

Beloved Places:

River and Road

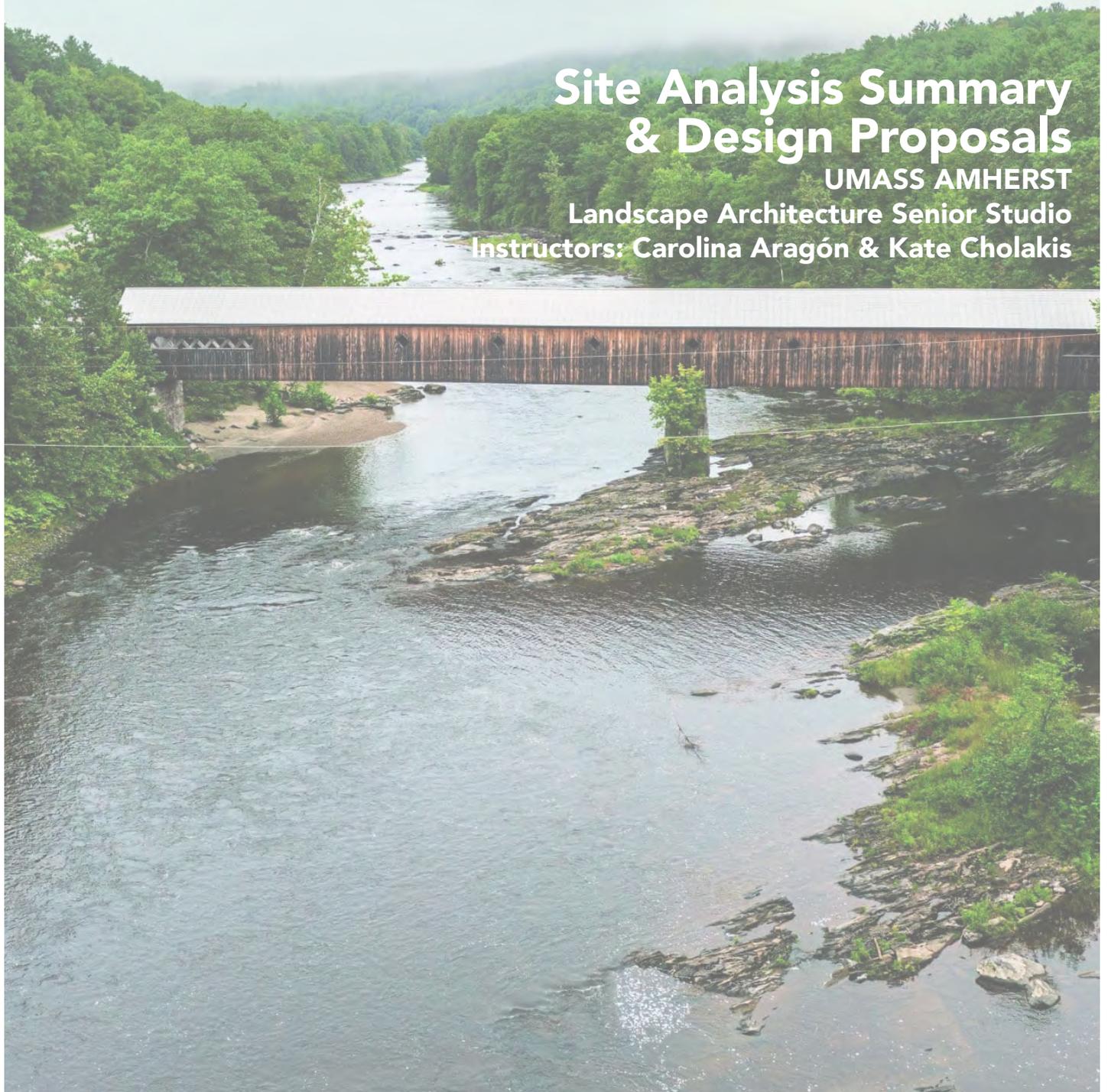
Vermont's Route 30 & West River Corridor

Site Analysis Summary & Design Proposals

UMASS AMHERST

Landscape Architecture Senior Studio

Instructors: Carolina Aragón & Kate Cholakis



UMassAmherst

LA&RP Landscape Architecture
& Regional Planning

Prepared for Windham Regional Commission

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UMass Amherst Center for Resilient Metro-Regions

Beloved Places: River & Road

Vermont's Route 30 and West River Corridor



The work of this senior landscape architecture studio focused on the Vermont Route 30/West River Valley corridor, extending from Brattleboro to Winhall. The corridor transects a large area of Vermont, winding from the West River's intersection with the Connecticut River north of Brattleboro to the foothills of the Green Mountains to the west. It includes the West River and the state highway Route 30 (which is situated along the river for much of the corridor's length, with a few exceptions).

The River/Road relationship was the focus of the studio. Though Route 30 transects the region, it is not perceived by its communities as a shared part of their identity. Residents associate mainly with their individual towns, rather than a larger geography. While there are many local assets that can offer an enhanced sense of place—such as the Brattleboro bridge, Newfane's quintessential New England village setting, the West River Trail, and many other recreational destinations along or near the corridor—these remain disconnected in public perception.

The work presented in this booklet is the result of a semester-long studio by senior landscape architecture students at the University of Massachusetts Amherst. Students engaged in research and design exercises focused on enhancing the sense of place of the West River/Rte 30 corridor, addressing climate adaptation/flooding challenges, and generating potential solutions to traffic calming, and other potential challenges identified in the studio. The information here represents their site analysis research and their proposed designs.

The goal of the design work was not to be comprehensive, but rather speculative and generative, to begin further work in public engagement. Conceptual design alternatives were developed by the students and refined through co-creative processes with stakeholders, experts, and interested community members. The UMass students presented their ideas during a public presentation in May 2024 in Newfane, VT, and received public feedback.

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SITE ANALYSIS

LOCAL COMMUNITY & HISTORY

ECOREGIONS & HABITAT

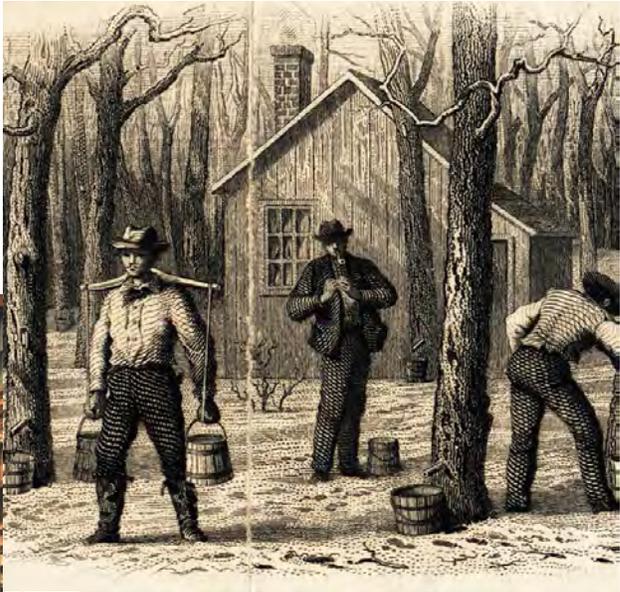
ROAD INFRASTRUCTURE

STORMWATER & INFRASTRUCTURE

TOURISM, VISITORS & THE ECONOMY

OUTDOOR RECREATION

LOCAL COMMUNITY & HISTORY



Windham Region Demographics

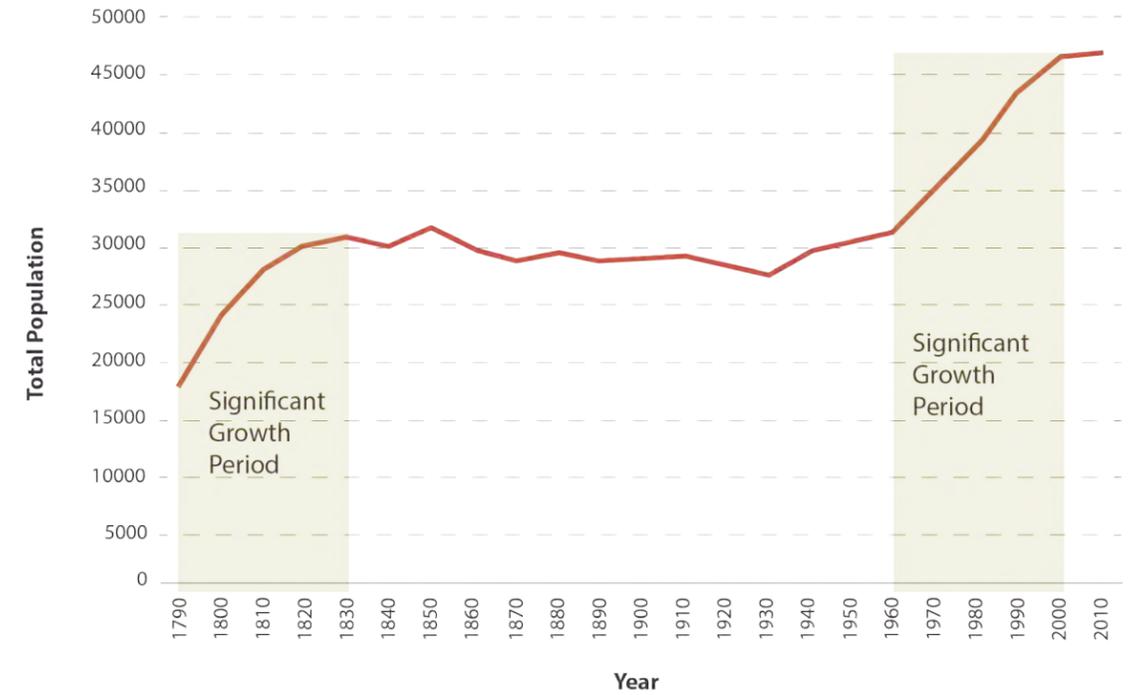
Windham County is a largely rural area, with towns and very small unincorporated villages. These towns are usually isolated, dappled throughout Vermont's characteristic mountainous topography. The next few pages review population and economic data through 2010, which is summarized in the most recent available Windham Regional Plan from 2014. Over the past several decades, the region's population has aged significantly, marked by declines in younger age groups and increases in those nearing retirement. While Windham Region towns generally have fewer elderly residents compared to neighboring areas, they still exhibit a relatively higher percentage of individuals aged 65 and above compared to nearby states. When compared with towns in New Hampshire and Massachusetts, Windham County appears to have a comparatively higher percentage of individuals 65 and over than the regions to the east and south. According to the Windham Regional Plan, "...the age groups entering the working population (late teens and early twenties) are small, and the population of people in the childbearing ages has

generally decreased. This trend has not changed since the previous plan." There has been a continual decline in the number of school-age children since the 1990's, while notably, there's been a growth in individuals aged 55 to 64, attributed to both aging residents and in-migration. Please see the "Population" section for graphic representation of this data. The population also surged during the COVID-19 epidemic, between 2020 and 2022. Understanding these shifts is crucial, especially in attracting and retaining working-age populations. Additionally, economic health in Windham County is mostly attributed to the tourism Vermont sees in the ski industry. Although, small businesses, and the intrigue of historic abundance also maintain their financial growth, among the leading industries as of 2011. Service Providing industries made up 70.63% of employment. More specifically, the trade, transportation, and utilities industry, education and health services industry, and the leisure and hospitality industry. Please see the "Economics" section for data on median incomes in Windham County and the state of Vermont.

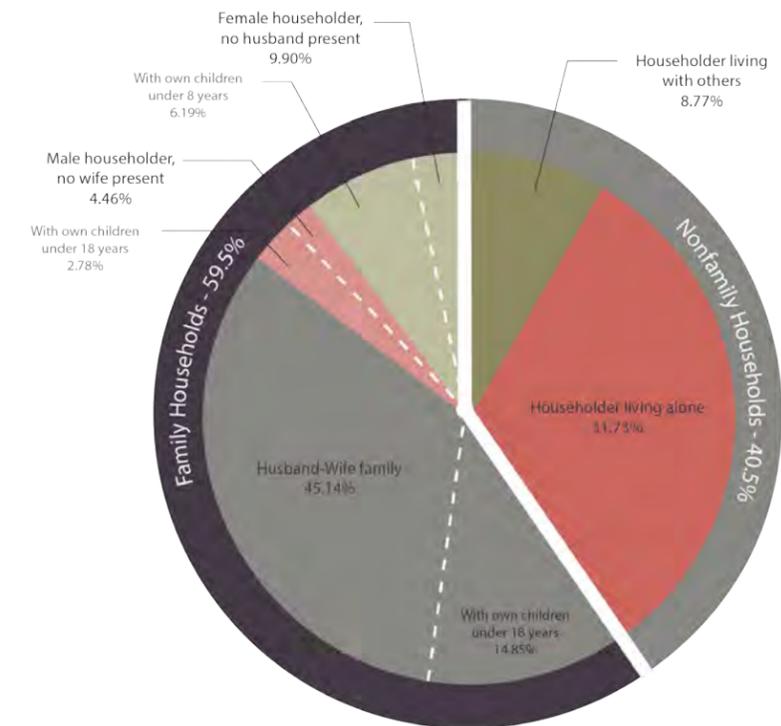


POPULATION

WINDHAM REGION POPULATION, 1790-2010



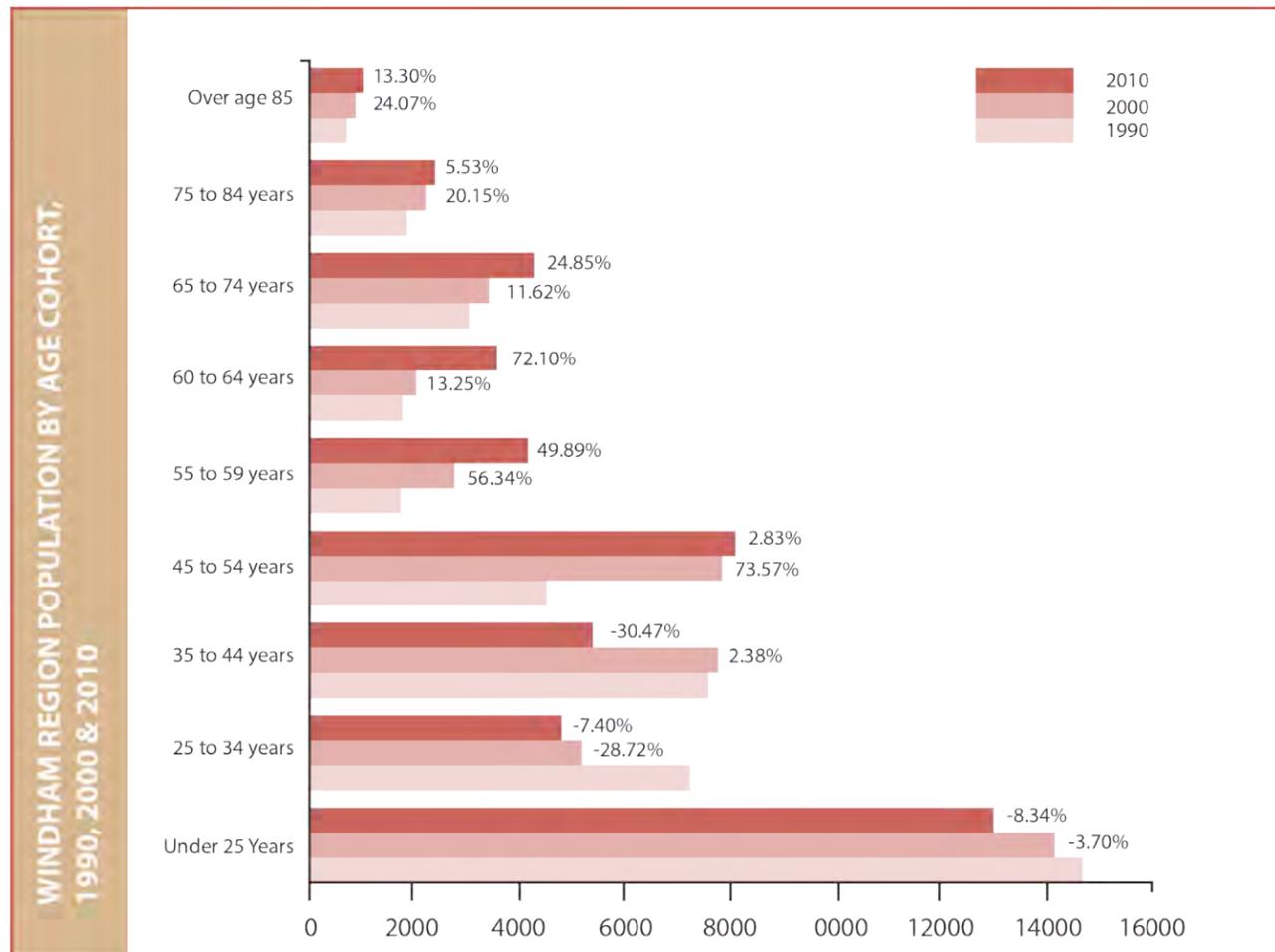
WINDHAM REGION HOUSEHOLD COMPOSITION, 2010



Base graphs and information from the Windham Regional Commission, "Windham Regional Plan," 2014

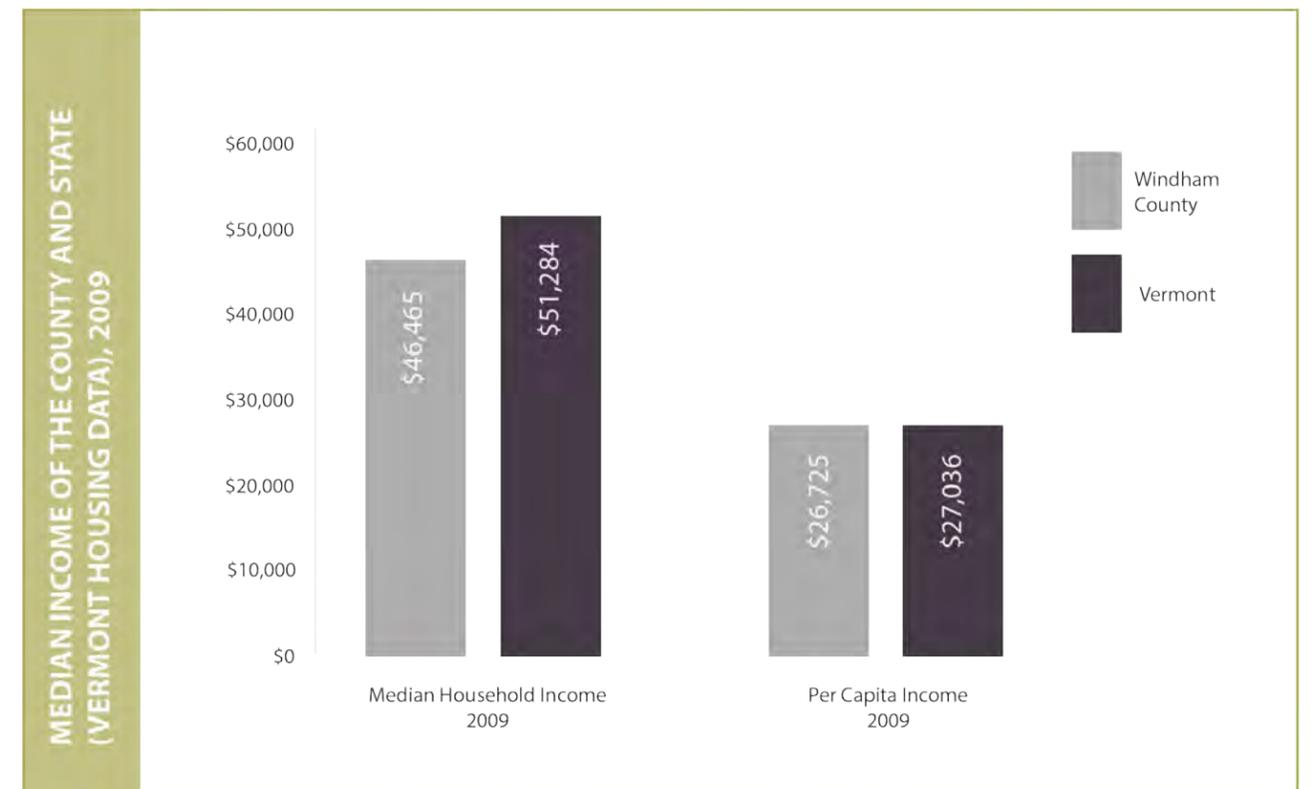
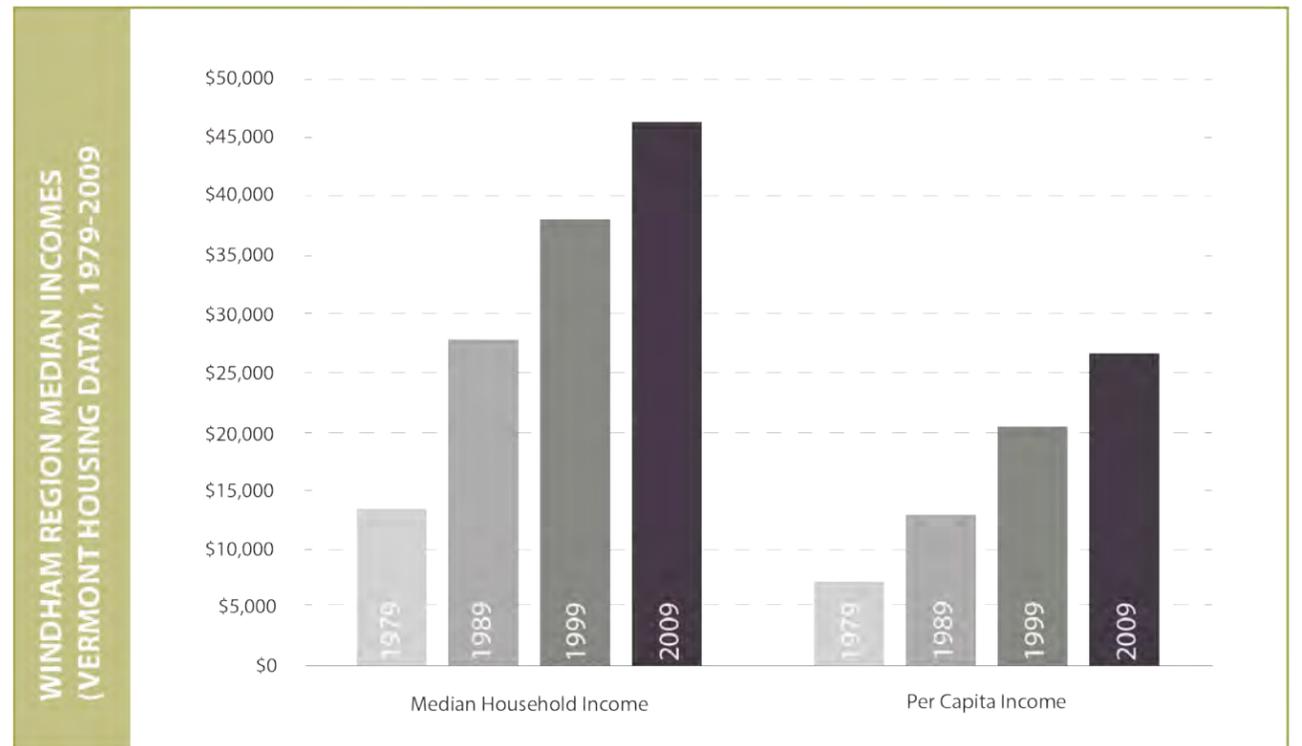
Changes in Windham County's median household and per capita incomes from 1979 to 2009 are summarized in the graphs on the next page. Notably, from 1999 to 2009, median household income increased significantly, influenced by high incomes in Stratton. However, median family incomes saw a slight decrease in 2009, likely due to the rising number of non-family households. In eleven towns within the region, median household incomes exceeded the state average. Ski resort areas like Stratton and Winhall experienced significant population growth due to in-migration, while towns near job centers like Brattleboro, such as Vernon, Westminster, Newfane, Guilford, and Dummerston, also saw economic advantages. Notably, Stratton had the highest median household and family incomes. However, its per capita income was surpassed by

Grafton, Halifax, Weston, and Winhall. Windham County, Vermont, embodies a blend of evolving population dynamics and economic resilience. Its population has undergone fluctuations over time, reflecting broader demographic shifts. Economically, the county has navigated challenges, notably experiencing a decline in its labor force during the "Great Recession" years from 2000 to 2010. However, it has shown resilience, with gradual declines in unemployment rates post-2009. Service-providing industries dominate employment, with sectors like trade, transportation, and utilities, education and health services, and leisure and hospitality playing prominent roles. Despite varying employment and population trends across sectors, Windham County continues to show economic stability amidst change.



