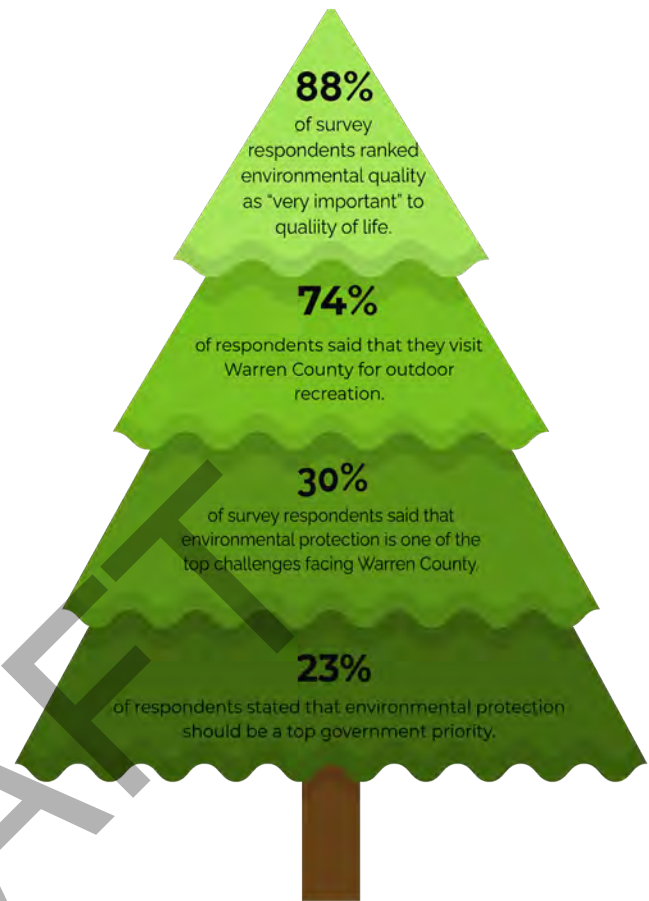


# CHAPTER 4: OUR NATURAL ENVIRONMENT





Warren County has a strong connection to its natural environment, which serves as both an economic driver and a focus of environmental stewardship. Public input collected during the development of this plan indicates that environmental quality and outdoor recreation are considered major assets by residents and stakeholders, contributing significantly to quality of life and economic development in the county. The natural environment is highly valued in Warren County because it provides a unique blend of accessibility, diversity, and quality of recreational opportunities. According to stakeholder interviews, even among Adirondack counties, Warren County stands out for offering recreational resources suitable for all skill levels, from beginner to expert, all within an hour's drive. Lake George serves as the crown jewel, attracting tourists and anchoring the County's recreation economy, while also generating occupancy tax revenue that benefits all municipalities. Other key natural assets include multiple ski mountains, extensive trails systems and many navigable waterways. The natural setting provides both economic benefits through tourism and recreation, and lifestyle benefits through easy access to outdoor activities, scenic beauty, and a balance between urban amenities and rural seclusion.



## WATER RESOURCES

### WATERBODIES

Warren County contains over 25 lakes, hundreds of streams and named/unnamed ponds, and over 50 miles of the Hudson River. Combined, seven percent of the County's total area is covered with water (42,134 acres). These waterbodies form watersheds and sub-watersheds that move ground and surface waters into, through, and out of the County. Eleven percent of County parcels are waterfront and 18 percent of all parcels are located within 250 feet of large waterbodies

Lake George, known as the "Queen of American Lakes," stands out for its pristine water, scenic beauty, historical significance, and role in the region's tourism economy. The lake's clear waters are a significant asset for local recreation, drawing visitors for activities such as boating, fishing, and swimming. It also contributes enormously to the local economy through tourism and hospitality industries. The conservation efforts around Lake George are recognized as a national model, with extensive measures in place to maintain its water quality. In addition to Lake George, Warren County has 86 other waterbodies over 20 acres in size. Twenty-three of them are entirely on State land; the remainder are either partially or entirely surrounded by privately owned land.

The Hudson River, which played an essential role in the settlement of Warren County, continues to influence the region. Towns such as Warrensburg, Lake Luzerne, and Glens Falls were developed along the river, capitalizing on its power to drive mills and industry. Today, the Hudson River remains a vital natural and economic resource, continuing to support recreational activities and providing a sense of historical continuity.



