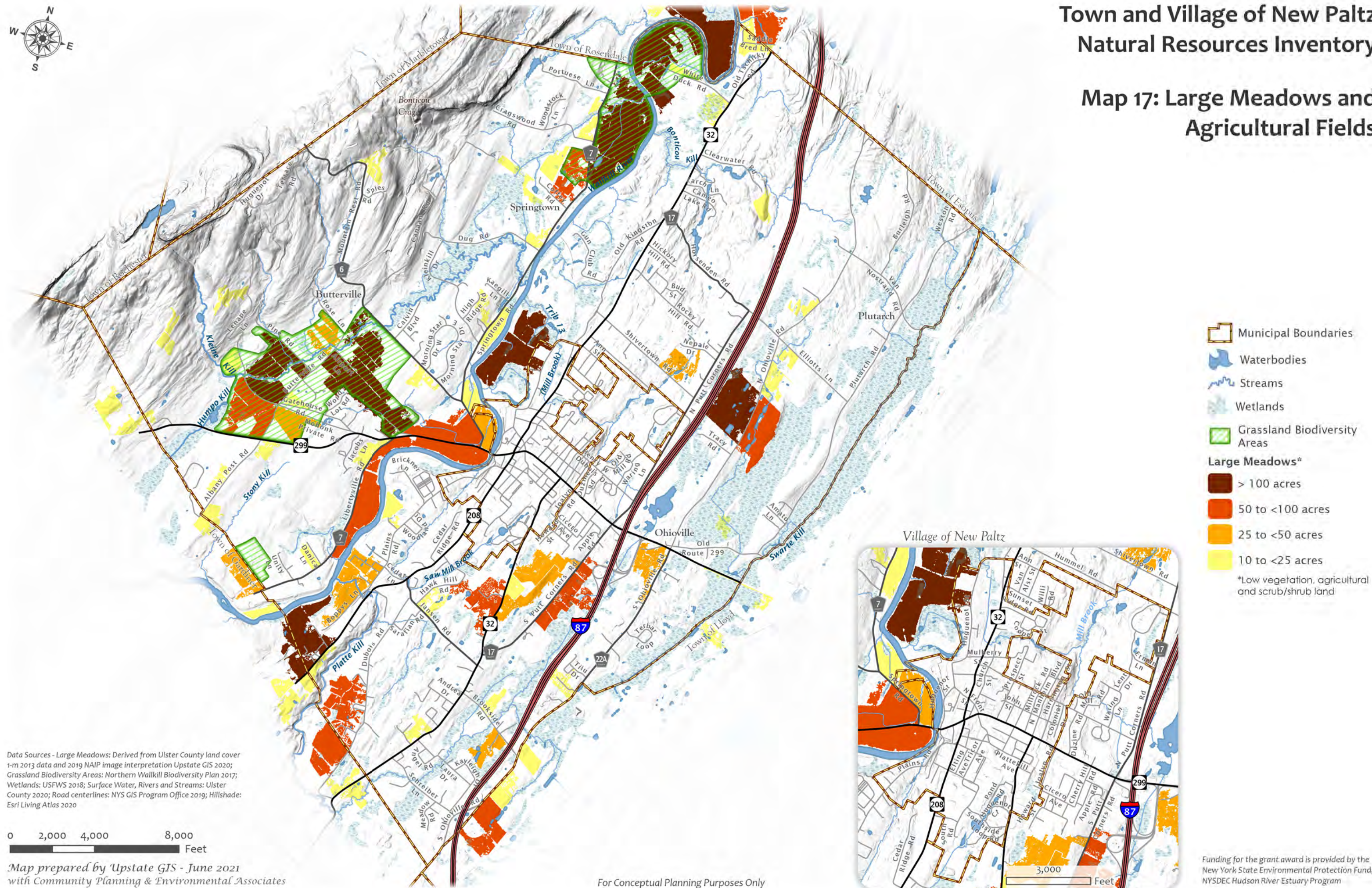
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Town and Village of New Paltz Natural Resources Inventory

Map 17: Large Meadows and Agricultural Fields

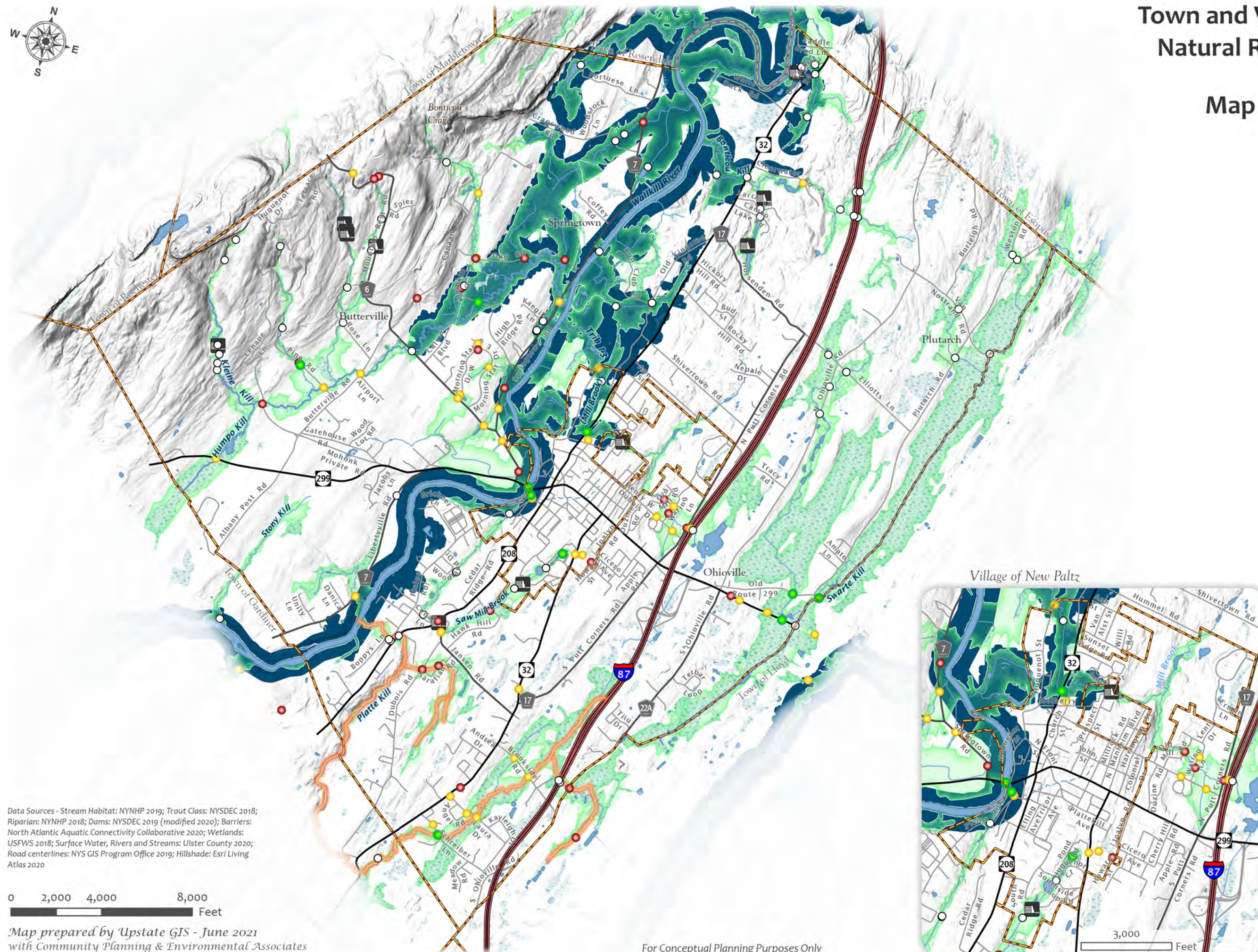


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Town and Village of New Paltz Natural Resources Inventory

Map 18: Stream Habitats



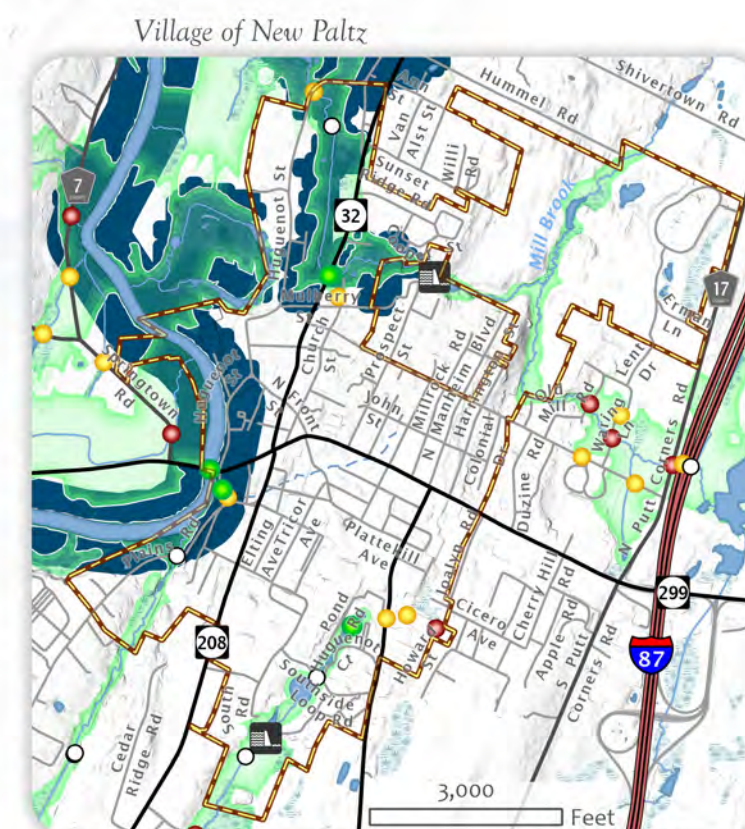
- Municipal Boundaries
- Waterbodies
- Streams
- Buried Stream
- Wetlands
- Riparian Areas
- Important Area for American Eel
- Bridges and Culverts**
 - Full passage
 - Reduced passage
 - No passage
 - No score
 - Dams
 - DEC Trout Stream

Data Sources - Stream Habitat: NYNHP 2019; Trout Class: NYSDEC 2018; Riparian: NYNHP 2018; Dams: NYSDEC 2019 (modified 2020); Barriers: North Atlantic Aquatic Connectivity Collaborative 2020; Wetlands: USFWS 2018; Surface Water, Rivers and Streams: Ulster County 2020; Road centerlines: NYS GIS Program Office 2019; Hillshade: Esri Living Atlas 2020

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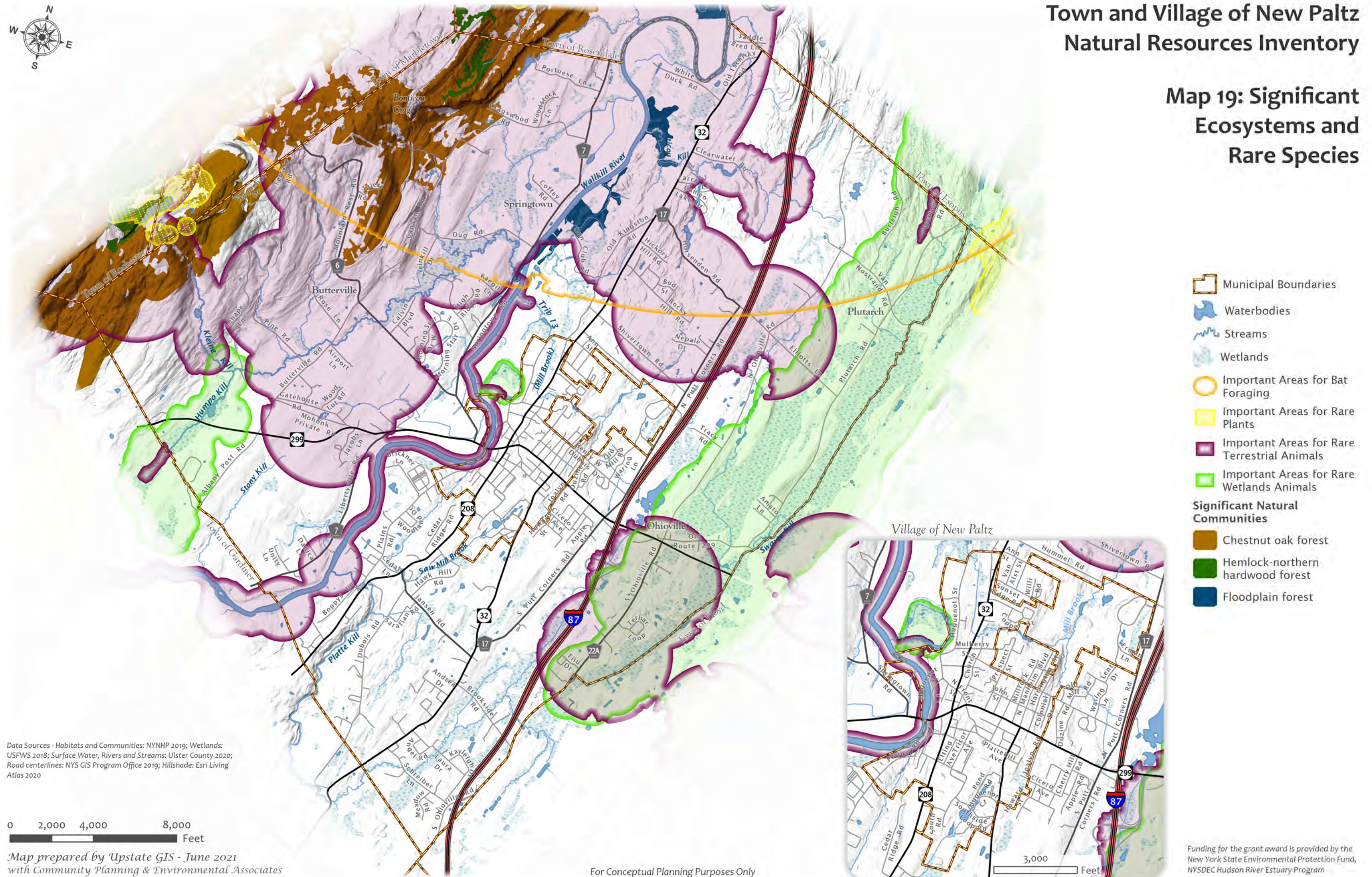


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Town and Village of New Paltz Natural Resources Inventory

Map 19: Significant Ecosystems and Rare Species



8 CLIMATE RESILIENCY

KEY CONCEPTS (MAP 20)

Climate change affects temperature, precipitation, sea level rise, and flooding. Projections indicate that there will be stronger storms with more flooding events and higher flood heights (Woodwell 2020). Intensified biological stressors will also be a likely outcome of climate change (Tobin et al. 2015). These include increases in nonnative plant species, insect pests and pathogens to expand in ranges farther north as the climate works.

The warming climate is forcing many species to migrate to cooler microclimates, higher elevations, or higher latitudes as their former habitats become unsuitable. Conserving connected habitats in a range of geological and topographical settings is an approach to support a diversity of plants and animals in the changing environment. The most effective way to do this is to understand where and what natural resources are in the area, and work to maintain intact and well-connected areas. This approach will help to maintain “natural strongholds” where direct effects of climate change are moderated by topography and connected natural cover and where species can find areas of suitable moisture, temperature, food, and shelter even while the composition and structure of communities is changing. Conserving these areas will also help to safeguard other natural benefits, such as clean and ample water and clean air, that we all depend on. Thus, this NRI is in itself a tool to help combat climate change.

For more information on climate resiliency see the environmental conservation board at <https://www.townofnewpaltz.org/environmental-conservation-board>:

2009 Town of New Paltz Open Space Plan

2011 Draft Town of New Paltz Comprehensive Master Plan.

And See the Climate Smart Communities Task Force at <https://www.townofnewpaltz.org/climate-smart-communities-task-force>

ABOUT MAPPED FEATURES (MAP 20)

In 2016, The Nature Conservancy (TNC) published a study projecting how natural systems may react to changing climate conditions (Anderson et al. 2016). The study looked at over 70 data sets to identify locations where the natural habitat areas may be best able to adapt to climate change. The study found that conserving places that possess geophysical diversity will help to protect diverse species and natural processes as environmental conditions change with the warming climate.

TNC has developed ‘resiliency scores’ that use different criteria to indicate parts of the landscape with greater or lesser potential for species to adapt as the climate changes. Resiliency Scores identify places that are ‘buffered from the effects of climate change because the site offers a wide range of micro-climates within a highly connected area” (Anderson et al. 2016). These criteria include identification of geophysical characteristics that influence a site’s resilience to climate change such as landscape diversity and local connectedness of land cover. The score is relative to all other sites with the same geophysical setting. The scores are described on a relative basis as above or below average. Features that contribute to resiliency include topographic and elevation diversity that provide a range of habitat types and microclimates, and minimal barriers that restrict movement of species or ecosystems.

Using TNC data, a Climate Resiliency Map has been created for New Paltz. Map 20 shows darker greens that indicate areas with higher estimated resilience graduated to yellow and then browns, that indicate areas more vulnerable to the effects of climate change. The Climate Resiliency Map identifies scores ranging from 'Far Below Average' to 'Far Above Average'.

Map 20 also shows a Climate Corridor in the eastern portion of New Paltz. Climate Corridors are areas where species movement due to climate change is predicted to be more concentrated due to the surrounding topography and landcover.

MORE ABOUT CLIMATE RESILIENCY IN NEW PALTZ

New Paltz has been addressing climate change for many years. Although the Comprehensive Plan drafted in 2011 was not adopted, it included public input that showed a large majority of residents agree there was a need to prepare for the effects of global climate change and sustainability.

New Paltz is now participating in New York State's Climate Smart Communities program. The Town is among the first smaller-sized towns to complete a Climate Vulnerability Assessment, and as such, is taking the critical first steps to ensure its investments and infrastructure are climate-secure for the long-term. The climate impacts projected for New Paltz by the Task Force (Town of New Paltz 2020) include:

- By the end of this century, New Paltz could experience 7x more extreme heat days.
- The number of extreme precipitation events are projected to nearly double by the year 2100.
- Within 20 years, New Paltz summer days will routinely begin to reach 100 degrees.
- New Paltz may experience 7x the number of days reaching mid-80s temperature by the end of this century.
- New Paltz may experience 5x the number of heat waves by the end of this century.
- New Paltz's freezing days could decrease by 50% by the end of this century.

Managing Stormwater in the Village

There are several examples of “green” stormwater management practices within the Village of New Paltz, particularly on the SUNY New Paltz campus. The campus has a permeable asphalt parking lot which allows rainwater to go through the parking lot instead of running across it. This not only reduces flooding concerns, but filters the water so it is cleaner when it eventually reaches the Saw Mill Creek and/or Wallkill. SUNY also has several rain collecting cisterns which both reduces runoff and provides an additional source of water on campus. There are several bioretention landscaped areas that help capture run-off as well.

Elsewhere in the Village officials decided to “daylight” one of the major underground drainage conduits, creating an aboveground stream within Peace Park. This reduces pressure on the overall stormwater system by allowing the water to overflow into the park instead of backing up and causing damage to other areas in the village. (Trotter, 2017)

The Woodwell Climate Research Center study (2020) for New Paltz provided projections of flood impacts in the future that consider climate change. That study estimated that there are significant increases in flood risk across New Paltz over time. They estimate more areas will be flooded to a greater depth. Areas within the 100-year flood event showed potential increases by 7% and 20% by mid and late 21st century, respectively. The number of buildings that could be flooded under these projections increases by 12% and 34% by the mid and late

21st century, respectively. The study estimates that there are also increases for the 500-year events, but the changes are smaller in magnitude than for the 100-year events.