Base graphs and information from the Windham Regional Commission, "Windham Regional Plan," 2014

ECONOMICS



Base graphs and information from the Windham Regional Commission, "Windham Regional Plan," 2014

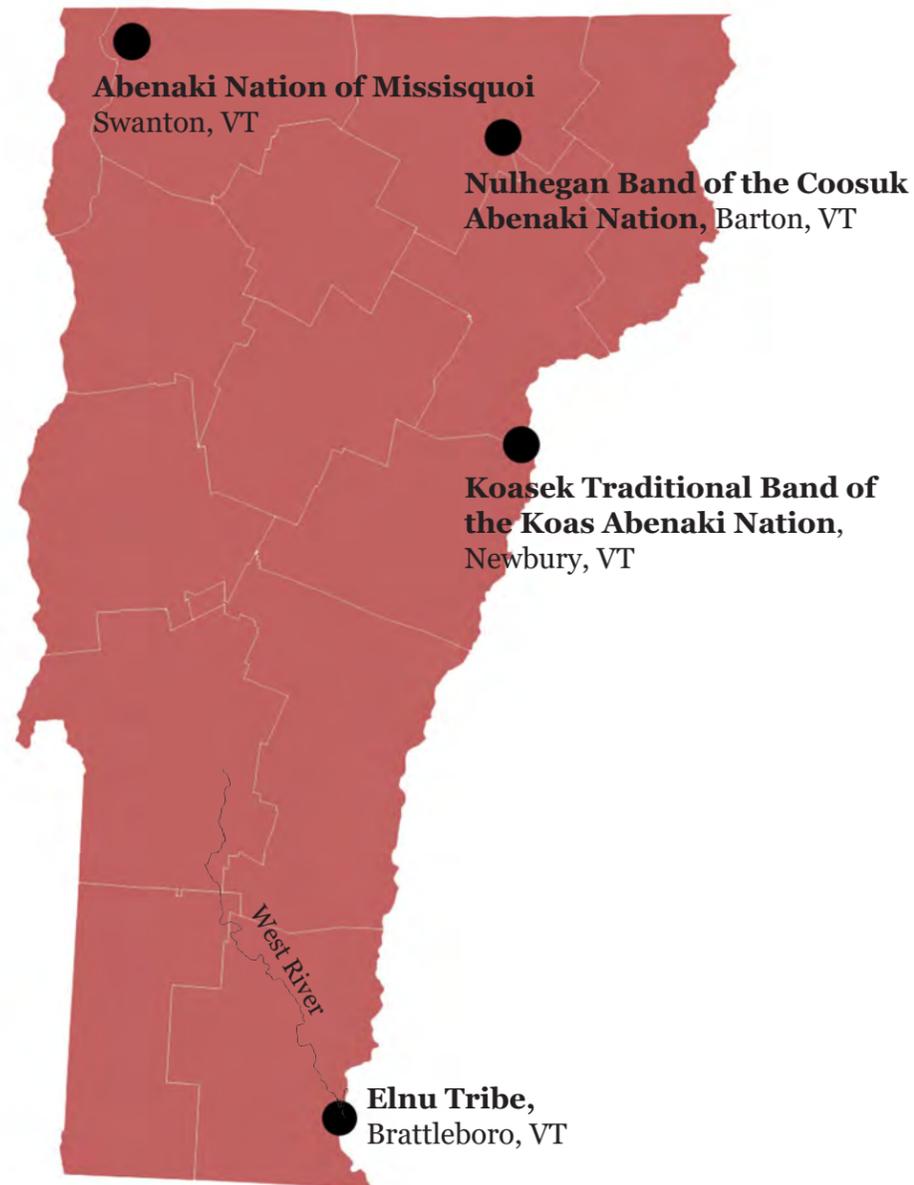
The Abenaki People

Western Abenaki Territory

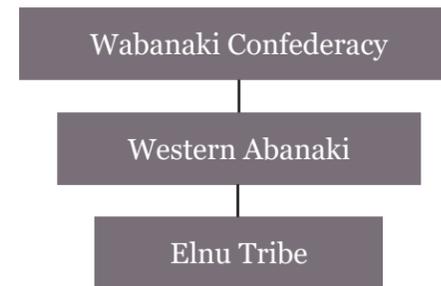


Ives Goddard, 1999

Vermont's State Recognized Western Abenaki Tribes



Who are the Abenaki Peoples?



The Abenaki are Algonquin-speaking native peoples that reside in what is now called Northeastern United States and Canada. (Vermont, Maine, New Hampshire, Quebec).

The Wabanaki (meaning People of the First Light or Dawnland) Confederacy consists of 5 principal nations:

1. Abenaki
2. Malecite
3. Micmac
4. Passamaquoddy
5. Penobscot

Elnu Abenaki

Elnu is a small tribe based in Southern Vermont along the Kwenitekw and **Wantastekw** (Connecticut and West Rivers), and the landscapes within those and connected watersheds. They work to continue Indigenous culture through historical research, song, dance, oral storytelling, and school programs.

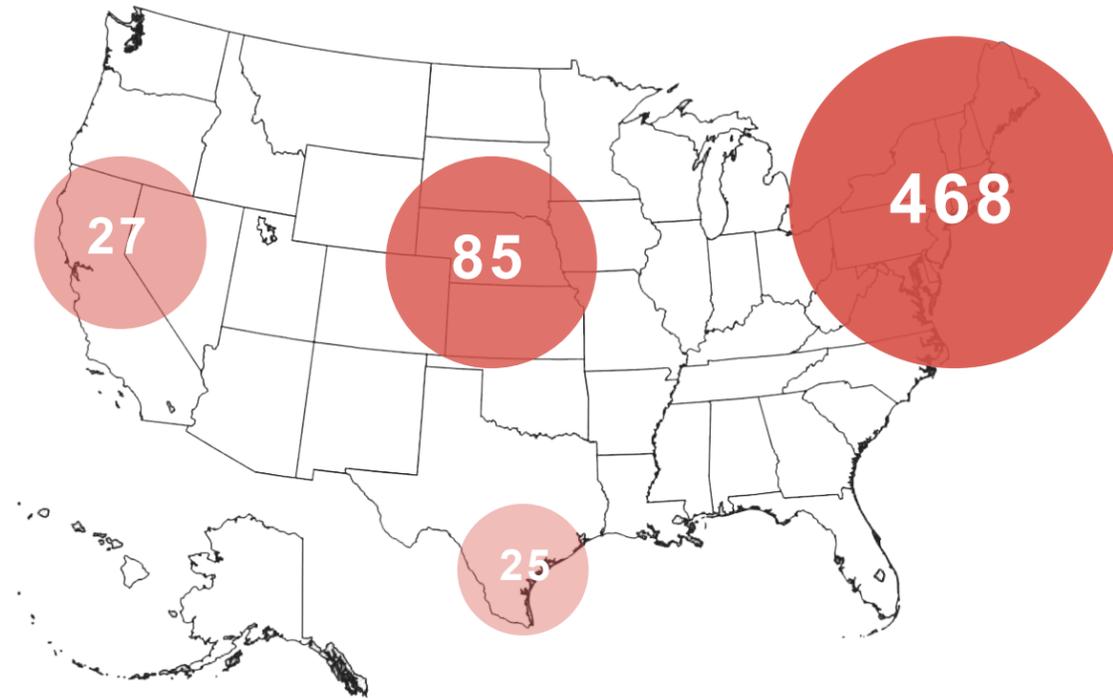


“Our primary focus is honoring our lasting heritage from the Kchiak – our Ancestors, maintaining our good relationships with Ndalôgmômek – All Our Relatives and Nigawes Akikw – Mother Earth, and ensuring that Alnôbaiwiwôganal – our Abenaki traditions – carry on to our children. We are traditionalists committed to maintaining our culture in a modern society. Learning from the past creates a better future for all.” - Elnu Tribe

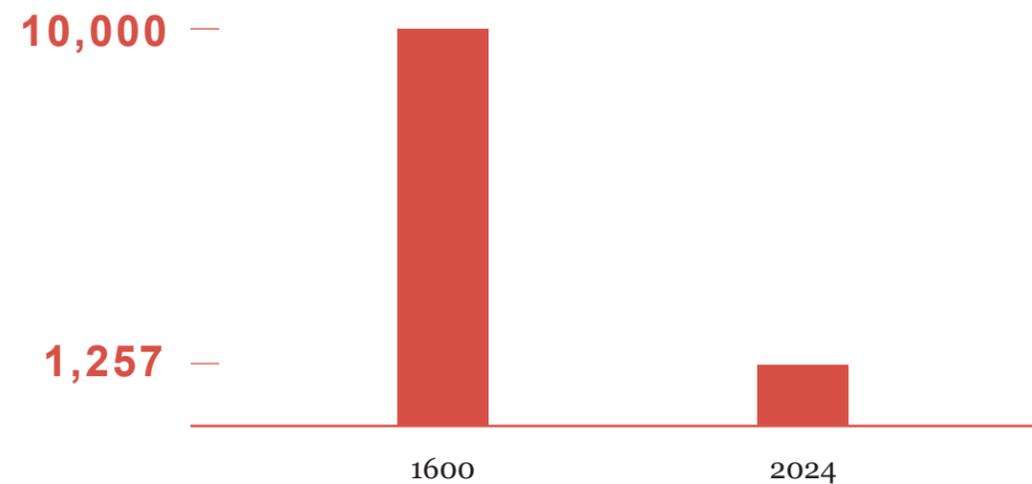
Acknowledged through State Recognition on April 22, 2011.

Place of Birth Abenaki Census Data

Majority of Abenaki in the U.S reside in New England region



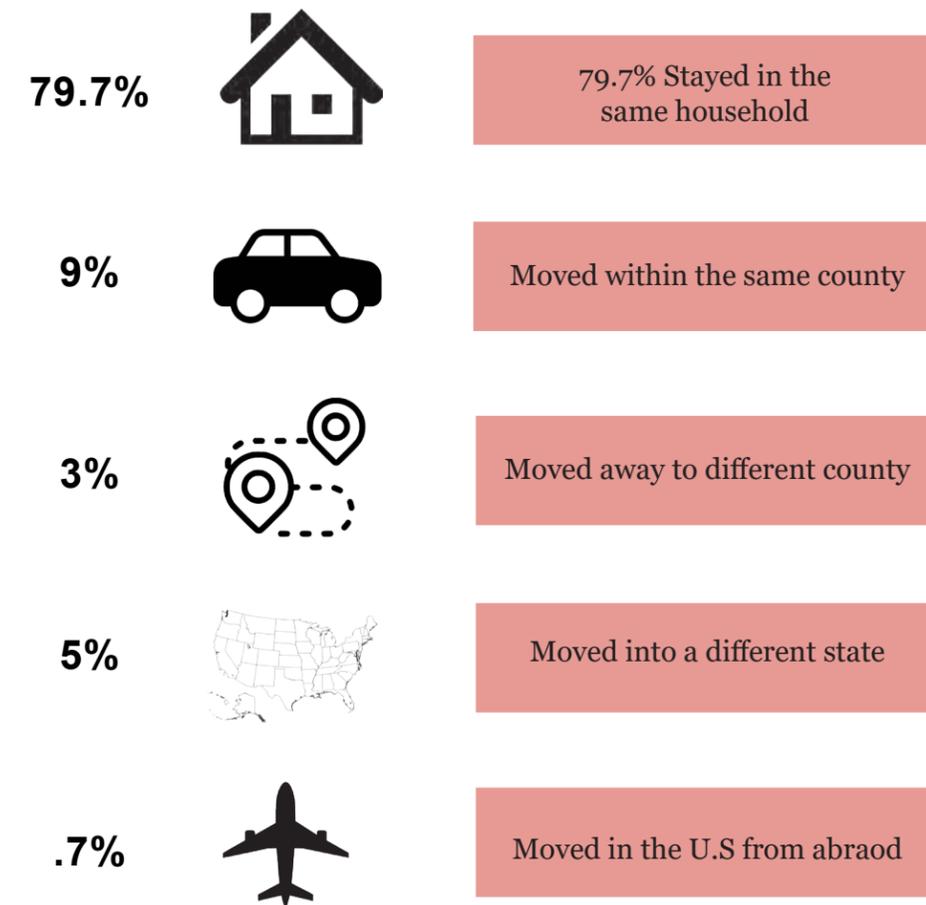
Decline of the Abenaki Population in the U.S



Demographics

Abenaki Census Data 2021

Geographic Mobility in 2021

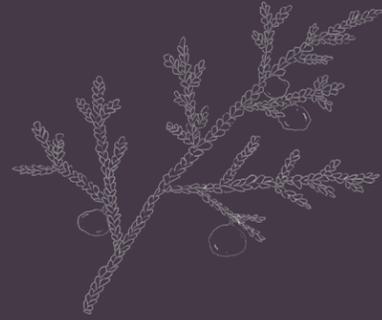
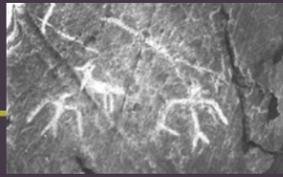


Majority of people remain in the same household after one year. Since the pandemic, people have moved into Vermont. Therefore, population changes involve movement into the state and current residents remaining there year after year.

<https://elnuabenakitribe.org/2023/04/28/the-double-curve-motif/>, <https://abenakination.com/missisquoi-history>, <https://www.thecanadianencyclopedia.ca/en/article/abenaki>

<https://data.census.gov/table/ACSST5YALAN2021.B07003?q=United%20States%20Abenaki>

Submerged petroglyphs acknowledge Native presence **(3000 BC)**



Abenaki Couple circa **1750–1780**
This watercolor drawing shows an Abenaki couple wearing traditional Abenaki clothing in the 1700s.

Double Curve motif is commonly used in beadwork. It is associated with plants of medicinal and protective nature.



Indian Sugar Camp
Illustration by Seth Eastman **(1852)**



The Abenaki used buckets made of birch bark to collect sap and boiled it in clay pots. Maple syrup season is in the very early spring, when the English arrived in the early **1600s**, the Abenaki shared this knowledge with them.

Women in Abenaki Culture
Abenaki women took the lead in cultivating land, producing crops, and tapping maple trees for maple sugar.



Native Americans and English Trading Theodor de Bry **(1597)**
English and the Abenaki traded with each other for items like beaver pelts, wampum, and metal tools.



Edmund C. Coats **(1859)**
Abenaki playing on Ice



Francine Poitras Jones of the Nulhegan Tribe
8th century painting of Abenaki man and woman



Gluskabe and the Whale
Illustration by Tomah Joseph **(1884)**
The Abenaki people pass down stories to teach their history and values.



Indian Council Francis S. Drake **(1885)**
Abenaki people in the Woodland period traded with other groups of indigenous people in eastern North America.



2020

Leaders of the Elnu Abenaki and the Retreat Farm joined Native Americans and others in the community in unveiling an interpretive sign for Watastegok, the original Abenaki word for the area.



Rose Hartwell, Abenaki Elder, stands with friend at the Salmon Hole **(2010)**

1600's

European ships travel to the Wabanaki coast and Ktsitekw, the St. Lawrence River, fishing and surveying for resources.

European trade goods move through Native trade networks to Bitawbagw.

1675-1678: First Anglo-Abenaki War, King Philip's War

1700's

1723-1727: Fourth Anglo-Abenaki War, a resistance against English colonization of Abenaki homelands.

1790-92: Mills were built in the 1790s, clearing forests in the new towns of Swanton and Highgate, impacting hunting.

1800's

Subsistence/trade economy sustains families, kinship networks, and relationship to land.

1900's

1920's-1930's: Vermont Eugenics Survey targets some Abenaki families, leading to state-sanctioned sterilizations

1960's: Tightening of Vermont Fish & Game regulations and enforcement, increase in tourism.

1980's: Title VII Indian Education, Parent Advisory Committee, and Tribal Learning Center established.

1990's: Increasing discussion of land claim and aboriginal rights among the Abenaki community and in the State of Vermont.

Vermont Supreme Court seeks to overturn Wolchik decision by declaring, against long-held standards of U.S. Indian Law that Abenaki aboriginal rights had been "extinguished by the increasing weight of history" (1992).

2000's-Present

Abenakis and other Vermonters work together to push for recognition in the Vermont legislature.

2006 State Recognition of Abenaki restored by Vermont Legislature.

2011 State recognition of the Elnu Abenaki Tribe

2019 State replaces "Columbus Day" with Indigenous Peoples' Day.

2020 Hunting and fishing rights recognized by the state of Vermont.

Collaboration with the University of Vermont and SRS/DCF on the co-taught course, "Social Work with Indigenous Communities: The Abenaki in Vermont," and Cultural Competency Trainings.

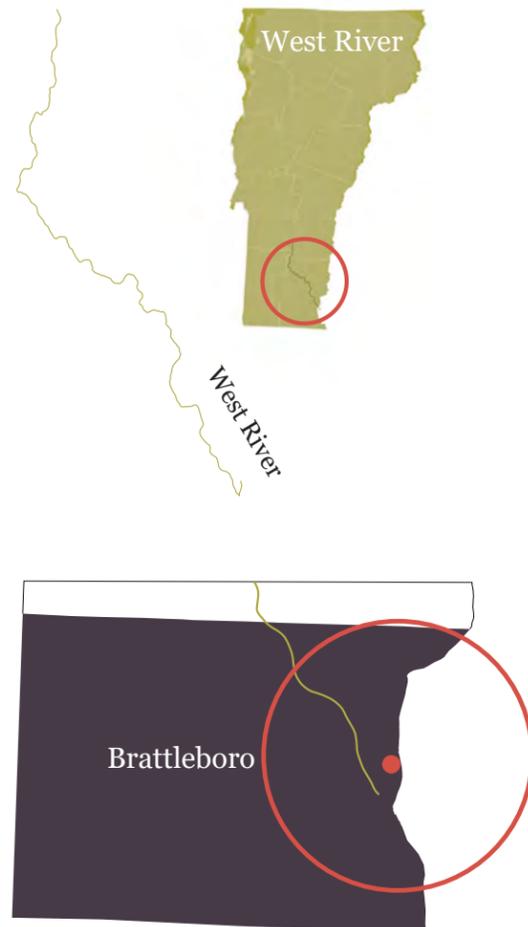
Collaboration with the Vermont Agency of Transportation, the Division for Historic Preservation, and the Northeast

Archaeology Research Center, on the Swanton Route 78 Archaeology Project, including advising/consultation on location and care of historic sites, fieldwork, and cultural programs.

Significance of Place

Wantastekw (West River) and **Kwenitekw** (Connecticut River), in what is now known as Brattleboro, VT., holds balance and significance for the Elnu Tribe.

The Elnu tribe acknowledges that culture is a result of the physical location of a place. Both culture and place are greatly intertwined, creating relationships between the sky, Earth, water.



Elnu Tribe has partnered with the Atowi Project and Vermont Land Trust to purchase 2-acre parcel of land. The renovated building will become the new tribal headquarters where cultural workshops and community gatherings will be offered.

This site is situated near the thousand year old Petroglyphs submerged underwater.



Native Presence Along West River

Jamaica State Park includes the oldest Indigenous campsites in Vermont.

Cobb Brook is a 125- foot waterfall and tributary where 3,000 artifacts were discovered, including stone tools and spear points. Most artifacts were from the Late Woodland period (1000-1600). AD).

The Salmon Hole, which lies beneath Jamaica State Park, has unearthed Native American artifacts dating back 6,000 years, excavated in 2010. Today, the hole is a recreation spot for swimming and fishing.

Abenaki community members, in collaboration with the Retreat Farm, dedicated an interpretive sign for Wantastegok, the original Abenaki word for the area, near the water's edge.

West River, Wantastekw

The Elnu Tribe is acknowledged by the presence of petroglyphs, which are now submerged since the building of the Vernon Hydroelectric Dam, but documented as Indigenous burial grounds.

Connecticut River, Kwenitekw

Elnu Tribe Headquarters

Uniting Features: Vermont Village Towns

Vermont is a village culture and remains a small community-based world where people know and care about one another. However development pressures in the state are becoming too much to handle. Rapid growth and changing demographics have had an unwanted impact on the spirit of community in many towns. They are struggling to fight against becoming city-centered communities, and domination by second homeowners. A way in which they reinvigorate their village as well as retain the character is by following the seven common characteristics that depict the traditional Vermont village.



Centrally located public common areas, such as a town square or green, surrounded by homes, churches, inns, or business establishments, and often town civic buildings, such as the school, library, post office or town hall.



Architecture which harmonizes the village due to similar scale, roof shape, and building materials which are often, but not exclusively, wooden clapboard, shingle, or red brick.



A sense of spatial enclosure created by the town buildings and large shade trees which line streets and town squares, providing both visual and physical continuity.



Densely populated center of town surrounded by limited residential neighborhoods, creating a community where residents generally live no more than five minutes walking distance from the center.



A small commercial district in the center of town with grocery stores, news agents, drugstores, hardware stores, and retail stores, meeting the everyday shopping needs of residents.



Pedestrian-friendly, but car-accessible streets in the town center which are narrow enough to require cars to slow down when passing each other and therefore promote a feeling of safety for pedestrians walking on abutting sidewalks.



Clearly defined open spaces at the boundaries of the town itself, symbolizing a visual "edge", or termination of the village area.

These common characteristics can create a clear picture of the traditional village: compact, predominantly residential area with supporting commercial and public activities near its core. Furthermore, there is no distinction between residential and non-residential areas and no separation of seemingly incompatible uses.

Through the elimination of reliance on the automobile and bringing most of the activities within walking distance, everyone in the community can gain freedom of movement traffic congestion within the town is minimized.

The village offers a peace of mind. Not only does it offer solace to its residents, it also contributes greatly to the economic base in the state. The beautiful towns and the landscapes that surround them attract a significant number of people to the state.



Vermont Timeline: 17th Century

1600

In 1600 as many as **10,000 western Abenaki** inhabited modern day Vermont and New Hampshire.



(2)

“Even before the movement of colonial settlers up the Connecticut River Valley, Native American life has been seriously destabilized by contact with the Europeans. Among many consequences were exposure to epidemic diseases which decimated the population.” (1)



(2)

Abenaki vs. English

“The Abenaki were prepared to trade with the English, but needed to defend against the encroaching settlements that threatened their way of life.” (1)



(1)

1672

In colonial New England, the king of England appointed governors to his various royal provinces and ruled through them. They had the authority to grant, in his name, any uncharted land in their province.



(3)

“The earliest grant in what would become Vermont was land in the future town of Vernon, included in the 1672 township of Squakheag.” (1)



(1)

Vermont Timeline: 18th Century

1713

“In settlement of various disputes, Massachusetts agreed to cede to Connecticut 107,793 acres of equivalent lands containing a portion the size of 43,943 acres, that are the present towns of Putney, Dummerston, and Brattleboro.” (1)

“The Abenaki, who wanted to keep their land, were prepared to fight for it. Until the end of the French and Indian Wars, the Abenaki presented a formidable obstacle to settlement.” (2)



(3)

1724

“Fort Dummer, near the present Brattleboro, was established in 1724 by Massachusetts colonists, and became the **first permanent European settlement in Vermont.**” (2)

1753

“Under the authority of King George II, Governor Wentworth of NH granted a charter allowing the townships of Brattleboro, Fulham, and Putney to be laid out.” (3)

“Colonists saw New England as both a dangerous wilderness and as a wellspring of limitless resources. Therefore, with an ethic of survival and self-sufficiency, they set to work **felling the forests.**” (1)



(2)

1766

“Governor Moore of NY also issued a charter on the same lands, this time under King George III, which resulted in a great conflict among the colonists.” (2)

1791

Vermont was admitted to the Union as the 14th state.

“As the State’s population nearly doubled in the following decade, small self-sufficient communities developed slowly, populated primarily by people from New York and other New England States.” (1)

Vermont Timeline: 19th Century

Early 1800s

“The connection of rail lines to Vermont in the mid-19th century vastly expanded the possibilities for export and import of goods, information, and people. With this economic expansion came major, rapid growth for many of Vermont’s small towns.” (1)



“The advent of the railroad opened up access to cheap, virgin lands towards the West, drawing people out of the forests and off of the farms into unexploited territories, and facilitating transportation of goods back east.” (3)

Late 1800s

Thousands of cords of wood were cut to supply the voracious steam trains and the growing industrial sector. Timberlands of the northern forests were cut and sent south to paper mills or turned into home and building products for the rest of New England.

“The prosperity fostered by the railroad lasted well into the late 19th and early 20th centuries. The State’s industries, businesses, agriculture, and population thrived.” (2)



1850s

“Such rapid extraction and consumption of natural resources could not carry on for long. By the 1850s, so much vegetation had been stripped away that there was nothing to hold onto the precious soil, and great quantities of it washed away. Extensive over-hunting and fishing had devastated wildlife populations.” (1)

Vermont’s growth in industrial sector during the last quarter of the 19th century was closely tied to the extension of the railroad.



Vermont’s natural resources - lumber, granite, marble, and slate - could now reach the booming northeastern cities. Urban centers grew with new immigrant workers from French Canada, Ireland, Scotland, Wales, Italy, and Sweden.