In addition to the County's lakes, ponds, rivers, and streams, wetlands are a key component of the local hydrological system and provide essential ecological services, such as flood control, water filtration, and habitat for diverse plant and animal species. The wetlands surrounding Lake George and along the Hudson River serve as natural buffers, absorbing stormwater and preventing soil erosion, while also helping to maintain water quality by filtering pollutants.

### WATERSHEDS

The County has two distinct watersheds: the Upper Hudson River Watershed, which encompasses 75 percent of the County, and the Lake Champlain Watershed, which includes Lake George and drains the remaining 25 percent of the County. The Upper Hudson River Watershed originates in the Adirondack Mountains and flows south to the Hudson River confluence with the Mohawk River at the Troy Dam. The Lake Champlain Watershed drains the area between the Adirondack Mountains in northeastern New York State and the Green Mountains in northwestern Vermont. Methods and approaches to protect these watersheds has been the focus of numerous County and regional studies, including the Lake George Watershed Action Plan and Upper Hudson Watershed Plans.



## LAND RESOURCES

The rolling and mountain landforms provide part of the unique scenic and recreation environment and are home to diverse plant and animal habitats. Approximately 323,518 acres of land in the County is used as wild, forested, conservation lands and public parks according to the NYS property type classification codes. Characteristics of these lands are shown in the table below. These lands support a variety of recreational opportunities and ecosystem functions. Private forest lands have a variety of owners, including timber companies, sporting clubs, conservation-based non-profits, and individuals. As a result, the County is in a relatively outstanding position in terms of natural resources and the ecological services provided by the natural landscape. Benefits include helping keep the surface water runoff clean through natural processes that buffer rainfalls, reducing erosion and helping keep the rates and volumes of runoff manageable through the existing natural landscape. Forests also provide an environmental service for air quality and climate resilience, beneficially absorbing massive amounts of carbon dioxide from the atmosphere.

The County is located almost entirely within the Adirondack Park so most private lands are regulated by the Adirondack Park Agency (APA), which enforces stricter zoning and building codes than areas outside the Park to protect the natural environment. There are also specific guidelines for timber harvesting, mining, and other resource extraction activities to ensure sustainable practices. Continued stewardship and wise management of the privately owned land in the County will be an important aspect of maintaining the high quality of the natural resource base that contributes to the quality of life in Warren County.

## RECREATION

The County's land and water resources play a significant role in the County's economy and quality of life through outdoor recreation. Based on the Comprehensive Plan survey responses, hiking is the most popular recreational activity amongst residents, with 85 percent participating at least one to two times per season. There are 270 miles of public hiking trails distributed throughout the County. NYSDEC is involved with the management of just over half (52 percent) of the hiking trails and trail systems in Warren County. Municipalities (23 percent of trails/trail systems) and land trusts (20 percent) also play a critical role in hiking trail system management.