Map 20 shows that the Town has a great deal of average resiliency (9,700 acres), 4,150 acres of slightly above average resiliency, 2,100 acres of above average resiliency, and 520 acres of far above average resiliency scores. Not surprisingly, the intact forested areas of the Shawangunk Ridge and the Esopus/Lloyd Wetlands and Ridges, both of which are Significant Biodiversity Areas and having the highest Forest Condition scores in Town also have the highest climate resiliency scores. Areas with above average to slightly above average resiliency scores are found along much of the Wallkill River (mainly north of Route 299), along the Platte Kill, and the Kleine Kill. West of the Wallkill and south of Mountain Rest Road, in portions of the Village of New Paltz (around Mill Brook Preserve) and north of the Village between Route 32 and the Swarte Kill, are generally of average resiliency with pockets of slightly below resiliency.

In the Town's Critical Environmental Area proposal, the Kleine-Kill Wallkill Corridor and the Clearwater Forest area was identified as an important wildlife and climate-corridor. This area is also mapped as a forest linkage zone and has above average climate resiliency. It provides important connectivity between the Shawangunk Ridge and the Shaupeneak Matrix Forest Block.

There is less than one acre of far below average, and 950 acres of below to slightly below average resiliency in Town. Most of these areas represent forests that have been

fragmented with residential development and areas with commercial development (including parking lots, or large buildings such as found at SUNY New Paltz). As shown on Map 20, the areas of below average resiliency are located primarily in or around developed areas of the Village of New Paltz. One fairly large area (~180 acres) of below average resiliency can be found along and around Gatehouse Road where residential development has taken place.



Several areas near the Wallkill are considered to have above average climate resiliency.

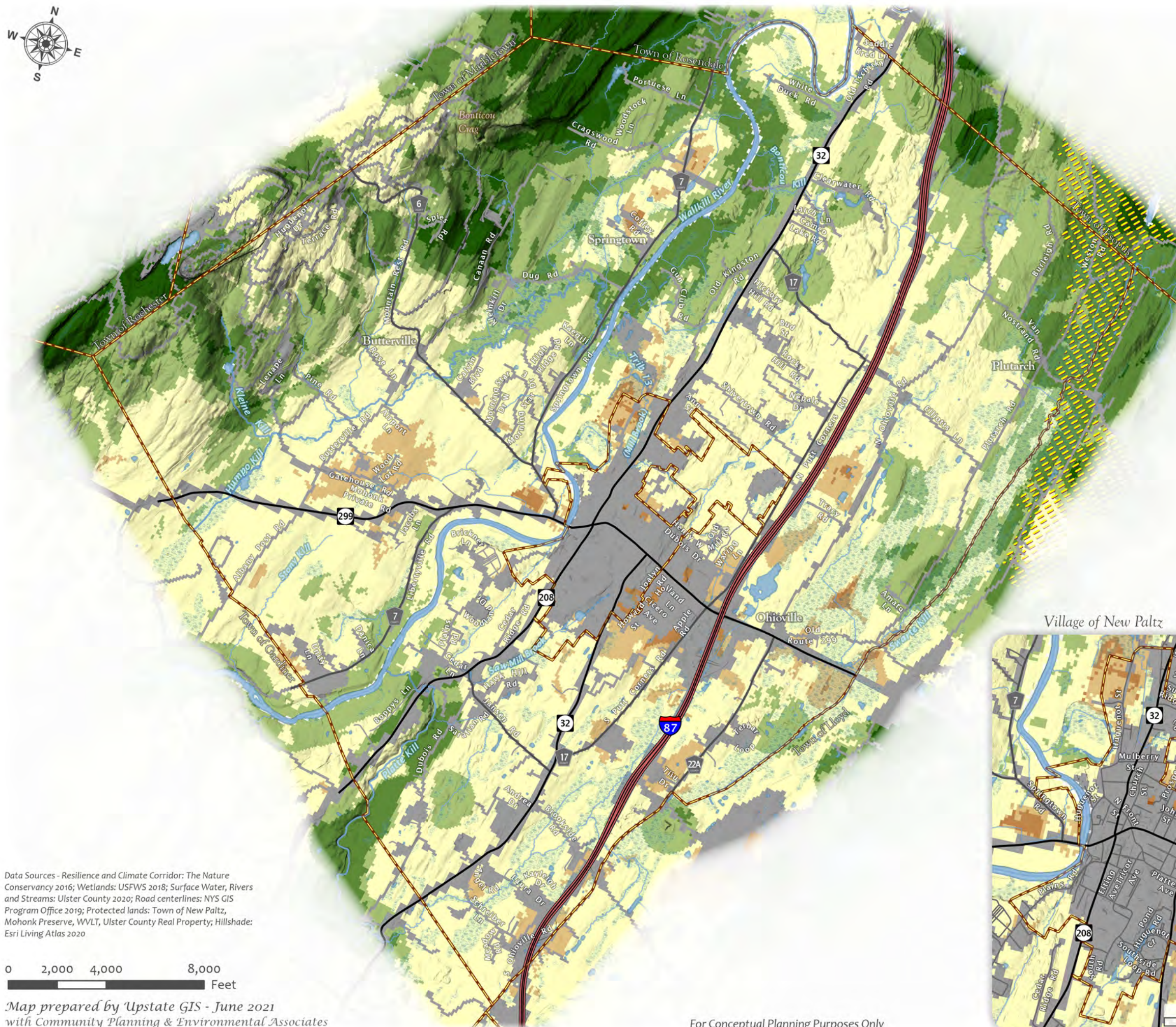
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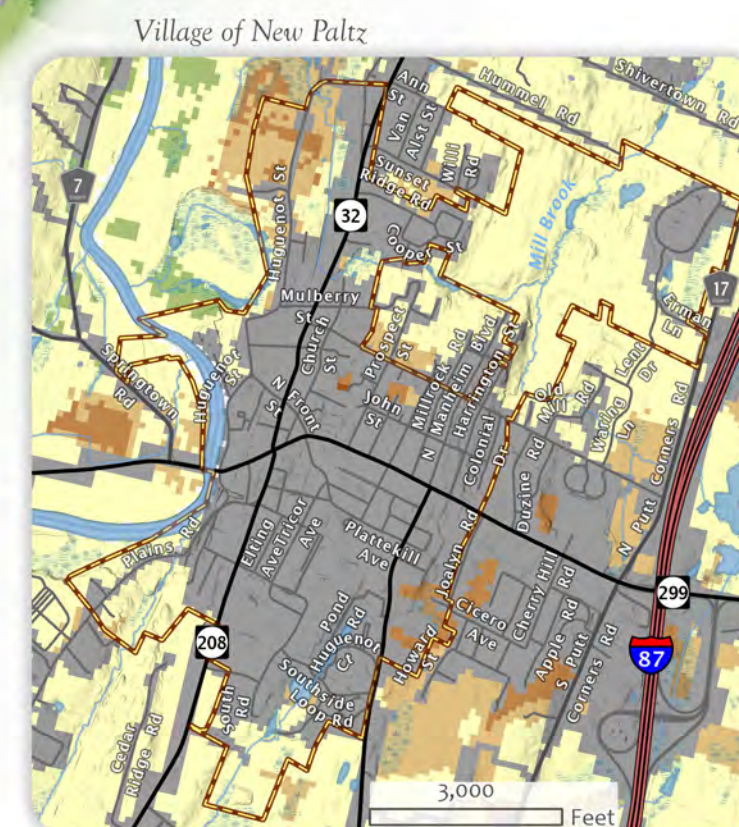
Town and Village of New Paltz Natural Resources Inventory

Map 20: Climate Resiliency



- Municipal Boundaries
- Waterbodies
- Streams
- Wetlands
- Climate Corridor
- Landscape Climate Resilience Score**

- Far Above Average
- Above Average
- Slightly Above Average
- Average
- Slightly Below Average
- Below Average
- Far Below Average
- Developed



Data Sources - Resilience and Climate Corridor: The Nature Conservancy 2016; Wetlands: USFWS 2018; Surface Water, Rivers and Streams: Ulster County 2020; Road centerlines: NYS GIS Program Office 2019; Protected lands: Town of New Paltz, Mohonk Preserve, WVLT, Ulster County Real Property; Hillshade: Esri Living Atlas 2020

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9 CONSERVED AND PUBLIC LANDS

KEY CONCEPTS (MAP 21)

Conserved and public lands are protected from development and serve many important roles in New Paltz. In addition to protecting open, green spaces for ecological and biodiversity benefits, they also help maintain scenic landscapes, provide recreational opportunities, and help make our environment more resilient to climate change. Protected agricultural lands in New Paltz not only protect large meadow habitats but contribute to local food security in the area. Some conserved and public land in New Paltz is protected primarily for ecological purposes, others are maintained for recreational purposes, and still others for historical purposes. Some may have multiple goals that combine protection of environmental resources with recreational use.

For more information on conservation lands see community preservation task force at <https://www.townofnewpaltz.org/community-preservation-fund-for-clean-water-working-farms-and-natural-areas>.

Land may be conserved and protected in a variety of ways. Some are public lands owned by a state, county, or local government. Others are privately-owned lands conserved through a conservation easement that limits future development. Where an easement exists, a land trust is often involved to ensure for the long-term protection of the property. Still other lands are fully owned and preserved by an organization, such as the Mohonk Preserve. Some Town of New Paltz-owned public land have various uses but may not be protected under a conservation easement. These lands still have conservation value however and should be recognized and managed as such.

ABOUT MAPPED FEATURES (MAP 21):

Protected and Public Land with Public Access: These are lands that are permanently protected from residential, commercial, or other types of development but that allow for public access for recreational purposes. Public lands with natural resource values and public access are included, but other public owned lands including lands owned by the school district and SUNY New Paltz are not included but should be noted as having important natural resources, as well.

Mohonk Preserve: This is an 8,000 acre preserve protecting the Shawangunk Ridge. The land is owned by the Mohonk Preserve and managed by its Board of Directors along with staff and volunteers. Lands in the Mohonk Preserve are open to the public with a paid pass or membership and activities within the preserve include rock climbing, hiking, running, mountain biking, horseback riding, and cross-country skiing. This location is one of the premier rock-climbing destinations in North America. The Mohonk Preserve protects key environments on the Shawangunk Ridge including cliff and talus slopes, ice caves, ravines, pitch pine barrens, historic and prehistoric places, bird habitat, bird migration routes, surface water locations that are important habitats and groundwater recharge locations (Mohonk Preserve 2020).

Other Protected Land: These are parcels of land that have been preserved but have limited or no public access. They are either government owned or are often where conservation easements exist to prevent future development. These are often lands preserved for active agriculture or habitat protection.

Recreational Land Features: Map 21 identifies a variety of recreational features found in New Paltz. These include trailhead and parking areas, a boat launch, the Empire State Trail, the Wallkill Valley Rail Trail, the River to Ridge Trail, and the Mohonk Preserve and Mill Brook Preserve recreational trails. Recreational resources are discussed in more detail in Section 10.1, below.

MORE ABOUT CONSERVED LANDS IN NEW PALTZ

The Town of New Paltz is a leader in Ulster County and the Hudson Valley in open space protection. In 2006, the Town adopted a visionary Open Space Plan, and secured a voter-approved bond to fund the protection of valuable open space in the community. It has taken initiative to protect key properties on its own and in partnership with conservation organizations, including the Wallkill Valley Land Trust, the Open Space Institute, and Scenic Hudson. This program has been managed by the Clean Water and Open Space Protection Commission (CWOSP) of the Town of New Paltz.

In addition, the Town in 2020 approved a Community Preservation Plan that provides a separate funding mechanism to enable the acquisition of property rights from willing landowners to protect land of agricultural, recreational, scenic, or historical value. Together, CWOSP and the new Community Preservation Fund Advisory Board will continue to guide the ongoing efforts to preserve and protect the open space resources of the Town. The Town of New Paltz website provides background and details about both of these programs.

Map 21 details all conserved lands in New Paltz as of 2020 (see also Table 4). Conserved and public lands cover approximately 4,500 acres of land throughout Town. The largest area is the 8,000 Mohonk Preserve. Approximately 2,600 acres of the Preserve lies within the Town of New Paltz. These lands cover forested areas, wetlands, and agricultural fields. Ownership of conserved lands includes both private and public entities. Privately conserved lands are those owned by the Mohonk Preserve or the Open Space Institute (~300 acres), while others are protected via conservation easements through organizations such as the Wallkill Valley Land Trust or by conservation easements held by organizations enabled by law to hold and enforce them, such as state agencies, municipalities, and land trusts such as the Mohonk Preserve and Scenic Hudson. A conservation easement is a legal agreement between the



The first known use of the term Mohonk, albeit with a slightly different spelling is on a deed from 1677 where the “high hills” are called Moggoneck. The first known usage of the current spelling is in reference to Lake Mohonk in 1860. The meaning of the name is not known, but has been speculated to derive from the Lenape word *maxkwung*, meaning “place of Bears.” (Fried, 2005)

landowner and an authorized entity such as a land trust or municipality. The easement restricts the types of development and other land uses that can occur on the property so that conservation values—such as wildlife habitat, scenic views, agricultural potential, and water resources—are protected.

Table 5. Summary of Protected Lands in New Paltz		
	Acres	Major Owners/Holders of Easements
Land protected by Fee Simple Ownership	3,672	Mohonk Preserve, NYC DEP, Open Space Institute, Town of New Paltz, Village of New Paltz, Ulster County, Wallkill Valley Land Trust
Land Protected by Conservation Easements	824	Wallkill Valley Land Trust, Mohonk Preserve

The New Paltz Community Preservation Plan, July 2020, has additional details on ownership of conserved lands in New Paltz: <https://www.townofnewpaltz.org/community-preservation-fund-for-clean-water-working-farms-and-natural-areas/pages/plan-maps-and-more>

The Town, Village, and County all own several parcels throughout the Town and Village that are protected (525 acres). These include parks or areas with public access as shown on Map 21. Public lands that are preserved natural areas include the Mill Brook Preserve. Mill Brook Preserve is the only publicly owned property under conservation easement. Other public lands with recreation access are not formally protected.

Mill Brook Preserve is owned by the Town and Village and managed by the Mill Brook Preserve Inc. Located in the heart of the Village, the Preserve protects wetland, woodland, pond, and stream habitats and provides opportunities for recreation and education. It maintains over 200 feet of bog bridges, works to monitor wildlife and invasive species at the preserve, and provides nature programs, research opportunities, and service opportunities (millbrookpreserve.org). Mill Brook Preserve provides important habitats to a variety of wildlife including fisher, coyote, muskrat, owls, fox, bear, porcupine, beaver, otter, mink, raccoon, turtles, deer, and a variety of birds.

The 53-acre privately owned conserved lands of the Nyquist-Harcourt Wildlife Sanctuary are owned and managed by the Thomas and Corinne Nyquist Foundation. Spanning areas in both the Town and Village, this wildlife sanctuary is relatively open with varied habitats formed along the Wallkill River. The sanctuary includes floodplain forest, farmland, part of the Wallkill River oxbow, and other riparian areas along the Wallkill. 140 bird species, including 36 that are on the Audubon list of birds of conservation concern in New York have been documented on the Sanctuary (Nyquist-Harcourt Sanctuary 2020). The area is popular as a birding spot, especially for marsh species including the sora, snipe, flycatchers, wrens, owls, bluebirds, warblers, and others.

The Mohonk Preserve is a significant conservation area in the Town of New Paltz providing habitats for rare plants and animals and provides recreational and scenic resources. Key environments in the Preserve are (Mohonk Preserve 2020):

- Cliff and talus slopes that support ferns, lichens, reptiles, and other rock-dwelling species, and are prime recreational areas for climbers.
- Ice caves, where rare alpine plants, bats, and rodents thrive year-round.

- Ravines, the deep misty gorges that support hemlock trees and shelter wildlife such as bobcats and coyotes.
- Pitch pine barrens found on bedrock at high elevations and considered to be one of the most unique and rare types of forest in the world.
- Historic and prehistoric places. Nestled in the forests of the Preserve are the remains of the Trapps Mountain Hamlet, which is listed on the National and State registries of historic places. Five out of about 20 Native American rock shelters in the northern Shawangunk's are located on the Preserve.
- Bird habitat and migration routes. Protected cliffs allow hawks, falcons, eagles, and vultures to travel and rest during seasonal journeys. Fields, cliffs, and forests support many species of birds, some of which are rare and threatened.
- Streams, swamps, wetlands, and woodland pools provide habitat for wildlife and recharge groundwater aquifers that provide clean water for area residents.



A series of acquisitions by the Open Space Institute has protected ~300 acres of land along the Wallkill River and adjoining agricultural land (Open Space Institute 2020). Within those lands is the River-To-Ridge Trail. See Section 10.1 for more information about the River-to-Ridge Trail.

The Sojourner Truth Park and Boat Launch is located on a forested site off Plains Road along the bank of the Wallkill River. The park's main feature is a boat launch ramp and associated parking areas allowing easy access to the river.

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Open Space Institute. 2020. Retrieved from (<https://www.openspaceinstitute.org/places/river-to-ridge-trail>)



Town and Village of New Paltz Natural Resources Inventory

Map 21: Conservation and Recreation Land

1. Clearwater Park
2. Nyquist-Harcourt Wildlife Sanctuary
3. Moriello Pool and Park
4. Mill Brook Preserve
5. River-to-Ridge Trail
6. Sojourner Truth Park
7. Hasbrouck Park
8. Field of Dreams Park
9. Ulster County Pool

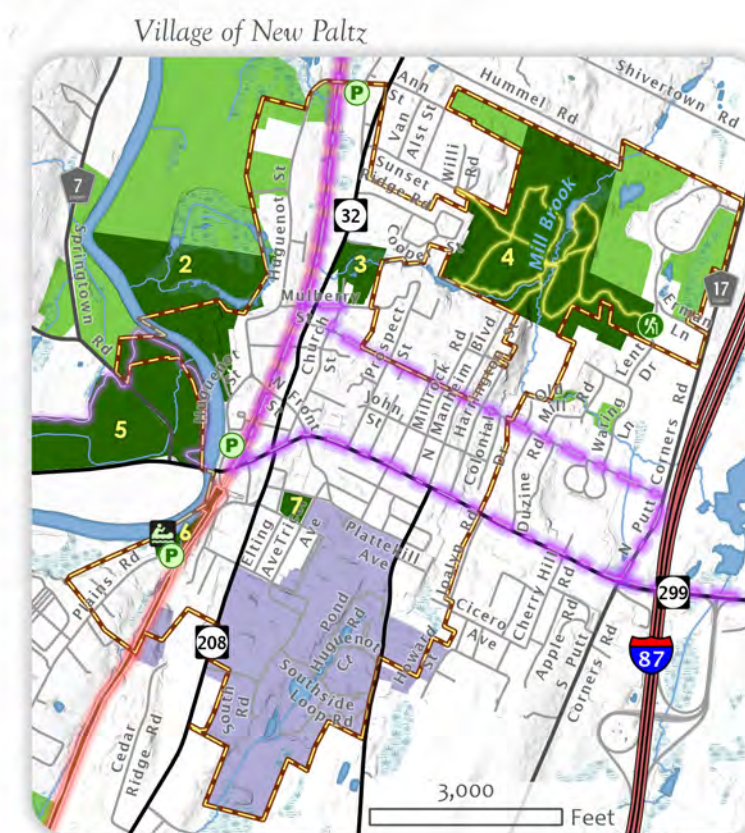
Data Sources - Wetlands: USFWS 2018; Surface Water, Rivers and Streams: Ulster County 2020; Road centerlines: NYS GIS Program Office 2019; Protected lands and Trails: Town of New Paltz, Mohonk Preserve, WVLT, Ulster County Real Property; Hillshade: Esri Living Atlas 2020

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- Municipal Boundaries
- Waterbodies
- Streams
- Wetlands
- Trail Parking
- Trailhead
- Boat Launch
- Empire State Trail Route
- Wallkill Valley Rail Trail
- River-to-Ridge Trail
- Mohonk Preserve Recreational Trails
- Mill Brook Preserve Trails
- Protected Land with Public Access
- Mohonk Preserve
- Other Protected Land
- SUNY New Paltz



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10 CULTURAL RESOURCES

KEY CONCEPTS (MAP 21 -29)

Cultural resources include recreational opportunities, scenic views, historic structures and districts, and important open space areas. They often overlap with or depend on environmental resources. For example, many conserved areas such as the Nyquist-Harcourt Wildlife Sanctuary also provide recreational opportunities. The key concept behind a cultural resource is that it relates to the human environment. While the human environment certainly includes the natural and physical environment, cultural resources are those that provide for human needs.