Vermont Timeline: 20th Century

Early 1900s

Changes in the 20th century economy, that began early in the century, affected the viability of Vermont within an increasingly competitive and global market.



1960s

“When interstate highways 89 and 91 effectively linked Vermont to Boston and New York City in the 1960s, the state’s **natural scenic beauty became a major attraction for tourists, and a prime source of real estate** for nearby metropolitan residents and second home buyers.” (3)



Vermont has seen many changes during the last half of the 20th century. Tourists have discovered the state’s natural beauty, ski slopes, and small town character.

“While tourism in Vermont has soared, other aspects of Vermont’s economy, such as farming, milling, and quarrying have experienced a decline.” (1)

“Although it has the shortest growing season in Vermont, less than four months, Washington County was historically an agriculturally based economy, augmented by numerous small industries throughout the country’s villages.” (3)



Late 1900s

“Vermont continued to experience rapid growth and subsequent change throughout the 1970s and 1980s. This created increases in real estate value, development along the newly built highways, all of which strained municipal services and increased poverty taxes.” (1)

Vermont Timeline: 21st Century

“Vermont is at a turning point in history, requiring creativity, new engagement, new leadership - to renew and revitalize the state; to advance equity, fairness, and opportunities for all; to protect and enhance the environment and working landscape; and to build the sustainable economy necessary for a resilient future.” (3)



“Development pressures in Vermont are out of control, and rapid growth, in addition to changing demographics, have negatively impacted the spirit of community in many towns.” (3)

Vermont Village



“Vermont is a village culture; it began as a state of frontier settlements and remains a small world where people know and care about one another.” (3)

“Towns are struggling to resist both devolution into city-centered communities, and domination by second homeowners. Towns resist by retaining and reinvigorating their villages, the principal distinguishing characteristics of these towns.” (3)

Suburbia



Essex Junction, Vermont

Scenic Beauty

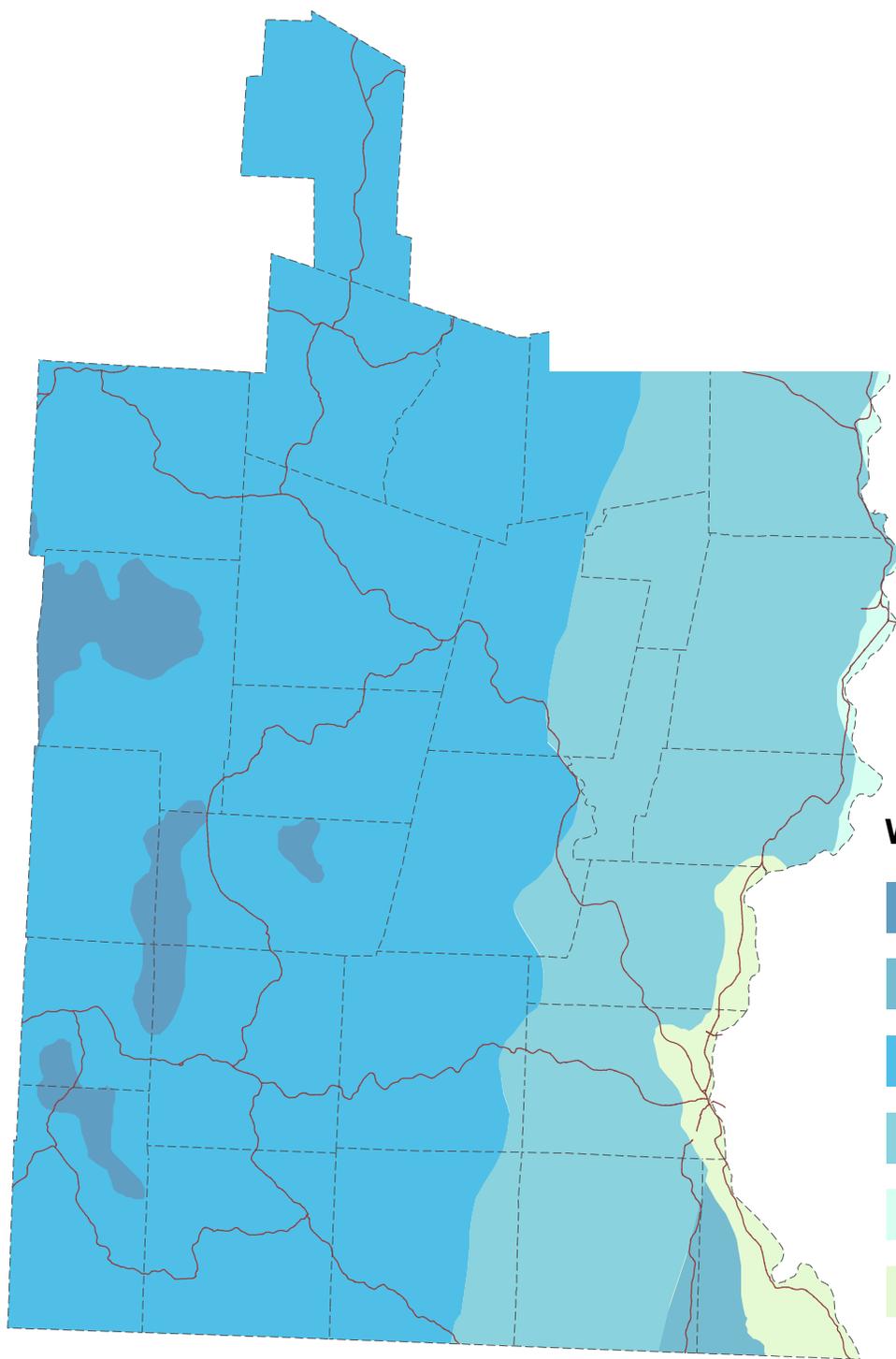


Rural Vermont

Works Cited:

- (1) War and Industry: Vermont's Changing Landscape. Vermont History <https://vermonthistory.org/freedom-unity-vermonts-changing-landscape>
- (2) Christ Church, Guilford: Our Mother Church. St. Michaels Episcopal Church <https://www.stmichaels-vt.org/community-life/https-www-stmichaels-vt-org-christ-church-guilford-vermont/>
- (3) The Malling of Vermont: Can the Growth Center Designation Save the Traditional Village from Suburban Sprawl. https://heionline.org/HOL/Page?collection=journals&handle=hein.journals/vlr21&id=951&men_tab=srchresults
- (4) Seven Catalytic Placemaking Strategies: A Discussion about the Future of Vermont Downtowns. Social Life Project <https://www.sociallifeproject.org/rural-placemaking-vermont-downtowns/>

ECOREGIONS & HABITAT



Windham Ecoregions

- Upper Montane/Alpine Zone
- Worcester/Monadnock Plateau
- Green Mountains/Berkshire Highlands
- Vermont Piedmont
- Northern Connecticut Valley
- Connecticut Valley

<http://www.epa.gov/wed/pages/ecoregions.htm>

Plant Communities of the Windham Region

Ecoregion Descriptions

Green Mountains/ Berkshire Highlands



The northern portion of the West River goes through the Green Mountains/Berkshire Highlands. This ecoregion consists of low mountains, narrow valleys, and bedrock, boulder, and cobble bottom streams. The geology of this region contains quaternary thin and discontinuous sandy loamy till. Land use includes forestry, recreation, wildlife habitat, and sugar maple production. Some public lands such as the Green Mountain National Forest and other state landscapes reside in this region. Deciduous forests are most common in this region containing hardwood trees such as sugar maple, white ash, basswood, butternut, and sweet birch. Evergreen and mixed forests make up a smaller portion of the landscape with yellow birch-red spruce forests.

Vermont Piedmont

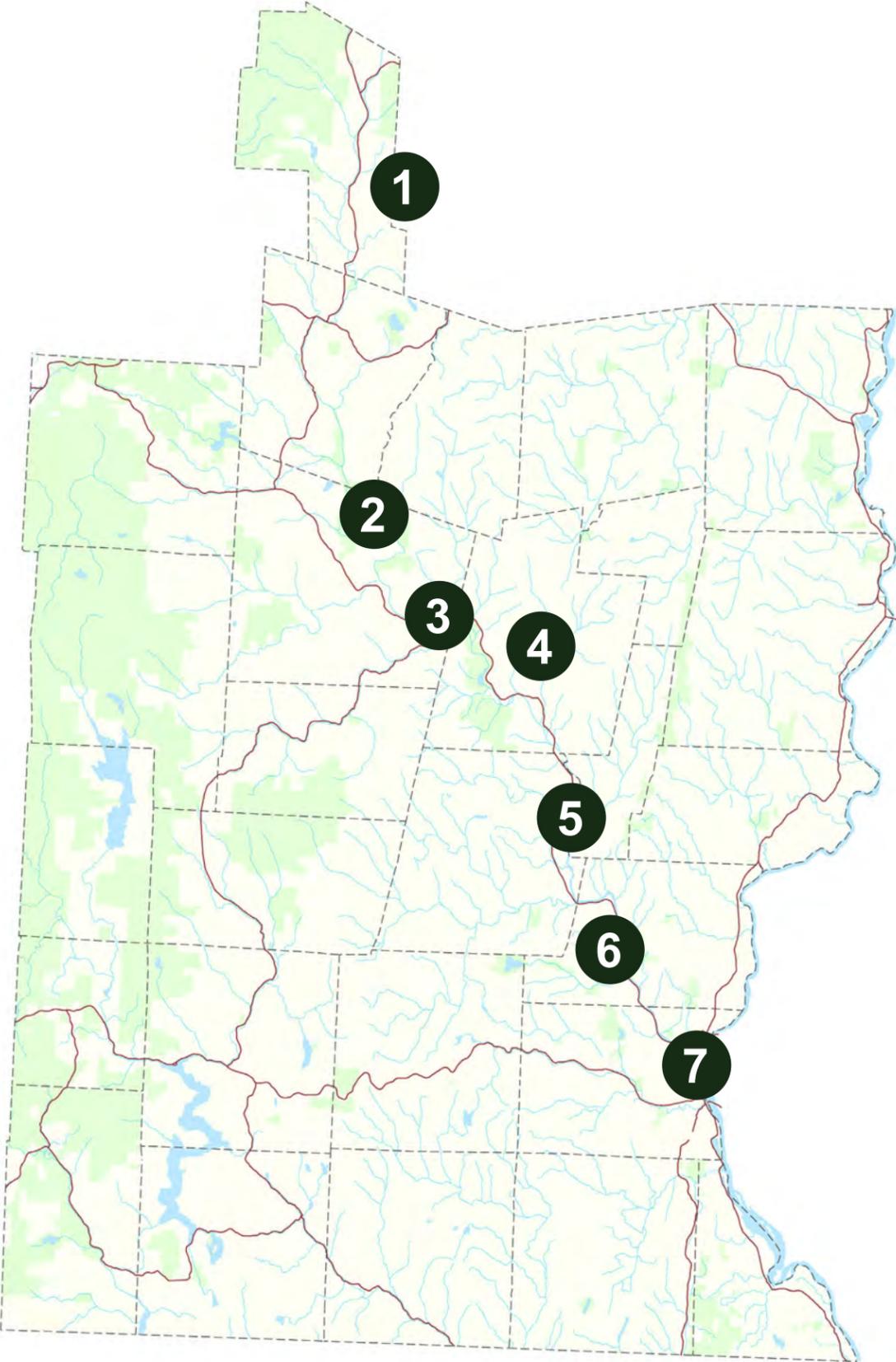


The central portion of the West River resides in Vermont Piedmont. This ecoregion is primarily hills and open low mountains, ponds, lakes, and reservoirs along with high gradient streams. The geology of this region consists of quaternary sandy loamy till, some kame delta gravel, sand, and silt in river valleys. Land in this region is used for forestry, rural residential, tourism, recreation, some livestock grazing and dairy farming, maple syrup production, minor cropland, corn, vegetables, and apple orchards. The forests consist of deciduous and mixed forests, with Northern hardwoods of beech, yellow birch, and sugar maple, along with red maple, white ash, and basswood.

Connecticut Valley



The southern portion of the West River begins in the Connecticut Valley. This ecoregion is level with rolling plains with some high hills and ridges. There are some small ponds, lakes, and reservoirs as water features in this region. The geology consists of quaternary deposits mostly associated with glacial lakes Hitchcock and Middletown: lake silt and clay; kame delta gravel, sand, and silt; lake delta sand and gravel; dune sand. Land uses include urban, suburban, and rural residential, deciduous forest, pasture and cropland with hay, corn for silage, nursery and greenhouse products, dairy, livestock grazing, some poultry, vegetables, sweet corn, potatoes, and tobacco, some woody wetlands. The forests consist of central and transitional hardwood forests. Mixed oak and oak-conifer forests including northern red oak-black oak-chestnut oak forest, oak-hemlock-white pine forest, and red oak-sugar maple transition forest.



<http://www.epa.gov/wed/pages/ecoregions.htm>

Images: <https://bplant.org/region/776>

Images: <https://bplant.org/region/776>

Seven Select Plant Communities of the Windham Region

1 Spruce-fir tamarack swamp



Spruce-fir tamarack swamps are uncommon plant communities in Southern Vermont. Here, plants like *Gaultheria hispidula*, creeping snowberry, are found. Gale Meadows in Winhall and Londonderry contains this community.

2 Temperate acidic outcrop



Temperate acidic outcrops are rare plant communities found in Glebe Mountain where the unusual geology allows these plants to thrive. A key species in this group includes poverty oat grass, *Danthonia spicata*.

3 River cobble shore



River cobble shores are sparsely vegetated riparian plant communities. Dwarf sand plum, *Prunus pumila* var. *depressa*, and tufted hair grass, *Deschampsia caespitosa*, are indicators of this community.

4 Northern hardwood forest



The northern hardwood forest is one of the most common plant communities in Vermont. Dominant species include sugar maple, *Acer saccharum*; yellow birch, *Betula aleghaniensis*; and American beech, *Fagus grandifolia*.

5 Mesic forests



Mesic maple-ash-hickory-oak forests are common communities found along our river corridor. Below a diverse deciduous canopy of sugar maple, ash, hickory, and oak, wildflowers like the round-lobed hepatica, *Hepatica americana*, bloom in spring.

6 Pitch pine rocky summit



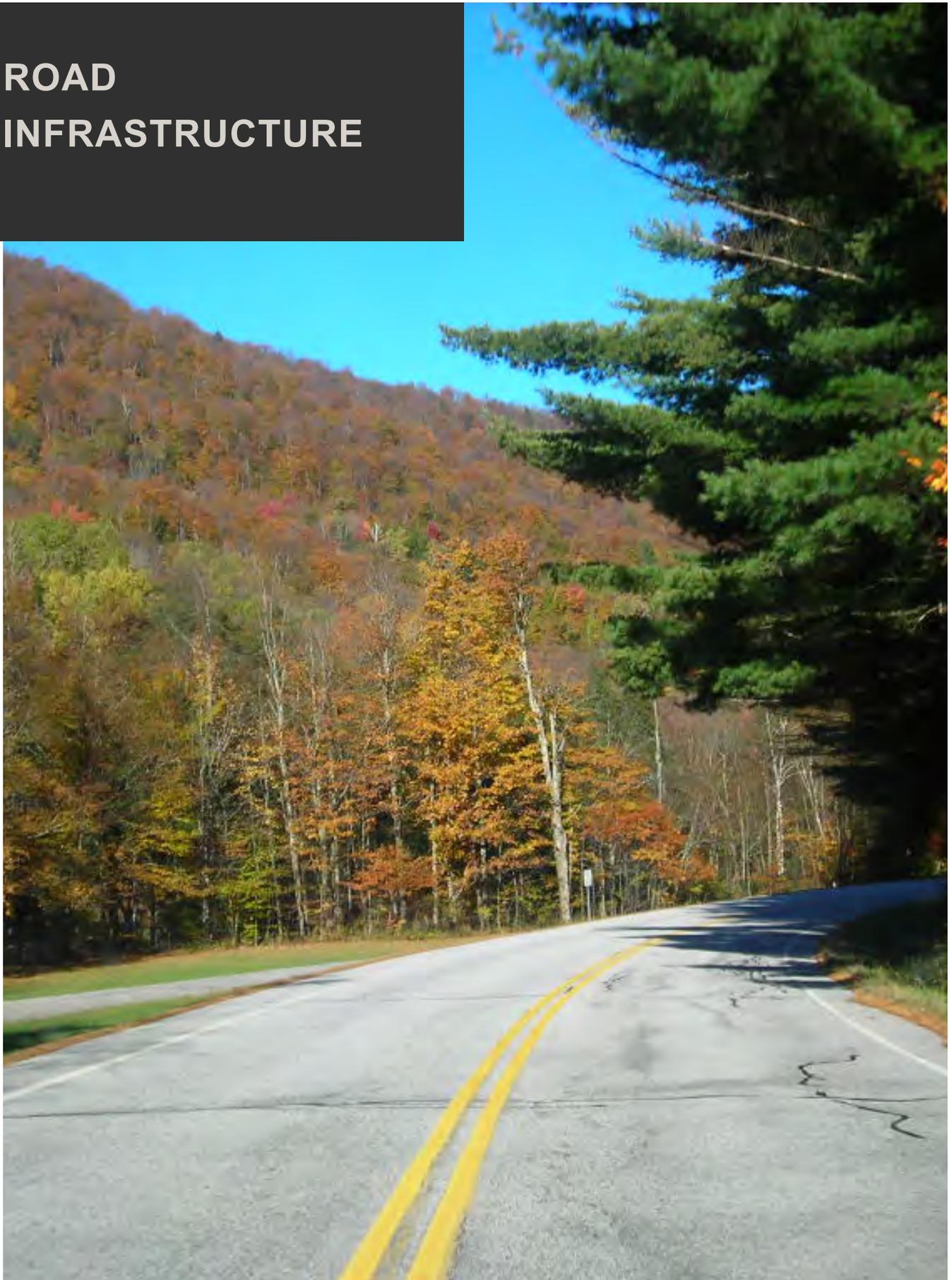
Pitch pine-oak-heath rocky summit is a rare community of plants for the state of Vermont. This community can be found in Black Mountain in Dummerston. This is a fire-adapted community with pitch pine, *Pinus rigida*; scrub oak, *Quercus ilicifolia*; and an ericaceous understory.

7 Ice meadow



Ice meadows along the West River are unique habitats shaped by the yearly disturbance from the scraping and accumulation of ice sheets during spring melt. Threatened plants like the Garger's sedge, *Carex garberi*, call this landscape home.

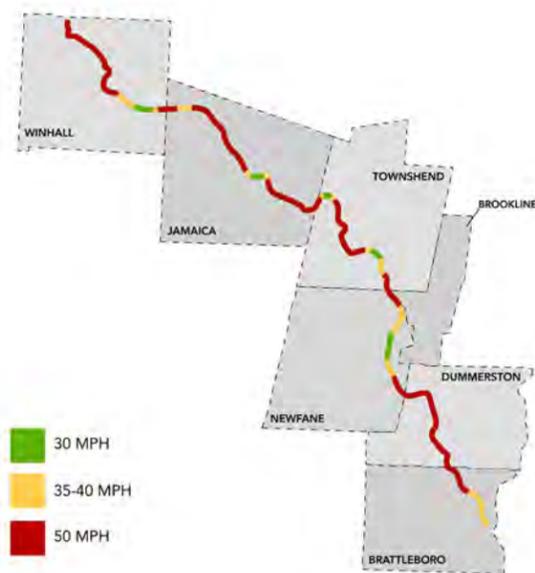
ROAD INFRASTRUCTURE



Road Safety

This section focuses on road infrastructure along Route 30 in Vermont, starting in Brattleboro up through Winhall. The maps below are a result of analysis of various safety aspects along the road. Speed limits are important and can contribute to car accidents as well as amount of road kill. Sidewalks and bike lanes are another part of Route 30 that is important to examine. There is certainly a lack of sidewalks along Route 30, which makes it highly unsafe for any pedestrians to walk this way. In the map about bicycle level of comfort, adult bikers are mostly comfortable until Townshend. From Townshend, people feel comfortable only if they are experienced and confident bikers. This is also the area where speed limits are higher, so it makes sense fewer bikers are comfortable.

VT ROUTE 30: SPEED LIMITS



VT ROUTE 30: BICYCLE LEVEL OF COMFORT SCORES



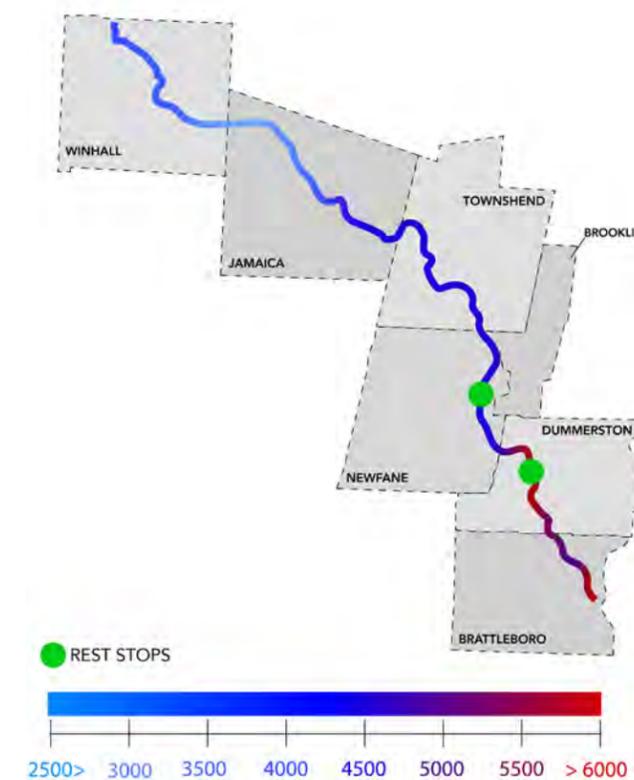
MAP DATA SOURCE: <https://geodata.vermont.gov/datasets/0f63075274d947adbb92fe56938417f3/explore?location=42.945847%2C-72.576176%2C11.00>
<https://vtrans.maps.arcgis.com/apps/MapSeries/index.html?appid=a0667542f66f45b98875ec655cf58b41>

Daily Traffic and Car Crash Mapping Analysis

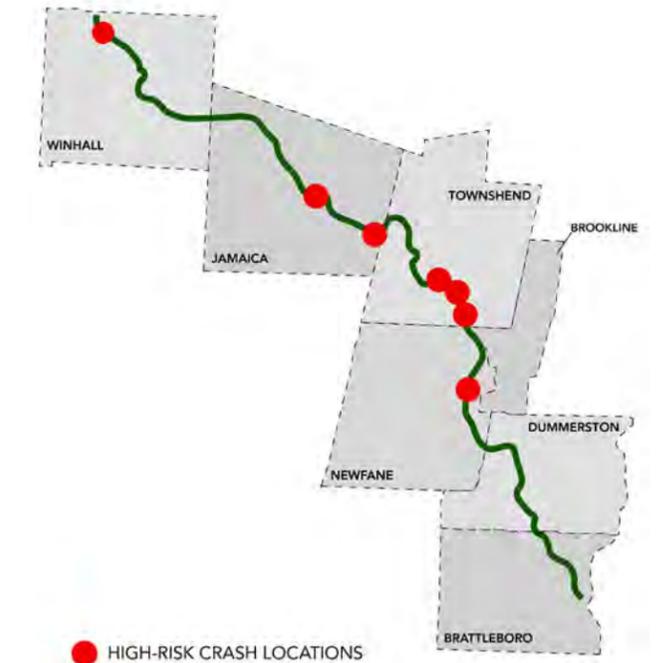
These two maps show the average daily traffic patterns in the year 2022 as well as the two rest stops along Route 30. It is clear that there is more daily traffic near Brattleboro until Dummerston and then continuing north there is not nearly as much traffic. The second map on the right is analyzing car crashes along Route 30 and the red dots symbolize where high risk crashes have been. There is room for improvement along Route 30

and traffic calming strategies might reduce vehicle crashes and improve bicyclist and pedestrian safety. The rest stop in Newfane correlates to one of the spots for high risk crashes, which could be significant. Also, most of the high risk crash locations are located in areas where there is less traffic on Route 30.