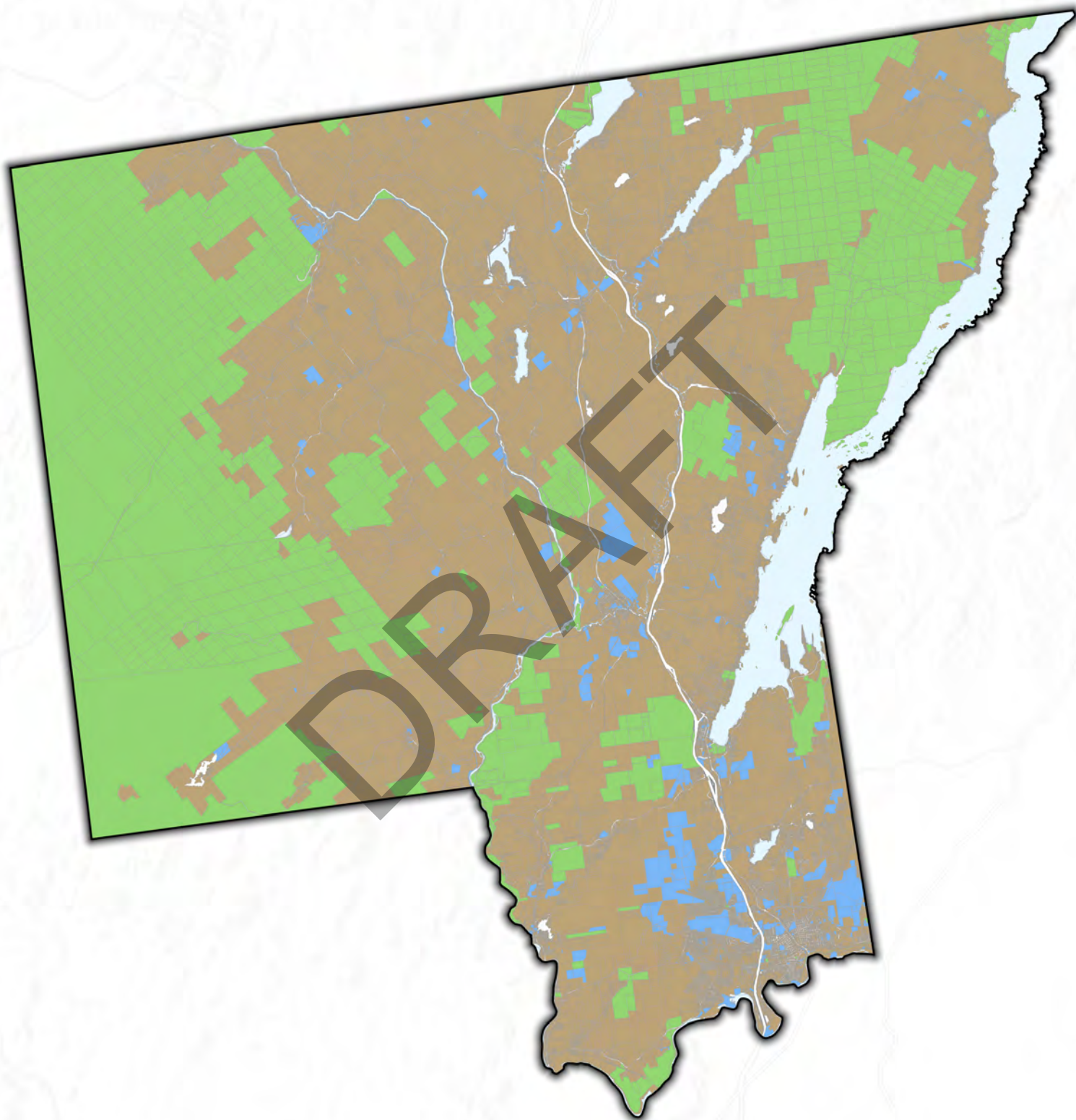
Other existing land resources include seven purpose-built cross-country mountain bike trail networks, two downhill mountain bike parks, 33 car-accessible campgrounds, 523 backcountry camp and tent sites and nine lean-tos, four lift-served skiing and riding areas, four groomed Nordic skiing areas, horseback riding, rock climbing, and 223 miles of public snowmobile trails. Hunting is also permitted on nearly 199,000 acres of State-managed lands in Warren County.

According to the Warren County Outdoor Recreation Existing Conditions report, waterbodies across the County support a variety of canoeing, kayaking, rafting, and tubing activities. In terms of paddle boating, there are 52 public boat launches in Warren County – mostly managed by NYSDEC (18) or Warren County (16). Municipalities manage an additional 18 launches. Public motorized boating access is provided to the following waterbodies: Lake George, Brant Lake, Schroom Lake, Lake Luzerne, Trout Lake and Hudson River impoundments. There are 15 municipally managed public beaches and a variety of managed public fishing access locations scattered throughout the County. While Warren County is blessed with water resources, there is limited public access to certain waterbodies, with some larger waterbodies having only a single public access point and a handful having no public access or poorly-maintain boat launches.

Land Type	Percentage
Forest Cover	88%
Publicly Owned Conservation and Recreation	37%
Wetlands (Herbaceous and Woody)	13%
Developed Land	2%

# LAND OWNERSHIP

WARREN COUNTY, NEW YORK



## LAND OWNERSHIP

- PRIVATE (58.9%)
- STATE (38.2%) & FEDERAL (0.002%)
- SCHOOL, COUNTY & LOCAL GOVERNMENT (2.90%)



## KEY NATURAL ENVIRONMENT PARTNERS

Although Warren County Planning administers programs related to environmental initiatives, the County does not have any staff dedicated to environmental quality issues. Much of the work being done to research and address invasive species, private septic systems, and road salt use is spearheaded by non-profit organizations. Warren County Planning has either applied for funding, have been awarded funding, and/or administers programs for all of these initiatives.