The National Environmental Protection Act (NEPA) defines the human environment as “including the natural and physical (e.g., built) environment and the relationships of people to that environment” (40 CFR 1508.14). The social and cultural aspects of the environment include both the natural resources and the relationships between natural and cultural.

For more information on cultural resources see:

Town of New Paltz Historic Preservation Commission (HPC):

<https://www.townofnewpaltz.org/historic-preservation-commission>

Village of New Paltz Historic Preservation Commission:

<https://www.villageofnewpaltz.org/historic-preservation-commission/>

Town Recreation Committee:

<https://www.townofnewpaltz.org/recreation-committee>

Town Bicycle and Pedestrian Committee:

<https://www.townofnewpaltz.org/bicyclepedestrian-committee>

10.1 RECREATION

KEY CONCEPTS (MAP 21)

The recreational opportunities linked to natural resources include hiking/biking trails, fishing, boating, hunting, road and mountain biking, cross-country skiing, snowshoeing, rock climbing, and bird-watching. In New Paltz, these opportunities include parks, trails, trailheads, and boat launches as shown on Map 21. This map also shows trailhead and parking areas to support those. Trails include the Empire State Trail, the Wallkill Valley Rail Trail, the River to Ridge Trail, the Mohonk Preserve Recreational Trails, and the Mill Brook Preserve Trails.

MORE ABOUT RECREATIONAL RESOURCES IN NEW PALTZ

New Paltz has an extensive trail system that links the Village through the Wallkill Valley to the Mohonk Preserve. In addition to the almost 66 miles of trails in the Mohonk Preserve, the Empire State Trail, the Wallkill Valley Rail Trail, the River-To-Ridge Trail, and the Mill Brook Preserve trails are all found in New Paltz.

Initiated in 2017, the recently completed Empire State Trail is a continuous 750-mile route spanning the state from New York City to Canada, and Albany to Buffalo. The Empire State Trail passes through New Paltz along Route 299 to Main Street with a bike section turning off onto Henry W. Dubois Drive, all meeting at Route 32. It then connects to the Wallkill Valley Rail Trail and continues along that north into Rosendale. Currently, there are plans to create a designated bicycle/pedestrian walkway on Henry W. Dubois Drive.

The Wallkill Valley Rail Trail offers a pathway for walkers, joggers, bicyclists, equestrians, cross-country skiers, and snowshoers (Wallkill Valley Land Trust 2020). The trail is on a

former 12-mile Wallkill Valley Railroad corridor between New Paltz and Gardiner. Parts of the land in New Paltz were conveyed to the Town and Village and the trail opened in 1993. Since that time, the trail has been extended and now includes a 22+ mile corridor that traverses Gardiner, New Paltz and Rosendale. In New Paltz, the trail traverses north to south. It passes through the Village and crosses the Wallkill near Springtown. The trail is owned by the Village of New Paltz within the village boundary, and by the Town of New Paltz for the rest of its length within the Town.

The River-To-Ridge Trail was created in partnership with the Mohonk Preserve by the Open Space Institute. The trail is an off-road loop that goes through active farm fields connecting the Village directly to the Shawangunk Ridge. It links the Village with trails in the Mohonk Preserve, Minnewaska State Park Preserve, the Wallkill Valley Rail Trail, and the Empire State Trail. Note that while the River-to-Ridge Trail passes through lands that are conserved, public access is limited to the trail area itself and not to other parts of the land.

A boat launch in Sojourner Truth Park off Plains Road offers access for non-motorized boating. Trail parking can be found for the Mill Brook Preserve at the end of North Manheim road and Sunset Ridge, for the trail to the Nyquist Preserve via the free municipal lot off Huguenot Street, and trail parking for the River-to-Ridge Trail where it crosses Springtown Road.

The Mohonk Preserve Recreational Trail system, which requires membership or a paid day pass, includes nearly 66 miles of trails, some of which are within New Paltz, including those at the Visitor Center, West Trapps, Coxing, Spring Farm, and Testimonial Gateway trailheads.



Boat access at Sojourner Truth Park

The Mill Brook Preserve, located in the Village of New Paltz, contains approximately 2.8 miles of trails. Trails can be accessed at three locations, making the park easily accessible to Village residents and visitors.

Other recreational opportunities in the Town and Village include:

- Clearwater Park on Clearwater Road includes three Little League fields, a Babe Ruth Field, and a BMX complex.
- Field of Dreams Park on Ulster County land, across Libertyville Road from the Ulster County Fairgrounds, includes areas for walking and jogging, a dog park, softball fields, volleyball courts, and soccer fields.
- Ulster County Pool Complex, located across from the County Fairgrounds, features an Olympic size swimming pool and two large Kiddie pools.
- Moriello Pool and Park includes a pool and playground.
- Hasbrouck Park, a small park in the Village, includes a unique wooden playground, baseball diamond, picnic table, basketball court, swings, gazebo, and water fountains.

- Nyquist-Harcourt Wildlife Sanctuary contains 56 acres in the Town and Village. It is open year-round and has walking trails ideal for bird watching and enjoying nature.
- Ulster County Fairgrounds, a 150-acre area located on Libertyville Road, hosts the Ulster County Fair, an historic fair showcasing entertainment and exhibits for a six-day event each summer. The fair is managed by the Ulster County Agricultural Society which was founded in 1868. Also hosted at the fairgrounds is the Taste of New Paltz, a daylong event featuring food and entertainment. The fairgrounds facilities are available for rent and feature a horse corral and camping area.



10.2 SCENIC RESOURCES

KEY CONCEPTS (MAP 22)

The visual environment affects the way people feel about a place, creates a sense of local identity and well-being for residents, and affects the desirability of New Paltz for residents, businesses, and visitors. In New Paltz, scenic resources are strongly tied to the dramatic geology and topography of the Town.

Scenic vistas refer to those locations or vantage points where broad expanses of unique and outstanding beauty are apparent. “Scenery” is simply the general appearance and visual features of a place or landscape. The visual condition of the landscape is dependent on both natural and human-altered features including vegetation and geologic landforms, and the patterns, colors, and textures of the viewed scene. While scenic quality is a subjective measure, this NRI recognizes the general appreciation in the New Paltz community for the aesthetic features of their landscape. Scenic quality has long been identified as a unique community strength in New Paltz. In this NRI, the term “scenic resources” refers to the places where scenic views—both expansive and close—can be seen from locations accessible to the public. These locations are largely found along roads throughout the Town.

ABOUT MAPPED FEATURES (MAP 22)

Scenic Views: Map 22 identifies those lands that contain scenic features as identified by the community. These are identified on Map 22 with a yellow arrow and represent locations where both long and short scenic views are identified. The arrow indicates the direction of the scenic view. These locations were identified through a process undertaken by the Open Space Committee in 2003 as part of New Paltz’s Inventory of Open Spaces. The extent of the vista as shown on the map may change depending on the season and the corresponding amount of foliage (Town of New Paltz 2020). The original scenic inventory done in 2003 was updated and validated by the Community Preservation Task Force in 2020.

Shawangunk Mountains Scenic Byway: The roads included in the Shawangunk Mountains Scenic Byway are designated as such through the New York State Scenic Byway program. State scenic byways are transportation corridors that are of particular interest statewide. They represent an area’s scenic, recreational, cultural, natural, historic, or archaeological significance. The NYS Byway program is administered by the New York State Department of Transportation.

Local Scenic Roads:

These are town roads identified in the 2003 Open Space inventory as having scenic characteristics or views and verified and updated by the Community Preservation Task Force in 2020.

MORE ABOUT SCENIC RESOURCES IN NEW PALTZ

The Shawangunk Mountains Scenic Byway is an officially designated New York State Scenic Byway and highlights the natural and cultural

heritage of its 82-mile route through the Shawangunk Ridge and across the Town of New Paltz. The byway loop connects the valley to the northern Shawangunk Ridge. The scenic byway is also important as a historic resource because it emphasizes the importance of the region's heritage and so encourages historic preservation. Part of the vision included in the Shawangunk Mountains Scenic Byway Corridor Management Plan (2005) is to "have an organized program for the interpretation and presentation of the vast historic resources we have throughout the region" (Shawangunk Scenic Byway Corridor Management Plan 2005). The entire Shawangunk Mountains Scenic Byway encompasses nearly 180 square miles in multiple towns: only a portion of the Shawangunk Mountains Scenic Byway is included in New Paltz.

In addition to the Scenic Byway, there are numerous scenic views throughout New Paltz. Although there are certainly dramatic scenic views of the Shawangunk Ridge from various locations, other significant views can be found of the Wallkill River, pastoral agricultural landscapes, views of the Village of New Paltz, and of wetlands along the Swarte Kill. Local roads designated as scenic include all or portions of:

- Mountain Rest Road
- Dug Road
- Albany Post Road
- Libertyville Road
- Cedar Lane
- Jansen Road
- Old Route 299
- North Ohioville Road/Route 22A
- Elliots Lane
- Burleigh Road
- Weston Road
- Old Kingston Road
- Route 32 (in the northern portion of Town)



10.3 HISTORIC RESOURCES

KEY CONCEPTS (MAP 23)

The Town of New Paltz Community Preservation Plan and the Village of New Paltz Comprehensive Plan, as well as several detailed historic resource inventories completed in the Town and Village, provide full details on all the historic resources in New Paltz. The modern New Paltz has a unique identity largely formed from its past.

That historical and cultural character evolved over time but was significantly influenced by having natural resources that attracted the Huguenot settlers who founded New Paltz in the late 17th century. The settlement of the area by the Huguenot families is intricately tied to the water, forest, fertile floodplain agricultural fields, and other natural resources of the area. Historic resources include locally designated historic landmarks, and locations or structures included on the National and State Registers of Historic places, National Historic Districts.

ABOUT MAPPED FEATURES (MAP 23)

Several sources of data were used to obtain the historic assets of New Paltz shown on Map 23. The Community Preservation Plan provided the inventory of all the historically significant properties including those designated as local landmarks by the Town and Village Historic Preservation Commissions, as well as those on the National and State Registers of Historic Places. The Historic Preservation Commissions have done extensive inventory work to document historic resources in the community.

National Register Historic District and Site: The State and National Registers of Historic Places are the official lists of buildings, structures, districts, objects, and sites significant in the history, architecture, archeology, engineering, and culture of New York and the nation. The same eligibility criteria are used for both the State and National Registers. The National Historic Preservation Act of 1966 and the New York State Historic Preservation Act of 1980 established the National and State Registers programs. In New York State, the Commissioner of the New York State Office of Parks, Recreation and Historic Preservation, who is also the State Historic Preservation Officer (SHPO), administers these programs.

Local Historic Landmarks: The Town and Village Historic Preservation Commissions were created by their respective governments in 2002. They are responsible for designating properties as local historic landmarks in accordance with Article XIV of the Town of New Paltz Zoning Law, and Article III of Chapter 9 (Boards, Councils and Commissions) of the Code of the Village of New Paltz.

The Commissions may propose an individual property if it: (1) Possesses special character or historic or aesthetic interest or value as part of the cultural, political, economic or social history of the locality, region, state or nation; (2) Is identified with historic personages; (3) Embodies the distinguishing characteristics of an architectural style; (4) Is the work of a designer whose work has significantly influenced an age; (5) because of a unique location or singular physical characteristic, represents an established and familiar visual feature of the neighborhood or (6) contains significant historical or cultural sites where buildings or structures have never existed or no longer exist, and which may have archeological resources that are likely to yield information important to area history or prehistory. Some locally designated landmarks are also included in the National Register. Locally designated historic landmarks require a Certificate of Appropriateness for any changes which prevents any exterior modifications from

impacting the historic integrity of the property/structure. This is not the case for properties in the National/State Register where there is no oversight and is largely ceremonial.

MORE ABOUT HISTORIC RESOURCES IN NEW PALTZ

There are 19 properties identified as local landmarks. These include a total of 160.49 acres of land, but most of these properties are less than 2 acres in size and are located in the Village.

Two resources in New Paltz have National Historic Landmark designation: The Jean Hasbrouck House (Village) and the Huguenot Historic District (Village and Town). The Mohonk Mountain House also has historic landmark designation but is not located within the Town.



Stone house on Huguenot Street

There are two National Register Historic Districts in New Paltz, both of which are located within the Village. The Huguenot Street Historic District includes 14 properties that are all related to the Huguenot history of the Village. It was listed on the National Register in 1966 and on the State Register in 1980. The New Paltz Downtown Historic District includes the area from Broadhead Ave. south to Mohonk Avenue and extending along Main Street from the eastern side of Huguenot Street east to just past Prospect Street (on the south side of Main St.) It was listed in 2009 and includes 116 properties.

Map 23 also identifies the Lake Mohonk Mountain House Complex. This large area is listed on the National and State Register of Historic Places (designated in 1973 and 1980, respectively), and a National Historic Landmark (designated in 1986). Three structures within this complex are also separately listed including the Van Leuven Cabin (in the Town of Gardiner), the Lake Mohonk Mountain House (Town of Marbletown), and the Testimonial Gateway (Town of New Paltz).

New Paltz History Overview Prepared by the Town of New Paltz Historic Preservation Commission

Many historians have focused on the history of New Paltz, from Ralph Lefevre in the late 19th century to scholars studying at SUNY New Paltz today. Stores of old documents and records, relating to the establishment of New Paltz, its governance by a council of 12 heads of Huguenot settler families (known as the Duzine), and expansion under their descendants and other migrants are available at several important places. They include the Library at Historic Huguenot Street; Haviland-Heidgerd Historical Collection at Elting Memorial Library; and Sojourner Truth Library at SUNY New Paltz. To summarize the extensive history of this vibrant and well-established community in a few short paragraphs is impossible. However, several essential themes help place the Town of New Paltz in a historic context.

The original peoples who inhabited the land that is present-day New Paltz, and engaged in agriculture, raised children, and maintained settlements with seasonally based ways of life,

rituals, and ceremonies were the native tribes. Indigenous peoples, traveling from the north and west, populated the valley that surrounds the Hudson River many thousands of years ago. The Lenape (also called the Lenni-Lenape) was one of two distinct yet closely related native nations – the other was the Mohicans – whose clans lived in the regional territory that included the Hudson Valley. The clans who migrated into this area were known as the Munsee Indians, for the dialect of Lenape languages that they spoke. The native peoples called the river the Mahicannituck, or “the river where the waters are never still,” according to the late 18th century Mohican historian Hendrick Aupaumut. The Esopus Munsee Native Americans were a band of the Munsee nation, and their descendants today maintain historic preservation efforts, for example, that done by the Stockbridge-Munsee Community Band of Mohican Indians.^[1]

Though the indigenous presence in these lands is believed to go back at least several centuries earlier, archaeological excavations on a Historic Huguenot Street site have unearthed thousands of artifacts from native habitation dating to 7,000 BCE. The fertile soil along the Wallkill River provided abundant food resources to the tribes. The native peoples lived in clans or villages, composed of family members. Tribal homes were wigwams or several families might live in a longhouse, each family residing in its own section. The tribes were agriculturalists who practiced using advanced skills that enabled successful harvests without modern-day plows or metal tools. They were also meat-eaters and fished for many freshwater species. Winters especially were a time of creating utensils, gear, and clothing, and for teaching and important storytelling for the children. Through ongoing research, archaeological excavations, educational programs, and publications, much more is being revealed and understood about the complex, rich history and the heritage of the native tribes in New Paltz and the Hudson Valley.^[2]

European contact and settlement, from the 17th century on, disrupted the tribal ways and villages that had flourished over centuries as well as brought vast change, disease, conflicts, and uprooting to the native tribes in the region. Between 1655 and 1664, a series of conflicts, known as the “Esopus Wars” erupted throughout the Hudson Valley, predominantly in Ulster County, then part of the Dutch colony of “New Netherland.” The encroachment of Europeans onto farmland that had traditionally belonged to the Esopus peoples resulted in raids against European settlements in attempts to drive the intruders out of the area.

Simultaneously, fear of a universal Indian uprising in New Netherland generated a sense of anxiety among European colonists, and this led to pre-emptive strikes against native villages. These wars were characterized by the taking of prisoners, small skirmishes, and the destruction of both Native American and European crops and settlements.

The Huguenots, who fled religious persecution in Europe and settled in the Hudson Valley, had their settlement of Nieuwe Dorp (Hurley) burned to the ground during the Second Esopus War in 1663. By 1664, peace returned to the region with the takeover of the colony of New Netherland by the English, who renamed it “New York.” Although several European settlers lived in the vicinity of New Paltz unofficially prior to 1677, it was during this year that 12 prominent French Huguenot settlers from Hurley, signed a treaty with the Esopus Indians to purchase an extensive tract of land that included two-thirds of present-day New Paltz. In return, the Esopus received goods such as nails, iron kettles, axes guns, and wampum among other European items.

The Huguenot settlement was established in the present-day Village of New Paltz (on Huguenot Street), which lies on the eastern banks of the Wallkill River. The Duzine, a kind of corporation, governed the community. That form of government continued well past the time of the American Revolution, by special action of the New York State legislature. These Huguenot settlers, and their descendants, would establish many of the hamlets that would comprise the Town of New Paltz.

Official settlement of New Paltz by Europeans can be dated in 1678 with the arrival of Huguenot families from Hurley, New York. The area was given the name “New Paltz” after the “Pfalz” region of the German Palatinate, where the Huguenot families had taken refuge after fleeing religious persecution in France.^[3] Archaeological evidence suggests that the first homes constructed on Huguenot Street are believed to be temporary pit houses, built to accommodate the families while the stone houses, preserved to the present day, were being constructed. The earliest home to survive from this period is the “DuBois Fort,” built around 1705.

Over the course of the next century, New Paltz’s industry grew to include sawmills, gristmills, harness makers, taverns, wagon makers, blacksmiths, and other cottage industries common in many villages and hamlets from the early 18th to the dawning of the 20th century.

Those settling in the town created public institutions shortly after the establishment of New Paltz. In August 1689, the Patentees deeded a lot and cottage to Jean Cottin, a school master. By 1717, the settlers built a stone church on Huguenot Street to accommodate religious services as well as education, as Cottin’s lot bordered the church property.^[4]

In the early 19th century, the introduction of the public school system in New Paltz led to the creation of the first public school in New Paltz in 1812, on 15 North Front Street. The school was constructed from the quarried stone of the early 18th century church, torn down in 1773. In 1828, the second story of the school at 15 North Front Street became a school for the teaching of Classical literature (the predecessor of the New Paltz Academy and SUNY New Paltz). The top floor of the building later became a meeting lodge for the infamous anti-immigration organization the “Know Nothing Party” from 1853-1855. Religious services continued at the new Reformed Church on Huguenot Street, built in 1838. One of the first teachers of the New Paltz Public School was Dr. John Bogardus, whose home (built circa 1813) was at 275 Main Street in what was known as the hamlet of Put Corners.