VT ROUTE 30: 2022 AVERAGE DAILY TRAFFIC

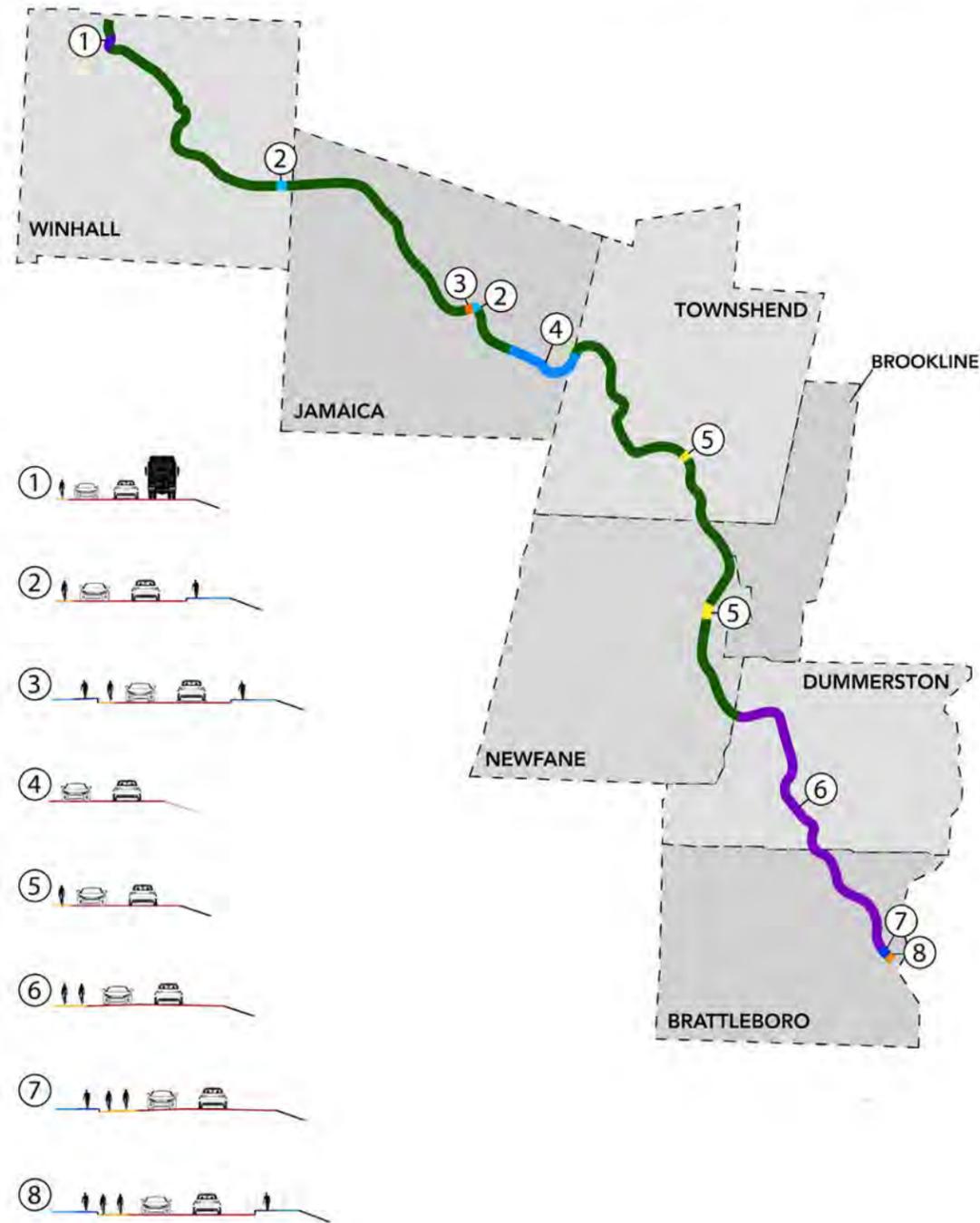


VT ROUTE 30: CAR CRASHES



MAP DATA SOURCE: https://geodata.vermont.gov/datasets/952ad0e1d9284bcebc6b28c0f7ea42a8_74/explore?location=42.896593%2C-72.916156%2C9.79
https://vtrans.vermont.gov/sites/aot/files/planning/documents/corridor/20210111_WRCTAC_VT30.pdf

VT Route 30: Sidewalks and Bike Lanes

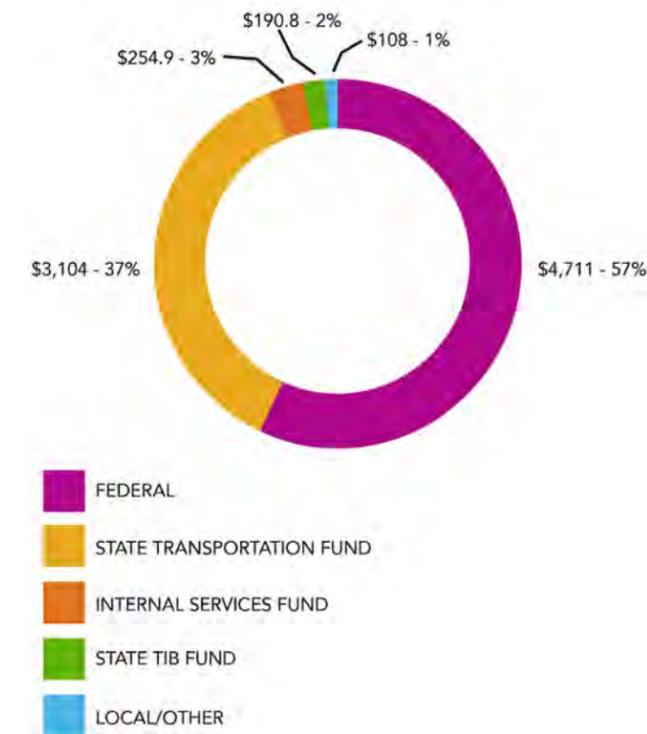


Road Funding and Financial Planning

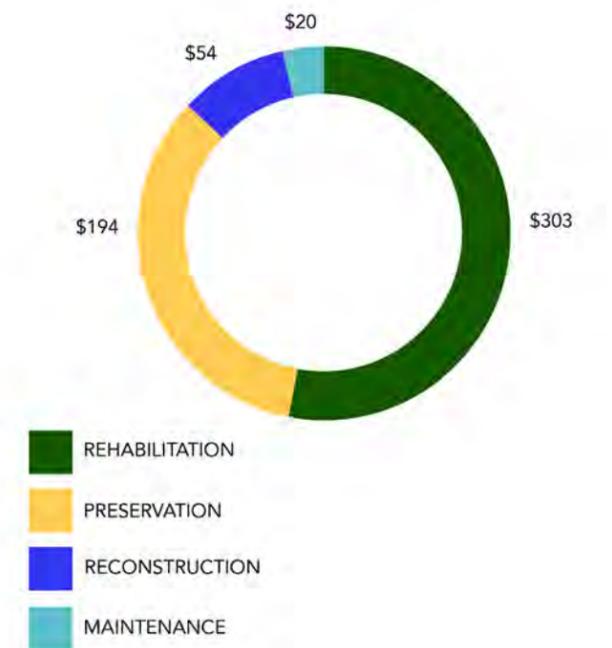
The information below comes from the Transportation Asset Management Plan from 2022 for Vermont. It aims to deliver the highest returns by cost-effectively preserving and improving transportation assets. These graphics show projected revenues and projected amount of investments for each category of road funding. The VTrans Office of Financial Management has projected total revenues for a 10 year period

between 2023 and 2032. The total is approximately \$8.4 billion from state and federal sources. Federal funds are expected to be the dominant source. In the bar graph, the investments for 2023 are highest in general and highest for rehabilitation costs. There is no year in the graph that allocates money towards new construction, which is important to note. Preservation and rehabilitation projects have been prioritized by VTrans.

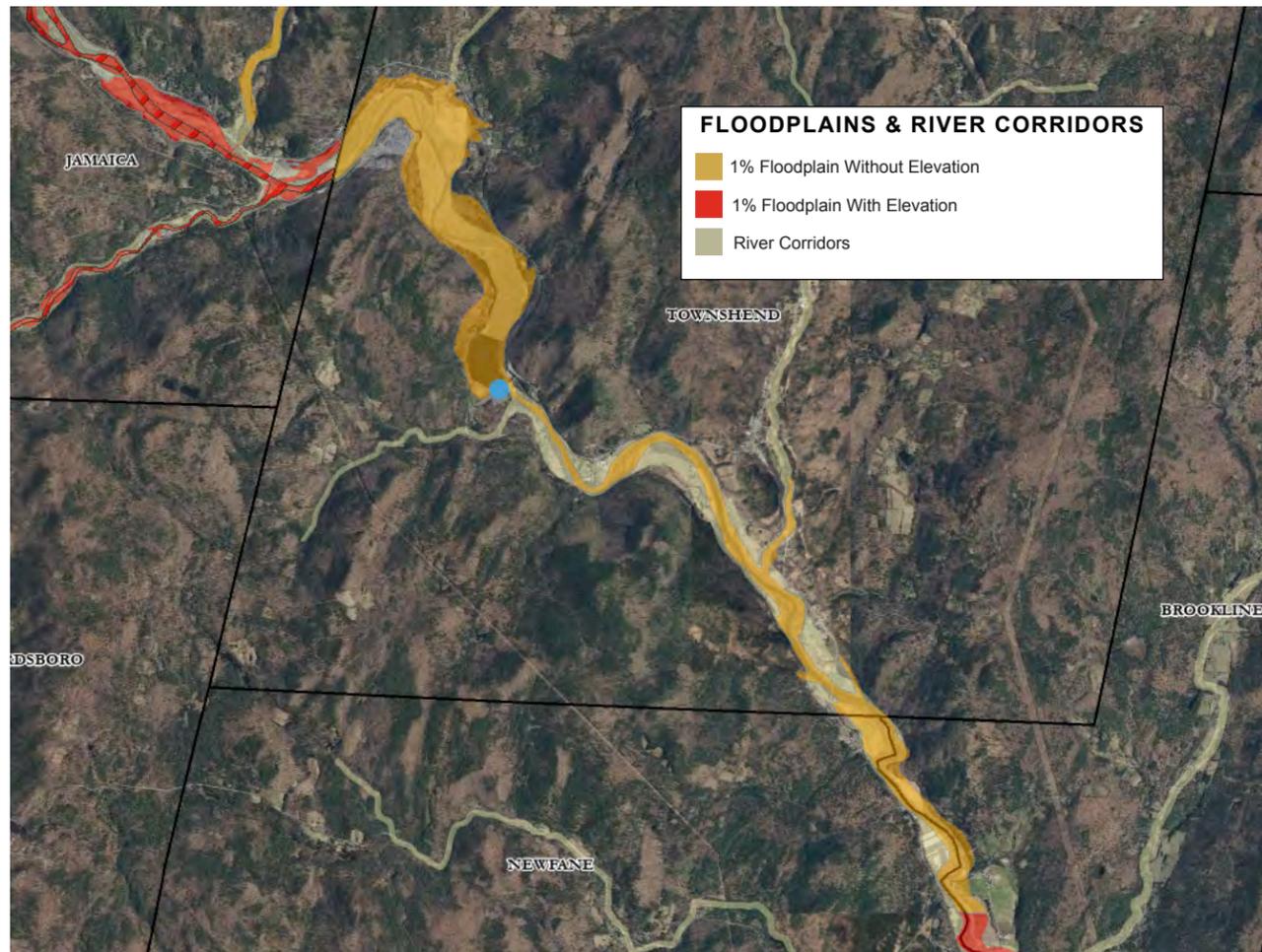
VT ROUTE 30: PROJECTED TOTAL REVENUES FOR 10-YR TAMP PERIOD (FY 2023-2032) - MILLIONS



PROJECTED INVESTMENTS USING BASELINE SCENARIO 2023-2032 - MILLIONS



STORMWATER & INFRASTRUCTURE



[Floodplain & River Corridor Map From Vermont's Flood Ready Atlas](#)

Flooding & Erosion In River Corridors

The Windham Region of Southern Vermont has had issues with floodwater and erosion since Hurricane Irene in 2011. Washed out buildings, roads, and other infrastructure has cost the community millions and continues to be a major issue. As older traditional stormwater infrastructure struggles to keep up with rising water levels from more frequent and stronger storms, new solutions must be developed and implemented to protect life and property.

As communities and the state plan for dealing with these issues in the future, an important tool they utilize is river corridor mapping. These river corridors follow the natural flow of water along rivers and tributaries, highlighting land that is vulnerable to flooding and erosion beyond the footprint of the river channels. They cover the areas that the stream or river needs to maintain physical equilibrium.



[Damage to a failed culvert for the North Branch Ball Mountain Brook on Pike Falls Road](#)
Kristopher Radder

Seen in this map, the identified corridors expand beyond the identified floodplains in areas, giving a better idea of what areas lie in erosion prone locations. The two can overlap 60-90%, but don't always represent the same issues. River corridor data is used to direct new structures to safer locations away from the physical space that the rivers need to express energy and expand. Within a river corridor, existing infrastructure and improved property is at heightened risk from erosion. In Vermont most flood related damage occurs outside the flood hazard areas and much of the damage is due to the erosive power of water causing damage to critical public infrastructure.



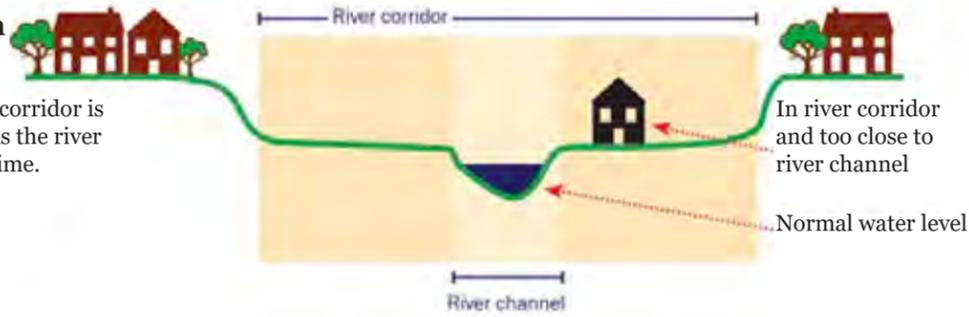
This map from [Vermont's Flood Ready Atlas](#) shows the river corridor along RT 30 that highlights the expanded area the West River will need to find its most stable path. Rivers that have been straightened or re directed lose their natural stability and put surrounding homes and infrastructure at risk for flooding. Erosion in these corridors has had a devastating effect on the local community as homes have been lost to eroded banks as well as roads and bridges collapsed and washed out. Most attention after flooding events is directed to flood inundation and areas that see high water levels, but over time erosion is often more damaging and impactful than flood inundation.

River Corridor Erosion

The diagram below from [The Vermont Agency of Natural Resources](#) illustrates the danger of development inside river corridors and the long term effects that come from channeling rivers and building physical barriers along them.

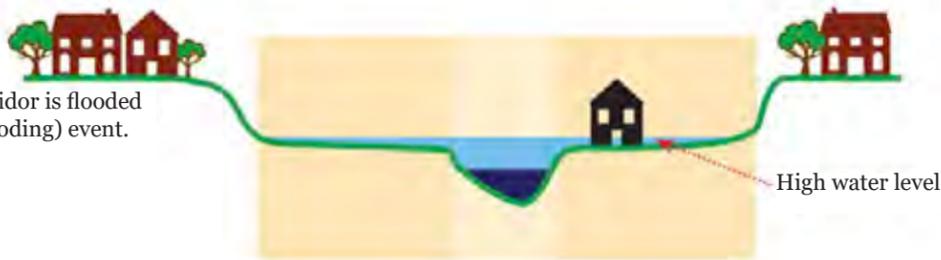
1. Development in River Corridor

Structure built in river corridor is vulnerable to damage as the river channel changes over time.



2. Flooding Event

Structure in river corridor is flooded during high water (flooding) event.



3. Attempt to Protect Property After Flooding

In an attempt to prevent property damage, physical barriers are erected. As a result, the river is confined and flows faster, scouring and deepening the channel and eroding the banks downstream.

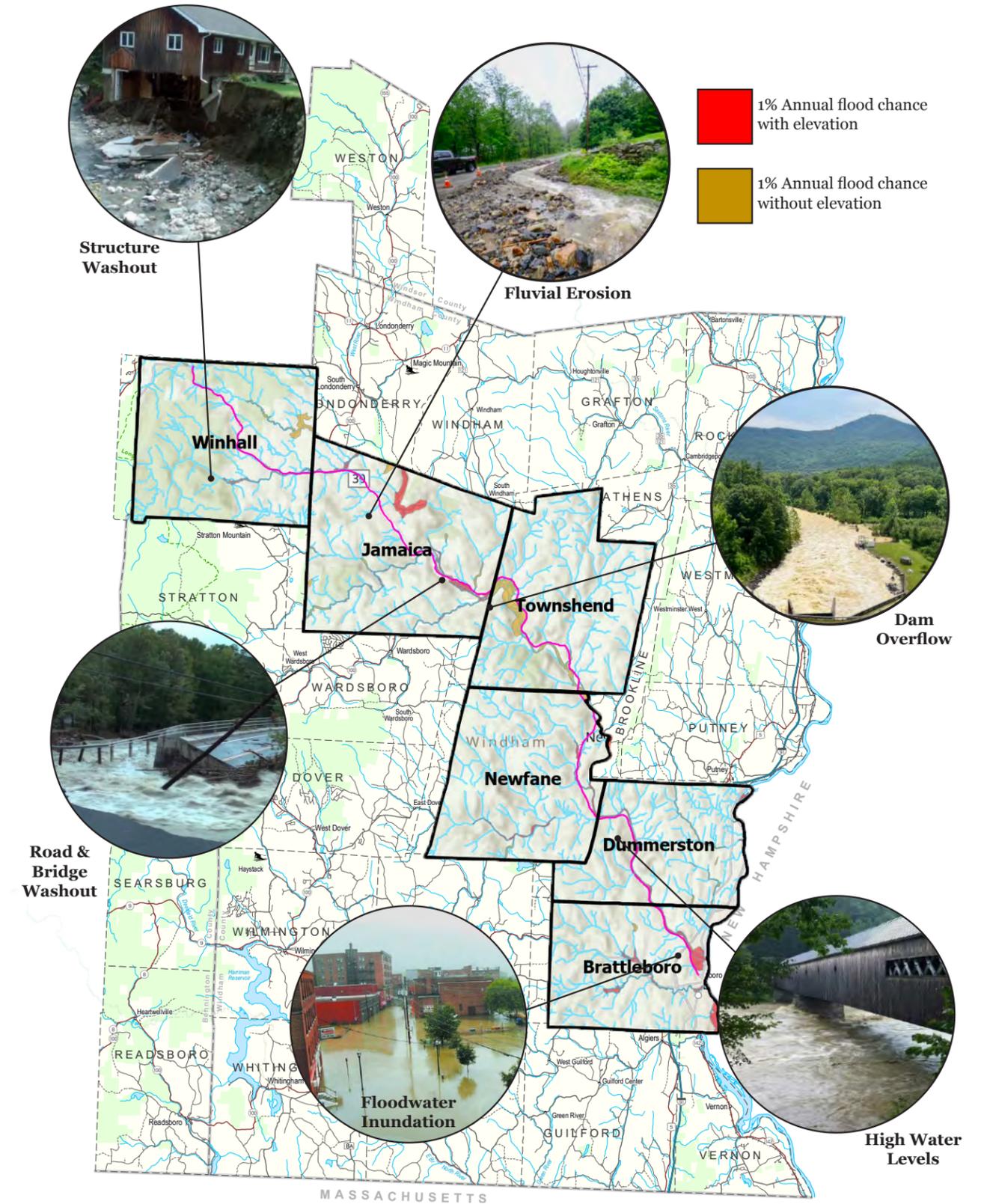


4. Unintended Damage

The deeper channel and faster water flow caused by encroachment eventually leads the bank to collapse during a high water event. Structures in the river corridor are lost or damaged.



Flooding & Erosion In Windham



Map highlighting various flooding types and issues along RT 30 & the West River in Windham County

Townshend Lake Dam Flooding



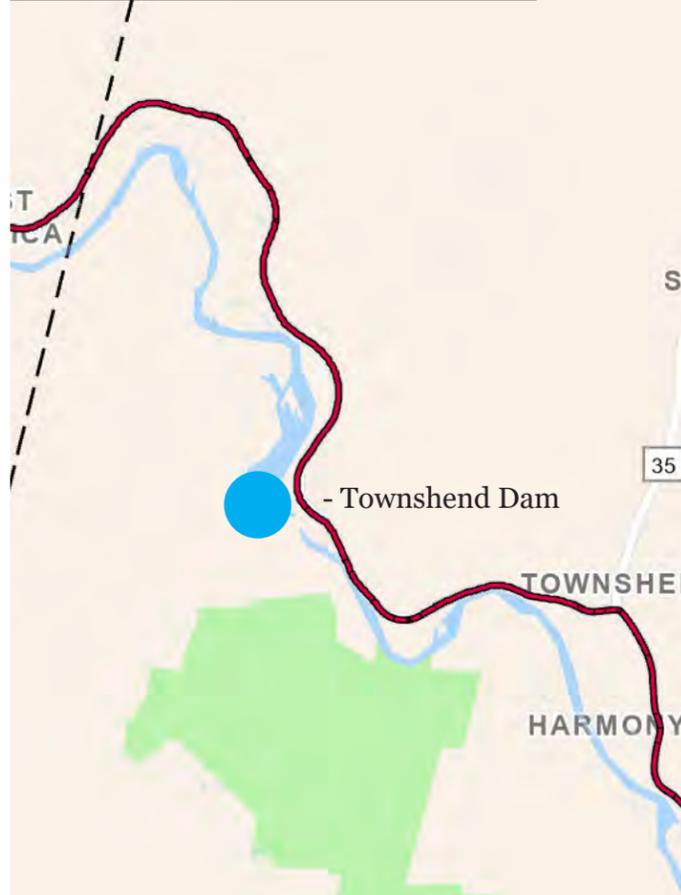
Before sediment damage and flooding



Current day after flooding and sediment damage



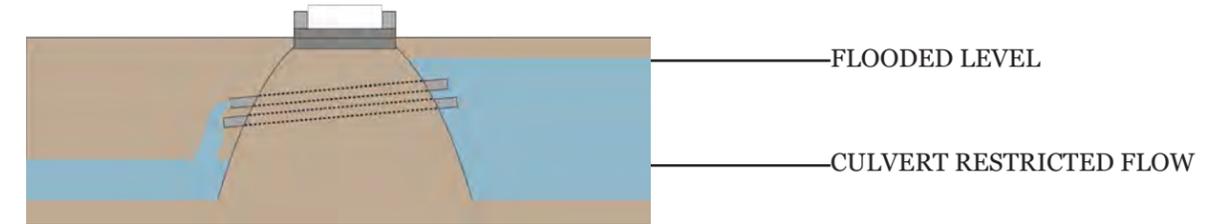
Dam releasing fast moving dirty flood and Sediment water



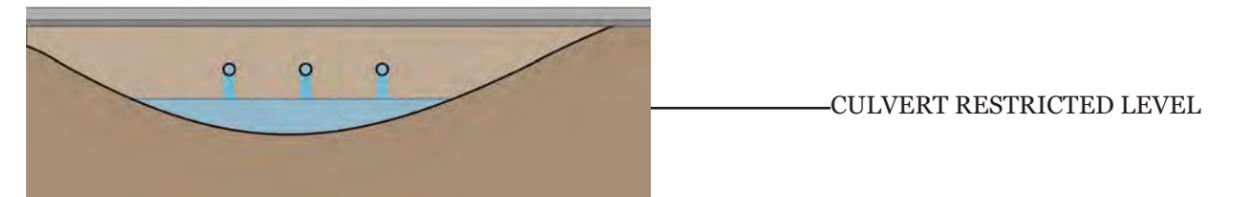
River Culverts & Water Levels

By allowing the water to flow through the full width of the stream bank towns can keep water from tributaries from flooding into respective floodplains. The use of culverts prevent large amounts of water from flowing down-stream and therefore lead to damages to the existing surrounding infrastructure.

ROAD WITH CULVERTS WATER FLOW



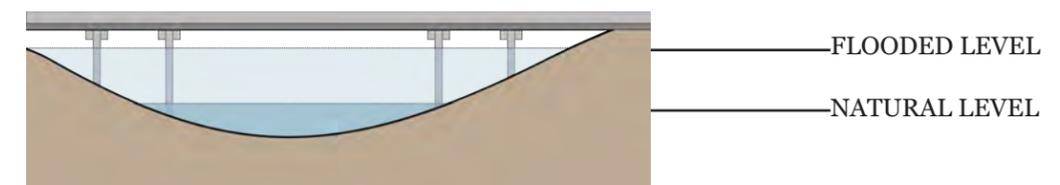
ROAD WITH CULVERTS RIVER BANK



BRIDGE WATER FLOW



BRIDGE WITH FULL BANK WIDTH



RIVER BANK EROSION: BEFORE & AFTER FLOODING EVENT

Vermont Rt 100, Jamaica, VT

June 2023

Pre Flooding Event

River bank with steep slope

Homes built inside natural river corridor



River bank covered in invasive knotweed making soil more erosive

Little to no established buffer between road and inside river bend

Homes and the road within this river corridor lie prone to damage from fluvial erosion during a storm event. The river bank steep on the outside edge and over taken by invasive plants on the inside edge offers no protection or buffer to the surrounding infrastructure.