It is essential for the County to collaborate with these local and regional organizations to strengthen their efforts or broaden their reach. The WCSWCD and LCLGRP (described in Chapter 3, "What We Do and How We Collaborate") are two key natural environment partners. Others include:

**Lake George Land Conservancy** has protected over 12,000 acres on and around Lake George since its founding in 1988 and has several initiatives, including additional land conservation and invasive species management/mitigation, among others.

**Lake George Park Commission** is a NYS Agency authorized to carry out a wide array of programs aimed at protecting Lake George and the safety of the recreating public. Program areas include invasive species prevention and management, stormwater management, stream corridor protection, Septic System Inspection Program, and New Wastewater Regulations.

**The Lake George Association (LGA)** is a not-for-profit agency focused on protecting Lake George through advocacy, research and public education. The Fund for Lake George recently merged with the LGA and includes the Lake George Waterkeeper program. The Jefferson Project is a collaboration of the LGA with the Rensselaer Polytechnic Institute (RPI) and IBM bringing "world-leading technology and science" to collection and analysis of water chemistry data to inform decision making with respect to policy.

**Cornell University Cooperative Extension** provides programs based on the needs of the County using research-based information from Cornell University to improve lives and communities, increase economic vitality, and enhance environmental quality. Cooperative Extension offers programs addressing community health; natural resources and water quality; wise energy use and 4-H youth development through real life, hands-on learning. The organization is well-known for its focus on agriculture and natural resources, with programs to promote stewardship of our natural resources.

**New York State Department of Conservation**, in consultation with the **Adirondack Park Agency**, prepares unit management plans (UMPs) to help guide the uses of State-owned Forest Preserve, State Forests, Wildlife Management Areas, and Lands under Conservation Easements. The agencies identify opportunities for public use and recreation that are consistent with the classifications of these lands and consider the ability of the resources and ecosystems to accommodate such use.



## CLIMATE CHANGE AND GREENHOUSE GAS EMISSIONS

Climate change is requiring municipal governments to reframe their approach to how infrastructure, community facilities, and programs are designed and managed. Climate change, once considered an abstract threat as recently as a decade ago, has forced its way into the tax-payers consciousness- primarily in the form of massively damaging storm events. Increasing county resilience in the face of climate change impacts through planning, infrastructure investments, and policies will be necessary in the coming years.

### CLIMATE CHANGE IMPACTS

The New York State Climate Impact Assessment projects significant impacts for the Adirondack region. By the 2050s, average temperatures are expected to increase by 4.6° to 6.6° F, and by 6.1° to 10.6° F by the 2080s, with fewer very cold days and more extremely hot ones. Warmer temperatures will reduce snowfall and lake ice, replacing winter snow with rain. Lakes are already experiencing shorter ice cover durations, and this trend is set to continue.

Increasingly severe storms in Warren County cause greater runoff, sedimentation, nutrient loading, and infrastructure damage, raising repair costs. While the County's Hazard Mitigation Plan (HMP) addresses some vulnerabilities, municipalities need further support to adapt.

In Warren County, the greatest risks posed by climate change include:

- **Increased flood risk**
- **Severe storms (high winds)**
- **Increase in extremely hot days**
- **Infestation and invasive species**
- **Vector-borne diseases**

Climate changes will also affect outdoor recreation. Ice fishing, skating, and fall foliage may decline, while warmer conditions increase harmful algae, invasive species, and fish population shifts. However, extended seasons for boating and cycling may offer opportunities. The County's current Outdoor Recreation Economy Strategic Plan acknowledges this threat and identifies goals and strategies to prepare and adapt.

### CLIMATE CHANGE ACTION

Addressing the impact of climate change is becoming increasingly important as communities are experiencing impacts. Warren County has made significant strides in addressing climate change. Since adopting the New York State Climate Smart Communities (CSC) Pledge in 2019 and achieving Bronze certification in 2020, the County has launched various initiatives. The County successfully secured DEC CSC funding to develop an Organics Management Plan, which later led to additional funding in 2024 for a municipal composting pilot program. The County also began systematically integrating electric vehicles into their fleet and, in 2023, invested \$750,000 annually to expand public transportation access through the CDTA merger. While the merger was primarily driven by practical considerations, it represents a significant step toward reducing transportation-related emissions.