SUNY New Paltz has origins as an educational institution to the early decades of the 19th century. In 1833, the New Paltz Academy was built in the vicinity of Huguenot Street near what is now the Wallkill Valley Rail Trail. It was originally founded as a school to teach classical studies, and then reorganized as the academy. By the 1870s, the Wallkill Valley Railroad ran near the academy and allowed for students from nearby communities to attend classes regularly.^[5] In addition to teaching classical studies, the school offered two- and three-year teaching programs for elementary and secondary education. The academy also included high school classes. After two fires (one in February of 1884 and another in the spring of 1906), the Academy, or Normal School, was destroyed. However, thanks to the quick thinking of Principal Myron Scudder, classes continued in several buildings within the village. By May of 1907, ground was broken for a new Normal School, “Old Main.”^[6]

Although schools, churches and public organizations helped nurture the well-being of the community of New Paltz, the same level of treatment was not accorded to the many enslaved and free Black people who lived in the village from its inception through the 18th and into the 19th centuries.^[7] Slaves performed work in the cultivation of fields as well as in gristmills, sawmills, domestic service, and other activities, which maintained the lifestyles of landowners like the Huguenots.^[8] ^[9] Many founding families of New Paltz by the end of the 17th century were slave owners.



Old church on Plutarch Road

For example, records from the 1680s and 1690s note that the Deyo family was involved in the purchasing and selling of enslaved Africans, and the 1703 census of New Paltz states that seven African adults and two children were living in the village.^[10]

Other information on slaves living in New Paltz during this early period can be found in family wills, inventories, and legal records.^[11] ^[12] According to the 1790 U.S. Census, slaves made up 13.1 percent of the population of New Paltz. Many of these slaves lived in just below adequate to very poor conditions, either in the attic or basement of homes where owners enslaved them or in slave quarters on the surrounding property.^[13] ^[14] Until the 1860s, enslaved and free Black residents were buried in a separate cemetery north of Huguenot Street proper, known as the African Burial Ground.

Despite the passing of an act of emancipation through gradual manumission by the state of New York in 1799, it was not until 1827 that most blacks in New York State were free. Afterward, white people still treated Black residents as second-class citizens. As one example, Black residents were buried in segregated plots in the New Paltz Rural Cemetery shortly after the end of the Civil War. Also, census records from the 1850s and 1860s list many Blacks either working as laborers or servants.

Still, other Black residents of New Paltz were able to make livelihoods for themselves as independent shop owners, farmers, and business owners throughout the 19th century. With the passage of the 15th Amendment in 1870, providing that the right to vote shall not be abridged or denied on account of race or color, the New Paltz Independent recorded that the amendment's passage was a threshold prompting a certain amount of joy among African Americans.^[15] Six years later, Jacob Wynkoop formed an organization of 30 Black voters that "cast solidly for the Republican ticket."^[16] ^[17] Wynkoop was also one of the original trustees of the African Methodist Episcopal Church on Pencil Hill in 1871, and his brother supervised the construction of the parsonage.^[18]

African Americans have played a vital role in the Town of New Paltz as college professors, community leaders, and business owners. By the latter half of the 20th century, famed boxer Floyd Patterson took up residence in the hamlet of Springtown. On May 12, 1972, he held a charity boxing exhibition in the Elting Gym to raise money for a young boy who was suffering from cancer. Over 3,000 spectators attended the boxing match.^[19]

The tourist industry has remained a constant for this community from the early 19th century to the present day. Outdoor pastimes, the close proximity to the Mohonk Mountain House, and the pristine nature of the surrounding area made New Paltz a prime travel destination. Numerous horse races on the Wallkill flats drew many wealthy gamblers and entrepreneurs, such as the Astors, Goulds, Morgans and Vanderbilts, who stayed at such places as the hotel on Main Street (known as the Palmer House in 1920). Riverside Cottage and the “Blue Haven Casino” were both established along the banks of the Wallkill, and the resort soon grew to include summer houses, a soft drink building, and candy factory.^[20]

By the 20th century, New Paltz Town and Hamlet underwent more changes to meet the influx of immigrants and great mobility in the area and region. During the early 1900s, many Italian immigrants moved into the areas known as Put Corners and Ohioville. By 1964, the Congregation of Ahavath Achim was created after several Jewish families bought the property at 8 Church Street. It became known as Hehilat Ahavath Achim, “congregation of brotherly love.”^[21] As the century wore on, other ethnic groups soon followed, with the help in changes in transportation. The Wallkill Valley Railroad played a major role in the transport of people and goods from the 1870s to 1978.

The New Paltz and Highland Trolley facilitated Inter-town transportation, providing regular service through the village from the turn of the 20th century to 1925. Automobiles arrived in the village around 1900. The first garage in New Paltz, and one of the first in the Hudson Valley, was established by George Johnston in 1903 on South Chestnut Street. It was first a radiator and repair shop, and Johnston later expanded it to a garage with the ability to hold 60 cars.^[22] Automobile travel and industry in the Hudson Valley by the 1950s also led to the removal or remodeling of some of New Paltz’s historic buildings to meet new demands for convenience shopping and business opportunities. The construction of the New York State Thruway also hastened the demise of a significant portion of Put Corners, while at the same time generating new jobs at several of the corporate plants that were established nearby.

New Paltz witnessed dramatic changes in the 20th century at the college that is a central institution in the town. The Normal School, established in 1907 at Old Main, transitioned to a college with a four-year curriculum in 1938, as the State Teachers College at New Paltz. It became one of the founding colleges in the SUNY system in 1948. During the 1960s, the university embarked on a major construction program. The SUNY New Paltz campus construction resulted in dormitories, a new gymnasium and library, and dining and performance halls added to the historic school. SUNY New Paltz has since become a center of entertainment, education, and social activities in the town and has educated thousands of students.



Van den Berg Hall on the SUNY New Paltz campus

The Hamlet of New Paltz can be considered the nucleus of the hamlets that surround it, all of which have either been founded or settled by the descendants of the original Patentees of 1677. For example, Moses Freer, who was born in the Freer house on Huguenot Street,

established several businesses in Ohioville and became a patriarch of that community in the mid-19th century. Christian Deyo was one of the first settlers of the hamlet of Springtown in 1728. Property owner Elias Ean, who married the daughter of Patentee Antoine Crispell, not only helped build the first church in the Hamlet of New Paltz but also inherited the majority of his father-in-law's property in what would become known as the hamlet of Middletown. These familial connections between the Patentees and their descendants ensured a strong bond between the original hamlet of New Paltz and its outlying communities.

However, the village was not an isolated community on the western side of the Hudson River, and its history was interwoven with world affairs. Citizens of New Paltz Hamlet served in every major American conflict from the Revolutionary War to the present day. During World War I, National Guard soldiers paraded along Church Street when they were not guarding the Catskill Aqueduct in Springtown. In the 1960s, students at the college staged protests about the escalation of the Vietnam War.

Despite social and physical change in New Paltz, its history is well entrenched. The creation of the "Huguenot Patriotic, Historical and Monumental Society" in 1894, by descendants of the original 12 patentees, secured Historic Huguenot Street's place in the annals of American history as one of the oldest communities in the United States. Historic Huguenot Street is a National Historic Landmark District, and the historic site's buildings, programs, and archives illuminate the history of the area's Native and enslaved African peoples, the Dutch settlers, and the French Huguenot settlers and descendants.

By putting this village and the communities that surround it in their historic contexts, we can see how its inhabitants adjusted to new cultural and physical changes over time while maintaining a strong sense of identity and history into the 21st century.

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- [19] Johnson, C.A./ Ryan, M.W. p. 34
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- [22] Johnson, C.A./ Ryan, M.W. p. 72

10.4 OPEN SPACE CHARACTER AREAS

KEY CONCEPTS (MAP 24)

The New Paltz Open Space Plan: A Framework for Conservation (May 2006) is a document developed to protect New Paltz's unique character. It includes an open space vision map, additional resource maps, conservation goals and recommendations, conservation project selection criteria, and landowner options for conservation. Like this NRI, the Open Space Plan grew from previous planning efforts and reflects the community's vision that "high standards for open space call for the conservation of a significant acreage of New Paltz' resources, and a diverse and well-connected system of open spaces".

According to the 2006 New Paltz Open Space Plan, "The open space vision for the New Paltz community reflects landscape-level 'character areas': places with similar natural and physiological features that determine the character of the land's uses and open space resources" (Town of New Paltz 2006). Seven distinct character areas have been identified.

Important open spaces are discussed in the cultural resource section of this NRI because the character areas were defined by the community. Although highly connected to environmental resources that make each area unique, these open spaces reflect community values.

ABOUT MAPPED FEATURES (MAP 24)

The 2006 Open Space Plan Vision Character Areas include:

Shawangunk Ridge: includes key wildlife corridor and unfragmented -high-quality habitat west of the 'break-in-slope'

Butterville-Canaan Foothills: include woodlands and open lands at the base of the Shawangunk ridge.

Wallkill Flats/River Corridor: includes farms, floodplain, and tributaries in the heart of the valley that serve as a primary wildlife corridor and greenbelt.

North Woods: are large natural areas and wildlife corridors (forest, woodlands, streams, and wetlands)

Eastern Wetlands: encompass a large wetland complex along the Swarte Kill and Black Creek dominated by the large Plutarch/Black Creek wetland.

Heart of New Paltz: includes greenways and connections between major population centers such as the Village center and Town neighborhoods, linking people to the Town's many natural and cultural resources.

Orchards, Farms and Ridge Views: encompass a critical mass of active farmland and open lands east of the Wallkill River.

MORE ABOUT IMPORTANT OPEN SPACES IN NEW PALTZ

Shawangunk Ridge: This geologic feature dominates the landscape in New Paltz. It traverses three counties and 16 towns, has significant ecology, and rare and endangered species habitat. It includes one of only two ridgetop dwarf pine barrens in the world as well as other unique forest types, lakes, rivers, and wetlands. Although largely protected by the Mohonk Preserve, development along the base of the ridge has encroached.

Butterville-Canaan Foothills: Centered between the Shawangunk Ridge and the Wallkill River, this character area is known for its moderately-sloping wooded hillsides that extend from the Wallkill flats to the 'break-in-slope'. Important water resources like the Kleine Kill and Humpo Marsh along with numerous smaller wetlands are in this area. Once highly agricultural, many fields are fallow, or being converted to non-farm uses. Much of the development pressure in New Paltz has been in these foothills.

Wallkill Flats/River Corridor: The Wallkill River and its floodplain traverses the center of the Town and the western edge of the Village. It is an important greenway connection north and south and together with its many tributaries and intermittent streams, serves as a wildlife pathway, connecting the river flats to the foothills, ridge, woodlands, and wetlands. The Wallkill has an important riparian and floodplain area. The corridor contains the most agriculture in Town along with low density residential development and several small hamlets along the river's edge.

North Woods: This area represents a relatively intact woodland. The woodlands are an important unfragmented habitat as described in previous sections of this NRI. The woodlands also act as a natural stormwater drainage system. Maintenance of the unfragmented woodland has been identified as a critical need in this character area.

Eastern Wetlands: Identified as part of a significant biodiversity area, the eastern wetland character area is dominated by the Plutarch/Black Creek wetlands and surrounded by rolling topography and wooded uplands. Land use patterns here are low density residential development connected through winding, narrow country lanes.

Heart of New Paltz: Greenways and connections between major population centers such as the Village center and Town neighborhoods, linking people to the Town's many natural and cultural resources.

Orchards, Farms and Ridge Views: Open farms and orchards in the southeastern part of the Town, specifically between the Thruway and the Wallkill River, are part of a large "critical mass" of farms and farmlands that extend beyond New Paltz and south into Gardiner. Farms south of the Village provide a dramatic contrast to the dense urban setting and help to preserve the magnificent views west to the Shawangunk Ridge. This character area includes two orchards (Apple Hill Farm and Dressel Farm) that present exceptional views of the ridge. This character area also has other farms and scenic roadways that serve as important economic, open space and rural character values in New Paltz.



The Wallkill Valley Rail Trail links many of the New Paltz Open Space Character Areas

10.5 LAND COVER AND ZONING

KEY CONCEPTS (MAP 25 – 26)

An area's natural resources are key to understanding the landscape we see today. Historically, settlements were founded in areas having easy access to important resources such as water, good soils, forest land, and other food sources from places such as a river. Natural resources influence the location, type, and intensity of land uses and at the same time, those same land uses can significantly impact those natural resources.

This chapter describes current land cover and Town/Village zoning. Land cover represents the actual or physical presence of vegetation (or other materials where vegetation is nonexistent) on the land surface. Land cover is also often described as what can be seen on land viewed from above. It is one means to describe landscape patterns and characteristics that are critical in understanding aspects of the environment, including the availability of and changes in habitat, the potential for dispersion of chemicals and other pollutants, and potential contributors to climate change, such as reflectivity of the land (Environmental Protection Agency 2020). Map 26 presents Town and Village zoning districts.

For more information on land cover and zoning see:

Ulster County Agricultural and Farmland Protection Plan (1997) at

<http://ulstercountyny.gov/planning/agriculture-and-farmland-protection-plans>

Town Zoning Code at

<https://ecode360.com/9168535>

Village Zoning Code at

<https://ecode360.com/7239315>

ABOUT MAPPED FEATURES (MAP 25 - 26)

Land Cover (Map 25) - A high-resolution land cover dataset was developed for all counties that intersect the Delaware River Basin, including Ulster. Seven land cover classes were mapped to reflect conditions as of 2015. Some of the classes were further refined for this project using 2019 imagery. The land cover classifications have the following definitions:

Tree Canopy: Deciduous and evergreen woody vegetation of either natural succession or human planting that is over approximately 5 meters in height is defined as tree canopy. Stand-alone individuals, discrete clumps, and interlocking individuals are included.

Tree Canopy Overhanging Others: This includes tree canopy that overhangs structures, impervious surfaces, or roads.

Low Vegetation: Low vegetation is plant material of natural succession or human planting that is less than approximately 2 meters in height. This includes visibly tilled fields (with or without vegetation), lawns, nursery plantings and natural ground cover. The data was further refined, using 2019 orthoimagery, to identify agricultural lands and recreational use open space lands. The remaining Low Vegetation lands include lawns, meadows, fallow land (unused agricultural land) and other land uses that meet the 'low vegetation' definition.

Agricultural: The "Low Vegetation" category is further refined to show farmland showing active agricultural activities such as row crops, orchards, or hay fields.

Recreational Use Open Space: Another refinement of “Low Vegetation” to include ball fields and golf courses.

Shrublands: Heterogeneous areas of both/either deciduous and evergreen woody vegetation that is between approximately 2 and 5 meters in height are considered shrublands. Discrete clumps, and interlocking individuals are included, as are true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions.

Wetlands: Wetlands are low vegetation areas that intersect or are near select NWI wetlands (freshwater and emergent wetland, freshwater forested/shrub wetland, and riverine) that are visually confirmed to have wetland characteristics, and that are located along major waterways. Areas of low vegetation near a NWI wetland are included if visually confirmed to be wetland ecosystems.

Barren: These are area’s devoid of vegetation consistent of natural earthen material regardless of how it has been cleared. This includes beaches, mud flats, dirt roads, and bare ground in construction sites. Areas of packed dirt such as parking areas would also be classified as barren.

Water: These are areas of open water, generally with less than 25% cover of vegetation or soil. This includes ponds, lakes, and rivers.

Paved Areas: These are human-constructed surfaces through which water cannot penetrate.

Structures: These are human-constructed objects made of impervious materials that are greater than approximately 2 meters in height. Houses, malls, and electrical towers are examples of structures.

Table 6 summarizes the area of the different land classes within New Paltz.

Table 6: Landcover areas within New Paltz calculated from 2015 Ulster County 1-meter data		
Land Cover Type	Acres	Percentage of New Paltz
Forest	14,420	66%
Low Vegetation	2,312	11%
Agricultural	1,942	9%
Impervious	1,269	6%
Wetlands	1,015	5%
Water	259	1%
Structures	247	1%
Recreation	224	1%
Shrublands	79	<1%
Barren	39	<1%

Zoning (Map 26): This map is not the official zoning map of the Town or Village. Instead, it shows generalized use areas based on the principal allowed uses in each zoning district in the Town and Village.

MORE ABOUT LAND COVER AND ZONING IN NEW PALTZ

This map illustrates the land cover and uses in the Town and Village. It is especially useful to show areas having unfragmented forested areas (largely in the Shawangunk Ridge area) and remaining areas of active agricultural land. The Town's landscape is dominated by three basic land covers: tree canopy, agriculture, and wetland. Within the Village, land cover is dominated by buildings, low vegetation (lawn) and overhanging tree canopy.

The map is also useful to understand the overall land use patterns in the Town and Village. The land cover in the Village reflects its concentrated and higher density of development. Except in the Shawangunk Ridge area, much of the Town has lands covered in tree canopy largely intermixed with low vegetation (lawns) and structures (houses). This illustrates the widespread, low density development pattern in Town that over time has fragmented forested areas. Large blocks of land used for agriculture are found mainly in the Wallkill River valley and reflect the remaining block of critical farmland.

The official zoning map for the Town separates the land area into eight different zoning districts. Within those eight districts, the zoning law establishes principal land uses for each. Map 24 includes those zoning districts but offers generalized zoning districts based on principal land uses. Districts are combined to see regulatory direction in the Town and Village for agriculture, flood areas, historic areas, mixed use areas, residential areas, business areas, industrial areas, and the SUNY campus area. Specific zoning districts are also labeled on the map (for example A-1.5, R-1, A-3, etc.).

The Town of New Paltz encompasses approximately 20,684 acres with the Village encompassing 1,121 acres. The predominant land use districts in Town are agricultural and residential along with a distinct flood/flood fringe district. About 11,400 acres of land in Town are included in agriculturally oriented districts, 4,700 acres in residentially oriented districts, and 3,600 acres in flood/floodplain. To the east and south of the Village, an industrial zoning district of 800 acres is found. Mixed use, industrial use and business use districts are clustered along the Route 299 corridor from the Village to the Town of Lloyd boundary.

The Village's zoning districts are principally oriented to residential use except for the SUNY Campus and business uses along Route 299/Main Street and Route 32 (N. Chestnut Street). One locally designated historic district is found within the Village encompassing the Huguenot Street area.

10.6 AGRICULTURAL RESOURCES

KEY CONCEPTS (MAP 27 – 28)

This section explores agricultural soil resources, where agriculture is taking place in New Paltz, and ag-support features such as New York State Certified Agricultural Districts. Agriculture is a land use activity that is tied directly to the natural resources of the area. Successful farming depends largely on suitable topography,



soils, and water to support growing crops and animals. Soils, and in particular, those soils identified as prime farmland soils or soils of statewide importance are critical to support farming activities.

Agricultural practices can highly influence soil health and as such, to climate change resiliency. As discussed in the Soil Section in this NRI, soil health is critically important to mitigating climate change. Use of best management practices in agriculture to maintain or even improve soil health are included among those actions that can be taken locally to combat climate change.