Vermont Rt 100, Jamaica, VT

August 2023

Post Flooding Event

River bank landslide

Home foundation washout



Severe river bank erosion

Road undermining and washout

After major flooding from rain storms during the summer of 2023, existing homes and Rt 100 were damaged from fast moving water that eroded the river bank. The inside bend of the river experienced more erosion as the water reclaimed the river corridor and found its natural equilibrium leaving the homes and road more susceptible to washout from future flooding.

Connecticut River Watershed & Runoff

Windham County is part of the larger Connecticut River Watershed. Water and other runoff from rivers and tributaries flow into the larger watershed and continue on downstream to Massachusetts and Connecticut. Dams along the watershed, including those in Windham County along the west river are put in place to protect communities downstream from severe flooding events.

Although some dams contribute locally to preventing flooding, the majority of the dams in Vermont are meant more to protect communities further down the Connecticut River Watershed in Massachusetts and Connecticut. Although these dams are important for protecting areas downstream, they can actually make flooding worse locally.

The US Army Corps of Engineers warned they had to release water from the two dams causing severe local flooding as unprecedented water levels were seen at both dams.

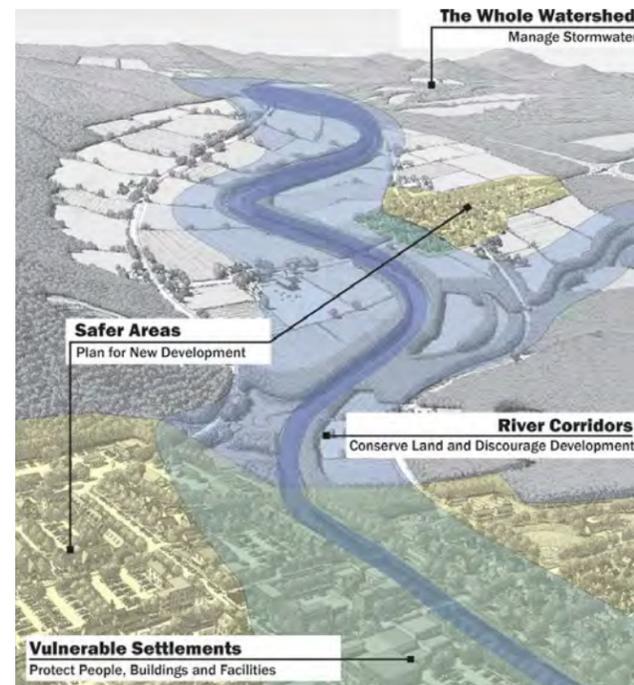
As the watershed has become more developed, the effects of stormwater runoff are being increasingly seen in local communities. Areas like Stratton Mountain experience significant runoff from ski mountains and increased impervious surfaces, that flow downstream making flooding worse in lower-elevation areas. It is important to implement preventative measures and green infrastructure solutions in new developments to prevent runoff.

The diagram below shows how we can plan to manage stormwater through the view of a whole watershed. An emphasis is placed on locating development away from river corridors and dangerous flood areas.



[Ball Mountain Dam In Jamaica](#)

Ball Mountain Dam in Jamaica pictured above along with the Townshend Dam recently neared capacity after heavy rain storms dumped two months' worth of rain in two days back in July.

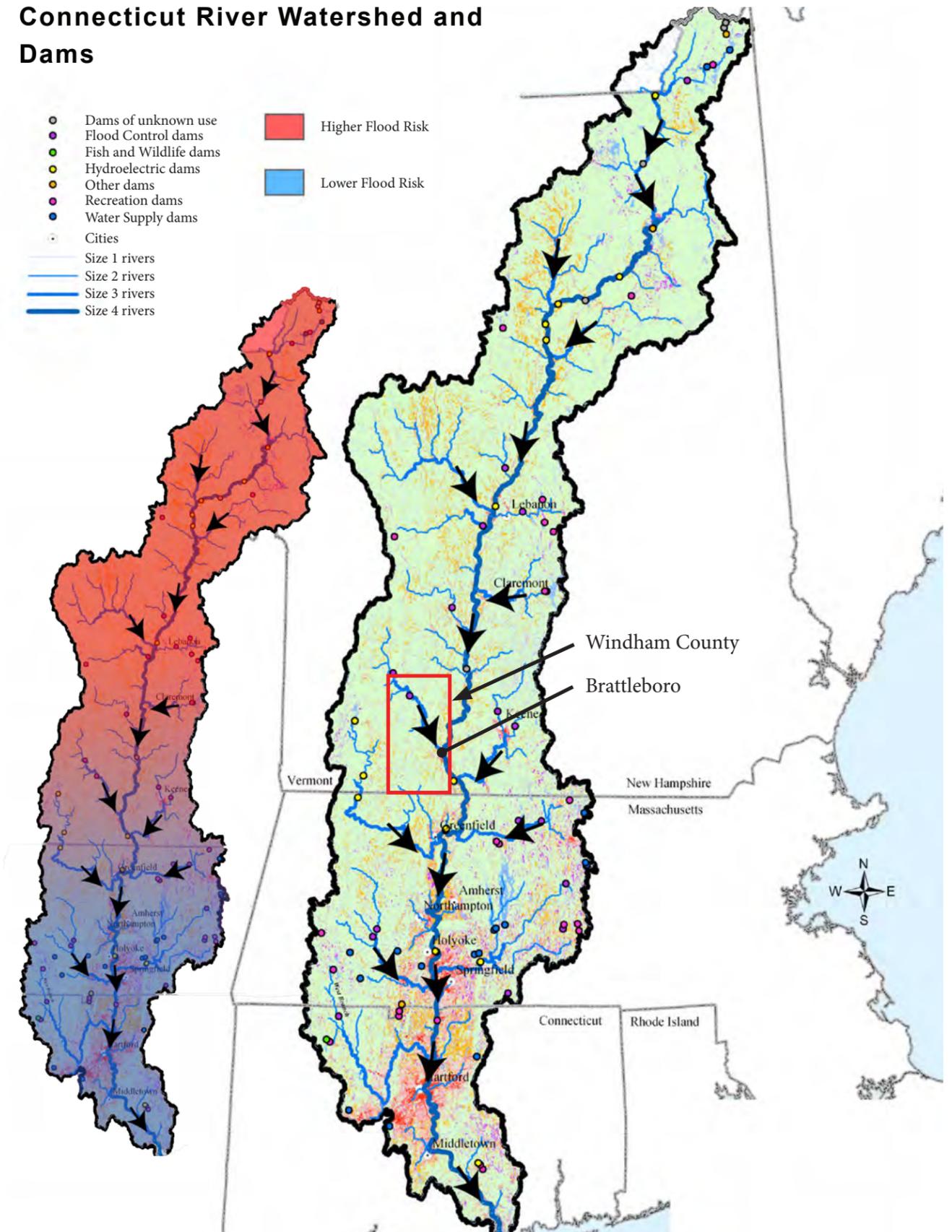


[Vermont Agency of Commerce and Community Development](#)

Connecticut River Watershed and Dams

- Dams of unknown use
- Flood Control dams
- Fish and Wildlife dams
- Hydroelectric dams
- Other dams
- Recreation dams
- Water Supply dams
- Cities
- Size 1 rivers
- Size 2 rivers
- Size 3 rivers
- Size 4 rivers

- Higher Flood Risk
- Lower Flood Risk



[Connecticut River Watershed](#)

Stormwater Infrastructure

Mitigating flooding events and stormwater runoff through traditional methods is hard to accomplish in a state like Vermont. Due to the difficult terrain and vast amounts of snow melt, the implementation of traditional preventative measures aren't as effective as those seen in typical urban and rural settings. The fact that most of the towns along the route 30 corridor are located in active floodplains is the most challenging hurdle in mitigating damages through the use of traditional storm water infrastructure.

The most effective solution to mitigating damages from stormwater and floods comes at a regional level of planning. Creating a strict hazard mitigation plan that can be adopted within all the small towns could help to prevent any new developments within flood-able areas. At a town and regional level, river corridor bylaws would aid in preventing any renovations and new construction within vulnerable areas. For example, after Hurricane Irene, businesses and homes rushed to build berms and levees to protect the properties from future floods. These mitigation measures had unintended consequences for communities down stream by speeding the flow of floodwater, while preventing river access to existing floodplains. River corridor bylaws could help to prevent consequential developments that have the potential to cause further damages.

Although traditional stormwater infrastructure might not be as effective as larger scale planning and stormwater interventions, there are many instances within these small towns, where traditional methods are not only effective, but preferable.

Installing appropriately sized culverts, that stretch the entire width of a river's banks, is one of the best investments a community can make to prevent small scale flood damages along roads. If a culvert isn't sufficiently wide, it can act as a dam during heavy flood events, holding back water and debris. Rip rap application is another popular method used to prevent erosion along the outer bend of rivers. The rocky material stabilizes slopes and slows down the flow of water. The following photos show examples of a correctly sized culvert, as well as rip rap protected slopes, located on the Muddy brook, on the line of South Burlington. Both were constructed after Hurricane Irene to protect adjacent road infrastructure from future damages.



[Stream width culvert, VT](#)



[Rip rap protected slopes under bridge, Muddy Brook, VT](#)

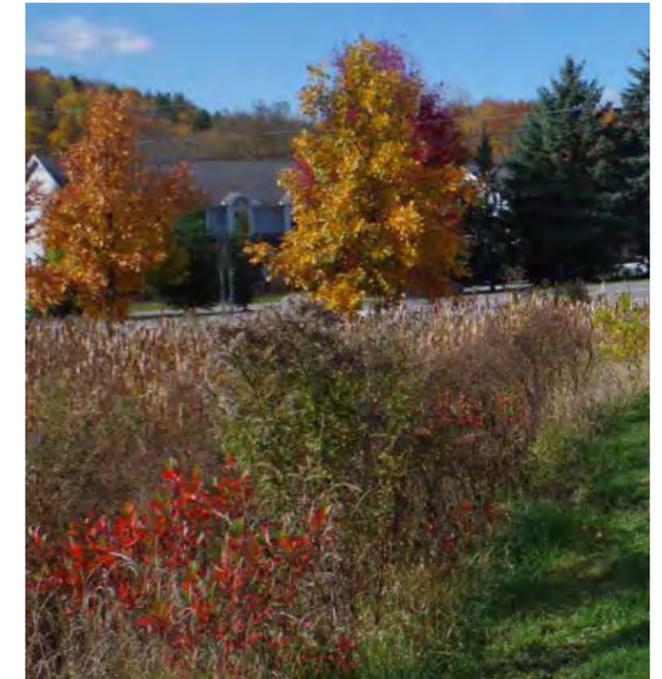
Other traditional methods of flood and stormwater infrastructure include home elevation, retaining walls, check dams, levees, and cisterns. Besides the traditional 'Grey' stormwater infrastructure, green stormwater infrastructure offers nature-based solutions to flooding events that provide both beauty and ecosystem services. Large scale methods can be used along the West River and its tributaries, where smaller scale solutions are necessary in denser areas.

Expanding vegetated buffer strips along the banks of rivers is a popular, large scale erosion control method utilized throughout Vermont. These 50 - 100 foot riparian buffers are composed of deep rooted native plants that can stabilize slopes and slow down runoff. It's important invasive species are managed within these projects to prevent shallow rooted vegetation from dominating. An example of a newly planted riparian buffer can be seen below, installed by the US Fish & Wildlife Service.

Smaller scale solutions are used in areas of higher populations and impervious surfaces. For example, rain gardens and bioswales are used to manage stormwater from impervious surfaces like parking lots and roads. These small scale

solutions intercept, hold, slow down, and treat stormwater as close to its source as possible.

Combining green stormwater infrastructure along with traditional infrastructure could help to mitigate damages associated with stormwater and flooding, and also connect community members with nature.

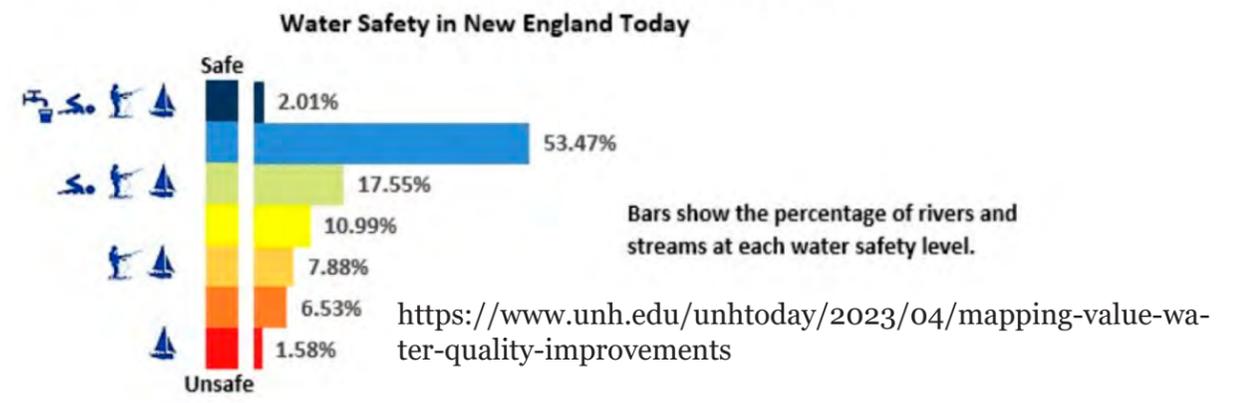
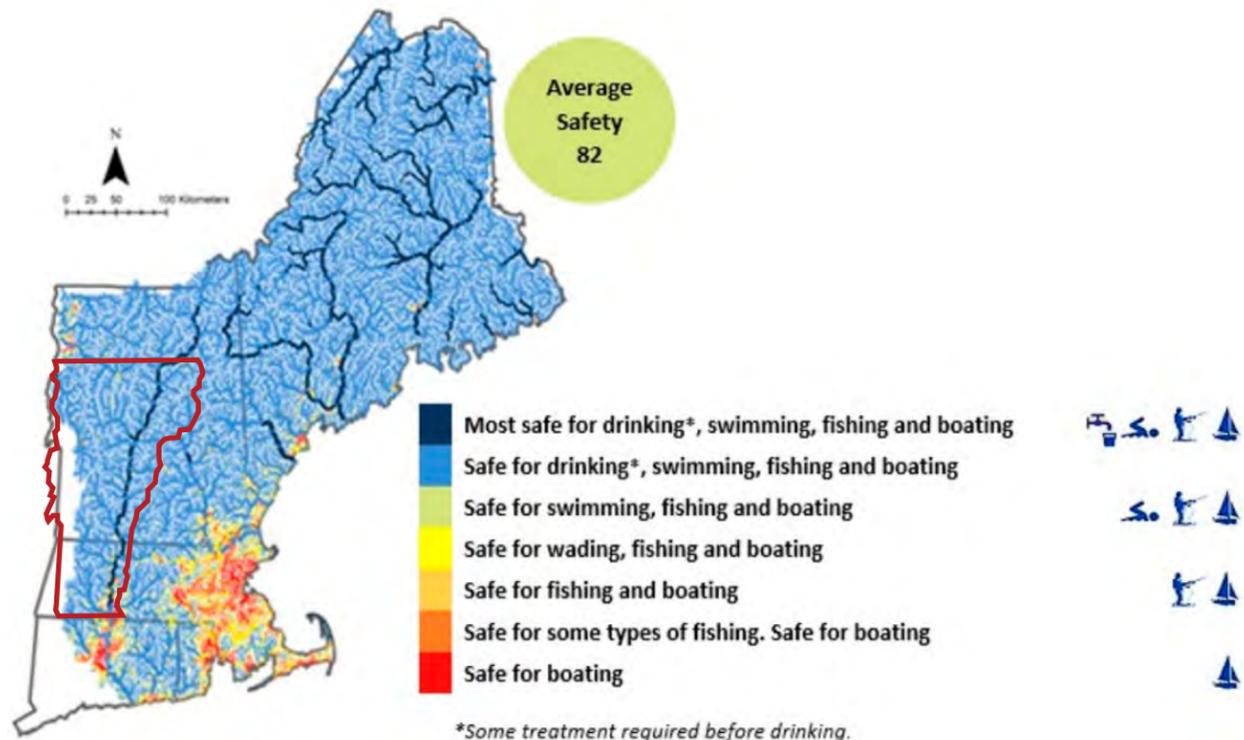


[Vegetated Swale, Hinesburg VT](#)



[Riparian Buffer Strip, VT - Photo by Katie Kain, US Fish & Wildlife Service](#)

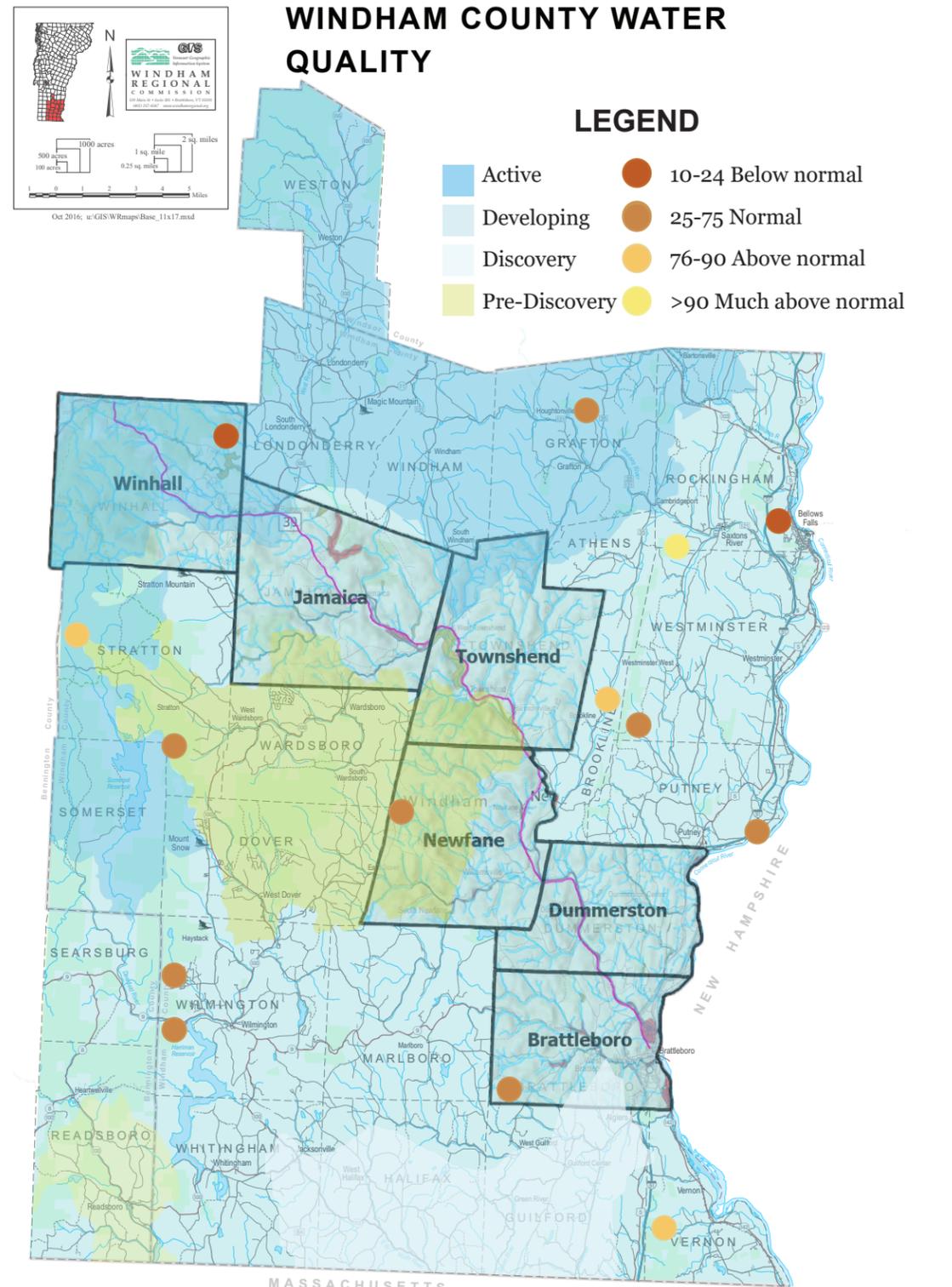
Water Quality



While water quality in Vermont is relatively superior than in many other urban areas in New England, water pollution limits use and enjoyment of approximately 15% of Vermont's lakes, and 20% of streams.

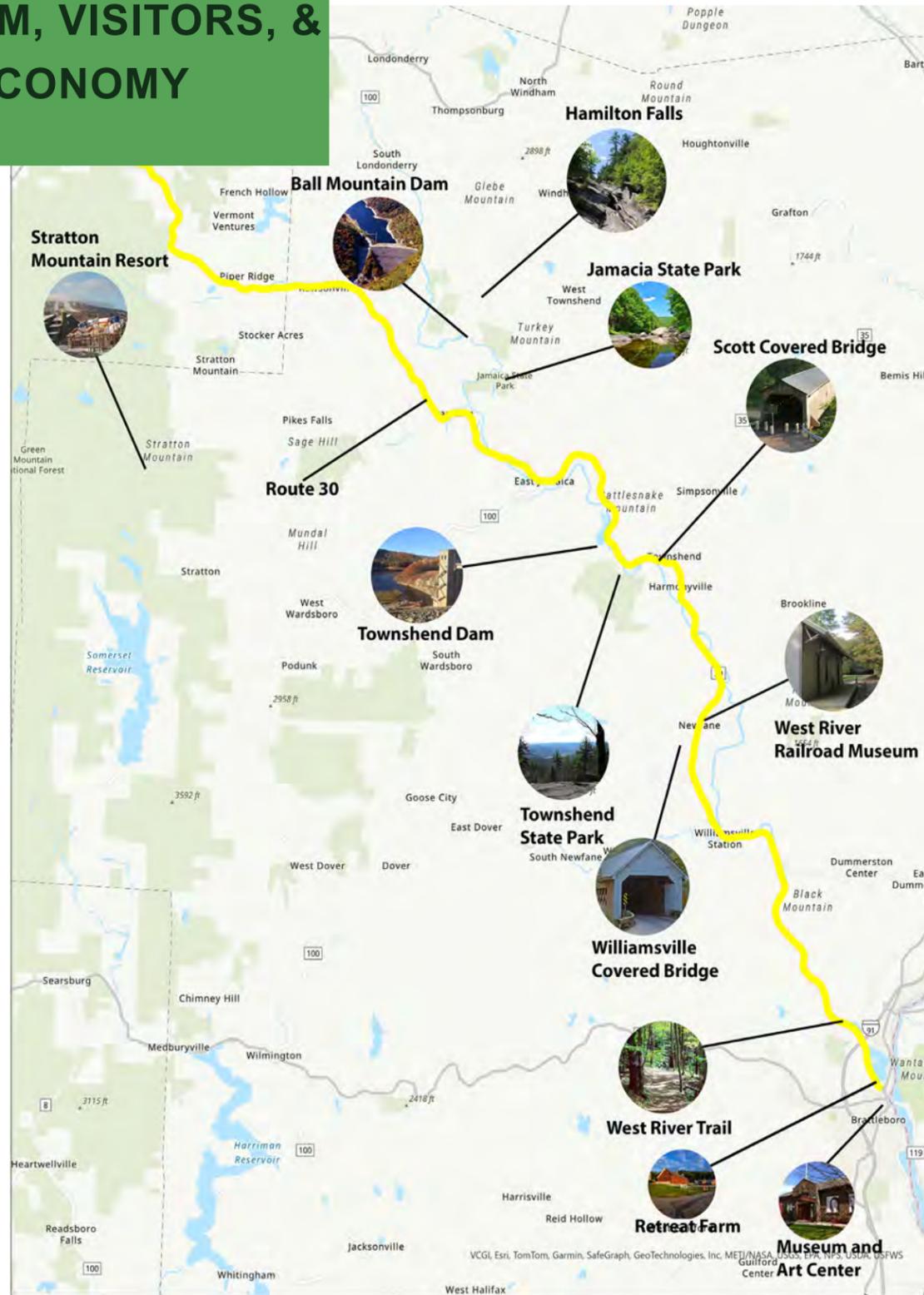
Primary source of water pollution: stormwater runoff from agricultural land, developed areas, forest harvesting operations, and stream bank erosion.

Secondary source of water pollution: wastewater treatment plants.



The overall water quality in Vermont is generally satisfactory expect a few areas. Notably, in Winhall, levels are observed to be 10-24 units below the standard norm, while in Newfane and Brattleboro, the water quality surpasses the norm by 25-75 units.