To strengthen their climate initiatives, the County has recently hired a dedicated climate coordinator and re-established the Climate Smart Task Force, demonstrating a renewed commitment to addressing climate challenges systematically. The Climate Smart Task Force will pursue maintaining an active role in supporting projects throughout the County that will advance mitigation and adaptation to prepare for a changing climate. Specific actions and goals from existing plans will be a starting point for the Climate Smart Task Force to act in addressing a changing climate. Warren County's actions are in alignment with the goals outlined in New York State's 2019 Climate Leadership and Community Protection Act (CLCPA).

### CLIMATE ADAPTATION

In 2023, FEMA approved Warren County's Hazard Mitigation Plan (HMP), prioritizing resilience to climate-related hazards. The County mapped mitigation projects from the HMP against its Capital Project Inventory, identifying infrastructure at risk of flood damage. Key efforts focus on right-sizing culverts and transportation infrastructure to improve flood resilience and guide future investments in community preparedness.



## STORMWATER RUNOFF

While Warren County's wealth of water resources are world-renowned assets, they also face significant environmental challenges. As development continues, stormwater runoff from both developed and undeveloped lands threatens water quality through increased sedimentation and nutrient loading. This leads to degraded water quality and creates conditions conducive to the growth of harmful algal blooms, which threaten aquatic ecosystems and public health. Stormwater management will become increasingly important as the region experiences increased precipitation and more extreme

precipitation events. The need to right-size culverts and incorporate green infrastructure is becoming increasingly important as the County works in partnership with municipalities to improve resiliency.

Stormwater management has made great strides since the adoption of Clean Water Act Phase I Stormwater regulations in 1990. The USEPA, as implemented by the NYSDEC, currently requires that stormwater management measures are included in land development activities disturbing more than one acre. The Lake George Park Commission (LGPC) has taken further measures to address the impacts of land development and reducing runoff-related pollutants.

## ROAD SALT

It is recognized that the use of road salt in winter maintenance can have long-term implications for local ecosystems. According to the 2023 Adirondack Road Salt Reduction Task Force Assessment, an estimated 193,000 tons of road salt are applied annually to the road network of the Adirondack Park during the colder months of the year. Of this road salt, 44 percent is applied to the local road network and the remaining 56 percent is applied to the State road network. Research by the Adirondack Road Salt Task Force Assessment indicates that road salt has doubled chloride concentrations in local streams and rivers since the 1990s, with ten percent of the County's surface waters showing elevated salt levels that exceed recommended thresholds for aquatic life and drinking water sources.







Road salt management has become an important concern, and the Adirondack Road Salt Task Force has included leadership from the Warren County Department of Public Works. The County, along with other public works/town highway partners, have been leading the way to minimize the impact of road salt to help protect water resources. A systematic approach, including improved plowing and deicing technology and knowledge sharing with other professionals, are contributing to significant reductions in the amount of salt applied to participating jurisdictions. This will be of continual importance, as the impact of salt will still need to be considered and mitigated over the long term.

## INVASIVE SPECIES

The presence of invasive aquatic plant species has been recognized as adversely impacting surface waters in the County, including Lake George and other water bodies. These include aquatic plants Eurasian milfoil and curly-leaf pond weed and invasive animals, including zebra mussels, Asian clams, and spiny water fleas. The recent arrival of the hemlock woolly adelgid, an invasive insect that kills hemlock trees, may lead to the devastation of our hemlock forests which in turn could threaten water quality and clarity throughout the region.

Invasive species will be an ongoing challenge to property owners and resource managers. In 2023, the LCLGRP facilitated the Watershed Action Plan for Lake George, which documents more than \$1.0 million is spent annually for prevention and mitigation of invasive species in Lake George and other lakes in the County are also facing increasing costs for invasive species management.

Addressing this and the other challenges facing the natural environment is imperative as it is critical to maintaining the quality of life that is valued by residents and drives tourism. Environmental protection was ranked as the third most important priority for the County; however the top priorities (infrastructure and economic development) are highly dependent upon a healthy natural environment and mitigating negative impacts on the environment.