Agriculture provides not only local food and food security benefits but contributes greatly to both rural character and to biodiversity. It provides habitats such as meadows and pastures vital to species requiring open areas for feeding and breeding. As stated in the Town of New Paltz Farmland Preservation Plan (2010), agriculture “plays a central role in the economic and environmental sustainability of the Wallkill Valley, providing local food and jobs, contributing positively to the tax base and discouraging sprawl.” Agricultural lands can also offer watershed protection, wildlife habitat, and scenic views with use of best management practices.

For more information on agricultural resources see:

Ulster County Agricultural and Farmland Protection Plan (1997) at

<http://ulstercountyny.gov/planning/agriculture-and-farmland-protection-plans>

<https://www.townofnewpaltz.org/community-preservation-plan-task-force/pages/plan-maps-and-more>

ABOUT MAPPED FEATURES (MAP 27)

Agricultural Districts: An Agricultural District is a land area identified through New York’s Agricultural Districts Law (Article 25-AA) to help protect current and future farmland from non-agricultural development by reducing competition for limited land resources and helping to prevent local laws that would inhibit farming and raise farm taxes. In an agricultural district, the NY Commissioner of Agriculture is authorized to review local comprehensive plans, legislation, and regulations, and approve or disapprove them according to whether they unreasonably restrict or regulate farm operations within an agricultural district. The Commissioner also reviews any purchase by a municipal or state agency of active farmland larger than one acre, or any land over 10 acres within an agricultural district, to assess the potential impacts on local agricultural resources. Agricultural Districts are developed when interested landowners, who collectively own at least 500 acres of land, request formation of such a district. Farmers and rural landowners enrolled in a state-certified Agricultural District receive important “right-to-farm” protections.

Active Farmland: This identifies that part of a parcel of land used for agriculture and is based on the land cover data from Ulster County using the ‘low vegetation’ category and then using a combination of imagery to determine which of those areas are agriculture versus meadows, lawns, recreation areas, etc. Data used for this was the summer 2019 USDA National Agricultural Inventory Program imagery as the primary source for image interpretation, then the NYS 2016 spring orthoimagery supplemented with Google street view where possible.

Active Agriculture: Unlike the Active Farmland category that identifies agriculture based on vegetation, this is a parcel-based designation that identifies the entire parcel of land that has been classified by the Town Assessor as being used for agricultural activities. These parcel classifications are coded by the Assessor as 100’s class code in the assessment data.

Active Agriculture with Agricultural Tax Assessment: These are active farmlands that participate in and receive special land assessments through the assessment program established in New York State Agricultural and Markets Law 25-aa. These special assessments are based on criteria established in State Law and applied by the Town Assessor, and are determined by crop production, soils, and acreage of farmland. This is a voluntary program designed to reduce (but not eliminate) a farmland owner's property tax liability. Lands having an agricultural assessment are generally considered to be committed to staying in agriculture because there are penalty fees to pay when active farmland that has received an ag assessment is converted to non-farm use.

Secondary Agriculture with Assessment: This is a parcel-based designation that identifies anything that is not coded by the Assessor as agricultural land in the 100's classification but is land that receives an agricultural tax assessment. These are lands that have both agricultural and other land uses on them. Most commonly, these are large parcels of land that have a house and other residential structures on them, but a portion of the parcel is used for active agriculture. Sometimes these lands are also those that are owned by a non-farmer but rented to a farmer. These secondary agricultural lands are very important to support farms that need additional land.

Non-agricultural use with apparent agricultural land: These are farmlands determined from the land cover classification (not parcel-based) as agricultural but that are not coded by the Assessor in the 100's classes and do not receive an agricultural tax assessment.

ABOUT MAPPED FEATURES (MAP 28)

Prime Farmland Soil: Prime Farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or developed land or waterbodies. Prime Farmland Soils have the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied.

In general, Prime Farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality.

Prime Farmland Soils are permeable to water and air. They are not excessively erodible or saturated with water for long periods, and either are not frequently flooded during the growing season or are protected from flooding. Slopes range mainly from 0 to 6 percent.

Farmland Soil of Statewide Importance: In some areas, land that does not meet the criteria for Prime Farmland is considered to be "Farmland of Statewide Importance" for the production of food, feed, fiber, forage, and oilseed crops. Generally, this includes soils that nearly meet the requirements for Prime Farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce yields as high as those of Prime Farmland if conditions are favorable.

Prime Farmland if Drained: Soils that are designated as Prime Farmland if Drained meet all the prime farmland criteria except for depth to seasonal high-water table and are suitable

for drainage. In New York, somewhat poorly drained soils are designated as Prime Farmland if Drained, if they meet all criteria for prime farmland other than depth to water table.

Parcels with Agricultural Use: These are all the agricultural related parcels as defined above for Map 27.

MORE ABOUT AGRICULTURE AND FARMLAND SOILS IN NEW PALTZ

Of the total land area in the Town (approximately 20,700 acres outside of the Village), about 1,900 acres are considered Prime Farmland Soils. As shown on Map 28, prime farmland soils are concentrated along the Wallkill River valley with other areas along the Swarte Kill. The prime farmland soils correspond to the location of the remaining farms in New Paltz.

Some areas in Town have soils classified as “Prime Farmland if Drained.” There are approximately 1,985 acres of those soils, also exclusively concentrated in the Wallkill River valley. Many areas identified as NWI wetlands, probable wetlands and possible wetlands have the soil classification of “Prime if Drained” (See Map 12).

The other soil type shown on Map 28 are those identified as “Farmland Soil of Statewide Importance.” There are 6,660 acres of this soil type. A large area of the Town has Farmland Soil of Statewide Importance. Not all areas having this soil classification are farmed though. A large concentration of this soil type is found east of the NYS Thruway to the Swarte Kill/Town boundary.



Although farmland acres have diminished over the years, agriculture remains an important land use and open space in New Paltz. Based on property classification codes, New Paltz has five primary types of farming: orchards, truck crops (non-muckland), field crops, horse farms and one livestock farm (cattle, calves, or hogs). Remaining agricultural land in New Paltz is unclassified but appear to be mostly field crops. Agricultural land use peaked in the 1960's when about half of the Town's land area was farmed (Town of New Paltz 1997). Now, there are 104 parcels either primarily or secondarily involved in farming, totaling 4,756 acres, which contain 1,942 acres of actively farmed land (nine percent of the Town's total land area). Of those, 52 parcels receive a NYS agricultural tax assessment. There are 73 parcels and 1,167 acres of secondary and other lands in New Paltz that have farming activities that support farmland uses (~2,650 parcel acres). Some agricultural activities, particularly orchards, are often on soils not considered prime or soils of statewide importance but are crops that have been growing in the New Paltz area for years. Protection of established orchards, or areas with orchard potential should be considered in agricultural farmland protection efforts.

Farmed areas are concentrated in the Wallkill Valley, although several significant farms are located to the east and south of the Village of New Paltz. There is very limited farmland within the Village limits: one corner of Huguenot Street Farm lies within the Village. Some of the remaining farmlands are permanently preserved properties as well, especially those preserved by the Open Space Institute in the Wallkill River floodplain and the area south of Butterville Road.

The New York State Certified Agricultural District in New Paltz has also decreased in size over the past few decades. Map 27 shows its location. Most, but not all of the farmed parcels are included in the NYS Certified Agricultural District. Most, but not all of the secondary and other lands used for agriculture are not included in the NYS Certified Agricultural District, nor do owners receive agricultural assessments on them.

The Town of New Paltz has developed a town-level agricultural and farmland protection plan. Ulster County also has a county-wide agricultural and farmland protection plan adopted in 1997. Although in need of updating, that plan clearly shows the critical mass of farmland in Ulster County as being along the Wallkill River, starting in New Paltz.

New Paltz is within the Hudson Valley/New York City foodshed (Scenic Hudson 2013). Ulster County and the entire Hudson Valley comprises a vital area that is included as a part of New York City's foodshed. In the Scenic Hudson foodshed plan (2013), New Paltz is identified as having a high farmland index (combination of soil value, farm size, and farm diversity). Scenic Hudson has identified the entire Wallkill River valley as a priority conservation cluster to preserve farmland.

The 2016 New York State Open Space Conservation Plan also identifies the Hudson Valley "foodshed," as an area with the potential to serve the growing demand for fresh local foods in the region. In addition to conserving the specific agricultural areas the Open Space Plan identifies priority projects which include protecting prime farmland soils throughout the Hudson Valley. The Open Space Plan discusses how conservation of farms will help meet growing demand for locally produced food, enable the region's agricultural economy to grow, and bolster the food security of the New York City Metropolitan Region and the Hudson Valley. Conserving the region's farmland will help conserve wildlife habitat and the area's rural character. As indicated in its Open Space Character Areas, farmed areas in New Paltz represented highly valued landscapes and land uses.



10.7 REGULATED FACILITIES

KEY CONCEPTS (MAP 29)

Many human activities influence the health and functioning of our natural ecosystems. Some cause soil disturbances, clearing of vegetation, disturbance of streambanks or of riparian vegetation, while others have risks for water and land pollution such as mines, salt sheds, and oil and gas storage. Most of these activities are regulated either locally or by New York State. This section identifies and discusses those regulated facilities and their relation to environmental quality.

ABOUT MAPPED FEATURES (MAP 29)

Active Sand and Gravel Mine: These are mines permitted by the New York State Department of Environmental Conservation. Sand and gravel mines are typically located where glacial deposits are found (NYS DEC 2018). As glacial meltwater carried away finer silt and clay, heavier sand and gravel deposits were left behind. Sand and gravel mines in these locations are common, and because transporting these materials long distances is not usually economically feasible, sand and gravel mines are usually located near consumers. Almost all sand and gravel produced in New York is used in construction projects such as concrete and blacktop, but there are other uses for these materials as well.

SPDES Permitted Facilities: These are locations having NYS DEC approved pollution prevention permits (SPDES Permits). New York State protects water resources in part through Article 17 of the Environmental Conservation Law (Water Pollution Control). That Article created the State Pollution Discharge Elimination System (SPDES). The SPDES program is designed to prevent water pollution by controlling surface wastewater and stormwater discharges. It also controls point source discharges to groundwater as well (NYS DEC 2020).

Active and Closed Remediation Sites: These are locations identified as currently having or previously having on-site hazardous wastes. Regulated by the NYS DEC, these sites may include locations that have some sort of current or past spill or are remedial sites that are part of the State Superfund, Brownfield or other cleanup sites, or inactive hazardous waste disposal sites.

Closed Landfill: There is one closed landfill in New Paltz, currently being utilized as a transfer station.

Salt Storage: These are locations having a local, County or State salt storage shed.

MORE ABOUT REGULATED FACILITIES IN NEW PALTZ

In New Paltz, the following regulated facilities can be found:

- One sand and gravel mine is located in New Paltz just south of Brickner Lane.
- Twelve SPDES permits have been issued by the New York State Department of Environmental Conservation for various uses and sites in the Town and Village. Two of those are located in the Village. There are five permits with discharges on smaller Wallkill River tributaries, three with discharges directly on the Wallkill River (including one from the Sewage Treatment Plant), one on the Platte Kill and one on the Swarte Kill (Sewage Treatment Plant discharge). There are two other SPDES permits that do not have direct discharges into a stream or creek.

- One active remediation site (Plesser Property) is located along at the corner of Route 299 and Route 22A in the Town (near Paradise Lane). This site was formerly an orchard, now abandoned that has been evaluated through an environmental site assessment. The site has two potential sources of contamination including an old underground storage tank, and contaminants from remnants of orchard spraying. This site is currently under NYS DEC review (NYS DEC Environmental Site Remediation Database Search Details 2020). The aquifer under this property has shown high salt content from contamination from the NYS Thruway salt storage facility at the Thruway exit adjacent to the property.

Two closed remediation sites that are part of the NYS DEC Brownfield Cleanup Program are located in the Town: one along Route 299 just west of the NYS Thruway, and one along Route 32 just south of the Village adjacent to the SUNY Campus. The Route 32 site is a 37.5-acre site encompassing a former orchard and NYS DEC considers its information on this site as preliminary (Class N). It is an abandoned apple orchard with a portion currently used as a pear orchard. Surface soil sampling indicated compounds commonly used years ago in agricultural practices. NYS DEC has determined that the site does not present a significant threat to human health or the environment. The other site is at the New Paltz Plaza and is on the State's Registry of Inactive Hazardous Waste Disposal Sites and is the result of a use of solvents at a dry cleaners. Remediation of this site is complete and remedial actions have achieved State cleanup objectives and New York State considers there to be no further potential environmental impacts.

- Groundwater quality problems stemming from road salt storage and use can occur. Currently, problems resulting from salt storage occur more often than those resulting from roadway application. Salt sheds are designed to keep salt under cover to minimize runoff into water bodies. The Town of New Paltz maintains a salt shed off of Clearwater Road in the northern part of town. The NYS DOT has a salt storage building near the Thruway exit and Ulster County maintains a salt storage barn near the county fairgrounds.

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Town and Village of New Paltz Natural Resources Inventory

Map 22: Scenic Resources



Data Sources - Scenic roads and views: Town of New Paltz 2020;
Wetlands: USFWS 2018; Surface Water, Rivers and Streams: Ulster
County 2020; Road centerlines: NYS GIS Program Office 2019; Protected
lands: Town of New Paltz, Mohonk Preserve, WVL, Ulster County Real
Property; Hillshade: Esri Living Atlas 2020; Base image: USDA NAIP 2019

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Feet

Map prepared by Upstate GIS - June 2021
with Community Planning & Environmental Associates

For Conceptual Planning Purposes Only

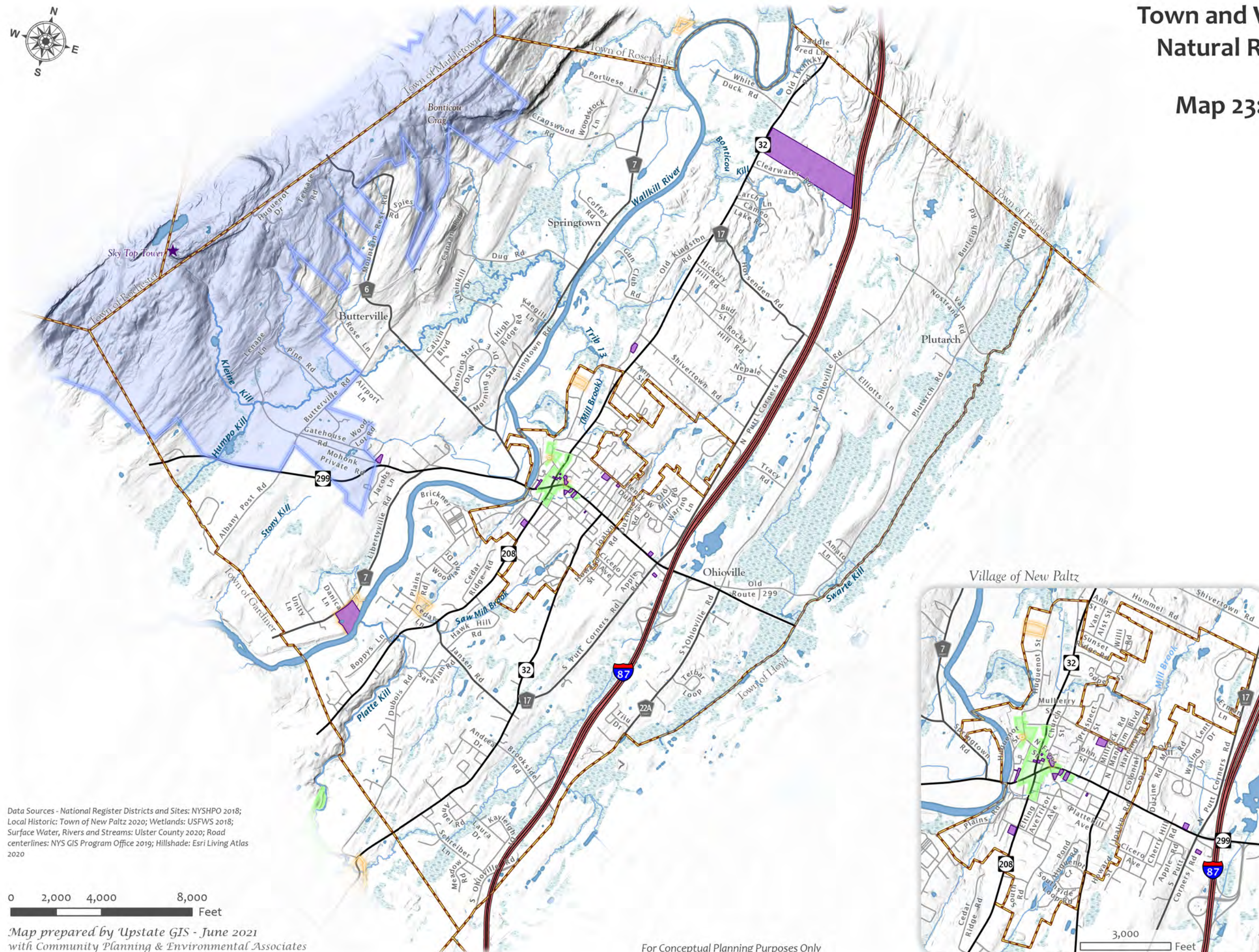
- Municipal Boundaries
- Waterbodies
- Streams
- Wetlands
- Streams
- Scenic Views
- Shawngunk Mountains
Scenic Byway
- Local Scenic Roads
- Protected Land with
Public Access
- Mohonk Preserve
- Other Protected Land

Funding for the grant award is provided by the
New York State Environmental Protection Fund,
NYSDEC Hudson River Estuary Program

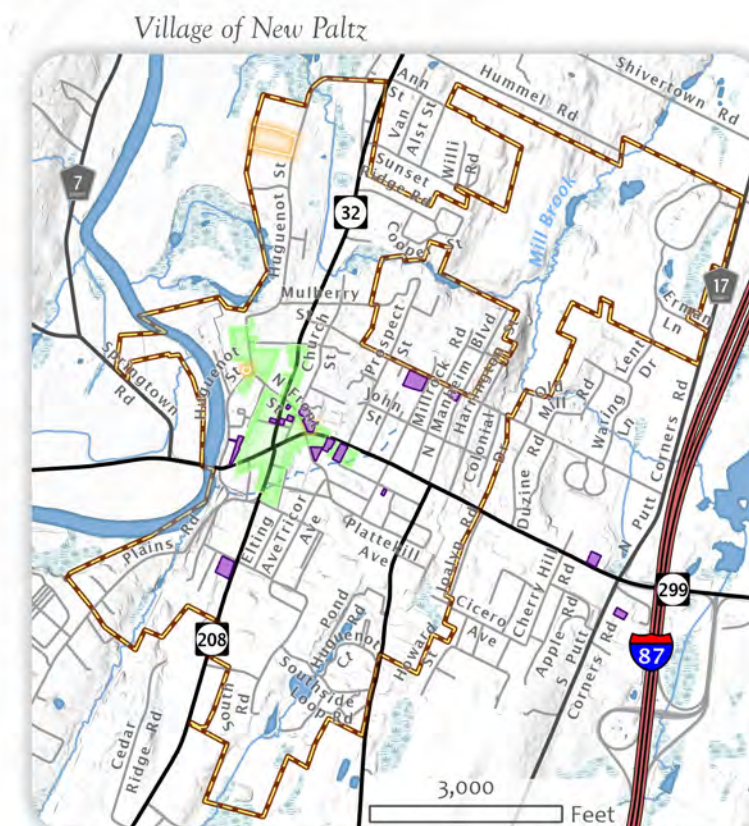


Town and Village of New Paltz Natural Resources Inventory

Map 23: Historic Resources



- Municipal Boundaries
- Waterbodies
- Streams
- Buried Stream
- Wetlands
- National Register Historic District
- National Register Historic Site
- National Register Historic Site and Landmark
- Designated Local Landmarks