TOURISM, VISITORS, & ECONOMY



0 2.5 5 10 Miles



Selected

Brattleboro Museum and Art Center: A contemporary museum that is known for showcasing a wide range of different art pieces, and its committed to showing work from both emerging and established artists

Brattleboro Retreat Farm: Originally established in the 1800s as a mental health and addiction treatment center. Now it offers a wide variety of recreation, education, and agriculture. Visitors come from all over to explore and learn about the region's heritage through guided tours

West River Trail: A very popular recreational trail that stretches about thirty-six miles and offers opportunities for hiking, biking, and many scenic views. Its a very popular trail for local and ourists because it is a relatively flat terrain and has several access points and parking areas

West River Railroad Museum: Showcases many documents, photographs, and artifacts that are related to the history of the railroad. Also has guided tours and educational programs that help tourists and visitors engage with and learn about Vermont's railroad and transportation history

Scott Covered Bridge: Just one reminder of Vermont's covered bridge history this is one of the longest covered bridges in the state. It offers great scenic views of the West River and is open to pedestrian traffic

Hamilton Falls: A beautiful waterfall that is a very popular destination for local hikers and tourists. In the summertime it offers a swimming hole that attracts a lot of people and provides a great area for outdoor relaxation

Ball Mountain Dam: Stretches about 915 feet across the West River, the dam is managed by the U.S. Army Corps of Engineers. Blue Mountain Lake next to the dam offers multiple recreational opportunities

Jamacia State Park: A large recreational area that highlights the West River flowing through it. Several miles of hiking trails and areas for tents and RVs. Also features a beach along the river which is frequently used

Stratton Mountain Resort: One of Vermonts destinations for skiing, snowboarding, and outdoor activities. The resort also offers hotels, condos, and rental homes. This resort is one of the biggest tourist attractions in southern Vermont

Townshend State Park: A large recreational area that offers many hiking trails across Bald Mountain, and open area recreation opportunities. The park attracts locals and tourists and includes camping, fishing, and picnicking

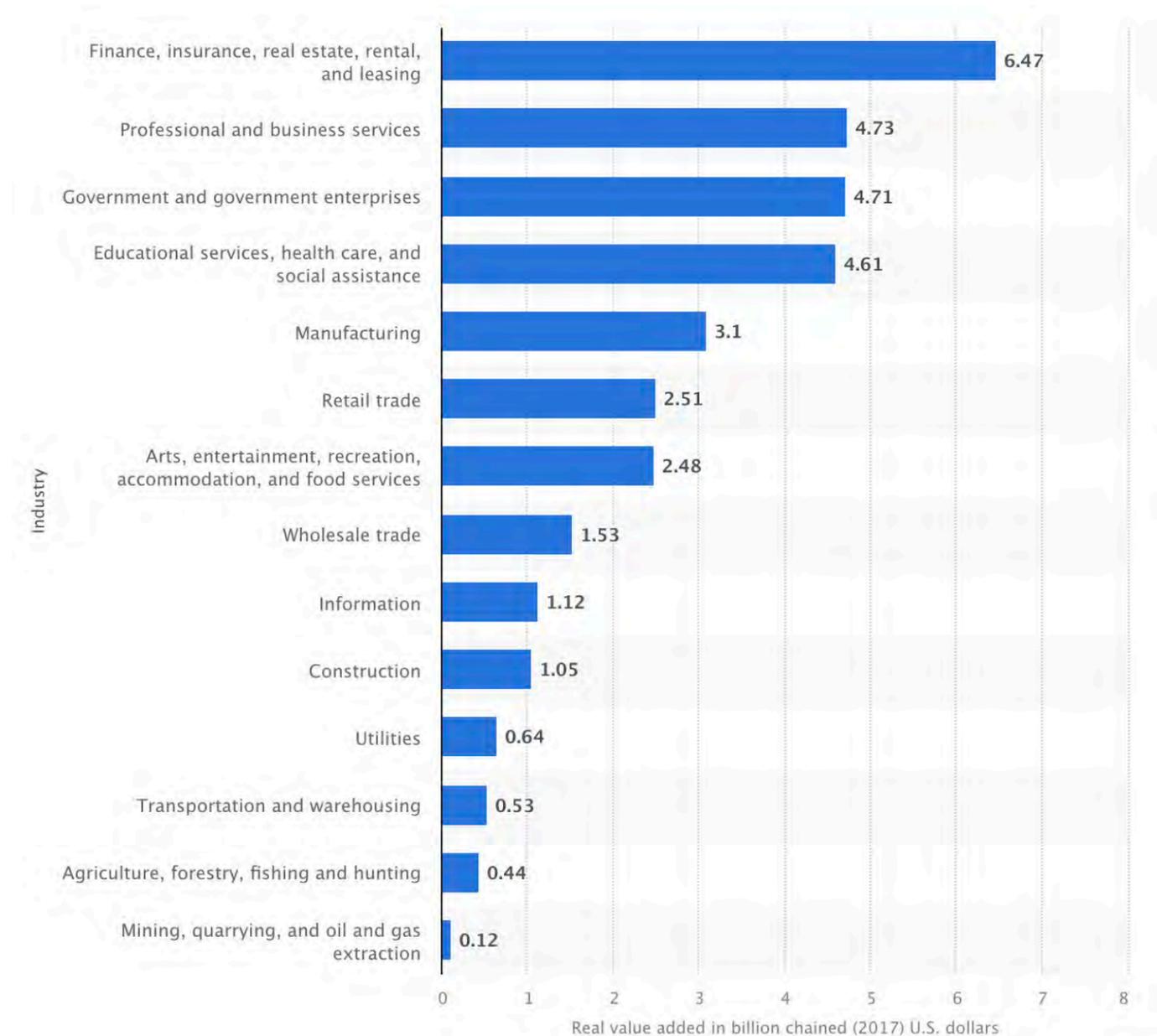
Williamsville Covered Bridge: Spans across the Rock River and is one of the oldest covered bridges in the state of Vermont. It is a notable tourist attraction due to its views and historic significance.

Tourism & Economy

- Southern Vermont is a very notable tourism destination
- The tourism industry in Vermont employs around 30,000 people, which is around 10% of the entire workforce
- On average about 13 million tourists that visit Vermont annually generates over \$3.2 billion which is the state's number two contributor to the economy
- Around 150 tourism and hospitality leaders gather at the State House every year for Tourism Day to engage and raise awareness about the contributions of each industry to Vermont's economy
- This chart shows the recent visitation trends in Vermont.

	2019	2020	2021	2022	2023
Camping and day-use visitation by Out-of-state Visitors at Vermont State Parks (Source: VT Department of Forests, Parks and Recreation)	373,648	260,382	389,693	385,578	323,845
Skier visits (for seasons ending in the year indicated) (Source: Vermont Ski Areas Association)	4,178,533	3,664,326	3,532,186	3,762,047	4,134,832
Annual Visitor Traffic at the Vermont Information Centers (Source: Vermont Department of Buildings and General Services)	3,269,856	856,067	1,718,601	2,294,465	2,449,824
Burlington International Airport Enplanements (Source: Burlington International Airport)	705,165	209,320	388,834	615,877	660,097
Crossings at the U.S.-Canadian Border into Vermont (Source: US Department of Transportation)	2,489,941	401,650	220,294	1,407,329	2,102,027

<https://accd.vermont.gov/tourism/research#visitation-trends>



- These are the industries that add value to the gross domestic product of Vermont. Tourism adds a significant cluster of revenue to the state due to the scenic beauty and the wide variety of outdoor recreational opportunities.
- The Southern Vermont Economic Development Zone includes Bennington County and Windham County, and with the power of collaboration it was established in 2015 by the Vermont Legislature.
- Some of the objectives and goals set are increasing population, expanding business infrastructure, improving physical infrastructure, improving social infrastructure, and developing their economic development capacity.
- Healthcare is very important to the local economy and is also the largest industry by number of jobs and is projected to keep growing.

<https://www.statista.com/statistics/1065238/vermont-real-gdp-by-industry/>

OUTDOOR RECREATION

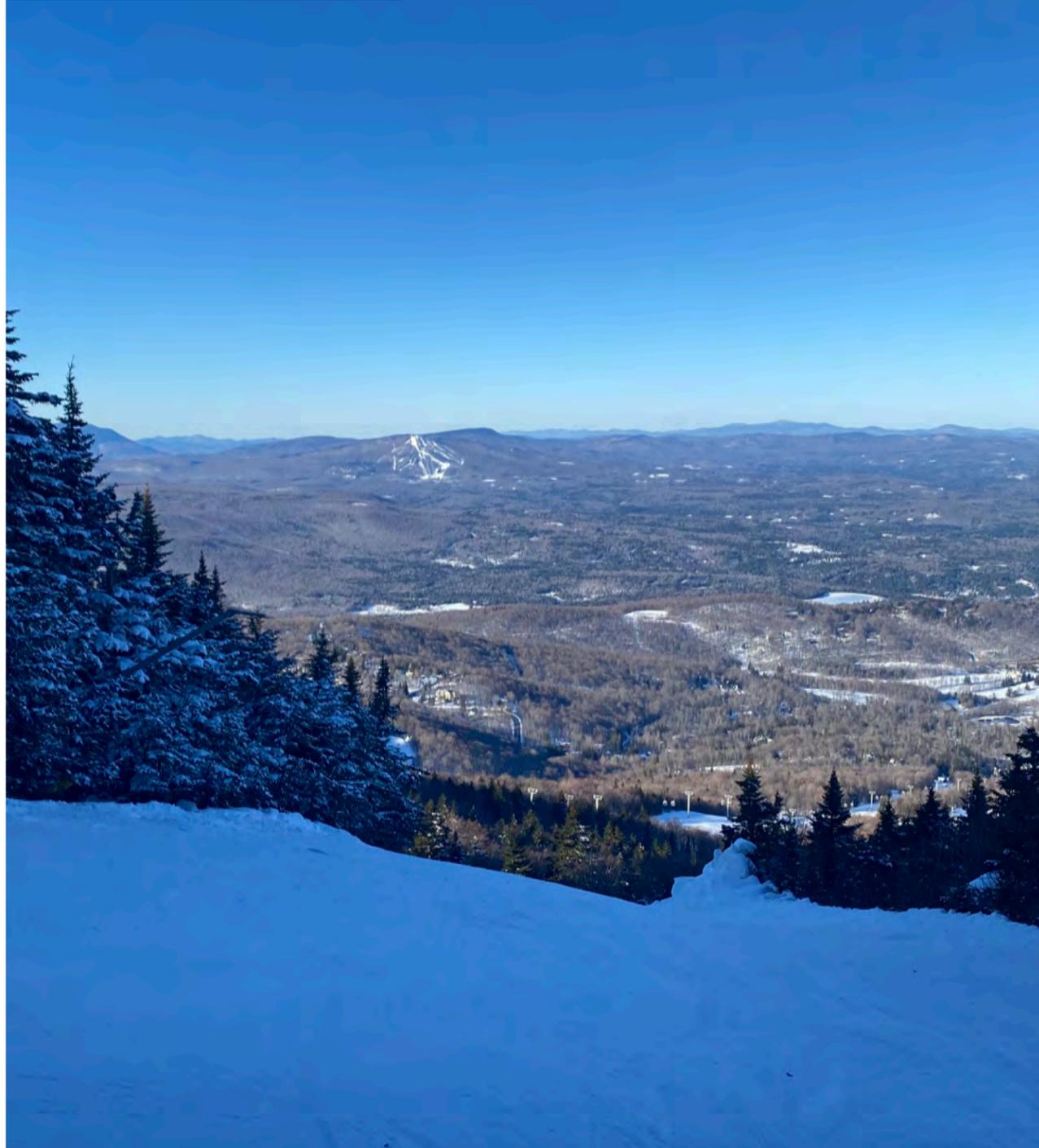


Image Source: Viktor Schneider - from Stratton Mountain with Bromley Mountain in the distance

Recreation in The West River Corridor

Vermont stands as a haven for any outdoor enthusiast, offering a wide variety of activities all year. The state is a four season attraction with consistent winter snowfall, stunning fall foliage, diverse wildlife, and countless hiking opportunities. In Southern Vermont around the West River, there are hundreds recreational opportunities that draw people to this region.

The West River Corridor is mostly known for its alpine skiing, however it offers plenty of other outdoor activities all year-round. These activities include: hiking, mountain biking, hunting, cross-country skiing, snowmobiling, fishing and river boating. People from all over New England, New York, and even Quebec come to this region to experience the things it has to offer.

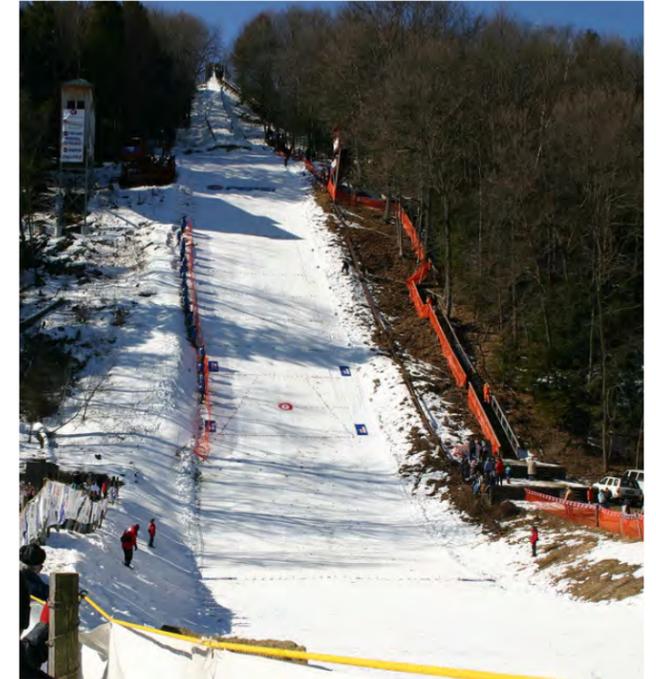
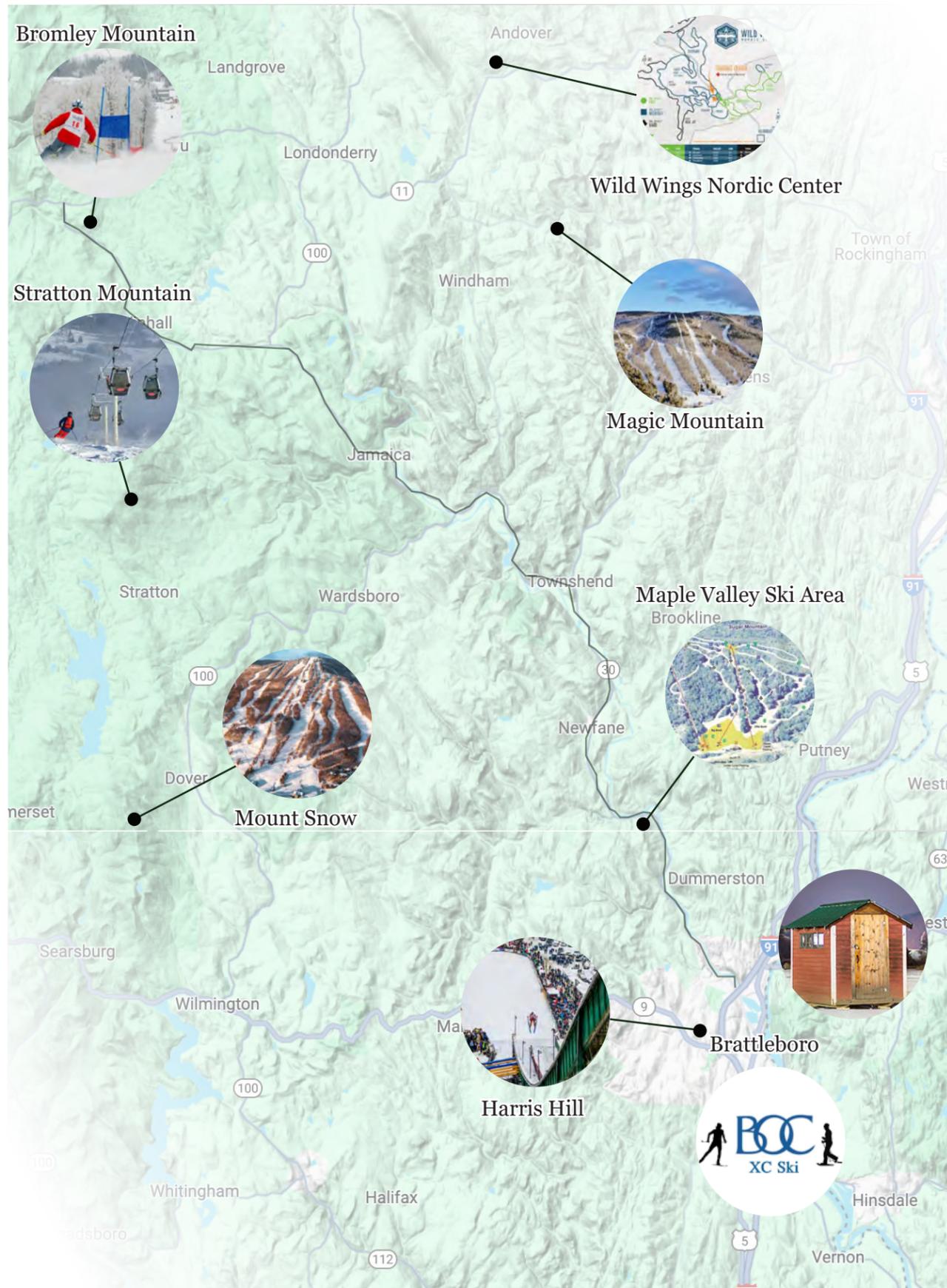


Image 1: Wikipedia; Harris Hill Ski Jump (2005) -Image 2: VT Fish & Wildlife Dept. - Moose



Winter Sports in The West River Corridor

Ski areas in Vermont attract around 4 million skiers each winter season. There are 25 ski resorts in Vermont and 5 major resorts are in the Windham Region/Route 30 Corridor. Not only is there alpine skiing in the area, but cross country trails are also found all over.

Stratton Mountain and Mount Snow are located in the Route 30 region and are two of Vermont's largest ski destinations. Both mountains offer around 700 acres of skiable terrain for skiers of all skill levels. These mountains are both on major ski passes with Stratton on the Ikon Pass and Mount Snow on the Epic Pass. Both resorts have high lift ticket prices that can reach over \$150 for a single day of skiing.

The area is also home to locally-owned resorts that are slightly more affordable such as Magic Mountain and Bromley Mountain. Though these areas may have fewer acres of skiable terrain, they attract both visitors and locals alike and are important parts of the community.

Brattleboro offers plenty of winter activities for residents and visitors. The Brattleboro Outing Club offers cross-country skiing, snowmobiling, and snowshoeing. When the West River pond freezes over, it is covered in ice-fishing huts and ice skaters. Brattleboro is also the home to the Harris Hill Ski Jump, which hosts international events with contestants from all over the world.



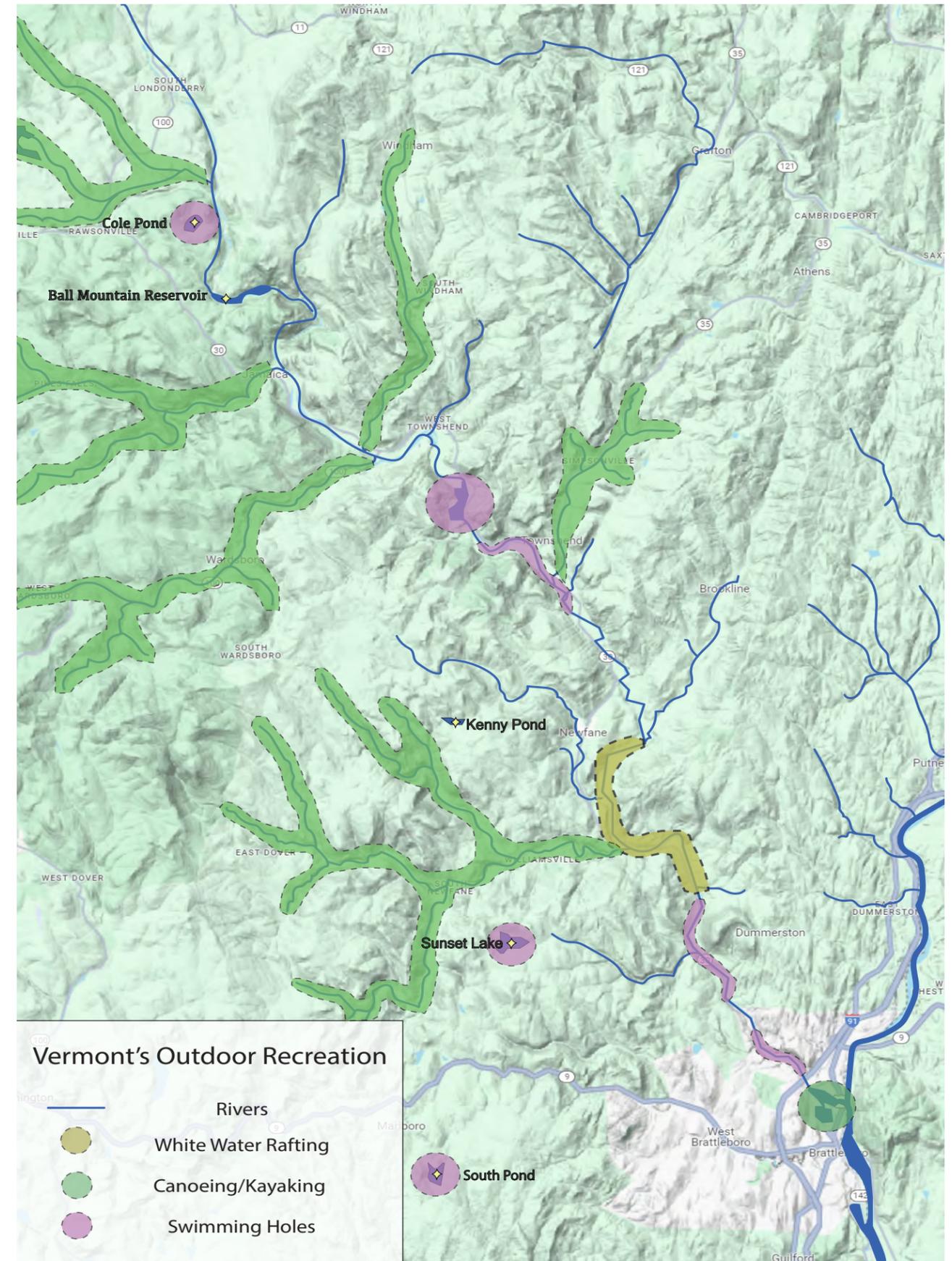
Recreational Activities in The West River Corridor

In Southern Vermont, along the scenic West River, adventure seekers can enjoy kayaking, canoeing, white water rafting, and swimming, making it a magnet for visitors from around the globe.

White water rafters can navigate through the rapids in Newfane and Dummerston, canoeists can glide through the calm water of the river while swimmers can enjoy the scenery of the swimming holes found in pockets along the banks of the river. Each activity offers a unique way to experience the beauty and excitement of Vermont's wilderness.



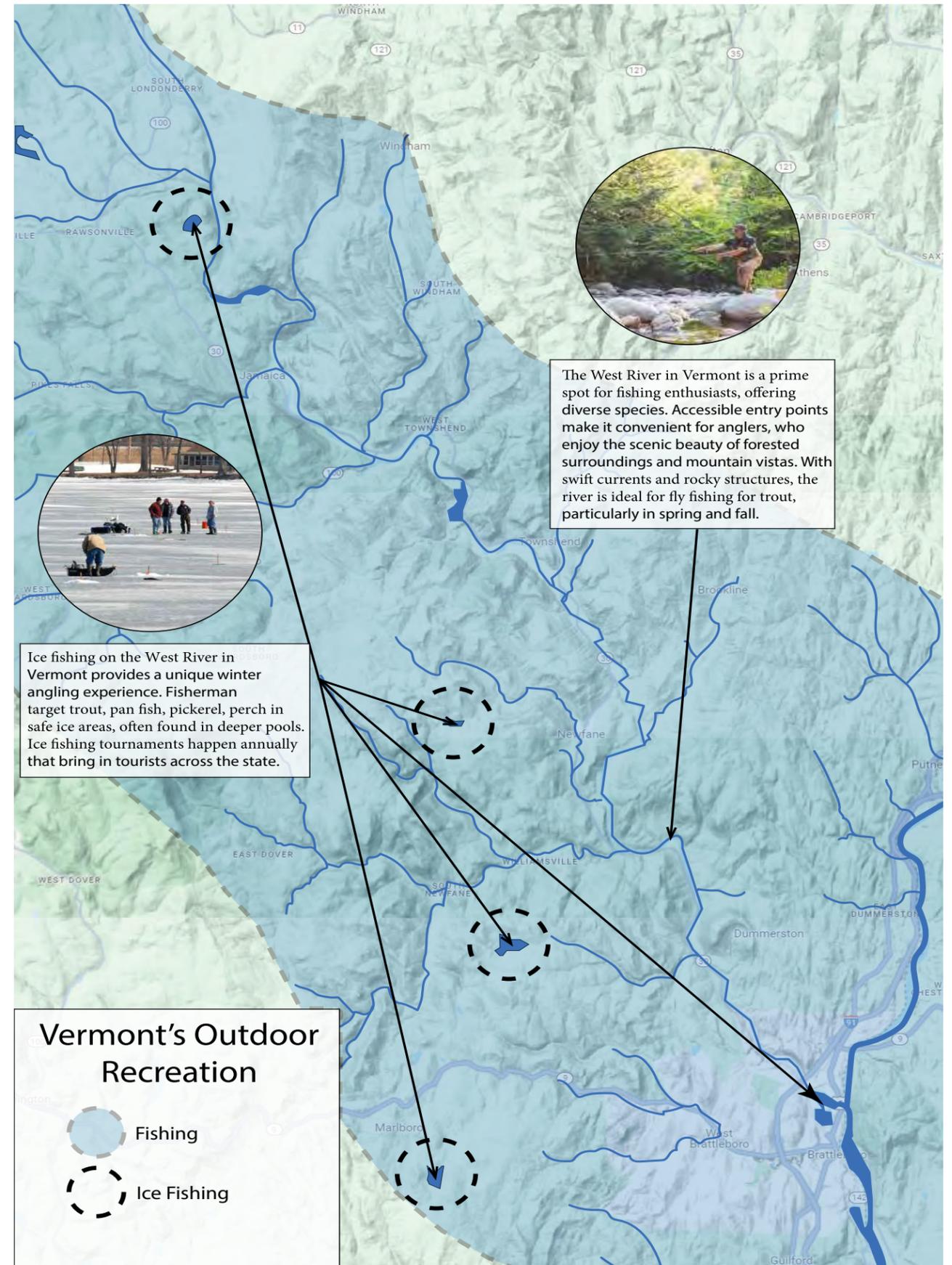
Image 1: Zoaroutdoor - West River White Water (2019) Image 2: West River Trail - Canoeing



Fishing in The West River Corridor

Vermont's Southern region along the West River is a magnet for anglers worldwide, offering abundant fishing opportunities year-round. From clear streams to busy angler hot spots, Vermont provides a serene escape for people who intend on connecting with nature and who love outdoor activities.

The West River Corridor is mostly known for its alpine skiing, however it offers plenty of fishing opportunities year round. Fly fishing is the most common type of fishing throughout the spring, summer and fall months while ice fishing takes place throughout the winter time. Vermont holds an annual ice fishing tournament throughout the month of February attracting tourists from all over to come compete. About 90,000 residents hold fishing licenses as of 2023 but an increase of 14,000 each year.



The West River in Vermont is a prime spot for fishing enthusiasts, offering diverse species. Accessible entry points make it convenient for anglers, who enjoy the scenic beauty of forested surroundings and mountain vistas. With swift currents and rocky structures, the river is ideal for fly fishing for trout, particularly in spring and fall.

Ice fishing on the West River in Vermont provides a unique winter angling experience. Fisherman target trout, pan fish, pickerel, perch in safe ice areas, often found in deeper pools. Ice fishing tournaments happen annually that bring in tourists across the state.

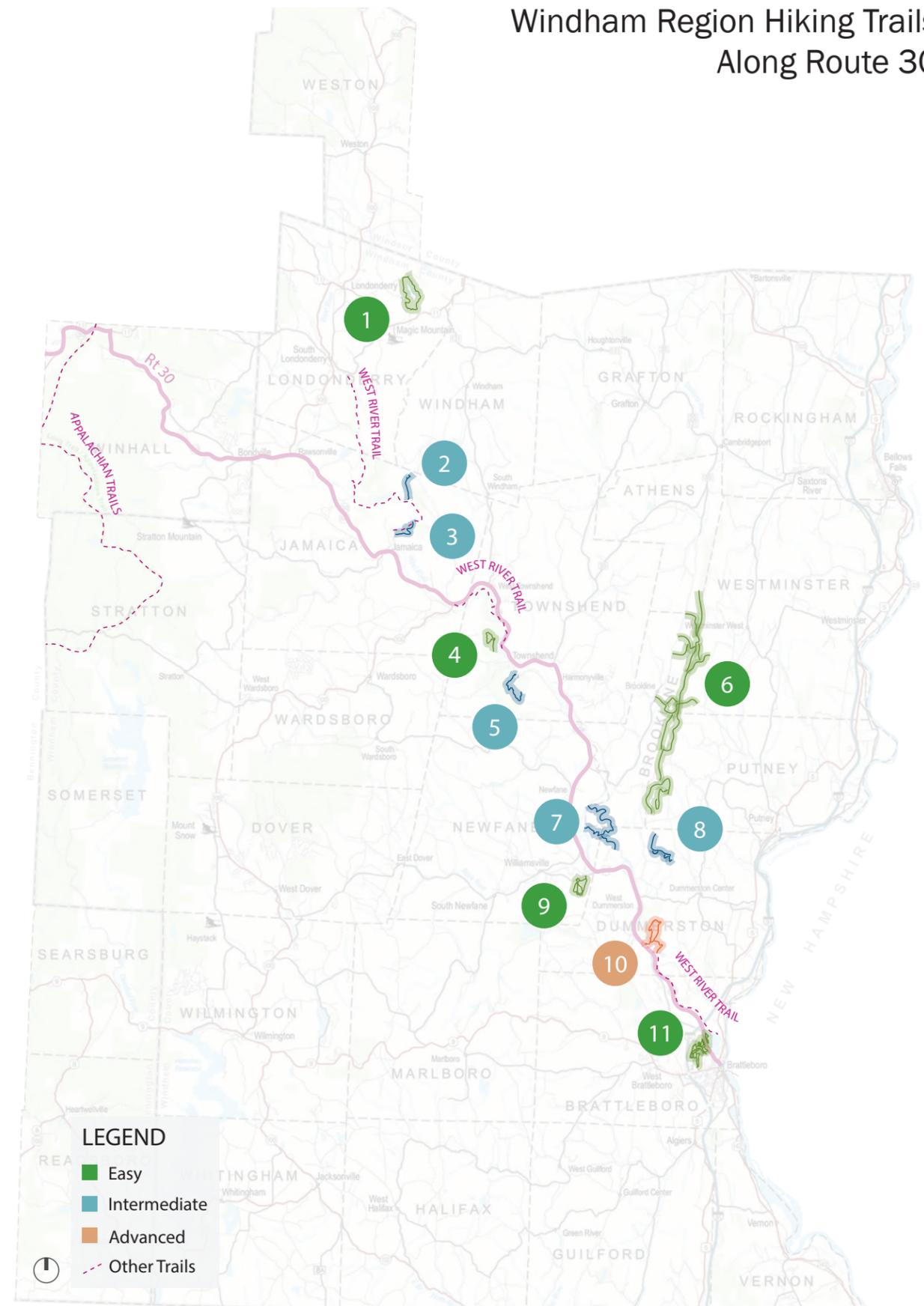
Vermont's Outdoor Recreation

- Fishing
- Ice Fishing

Hiking Trails

- 1** **LOWELL LAKE TRAIL**
A 3.5 mile loop around Lowell Lake in Londonderry. Relatively flat and permits foot travel only.
- 2** **SWITCH ROAD TRAIL**
A 1.1 mile trail in Jamaica off the West River Trail through the Hamilton Falls Natural Area. Steep and permits foot travel only.
- 3** **OVERLOOK TRAIL**
A 2.0 mile steep trail in Jamaica that ascends and descends Little Ball Mountain.
- 4** **LEDGES TRAIL**
A 1.7 mile loop adjacent to Townshend Reservoir. Permits foot travel and cross country skiing in the winter.
- 5** **BALD MOUNTAIN TRAIL**
A 1.7 mile steep climb through Townshend State Forest.

- 6** **PUTNEY MOUNTAIN TRAILS**
A 15+ mile trail network connecting 4 towns with a few designated snowmobile trails. Otherwise only permits non-motorized rides.
- 7** **DEER RUN NATURE PRESERVE TRAILS**
8 miles total of trails connecting various natural features in Dummerston.
- 8** **MISSING LINK TRAILS**
A 2.7 mile trail network that will eventually connect various trails in Dummerston.
- 9** **NEWFANE TOWN FOREST TRAILS**
A 6+ mile trail network through forested conservation grounds in Newfane.
- 10** **BLACK MOUNTAIN NATURAL AREA**
A 3 mile steep climb around Black Mountain in Dummerston adjacent to a granite quarry.
- 11** **RETREAT TOWER AND FARM TRAILS**
A 10+ mile trail network with a variety of themed walks in Brattleboro.



Source: Windham Regional Commission

Destinations

LOWELL LAKE STATE PARK

The park features a lake, dam, cemetery, wetlands, and an informal boat launch.

TOWNSHEND LAKE RECREATION AREA

Picnic, swimming, and play areas create an active, family-friendly environment.

FORT DUMMER STATE PARK

In the Connecticut River Valley, Fort Dummer State Park contains a campground, trails, field, and a southern New England hardwood forest.

ROCK CLIMBING

The region's rocky terrain offers bouldering sites for climbers, from beginner to advanced.

JAMAICA STATE PARK

A half mile from Jamaica, the park sits along a bend in West River offering Salmon Hole, The Dumplings, and a campground.

TOWNSHEND STATE PARK

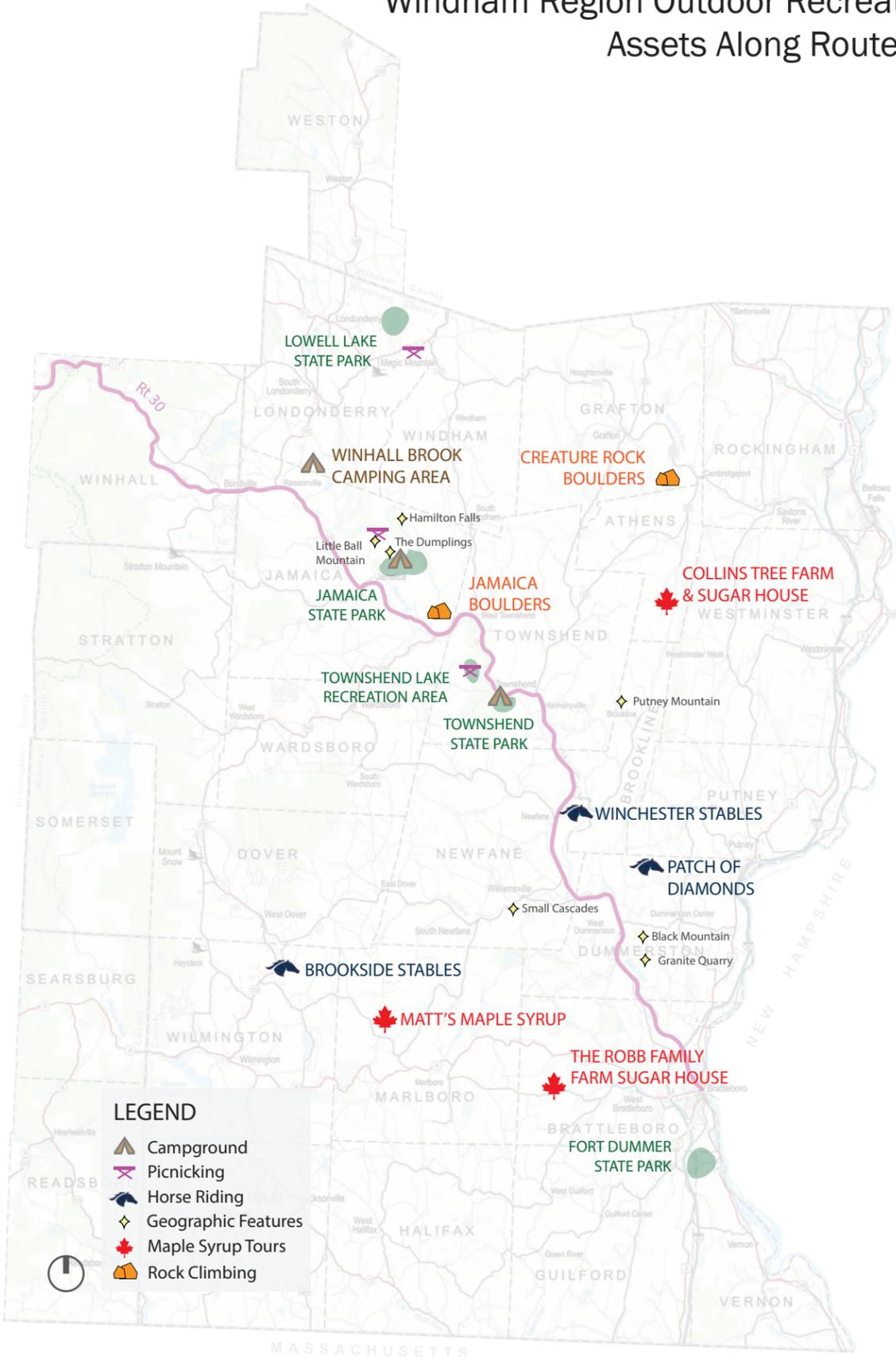
A historic park with campgrounds, picnic areas, and Bald Mountain Trail.

HORSE RIDING

Winchester Stables, Patch of Diamonds, and Brookside Stables offer riding lessons as well as their property for wedding pictures.

MAPLE SYRUP TOURS

With Vermont being one of the top producing states in the nation, its syrup is unique in its pure process.



Source: Windham Regional Commission

STUDENT PROJECTS

The Newfane Townscape

Lucas D'Entremont

Flowing Through Time: Acknowledging Indigenous Culture in Vermont as a means of Fostering Land Stewardship

Maia Medina

Hooked on Nature

DeWitt Purcell

West River Culvert Restoration

Sarah Daube

Restoration of the Townshend Dam

Thompson Tanch

Connection Through Observation: Recording a Landscape in Transition

Madeleine Lombard

The Story of VT Rte.30- Art Green-Way

Amber Rachele

Protecting Winhall Brook Campground

Bryan Lucente

Vermont's Vulnerable Landscapes: Restoring River Corridors and Reclaiming Identity

Mario DeLuca and Haynes Bell

Enhancing Vermont's Community Wildlife Relationship

Keegan O'Keefe

Newfane Town Forest

Yuhan Liu & Kayleigh Lin

Maple Valley: a Model Mountain Resort in a Changing Climate

Viktor Schneider

West River Ride

Christina Stakutis

Brattleboro Battles Invasives: Identifying Invasive Species Through Recreation & Education

Daniel McColgan

Longitudinal and Lateral Restoration Along the West River Corridor

Matthew Velasquez

A Story of Places and Positive Change: Memories in the Making at Silhouette Hill

Carolyn Brooks

THE NEWFANE TOWNSCAPE

Student: LUCAS D'ENTREMONT



Beloved Places: River & Road, Vermont's Route 30 & West River Corridor

Instructors: Carolina Aragón & Kate Cholakis



UNITING FEATURES OF THE VERMONT VILLAGE



1 Densely populated center of town surrounded by limited residential neighborhoods, creating a community where residents generally live no more than five minutes walking distance from the center.



2 Centrally located public common areas, such as a town square or green, surrounded by homes, churches, inns, or business establishments, and often town civic buildings, such as the school, library, post office or town hall.



3 A small commercial district in the center of town with grocery stores, news agents, drugstores, hardware stores, and retail stores, meeting the everyday shopping needs of residents.



4 Architecture which harmonizes the village due to similar scale, roof shape, and building materials which are often, but not exclusively, wooden clapboard, shingle, or red brick.



5 Pedestrian-friendly streets in the town center, narrow enough to require cars to slow down when passing each other and therefore promote a feeling of safety for pedestrians walking on abutting sidewalks.



6 A sense of spatial enclosure created by the town buildings and large shade trees which line streets and town squares, providing both visual and physical continuity.



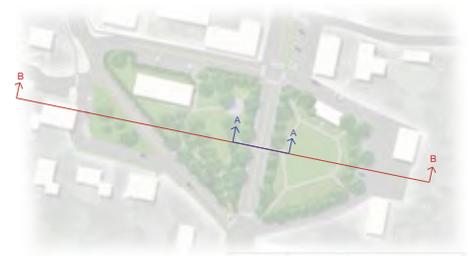
7 Clearly defined town spaces at the boundaries of the town itself, symbolizing a visual "edge", or termination of the village area.



The historic town of Newfane, Vermont is at a crossroads. Their desire to develop their economy competes with the natural desire to preserve what makes the town of Newfane special. When trying to consider the best ways in which a town deeply rooted in their historic past can move forward, one must view the town as a 'townscape'. Townscape is the overall visual impression of a town - the total impression it makes on a resident or visitor. It reflects the familiar principle that the whole is greater than the sum of its parts: the overall visual impression has a life of its own beyond its constituent parts. The elegant yet understated New England town is one of the most readily identifiable cultural attributes.

The proposal for the newly designed Newfane Village celebrates the culture and history of the area while also making it suitable for all types of life in the 21st century and beyond. The proposal brings back the pedestrian experience throughout the village - offering crosswalks, sidewalks, and pathways throughout the green and common. Instead of the flat lawn spread across the village, the proposed landscape has a far more developed understorey as well as a meadow area to celebrate the unique landscape that can be seen throughout rural Vermont. A newly proposed pavilion has been installed south of the General Store, offering public restrooms and outdoor seating.

The redesigned site of Newfane Village may serve as a representation for all other historic districts in Windham County that may face the conflict of wishing to develop economically but not at the price of losing its sense of place and character.



SECTION A SCALE: 1" = 10'



SECTION B

SCALE: 1" = 100'

Hogle Wildlife Sanctuary
Planting Intervention



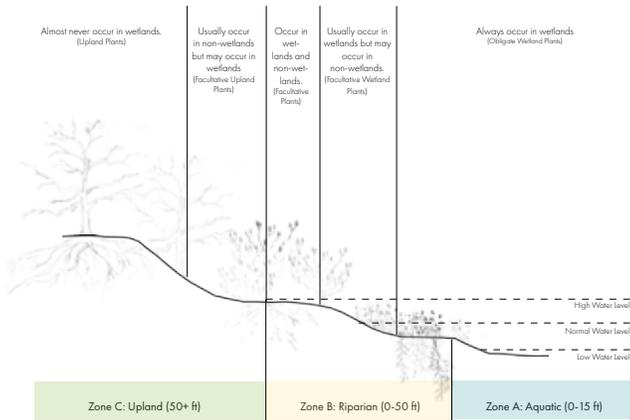
Riparian wetland



Shrubland



Mixed Woodland



Significance of Place

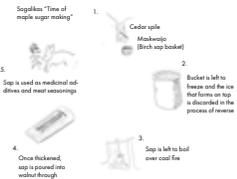
Wantastekw (West River) and **Kwenitekw** (Connecticut River), in what is now known as Brattleboro, VT, holds balance and significance for the Elnu Tribe. The Elnu tribe acknowledges that culture is a result of the physical location of a place. Both culture and place are greatly intertwined, creating relationships between the sky, Earth, water.

Elnu Tribe has partnered with the Atowi Project and Vermont Land Trust to purchase 2-acre parcel of land. The renovated building will become the new tribal headquarters where cultural workshops and community gatherings will held.

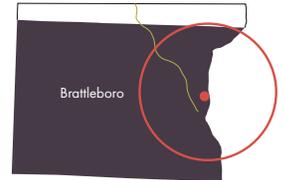


Traditional Maple Sugaring Process

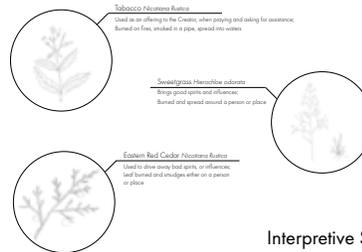
Historically, it was the Native American tribes that taught settlers the process of turning maple sap into sugar.



This site is situated near the thousand year old Petroglyphs submerged underwater.



SACRED PLANTS



Interpretive Signage



3 Listening circle

Sandblasted bluestone of Vermont rivers and ridges offers respite and learning

4 Drum lane

Experience the sound of music using outdoor drums

5 Boardwalk

Animal track engravings along boardwalks

6 Water access

Access to the river through granite seeding

9 West River Debris Sculpture

Using left over river flooding debris, environmental installations like this can be a place of awe for school children and visitors

12 Ecosystem Exhibit

Sandblasted glass allows people to learn about Vermont ecosystems while being able to bring home a tangible memento of their favorite animal

15 Lookout

An interpretive sign describes the Petroglyphs nearby

13 Kayak launch

Abenaki Interpretive Signage

Signage of salmon and Abenaki language

1 Dry Meadow

Native meadow

Model of possible debris exhibit. As the debris erodes, there is curriculum opportunity for school children and Volunteers to rebuild the installation year after year.

SHRUBLAND BIRDS

- American Woodcock
- Blue Jay
- Blue Jay
- Blue Jay

GRASSLAND BIRDS

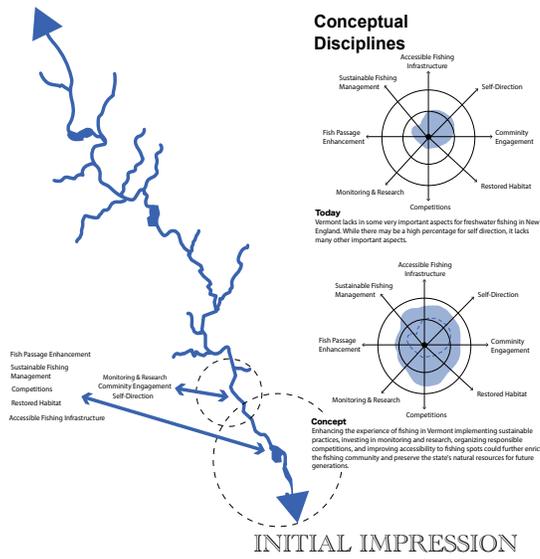
- Bobolink
- Eastern Meadowlark
- Indigo Bunting

Hooked on Nature

Enhancing Waterscapes: Sustainable Approach to Fishing Tourism in Southern VT
Beloved Places: River & Road, Vermont's Route 30 & West River Corridor

Student: DeWitt Purcell II

Instructors: Carolina Aragón & Kate Cholakis



DESIGN STATEMENT

This design reimagines the existing pier for fishing, adding native plants, a rock wall, and erosion protection. These additions not only protect the structure but also give biodiversity, ensure durability and offer educational opportunities. Through sustainable practices, this design aims to create a space for longevity, foster ecological resilience, and invite meaningful engagement with the natural environment that integrates with the beloved West River Trail.



Fallen trees that block flow of water through the creek adjacent to West River. Need to be removed.



A lot of open space where flood events and rise in water level occur. Natural looking rock wall and erosion control plantings can help aesthetically.



Bland look to the beloved West River Trail. A lot of potential can happen underneath the bridge and with the existing pier.

PRECEDENT IMAGES



WEST RIVER CULVERT RESTORATION

BELOVED PLACES: RIVER AND ROAD, VERMONT'S ROUTE 30 & WEST RIVER CORRIDOR

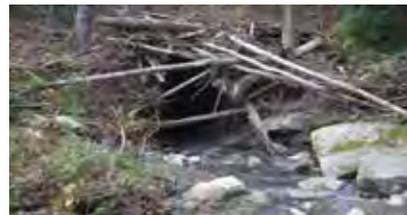
Sarah Daube, LA491LJ
 Instructors: Carolina Aragon & Kate Cholakis



SITE CONTEXT:



Undersized culvert scouring and bank erosion can be due to high velocity of water, which is increasing because of heavy rain events



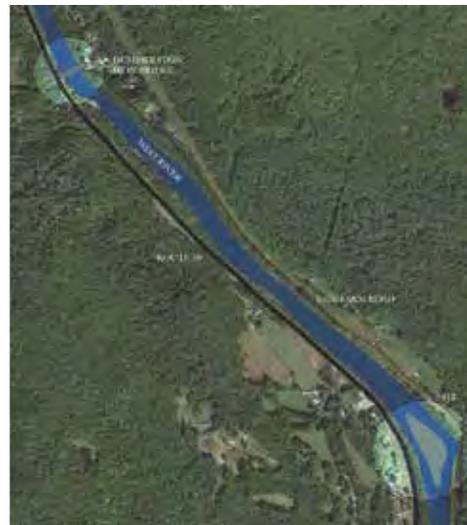
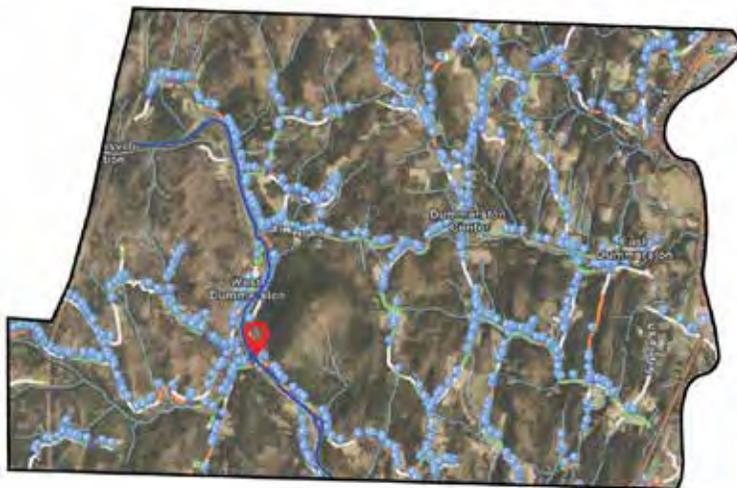
Debris clogging during floods leads to failure of culverts, which inhibits fish and wildlife movement and water ponds upstream



Shallow crossings are too high compared to the natural stream channel, so a streambed cannot form and many species cannot pass

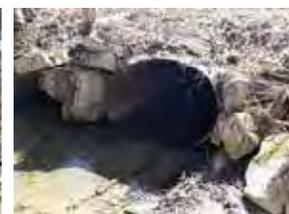
<https://cfribandw3d8f6.com/sites/ribandw3d8f6/files/documents/Leary%20Mar%20Ehlers/REPORTS%20AND%20DOCUMENTS/AOP/AOP%20HANDBOOK.pdf>

DUMMERSTON



DESIGN STATEMENT:

The current boiler tube culvert in this area restricts fish passage and wildlife movement because it is too small and shallow, clogged with debris, and is blocked by a big concrete piece of a wall. Replacing this with a box culvert that spans the bank width and remains buried in the streambed, will allow organisms to safely cross through the area. In addition to a culvert restoration site, the area is designed to bring people to see the redesigned culvert and provide gathering spaces near the West River Trail and Black Mountain Trail.