Data Sources - National Register Districts and Sites: NYSHPO 2018;
Local Historic: Town of New Paltz 2020; Wetlands: USFWS 2018;
Surface Water, Rivers and Streams: Ulster County 2020; Road
centerlines: NYS GIS Program Office 2019; Hillshade: Esri Living Atlas
2020

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Map prepared by Upstate GIS - June 2021
with Community Planning & Environmental Associates

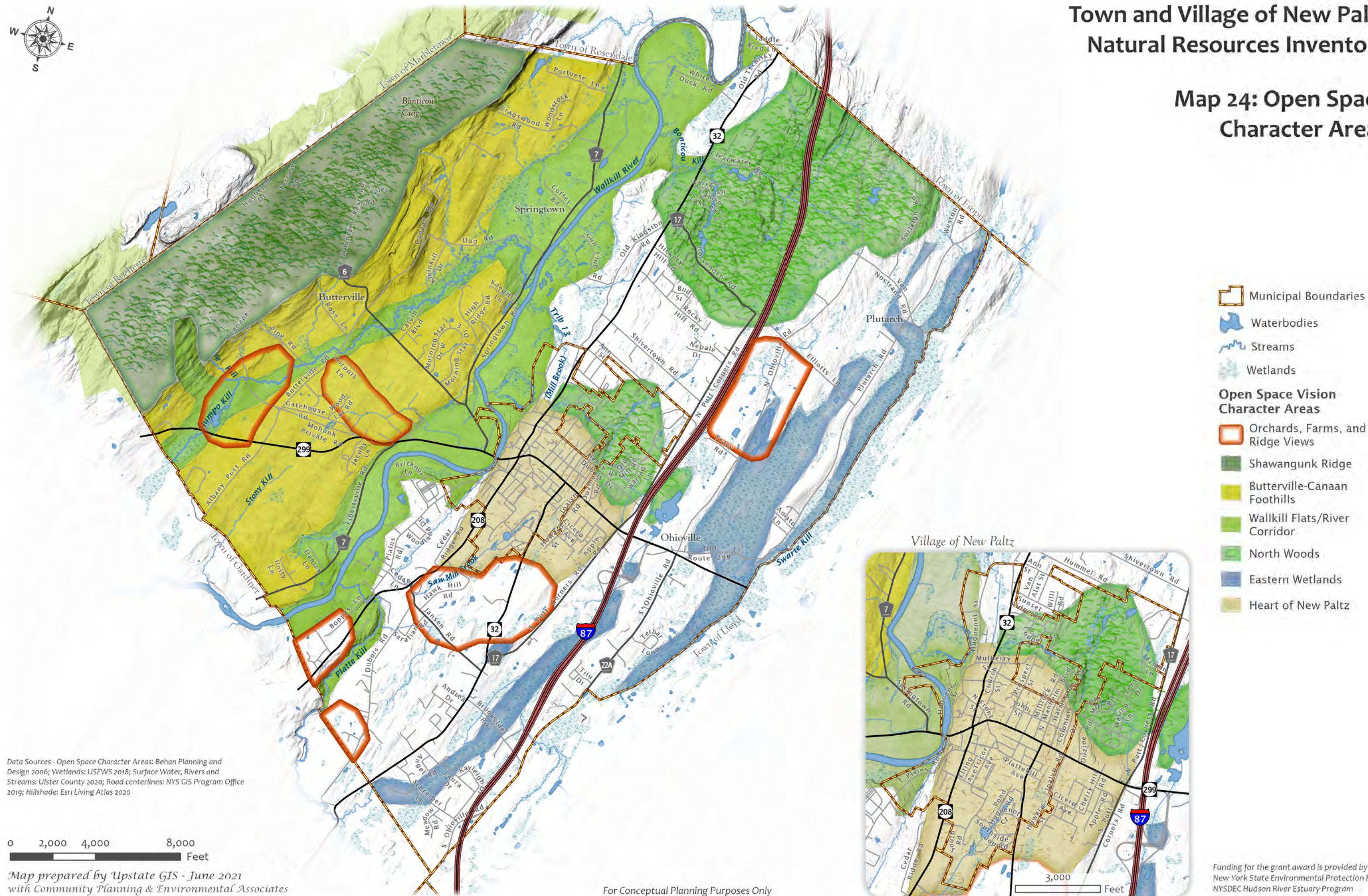
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Town and Village of New Paltz Natural Resources Inventory

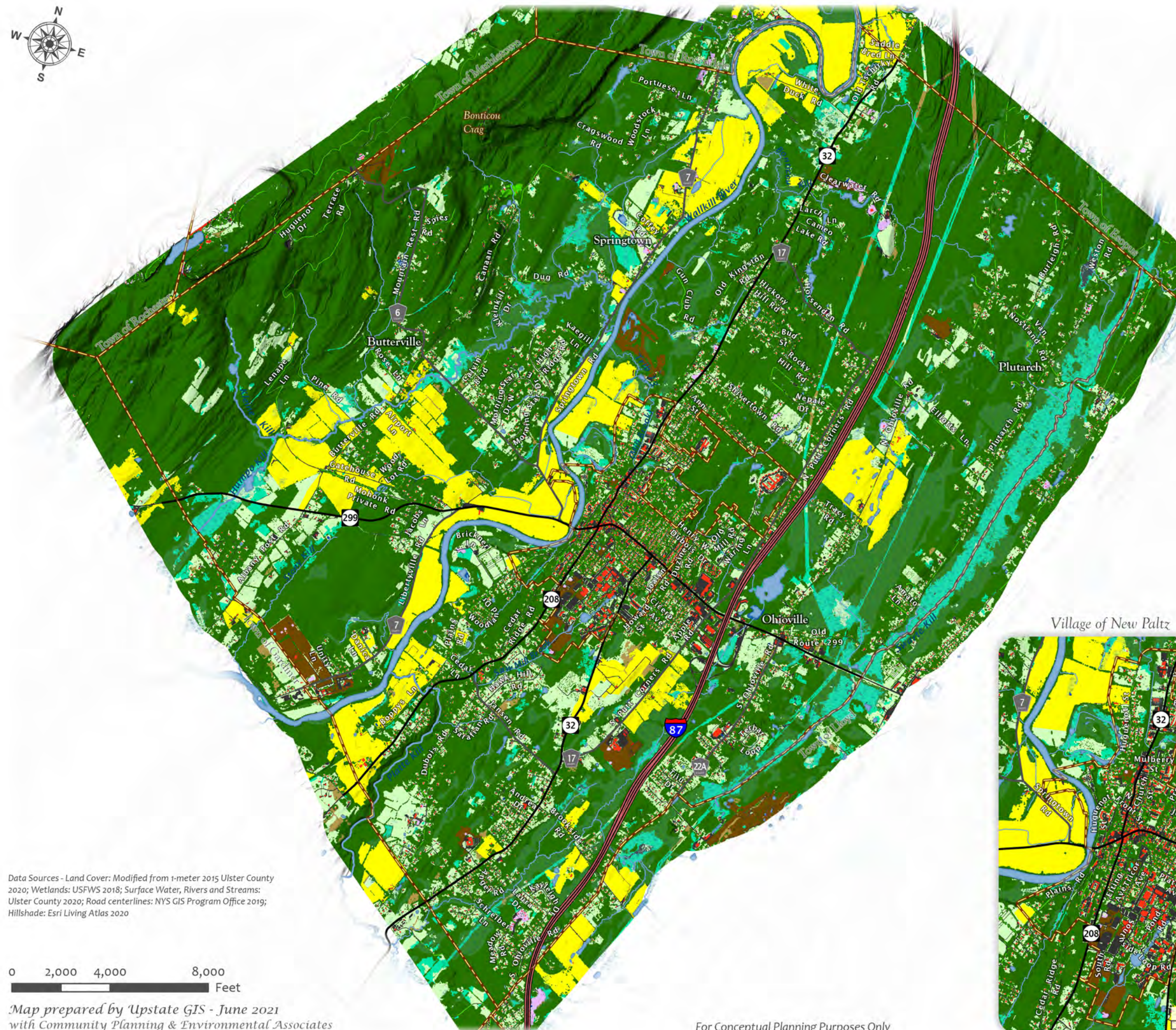
Map 24: Open Space Character Areas





Town and Village of New Paltz Natural Resources Inventory

Map 25: Land Cover



- Municipal Boundaries
- Waterbodies
- Streams
- Wetlands
- Tree Canopy
- Tree Canopy Overhanging Others
- Low Vegetation
- Shrublands
- Wetlands
- Agricultural
- Barren
- Recreational Use Open Space
- Water
- Paved Areas
- Structures



Data Sources - Land Cover: Modified from 1-meter 2015 Ulster County 2020; Wetlands: USFWS 2018; Surface Water, Rivers and Streams: Ulster County 2020; Road centerlines: NYS GIS Program Office 2019; Hillshade: Esri Living Atlas 2020

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Map prepared by Upstate GIS - June 2021
with Community Planning & Environmental Associates

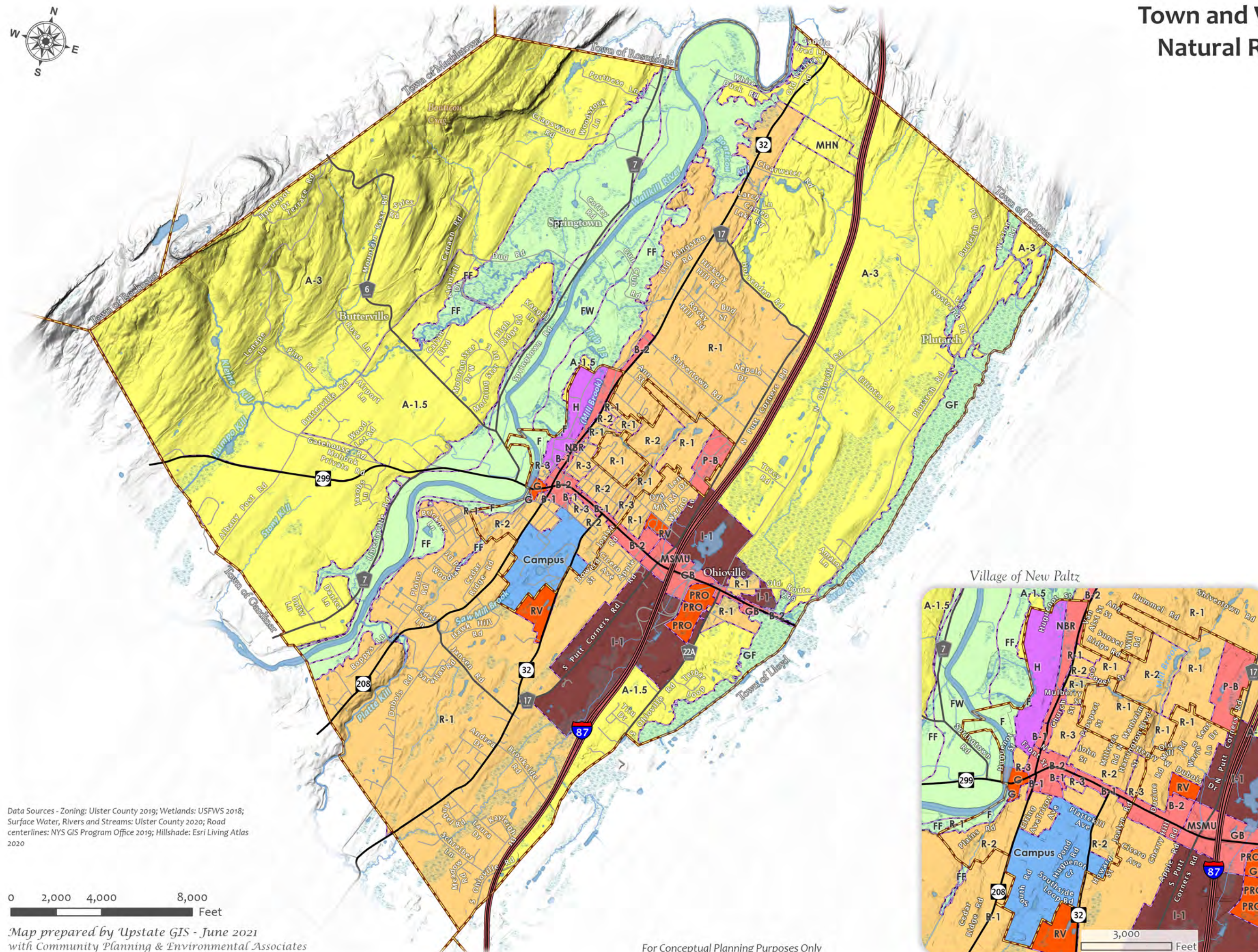
For Conceptual Planning Purposes Only

Funding for the grant award is provided by the
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NYSDEC Hudson River Estuary Program



Town and Village of New Paltz Natural Resources Inventory

Map 26: Zoning



Data Sources - Zoning: Ulster County 2019; Wetlands: USFWS 2018; Surface Water, Rivers and Streams: Ulster County 2020; Road centerlines: NYS GIS Program Office 2019; Hillshade: Esri Living Atlas 2020

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Zoning shown is generalized by primary allowed uses. For descriptions of individual zoning districts refer to the Town and Village's adopted zoning codes.

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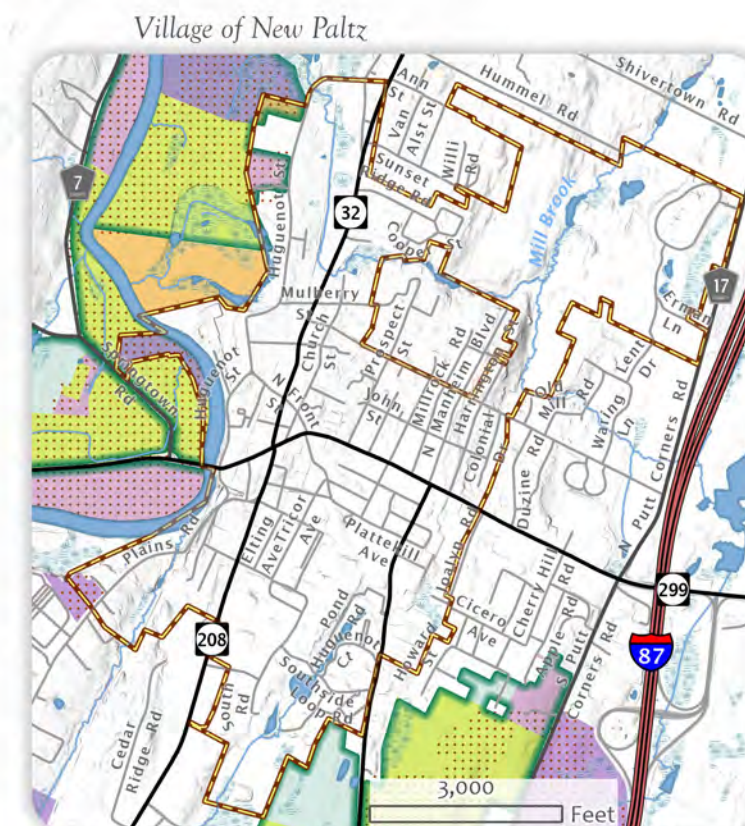


Town and Village of New Paltz Natural Resources Inventory

Map 27: Agricultural Parcels, Districts and Farmland



- Municipal Boundaries
- Waterbodies
- Streams
- Wetlands
- Agricultural Districts
- Active Farmland
- Active Agriculture with Agricultural Tax Assessment
- Active Agriculture
- Secondary Agriculture with Agricultural Tax Assessment
- Non-Ag Use with Apparent Agricultural Land



Data Sources - Ag Parcels: Ulster County Real Property (2019), Town of New Paltz exemption data (2019), Ulster County Land Cover (2015), and Image interpretation (2016 & 2019) 2020; Soils: USDA NRCS 2017; Wetlands: USFWS 2018; Surface Water, Rivers and Streams: Ulster County 2020; Road centerlines: NYS GIS Program Office 2019; Hillshade: Esri Living Atlas 2020

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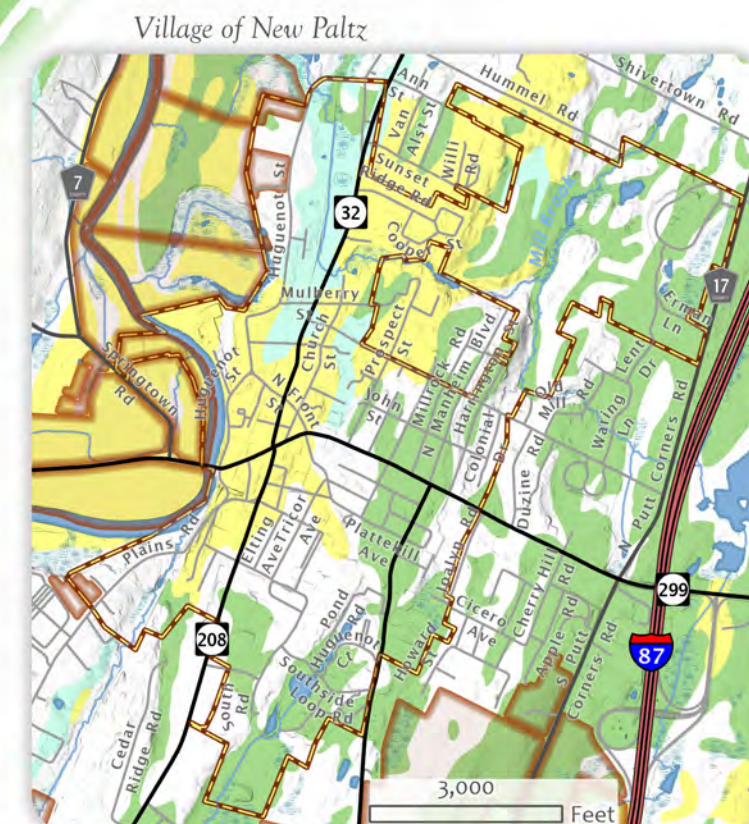


Town and Village of New Paltz Natural Resources Inventory

Map 28: Agricultural Parcels and Soils



- Municipal Boundaries
- Waterbodies
- Streams
- Wetlands
- Parcels with Agricultural Use
- Prime farmland soil
- Farmland soil of statewide importance
- Prime farmland soil if drained



Data Sources - Ag Parcels: Ulster County Real Property (2019), Town of New Paltz exemption data (2019), Ulster County Land Cover (2015), and Image interpretation (2016 & 2019) 2020; Soils: USDA NRCS 2017; Wetlands: USFWS 2018; Surface Water, Rivers and Streams: Ulster County 2020; Road centerlines: NYS GIS Program Office 2019; Hillshade: Esri Living Atlas 2020

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Map prepared by Upstate GIS - June 2021
with Community Planning & Environmental Associates

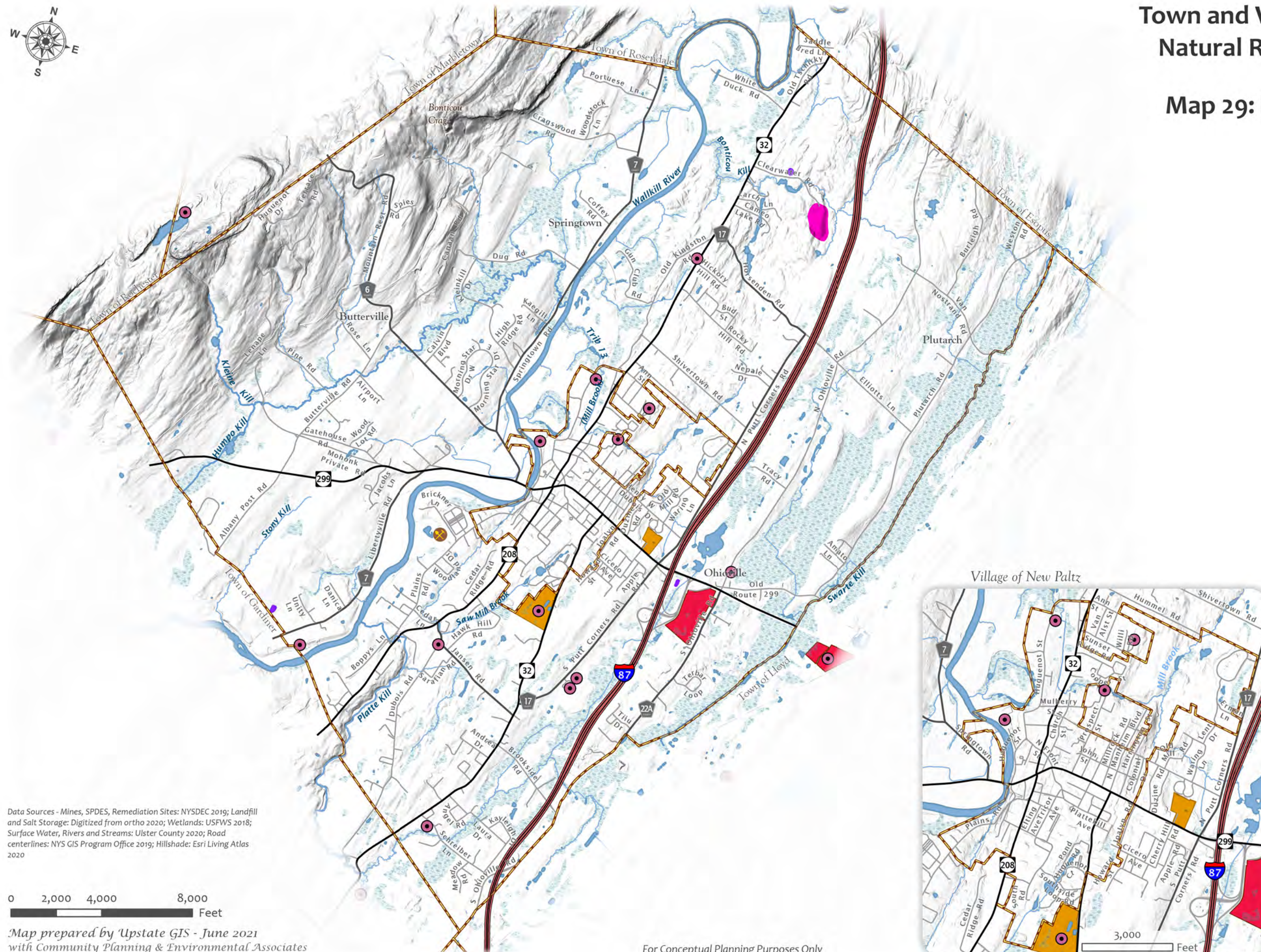
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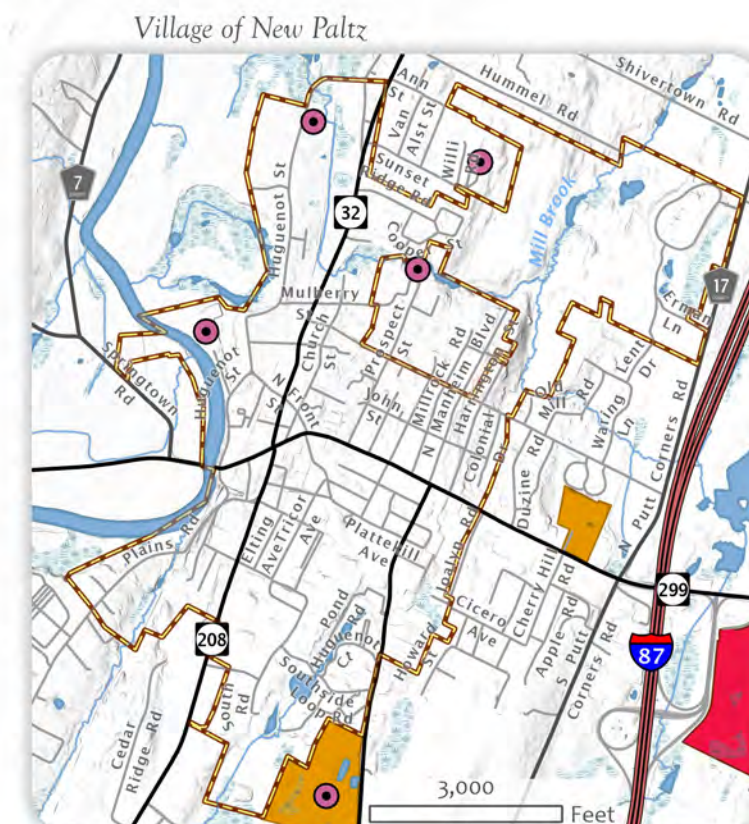


Town and Village of New Paltz Natural Resources Inventory

Map 29: Regulated Facilities



- Municipal Boundaries
- Waterbodies
- Streams
- Wetlands
- Active Sand & Gravel Mine
- SPDES Permitted Facilities
- Active Remediation Sites
- Closed Remediation Sites
- Streams
- Closed Landfill
- Salt Storage



Data Sources - Mines, SPDES, Remediation Sites: NYSDEC 2019; Landfill and Salt Storage: Digitized from ortho 2020; Wetlands: USFWS 2018; Surface Water, Rivers and Streams: Ulster County 2020; Road centerlines: NYS GIS Program Office 2019; Hillshade: Esri Living Atlas 2020

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Map prepared by Upstate GIS - June 2021
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For Conceptual Planning Purposes Only

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NYSDEC Hudson River Estuary Program

11 THREATS TO RESOURCES / CONSERVATION PARTNERS

KEY CONCEPTS

This chapter summarizes potential threats to New Paltz's natural resources. Many of these threats have been identified as being of concern in New Paltz for some years. At least since 1995 when the Comprehensive Master Plan was developed, concerns have been raised and plans enacted to address them. But many threats remain. Both the Town and Village have been working to address the concerns and to implement recommended conservation tools.

These efforts include (but are not limited to) formation of the Environmental Conservation Board (Town), the Environmental Policy Board (Village), the Clean Water and Open Space Protection Commission, the Community Improvement Team (Town) and the Climate Smart Task Force (Village and Town), the Community Preservation Task Force, and the Historic Preservation Commission. It also includes initiatives to work with various organizations to protect specific parcels of land (for example, the Open Space Institute and the Wallkill Valley Land Trust).

The two local governments have created land use regulations designed to protect specific natural resources. At the Town level, Stormwater Management and Erosion and Sediment Control (Chapter 116), Wetland and Watercourse Protection (Chapter 139), Water Conservation (Chapter 138A), Steep Slope Protection (Article XV of Chapter 14), Flood Damage Prevention (Chapter 82), and Residential Cluster Subdivision Design (Chapter 121-25) all are designed to address environmental conservation needs. At the Village level, regulations affecting natural resources include, but are not limited to Air Pollution (Chapter 60), Environmental Quality Review (Chapter 105), Environmental Protection (Chapter 106), and various zoning development standards (Chapter 212) (General Code Publishers 2020).

Identified threats to natural resources are summarized in this chapter and include the following:

- Climate change
- Degradation of water resources (groundwater, surface water)
- Habitat loss, degradation, and fragmentation
- Invasive species, insect pests, and diseases
- Loss of farmland and farms
- Loss of Scenic Views

All previous Town and Village plans and studies have identified one or more of these threats, and offer a range of tools designed specifically to address them. Most recently, the 2020 Community Preservation Plan (CPP) thoroughly reviewed all past plans and provides an excellent summary of each. "Each of these plans spelled out how important it was to protect natural and cultural resources in the community" (Town of New Paltz 2020). This NRI is just one effort among many designed to provide information on New Paltz's natural resources.

For more information about threats to resources and conservation tools see:

<https://www.townofnewpaltz.org/community-preservation-plan-task-force/pages/plan-maps-and-more>

For plans and studies in New Paltz where threats and conservation tools have been discussed.

The purpose of this chapter is not to repeat specifics already well laid out in other plans but to provide general information about how our natural resources are threatened.

11.1 THREATS TO RESOURCES

Climate Change: Predicted effects of climate change include higher temperatures, larger and more frequent storms and floods, more frequent and more prolonged droughts, more frequent wildfires, and related effects such as increases in invasive pests and pathogens affecting humans, livestock, and wildlife. All these changes will serve to deplete native biodiversity and reduce resiliency for both wild animals and their habitats, as well as for humans. The New Paltz Vulnerability Assessment identified the 11 top climate change hazards for the Town. These include:

- More extreme hot days
- More heat waves
- More intense rainstorms and resulting river flooding including more groundwater flooding and flash and surface floods
- More drought with risk of wildfire
- Changed seasonal patterns
- More insect infestation

Droughts can threaten local drinking water supplies and impact farming. Higher water temperatures and increased drought and evapotranspiration will stress stream, pond, wetland, and other ecosystems. Expected climate-related health effects include increases in heat-related illness and death, respiratory disorders from exposure to increased air-borne allergens and air pollution, physical injuries from large flood events, and a range of infectious diseases.

A warming climate and accompanying large rainstorms are likely to increase mosquito and tick populations along with the risk of diseases carried by those organisms. Many pathogens—such as those for Lyme disease, ehrlichiosis, West Nile Virus, and malaria—have increased their geographic range in recent decades in part due to warming winter temperatures. Ticks do not survive prolonged periods of very cold temperatures; the flourishing populations of wood ticks and Lyme-infected black-legged ticks in the area will continue to be aided by the warmer winter temperatures.

Climate change is an adverse factor that will likely contribute to worsening all the other threats facing our natural resources.

Degradation of Water Resources (Groundwater, Surface Water): Groundwater and surface water support all aspects of our lives and are essential components of New Paltz's natural and human ecosystems. Depletion of water volumes or degradation of water quality profoundly affects habitats, plants, animals, and human uses for daily living, businesses, agriculture, and recreation. Degradation of water resources includes both quality and quantity reductions.

Groundwater can be depleted by reduced recharge from the ground surface. Reduced recharge can occur during drought, when impervious surfaces (such as parking lots) reduce water infiltration, and with excessive groundwater withdrawal for commercial or residential uses. Groundwater can be degraded by fertilizers and pesticides applied to farm fields and lawns, nitrates, and bacteria from septic systems, deicing salts from roads and driveways,



Flood waters from Hurricane Irene

and volatile polluting substances, such as from leaks and improper disposal of petroleum and other fluids.

Surface water can be adversely affected by many land use activities. Impervious surfaces increase surface runoff of rainwater and snowmelt and reduce groundwater infiltration, leading to erosion of stream banks and siltation of stream bottoms which in turn, degrades stream habitat quality and water quality. Runoff from impervious surfaces can also raise the water temperature of nearby streams, leading to reduced levels of dissolved oxygen and degraded habitat for sensitive stream organisms.

Similar effects can occur when vegetation is cleared and when soils on steep slopes or in areas of shallow soils are disturbed (e.g., during construction of roads, driveways, or houses). Forested land, on the other hand, is very effective at facilitating the infiltration of rainwater and snowmelt to the soils, thus making it available for uptake by vegetation, for recharging the groundwater, and for slowly feeding streams, lakes, and ponds. Clearing of forests can greatly reduce infiltration to the soils and greatly increase the rapid runoff of surface water. This leads to “flashy” streams that run at high volumes during runoff events and then dry up at other times because groundwater is unavailable to feed the base flow.

Roadside ditches often carry contaminants, such as motor oil, heavy metals, road salt and other de-icing chemicals, sand, and silt, into nearby streams and wetlands. Applications of fertilizers and pesticides to agricultural fields, golf courses, lawns, and gardens can degrade the water quality and alter the biological communities of surface waters. Leachate from failing septic systems often introduces elevated levels of nutrients, especially phosphorus and nitrogen compounds, into surface waters, leading to a cascade of effects on water chemistry, biota, and whole aquatic ecosystems. A Hudson Valley study found that the amount of nutrients and sediments entering a stream is affected by the amount of development within 300 ft of the stream (Cunningham et al 2009). Streams, lakes, and ponds are also subject to atmospheric deposition of substances such as sulfur dioxide, mercury, and nitrogen from

fossil-fuel-burning power plants in the Midwest, as well as nitrogen compounds from distant agriculture (Driscoll et al 2001).

Removal of shade-providing vegetation along a stream or pond shore for landscaping, agriculture, or other purposes can lead to elevated water temperatures and severely impact the aquatic communities that depend on cool environments. Clearing of vegetation and conversion of riparian areas to developed uses can also reduce the important exchange of nutrients and organic materials between the stream and the floodplain, diminish the capacity for flood attenuation, and increase downstream flooding.

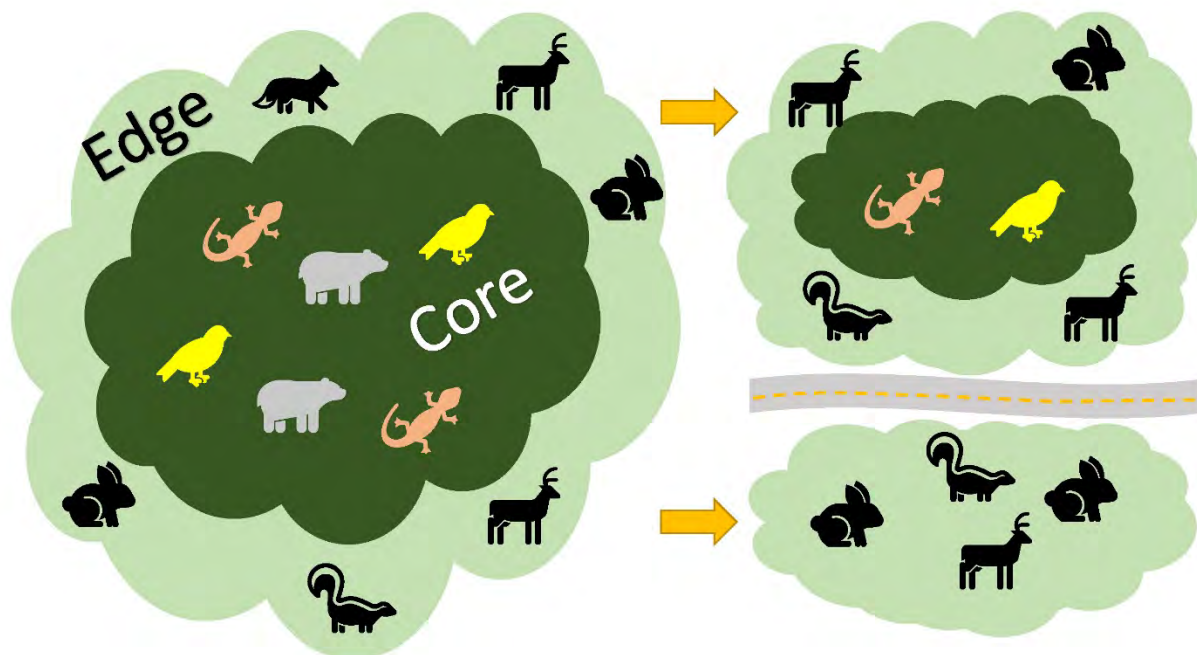
The warming climate is expected to affect both the quantity and quality of groundwater and surface water resources in the region, as well as the habitat quality of streams and ponds. Both total annual rainfall and rainstorm intensity are predicted to increase in New York in the coming years, with multiple consequences to the land, water resources, and agriculture. Flooding hazards will increase and longer, frequent droughts are also predicted in the coming decades (Shaw et al. 2011) and are likely to affect public water supplies, private drinking water wells, and farm ponds for watering livestock, as well as streams, other natural habitats, and native plants and animals.

Habitat Loss, Degradation, And Fragmentation: Loss of habitat occurs when new roads or residential, commercial, or industrial development eliminate native vegetation. It also occurs when habitat barriers such as powerlines, roads, or even culverts are constructed resulting in disruption in fish and wildlife movement. Habitat fragmentation is when large natural areas become smaller and isolated from each other by barriers or breaks in vegetation.

Habitat fragmentation and other forms of degradation can be less visible but the “one lot at a time” style of development is more widespread. New development in New Paltz has fragmented forested areas (easily seen on Map 2) and new roads or driveways not only create barriers that many species will not cross or cannot safely cross but also alters the conditions of light, noise, and predator access in adjacent habitats. Such fragmentation affects habitat quality for nesting songbirds, amphibians, and other wildlife. Forestry operations, or other activities that result in soil compaction, or even removal of dead and downed trees can profoundly affect the habitat quality for forest wildlife, plants, and soil biota.

The effect of fragmentation extends beyond the specific footprint of the road, driveway, or clearing at least 100-meters or more. The “edge effects” of these kinds of disturbances can reach well into forested areas and reduce the habitat suitability for area-sensitive wildlife and forest-interior plants and animals. Similarly, a road or driveway that cuts through a large meadow can reduce the habitat values of the meadow for grassland breeding birds and increase accessibility to nest predators and other disturbance.

Land use changes including transportation development (roads, driveways, stream crossings, and railroads); water diversions and damming; transmission lines, power lines and pipelines; and urban development remove or fragment habitats and can create habitat barriers that impede fish and wildlife movement and migration. Degradation can also occur due to pollution, night-time lighting, noise, invasive species, damage to soils, and loss of farmland. The direct result may be mortality or injury to individual animals and depletion of whole populations.



An illustration of how a single road can have a large impact on a forest core area. By splitting the forest patch into two smaller patches the core within the upper portion is greatly reduced and the lower portion is so small there is no true core area left. This results in loss of core habitat species in this area and often an increase in edge habitat species, which often can be “nuisance” animals that may cause additional ecological harm to the surrounding area.

Loss and degradation of habitats can result in loss of native biodiversity, an essential component of a healthy ecosystem. Maintaining the full range of native plants and animals in an area allows an ecosystem to withstand stress and adapt to changing environmental conditions. This is likely to become even more important with the changing climate.

Invasive Species, Insect Pests, And Diseases: Land disturbances and loss of native habitats can result in the spread of non-native invasive plant species. Soil disturbances, removal of tree canopy, and transportation of seeds and plants by vehicles and earth-moving machinery are activities that favor establishment of many invasive species, pests, and diseases. Non-native species such as common reed, reed canary-grass, Japanese stiltgrass, Japanese knotweed, purple loosestrife, multiflora rose, Bell’s honeysuckle, Japanese barberry, and tree-of-heaven are now widespread in the Hudson Valley, but are concentrated in areas in and near human land development. The woolly adelgid can cause damage to hemlocks, and ash die-off due to the emerald ash borer is occurring throughout the Hudson Valley. Land development has the potential to promote the spread of these species into many high-quality habitats and reduce the overall value of those habitats to native biodiversity.

Warmer summer and winter temperatures, longer growing seasons, and elevated levels of atmospheric carbon dioxide will favor certain plants and disfavor others and are thus likely to alter the composition of plant communities. The changing climate conditions may also allow some insect pests and insect disease vectors to complete more generations per season and to allow greater winter survival (Rodenhouse et al. 2009).

Loss of Farmland and Farms: Loss of active farms and good farmland soils reduces our ability to grow high-quality food locally and reduces the economic and cultural benefits that farms provide to the Town and Village. Loss of farmland also reduces the availability of

certain open habitats—pastures, hayfields, fallow fields, and old fields—that are used in various ways by native plants and animals. Farmland has decreased substantially over the past few decades in New Paltz. Although some farm practices (such as early hayfield mowing) can reduce breeding success for grassland birds, farmlands remain vital open spaces in New Paltz. These open spaces contribute not only to the natural environment, but to the rural character of the Town.

The difficult farm economy has resulted in the loss of many local farms over the years and this trend is not likely to change. Farms often cannot effectively compete with other land uses such as residential uses, especially those for second homes. Land use competition, low farm profits, changing weather and reliance on rented lands controlled by non-farmers are all putting extreme stress on area farmers and farmlands.

Abandoned farmland, if not converted to built uses, will revert to an unmanaged meadow, then to a woody shrub vegetation, and then to various forested stages. While this natural process results in the beginning in a loss of species requiring open lands, each subsequent stage has its own diversity of plants and animals.

Loss of Scenic Views: Past planning efforts in New Paltz have identified the many scenic views in New Paltz and underscore their value to Town and Village residents. These scenic views include both expansive, long views, especially those of the Shawangunk Ridge, and close-up views of places such as rivers, streams, wetlands, and rural landscapes. The scenic qualities of an area can be degraded by construction of structures, roads, utility lines, and other components of the built environment. Loss of scenic views affects quality of life but also can impact an area's economy, especially when tourist activity is reliant on those scenic resources.

11.2 CONSERVATION PARTNERS

In addition to the Town and Village agencies identified in this NRI such as the Environmental Conservation Board, The Climate Smart Task Force, Historic Commission, and others, the following federal, state, county, regional, and private agencies and organizations share conservation goals and can be effective partners to accomplish the conservation goals of New Paltz.

Federal, State, and County Agencies

Cornell Cooperative Extension—Ulster County

The Cooperative Extension is part of a statewide program that aims to put “knowledge to work in pursuit of economic vitality, ecological sustainability and social well-being,” serving local families, farms, and communities. Their natural resource programs provide information, workshops, and assistance on such topics as climate change, water quality, invasive species, and agroforestry.

Hudson River Valley Greenway

The Greenway offers technical assistance and small grants to local municipalities and nonprofit organizations for projects related to community planning, economic development, and protection of open space and of natural, cultural, and scenic resources.

Natural Resource Conservation Service

The NRCS (of the U.S. Department of Agriculture) collaborates with farmers, communities, and other individuals and groups to protect natural resources on private lands. They identify natural resource concerns related to water quality and quantity, soil erosion, air quality, wetlands, and wildlife habitat, develop conservation plans for restoring and protecting resources, and help to direct federal funding to local conservation projects.

New York State Department of Environmental Conservation (NYS DEC), Hudson River Estuary Program

The Hudson River Estuary Program was created in 1987 through the Hudson River Estuary Management Act. Its program focuses on the tidal Hudson and adjacent watershed from the federal dam at Troy to the Verrazano Narrows in New York City. The mission of the Estuary Program works towards the following benefits in the Hudson River Valley:

- Clean Water
- Resilient Communities
- Vital Estuary Ecosystem
- Estuary Fish, Wildlife, and Habitats
- Natural Scenery
- Education, River Access, Recreation, and Inspiration

New York State Department of Environmental Conservation (NYS DEC), Region 3 Office in New Paltz, Division of Lands and Forests, Bureau of Ecosystem Health, and other DEC Offices.

New York State Department of State (NYS DOS)

The NYS DOS offers training opportunities, educational publications, and technical assistance for municipal agencies on a variety of topics including the State Environmental Quality Review (SEQR) process and developing local legislation. SEQR and local legislation can be powerful tools in the protection and stewardship of local resources.

New York Natural Heritage Program

This program is a partnership between the DEC and SUNY ESF to facilitate conservation of rare animals, rare plants, and natural ecosystems. They combine thorough field inventories, scientific analyses, expert interpretation, and comprehensive databases on New York's flora and fauna to deliver quality information to partners working in natural resource conservation.

New York State Office of Parks, Recreation, and Historic Preservation (OPRHP)

The agency provides information, technical assistance, and other support for projects related to parks, recreation and historic resources including information about state and national historic registers and national historic landmarks.

State University of New York, New Paltz

SUNY New Paltz is a major landowner in the Village and an important member of the New Paltz community. The Town-Gown Committee can continue to provide information to and work with SUNY to enhance natural resource protections on campus lands.

Ulster County

- Planning Department
- Department of the Environment
- Environmental Management Council

Ulster County Agriculture and Farmland Protection Board

The Agriculture and Farmland Protection Board, a committee of active farmers and representatives of several county agencies, advises Ulster County on matters related to state-certified agricultural districts and acts as a liaison between county agencies, landowners, and state agencies on matters affecting agricultural district lands.

Ulster County Soil and Water Conservation District

The agency does design, and implementation of engineering and agronomic practices intended for the improvement of water quality and the preservation of the County's natural resources, in both rural and urban capacity. The District office provides technical assistance and education on matters related to water, soils, and other natural resources to municipalities, farmers, landowners, and residents, and promotes resource conservation and environmental stewardship. They host educational programs, provide consultations, and assist with obtaining funding for projects that enhance environmental quality or economic viability of farm-related enterprises. They have a variety of programs related to natural resources including non-point source pollution, stormwater and erosion/sediment control, and riparian buffers.

Statewide and Regional Conservation Organizations

Gumba Gunks Mountain Bike Association

The Gumba Gunks Mountain Bike Association is a group of mountain bikers dedicated to preserving the privilege of riding in the Shawangunk Ridge. They assist those using the trail system and represent and advocate for mountain bikers. See www.gumba.org.

Hudson River Watershed Alliance

The Hudson River Watershed Alliance's mission is to unite and empower communities to protect their local water resources. They work across the Hudson River watershed to support watershed groups, help communities work together on water issues, and communicate as a collective voice. They offer stream and buffer protection webinars, a water quality monitoring workshop, and other events to celebrate and educate about the Hudson River.

Hudsonia Ltd.

Hudsonia is an environmental research institute that studies the plants, animals, and habitats of the region, their ecology, and their conservation. Hudsonia biologists conduct pure and applied research throughout the Hudson Valley and elsewhere in the Northeast, produce educational and scientific publications, and conduct training and other educational programs for scientists, environmental practitioners, and land use decision-makers to help participants better understand how to recognize, assess, and protect important biological resources.

John Burroughs Natural History Society

The John Burroughs Natural History Society is an Ulster County-based membership organization that serves as a source of information about the flora, fauna, and natural history of Ulster County. They offer field trips, lectures, and a newsletter.

Mill Brook Preserve, Inc.

The Mill Brook Preserve, Inc. is dedicated to promoting and protecting the biodiversity and wildlife habitats, while providing recreational and educational opportunities within the Mill Brook Preserve. They work to maintain trails and ensure access to them, improve forest ecology and wildlife habitats at the Mill Brook Preserve, and provide education opportunities at the Preserve.

Mohonk Preserve

This is an 8,000 acre preserve that protects a large portion of the Shawangunk Ridge region. It is owned and managed by a Board of Directors and multiple staff and the lands and facilities are open for hiking, biking, climbing, horseback riding, running, and ski/snowshoeing for a fee or as a member. The purpose of the Mohonk Preserve is to ‘foster conservation, deepen connections, be inclusive, and nurture resilience to fulfill our mission to protect the Shawangunk Mountains region and inspire people to care for, enjoy and explore their natural world” (Mohonk Preserve Strategic Plan: Vision 2020 and Beyond). The Preserve protects a variety of key environments including cliff and talus slopes, ice caves, ravines, pitch pine barrens, historic and prehistoric places, bird habitat and migration routes, streams, swamps, wetlands, and woodland ponds.

The Nature Conservancy

The Nature Conservancy (TNC) is an international land conservation organization that has worked extensively throughout the state to further land protection. It encourages conservation easements and works with other organizations, agencies, and private landowners to prevent further fragmentation of important ecosystems. TNC’s conservation targets include matrix forest blocks, wetlands, drinking water sources, rare and endangered plants, and rare animals such as the timber rattlesnake and the bog turtle. In addition, TNC has a particular interest in helping communities adapt to climate change.

Open Space Institute

The Open Space Institute (OSI) works in the eastern U.S. to protect scenic, natural, and historic landscapes through direct acquisition and conservation easements, and partners with local and state government to expand parklands. OSI’s conservation strategy focuses on permanent protection at the landscape-level scale. OSI has protected over 46,000 acres in the Hudson Valley, including 98 acres in New Paltz, creating connecting corridors that benefit both recreationists and wildlife, and protecting prime farmland.

Partnerships for Regional Invasive Species Management

Ulster County is part of the Lower Hudson Regional Invasive Species Partnership. Their mission is to promote education, prevention, early detection, and control of invasive species to limit their impact on the ecosystems and economies in the lower Hudson Valley.

Scenic Hudson

Scenic Hudson is an environmental organization that advocates for the conservation of the Hudson River Valley. It does so through advocacy, building community, and environmental education programs.

Sustainable Food and Agriculture

Several organizations and farms exist in or near New Paltz that are oriented to sustainable food and agriculture. These include:

- Sustainable Hudson Valley
- Phillies Bridge Farm Project
- Huguenot Street Farm
- Old Ford Farm
- Lo Farm

Trout Unlimited

Trout Unlimited (TU) is a national organization whose mission is to conserve, protect and restore the cold-water streams and fisheries of North America through habitat restoration, land conservation, public education, and legislative advocacy. They have a long history of collaborating with conservation organizations and local, state, and federal government agencies to achieve shared goals. The local chapter of TU is the Ulster-Greene Chapter #569 (Hudson). TU has an extensive network of volunteers who work on local conservation projects and issues. The New York State Council Trout Unlimited Conservation Fund provides small grants to local TU chapters for coldwater fisheries conservation projects. TU has been collaborating recently with the Hudson River Estuary Program and the Cornell Cooperative Extension in identifying aquatic barriers and securing funding for municipalities to replace inadequate culverts. Due to the presence of small and large trout streams in New Paltz, the local TU chapter (Ulster-Greene, Hudson) might also be well-positioned to obtain other funding for projects to restore, enhance, or protect the habitat quality of New Paltz's streams.

Trust for Public Land

The Trust for Public Land (TPL) is a nationwide conservation organization working in many disparate environments, from inner cities to wilderness areas. In the ten-county area of the Hudson Valley below the Troy dam, TPL has assisted the state, counties, and municipalities in protecting more than 51,000 acres.

Wallkill River Watershed Alliance

The Wallkill Watershed Alliance is a local organization formed to advocate for the restoration of the Wallkill River and its watershed and is actively involved in programming to improve water quality (www.wallkillalliance.org).

Wallkill Valley Land Trust

The Wallkill Valley Land Trust works with landowners to secure conservation easements in order to permanently protect their land from future development for the benefit of present and future generations. They also work to connect the community to the land by providing access to open space, including the Wallkill Valley Rail Trail, educating the community on the importance of conservation, and engaging them in caring for the land we protect.

Wild Earth

An educational organization providing opportunities to explore, play and learn in nature. They offer unique, empowering outdoor experiences that strengthen nature awareness and knowledge of place.

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12 APPENDIX 1. HABITAT PROFILES OF KEY SPECIES

The following habitat profiles derive from Nature Serve Explorer (explorer.natureserve.org) and the DEC Nature Explorer (<https://www.dec.ny.gov/natureexplorer/>).

Eastern Box Turtle (Large Forest, Edge Habitat)

Eastern box turtles in New York are considered vulnerable species and are listed as a species of special concern. They can be locally abundant but have declined in some areas due to habitat loss and fragmentation. Habitats vary across their range but are often associated with mesic woodlands. Eastern box turtles inhabit forests, fields, forest-brush, and forest-field ecotones. In some areas they move seasonally from fields in spring to forest in summer. They commonly enter pools of shallow water in summer. For shelter, they burrow into loose soil, debris, mud, old stump holes, or under leaf litter. They can successfully hibernate in sites that may experience subfreezing temperatures. They eat insects, fruit, and herbaceous vegetation. Busy highways are examples of obstructions that turtles rarely cross successfully. Steep cliffs, major rivers, urbanized areas, and large ponds or lakes are other locations that present barriers to box turtle movement. Egg laying sites often are sandy or loamy soils in open areas; females may move from bottomlands to warmer and drier sites to nest.

Spotted Turtle (Wetland Habitat)

Spotted turtles are considered vulnerable species and are listed as a species of special concern. They are widely distributed in New York and can be common in many areas but are also declining due to habitat loss and fragmentation. They are also vulnerable because they have an unusually low reproductive potential. Main threats to the species in New York are road mortality, and habitat loss due to invasive plants, draining and filling of wetlands, grazing, water pollution, and development. Spotted turtles inhabit mostly unpolluted, shallow bodies of water with a soft bottom and aquatic vegetation, such as small marshes, marshy pastures, bogs, fens, woodland streams, swamps, small ponds, vernal pools, and lake margins. Ponds surrounded by relatively undisturbed meadow or undergrowth are most favorable. These turtles favor waters with a soft bottom and aquatic vegetation. They often bask along the water's edge, on brush piles in water, or on logs or vegetation clumps. Often they move seasonally among different wetland types and may spend significant time on land during summer.

Cold season hibernation occurs in the muddy bottoms of waterways or bogs in communal hibernacula. Hibernacula are usually in places with shallow water having a slow but steady flow or drift of water. Eggs are laid in well-drained soil of marshy pastures, in grass or sedge tussock or mossy hummocks, in open areas (e.g., dirt path or road) at edge of thick vegetation, or similar sites exposed to sun. Sandy, sparsely vegetated strips, and washouts along agricultural field edges are favorable for nesting.

Spotted turtle diet includes various aquatic and terrestrial invertebrates, but they also eat plant material, carrion, and sometimes, small vertebrates. Hatchlings eat mainly small insects, worms, and snails.

Wood Turtle (Stream Corridor Habitat)

The wood turtle is considered another vulnerable species and is listed as a species of special concern. They are vulnerable due to their late maturity and very low annual juvenile recruitment. They are also threatened by habitat loss and fragmentation. The wood turtle requires both aquatic and terrestrial habitat but is more terrestrial than other freshwater turtles. They are also vulnerable to roadkill, disruptive land use practices, mowing and tilling related to agricultural practices, expanding populations of predators, pet trade collection and changing regimes in watersheds.

Wood turtles are generally associated with the margins of wooded streams found in wet, mesic forests in riparian and shrub/forest ecotones. They feed along the margins of woods, or in openings, where they seek berries. They can be quite tolerant of minor or moderate habitat changes and development such as cutting of forest patches (which create more edge) or low intensity agriculture. Intense uses along streams or altering stream habitats can adversely impact the wood turtle.

Wood turtles live along permanent streams during much of each year but in summer may roam widely overland and can be found in a variety of terrestrial habitats adjacent to streams, including deciduous woods, cultivated fields, and woodland bogs, marshy pastures. Use of woodland bogs and marshy fields is most common in the northern part of the range. However, they do not travel large distances from water. They seek areas having openings in the streamside canopy where there is growth of herbaceous plants. These openings provide both food and basking sites. As with other turtles, nesting wood turtles require loose substrate on fully exposed (unshaded) sites, such as sandy banks or sand-gravel bars in streams. When natural openings are unavailable they may use such man-made disturbances as road grades, railroad grades, sand pits, or plowed fields. Overwintering occurs in bottoms or banks of streams where water flows all winter, including pools underneath a layer of ice; underwater muskrat burrows, beaver lodges, or over-bank root systems.

Eggs are laid in open sunny areas in fairly moist but well-drained, sandy, or gravelly soil, commonly in clearings created by humans. Sites are usually near a stream, but females often appear along roads at this time of year, presumably looking for nesting sites in the soft shoulder material. This habit is a significant source of adult mortality.

Marbled Salamander (Vernal Pool Habitat)

The marbled salamander is considered a vulnerable species and is listed as a species of special concern. Their habitats become vulnerable due to intensive timber harvesting or other activities that reduce forest canopy closure, understory vegetation, or reducing in forest litter and woody debris. They breed in vernal pools and these breeding sites are vulnerable to destruction by draining and filling. Adults migrate seasonally between upland nonbreeding sites and vernal pool breeding locations – generally less than a few hundred meters. Marbled salamanders live in various wooded habitats, near swamps or vernal pools. They are more tolerant of dry habitats than are most salamanders and can be found on rocky bluffs and slopes and wooded sand dunes. Adults are entirely terrestrial and spend most of their time under surface objects or underground. Eggs are laid in forest depressions such as vernal pool basins and sometimes at the edges of permanent ponds, swamps, and slow-moving streams, in sites that lack standing water in late summer or early fall but are inundated by fall rains and generally hold standing water through winter and into at least early summer of the next year. Egg laying sites typically are in mineral soil beneath protective cover of leaf litter, logs,

detritus, or rocks. They eat any small terrestrial invertebrate. Larvae eat aquatic invertebrates or amphibian larvae. Barriers include heaving traveled roads, wide, fast rivers, and areas of intensive development.

Forest Breeding Songbirds (Large Forest Habitat)

Many bird species use large forest habitats. Woodlands common in New Paltz provide important habitats for them. Most forest breeding songbirds use coniferous, mixed coniferous-deciduous or entirely deciduous forest lands including forest edges and wooded wetlands. Some species require large areas of unfragmented forest habitat.

Forest interior species rely on those areas having closed canopy and open forest floor, while others seek dense understory having a high diversity of shrubs and scant ground cover. Barred owl, pileated woodpecker, scarlet tanager, various warblers, ovenbird, wood thrush, and hermit thrust are songbirds found in New Paltz forest habitats.

Many forest songbird populations are experiencing population declines. For forest breeding songbirds, removal or excessive fragmentation of mature forest cover is detrimental. Habitat loss and fragmentation are among the most urgent threats to forest breeding songbirds.

Fragmentation is of special concern and occurs when an opening in the forest is created for roads, fields, house lots, or even driveways. Removal of patches of forest and change sunlight, wind, humidity, plant composition, and insect populations and thus can greatly affect breeding songbirds.

Timber Rattlesnake (Ridge/Large Forest Habitat)

According to the NYS DEC Nature Explorer, the timber rattlesnake was recently confirmed species in Ulster County. It is listed as a threatened species. It is vulnerable due to loss of habitat, habitat fragmentation, mining, road mortality, illegal collecting, persecution, and pathogenic organisms. Timber rattlesnakes are found in mountainous or hilly deciduous or mixed deciduous-coniferous forests, often with rock outcroppings, steep ledges, and rock sides (NYNHP 2021 retrieved at <https://guides.nynhp.org/timber-rattlesnake/>). They need rocky areas with underground crevices for overwintering and open canopy, rocky areas for other uses. They are associated with chestnut oak forest, cliff communities, and other forested habitats. Rattlesnakes prey predominantly on small rodents such as mice and squirrels. They need upland areas, commonly hibernate communally, and migrate seasonally between hibernacula and their summer habitats.

Hibernacula are typically located in a rocky area where underground crevices provide retreats for overwintering, such as a fissure in a ledge, a crevice between ledge and ground, talus (rockslide) below a cliff, open skree slope (fallen rocks not associated with a cliff) or fallen rock (talus or skree) partly covered by soil. Both males and non-nesting females are primarily forest dwellers while nesting gravid females use open, sparsely forested sites.

NOTE: Because many of these animals are often illegally collected for the pet trade, their specific locations should not be made public.