SCALE: 1"=25'



SCALE: 1"=10' 0 5' 10' 20' 30'



The redesigned box culvert will give fish and wildlife a safer way to move downstream. The new design will remove any previous barriers, like the concrete wall, debris, and too shallow of a crossing. The culvert will also be embossed with the branching pattern of the West River and its tributaries. Enhancing this specific culvert will bring people's attention to it when crossing the bridge. Also, there will be an educational sign along the bridge explaining the importance of stream crossings and the boiler tube that was replaced.

The old steel corrugated boiler tube will be cut to be reused as planters to be placed at the entrances of the trails and in between the benches near the bridge. Using the boiler tube honors the site's past, while giving it a new use for the future. Also, the addition of more native vegetation and buffer planting along the river edges will further stabilize the land around it and be beneficial for aquatic life.

This design encourages people to notice the ecological systems along the corridor and its significance to the larger region and state, while also giving people areas to rest, take a quick stroll, and enjoy nice views. It is intended to make people feel connected to the landscape around them and be an educational experience about restoration work and fish and wildlife movement.

Restoration of the Townshend Dam Lake



Beloved Places: River & Road, Vermont's Route 30 & West River

Student: Thompson Tanch Instructors: Carolina Aragón & Kate Cholakis

Concept Statement

The Townshend Dam Lake was a popular recreation spot in Vermont until it was damaged heavily over time by sedimentation. Despite efforts over the years to restore the area, the July 2023 flood events once again damaged the area heavily with sediment carried downstream by rushing flood waters. However, there is an opportunity to restore the landscape and prevent future damage. Using the implementation of newly constructed wetlands, my design would serve to create both a recreation destination to connect communities; as well as protect the landscape from flooding and sediment damage due to erosion from the surrounding mountainous landscape

Regional Context



Major Steps of The Process



Step 1: Lake Dredging and Sediment Removal

The first step of the restoration process would be dredging the lake and removing the sediment, using the methods used by GZA for Smith College's Paradise Pond. GZA had designed a hydraulic dredging program that minimized impacts of turbidity to endangered species downstream by requiring a mechanical sediment de-watering program sited upland to the pond.

Step 2: Wetland Integration and Riparian Buffer Reinforcement

The second step of the process would be the construction of new wetlands upstream and along the lake edges, using the help of Vermont's 5 Star Restoration Program. The Five Star Restoration Program is supposed to bring together students, conservation corps, other youth groups, citizen groups, corporations, landowners, and government agencies to provide environmental education and training through projects that restore wetlands and streams. This would help to encourage community members to get involved with the project.



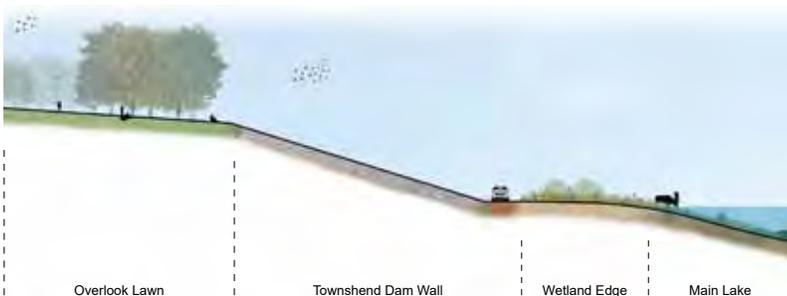
MASTER PLAN SCALE: 1" = 250'

Sections and Perspective



SECTION A

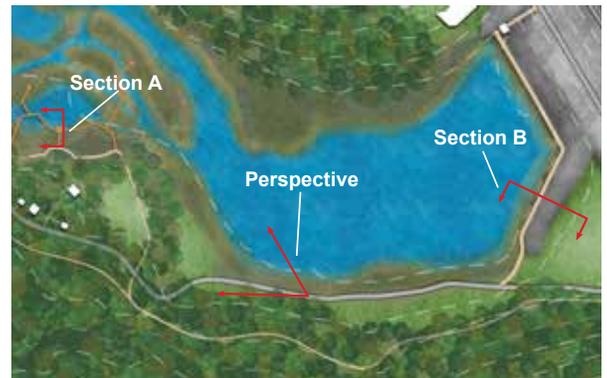
SCALE: 1/8" = 1'



SECTION B

SCALE: 1/16" = 1'

Locator Map



Wetland Edge Perspective



CONNECTION THROUGH OBSERVATION RECORDING A LANDSCAPE IN TRANSITION

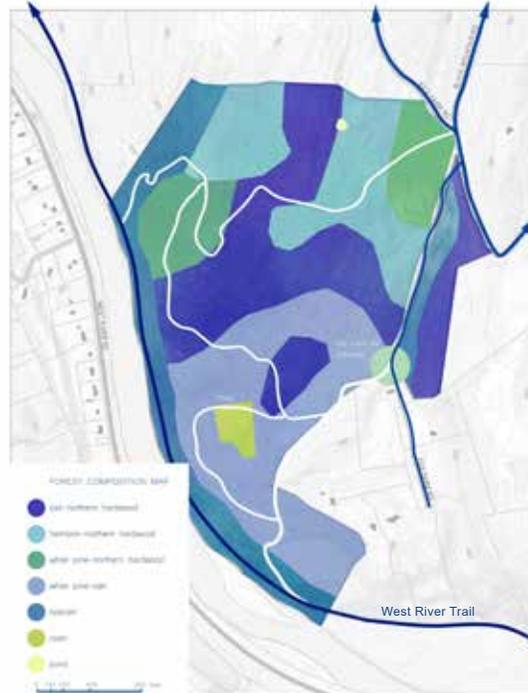
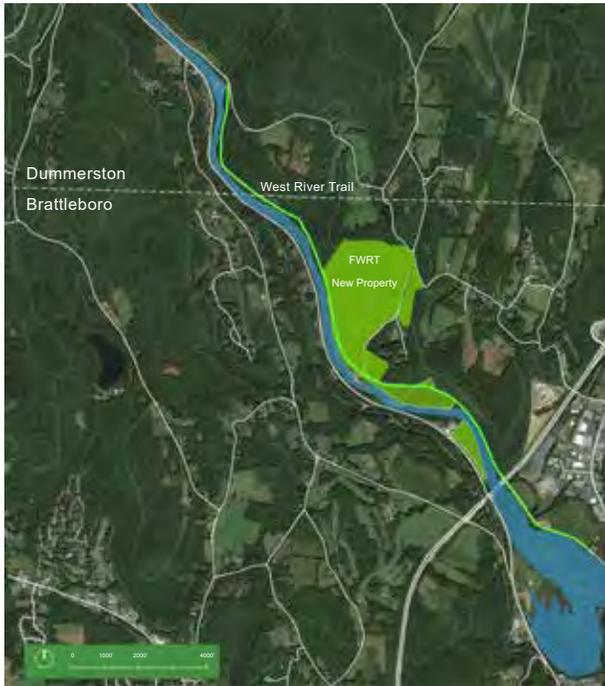
Student: MADELEINE LOMBARD



Beloved Places: River & Road, Vermont's Route 30 & West River Corridor

Instructors: Carolina Aragón & Kate Cholakis

New England landscapes are changing at an accelerated rate. With warming temperatures and novel weather patterns, our native flora and fauna are shifting in response. Conservation areas and citizen scientists have the opportunity to record landscape changes and discuss collective conservation goals. The Friends of the West River Trail recently purchased an 160 acre property adjacent to the West River Trail. A series of logging roads onsite provide the framework for an extensive trail system once mapped and marked. Using a plant inventory from the West River Trail corridor, I designed an entry sequence on Fox Farm Road with an information kiosk, parking area, and lush native plantings to welcome visitors to the trail system. I propose a few targeted educational interventions, including a Chronolog tool, for observing change onsite. I believe that intentional observation of natural systems is crucial for connecting people to the land.



Chronolog is a citizen science project that helps researchers and land managers install photo stations at environmentally significant locations to record the changes in the landscape. Using a photo station (lens and rotation sign included), any assembly can take photos from a standardized point of view and submit them to be included in a crowd-sourced time lapse of the site which is housed on the Chronolog website. The standard rate for this service is \$200 a year (chronolog.io).

There are over 600 active Chronologs world-wide. There are no Chronologs in Southern VT and only two in VT in total. This meadow contains a remarkable composition of native species worthy of monitoring.

Vaccinium angustifolium, lowbush blueberry, prefers sandy acidic soils in full sun. It is a colonizer of old fields like the one found here.

Return in May to observe lowbush blueberry in bloom and in August to sample its antioxidant-rich fruit. In fall, the field will be brushed with swathes of crimson as lowbush blueberry takes on its autumn color.

Indigenous people used low intensity prescribed burns to increase blueberry fruit production for hundreds of years. This technique is still used by blueberry farmers today.

In the absence of fire, a mowing every other year will keep the competitors at bay, maintaining lowbush blueberry in the landscape.



THE STORY OF VT ROUTE 30: ART GREEN-WAY

Beloved Places: River & Road, Vermont's Route 30 & West River Corridor

Student: Amber Rachele
Instructors: Carolina Aragón & Kate Cholakis

TOWNSHEND DAM RECREATION SITE: DESIGN PROPOSAL

- ① ROAD
- ② PARKING
- ③ MEANDERING PATH & MOUNDS
- ④ PUBLIC BEACH
- ⑤ ADA RAMP TO UPPER SITE
- ⑥ EXISTING STAIRS TO UPPER SITE
- ⑦ COMMUNITY GRILL AREA
- ⑧ COMMUNITY VOLLEYBALL COURTS
- ⑨ BRIDGE OVER STREAM
- ⑩ ADA RAMP
- ⑪ ARTISTS PLAYGROUND
- ⑫ PICNIC TABLES & BENCHES
- ⑬ COMMUNITY CABANAS
- ⑭ TRAIL HEAD
- ⑮ TRAIL HEAD
- ⑯ PRIVATE EVENT CABANA & VOLLEYBALL



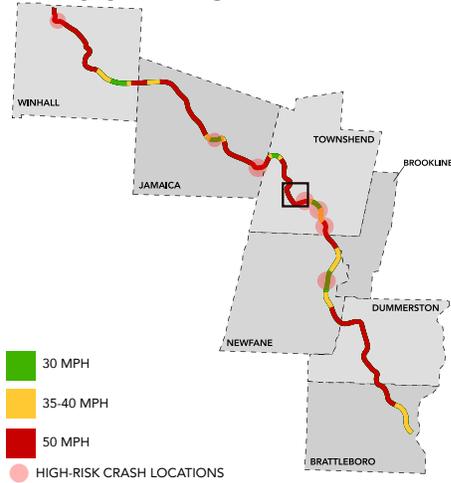
Concept Statement: Incorporate art through VT Route 30 as a method of storytelling, to enhance the natural beauty of the landscape, and to encourage further exploration of the area.

The Townshend Dam serves as a major piece of infrastructure for the West River to control flooding, and also acts as a recreational site. I have chosen to re-program the space to better perform as an element of social infrastructure to increase awareness on it's function, and to strengthen community connections. I propose a path that better connects trails through the site, while also increasing accessibility with ADA ramps. I have placed land art installations through the path to increase visual interests and to allow local artists to express the space. I have also decreased parking to create more natural transitions from the road to the beach front.



SECTION A - A'

TRAFFIC CALMING



Along with decreasing parking around the west side of the Townshend Dam, I have also looked at the rest stop across the lake that sits directly off VT Route 30. The current space is large with no organizational elements, which has created an unsafe area in a high-speed traffic area. I have removed one of the entry points and also decreased the width of the second entrance. I have increased the lawn space, which overlooks the dam, and created a buffer between the parking lot and the seating area. To incorporate this element together with the other side of the dam, I have added a path for accessibility, which leads from the trail-head towards the dam crossing.



STREET ART - TOWN CENTERS - COMMUNITY ENGAGEMENT



I have chosen Townshend Dam as a focus area because there are three trail-heads present, which is the main envisioned location for art installations throughout VT Route 30. Along with using art to bring people into the surrounding landscape of the corridor, I also envision residents making a mark and expressing their towns through art. After analysis on traffic patterns through the corridor, I looked at strategies to calm traffic with art. One technique, which can be an inclusive activity for all residents, is street murals. Street murals can help calm traffic by providing visual cues to drivers that they are not just driving through to their destination, but passing through towns, a place that is cared for, and a place with meaning.

PROTECTING WINHALL BROOK CAMPGROUND

Beloved Places: River & Road, Vermont's Route 30 & West River Corridor

Student: Bryan Lucente

Instructors: Carolina Aragón & Kate Cholakis



Entire Site is inside the flood hazard zone



Context Map



Winhall Brook Campground is located in Londonderry, Vermont along the West and Winhall River. Due to a major flooding event that occurred in 2023 the campground is shutdown for the entire 2024 Recreation season. My design goal for the site was to design a new floodable mound park that can reduce potential flood damage in future events and open a new area for outdoor recreation

Mound Park



Perspective



Cross Section



Indian Mounds Park
<https://www.flickr.com/photos/23711298@N07/10637424805>

The mound park design is located next to the corner where the Winhall and West River connect. The park has restrooms, seating, and additional recreational opportunities. Overall, the park helps address flood damage protection, and a new creative gathering area for the campers to enjoy

Perspective

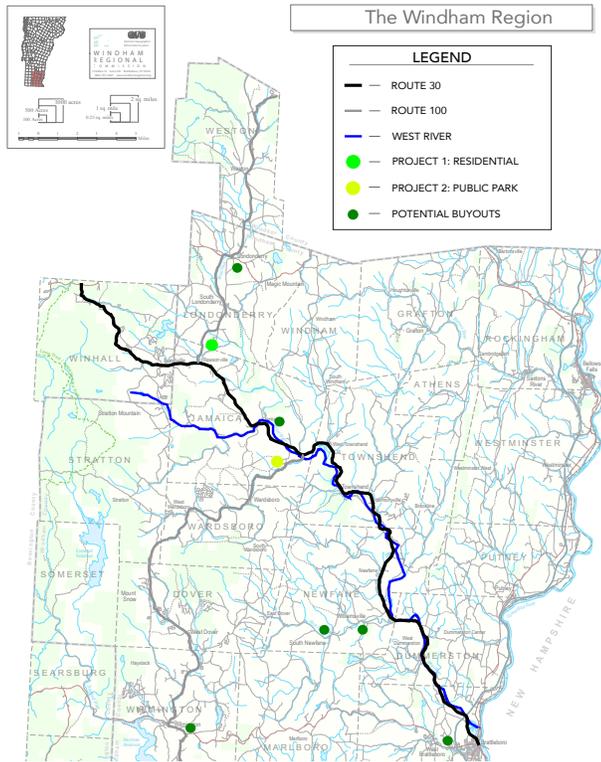


VERMONT'S VULNERABLE LANDSCAPES: RESTORING RIVER CORRIDORS & RECLAIMING IDENTITY

Beloved Places: River & Road, Vermont's Route 30 & West River Corridor

Students: Mario DeLuca & Haynes Bell

Instructors: Carolina Aragón & Kate Cholakis



In the face of climate change, the State of Vermont and communities along the Rt 30 corridor face unprecedented challenges from the increasing frequency and severity of river and stream flooding. Our design proposal serves as a model for restoring vulnerable riparian landscapes and connecting communities throughout the corridor. Looking for solutions at multiple scales, we focused on developing templates for restoration at a residential and municipal level, while thinking about watersheds and their larger connections at a regional scale. A new public park envisioned in a property buy-out, adapts to the riparian landscape and dynamic river corridor to respond to flooding events, and provide a new gathering and recreation space for the community. A native planting and slope stabilization plan provides inspiration and solutions for homeowners along river corridors to protect their homes and restore the natural function of important riparian buffers. At the heart of our design, community building and place making is achieved through the use of local stone and native plants within a series of these landscapes along the corridor. This along with the involvement of community members in the design and construction of these projects will help to further educate and build a recognizable community identity in Windham County.



Project 1: Residential Riverbank Restoration

Winhall River Watershed Corridor Plan
Winnet, Jamaica, & Londonderry, Vermont

Project #	Phase	Restoration Goal / Existing Condition	Proposed Planting	Moderate Priority (streambank stabilization)	Proposed Habitat and Water Quality	Materials	WQC / CWC	Notes
113.03.A	Phase 1	Streambank stabilization	Native plants	Streambank stabilization	Improved habitat and water quality	Local stone	WQC / CWC	See plan

Project 2: Municipal Buyout & Public Park

Wardsboro Brook Watershed Corridor Plan
Wardsboro & Jamaica, Vermont

Project #	Phase	Restoration Goal / Existing Condition	Proposed Planting	Moderate Priority (streambank stabilization)	Proposed Habitat and Water Quality	Materials	WQC / CWC	Notes
113.03.B	Phase 2	Streambank stabilization	Native plants	Streambank stabilization	Improved habitat and water quality	Local stone	WQC / CWC	See plan

PROJECT 1: RESIDENTIAL RIVERBANK RESTORATION

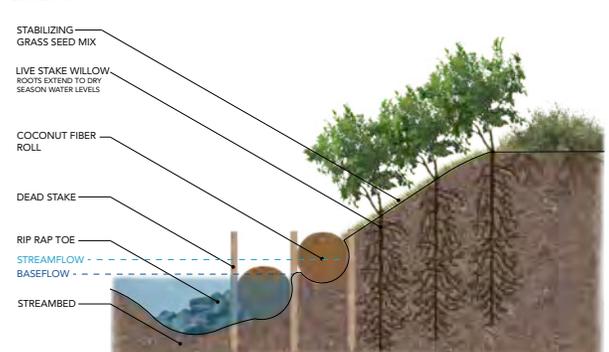


KEY	BOTANICAL NAME	COMMON NAME	QTY
TREES			
	ACER RUBRUM	RED MAPLE	9
	BETULA NIGRA	RIVER BIRCH	12
SHRUBS			
	CORNUS SERICEA	RED OSIER DOGWOOD	80
	CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	200
PERENNIAL & GRASS SEED MIX			
	Elymus virginicus Carex vulpinoidea Glyceria grandis Sparganium eurycarpum	Virginia Wild Rye Grass Fox Sedge American Mannagrass Giant Bur-Reed	9,100 SQ FT
	Rudbeckia hirta Monarda fistulosa Chamaecrista fasciculata Eutrochium purpureum	Black-Eyed Susan Wild Bergamot Partridge Pea Joe Pye Weed	5,100 SQ FT

RIPARIAN RESTORATION PLANTING SECTION



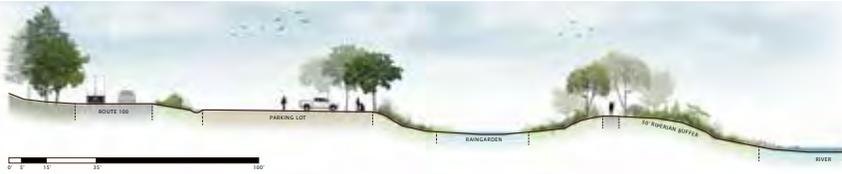
BIOENGINEERED STREAMBANK STABILIZATION FOR STEEP SLOPES



PROJECT 2: MUNICIPAL BUYOUT & PUBLIC PARK



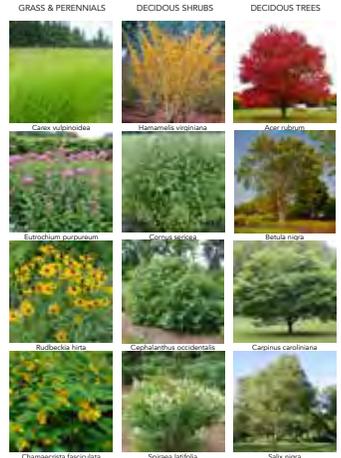
SITE CROSS SECTION



UTILIZING LOCAL STONE



RIPARIAN NATIVE PLANT BOARD



PROJECT 2: MUNICIPAL BUYOUT & PUBLIC PARK

EXISTING SITE CONDITIONS



RT 100 JAMAICA WELCOME STONE & RIP RAP



NATURAL PLAYGROUND & WALKING TRAIL



RIPARIAN BUFFER & RIVER RECREATION ACCESS



Enhancing Vermont's Community Wildlife Relationship

KEEGAN O'KEEFE



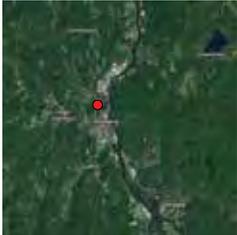
Beloved Places: River & Road, Vermont's Route 30 & West River Corridor

Instructors: Carolina Aragon & Kate Chloakis

Site Context



Vermont



Brattleboro, Vt



Brattleboro Retreat Farm (Site)



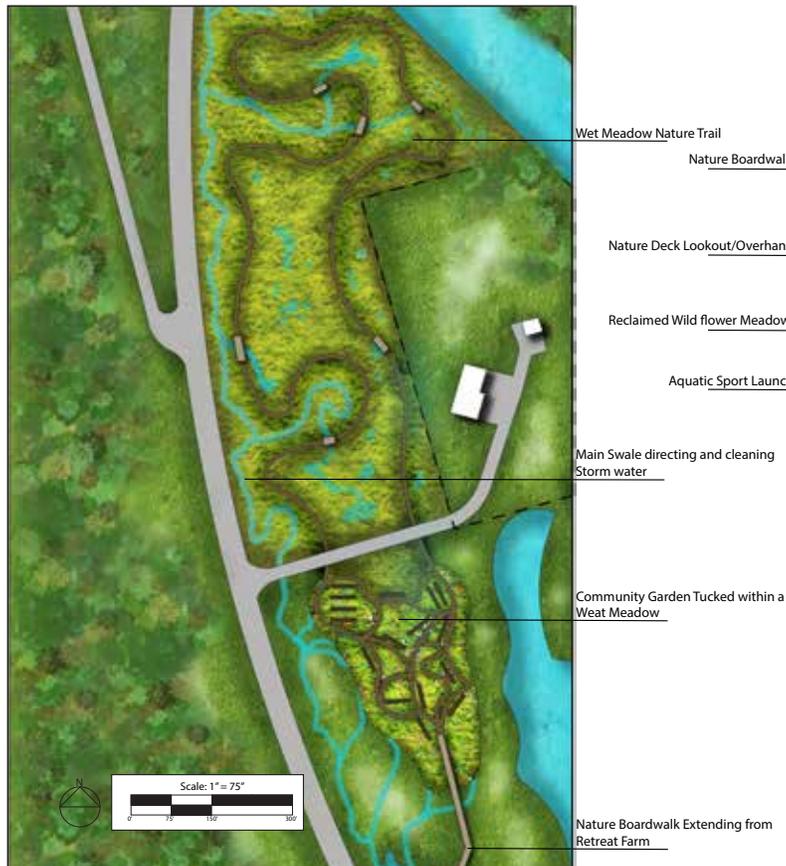
Site Legend

- ① Amphibian Underpass #1
- ② Nature trail + Education center
- ③ Amphibian Underpass #2
- ④ Large Mammal Underpass
- ⑤ Community Garden
- ⑥ Amphibian Underpass #3
- ⑦ Boardwalk + Overlook
- ⑧ Aquatic Sport Launch

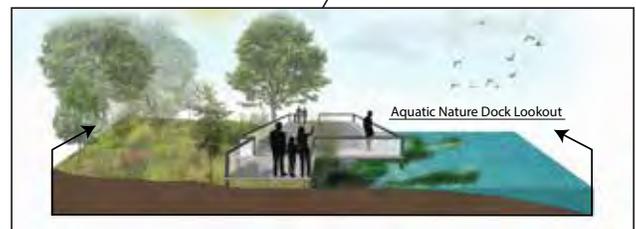
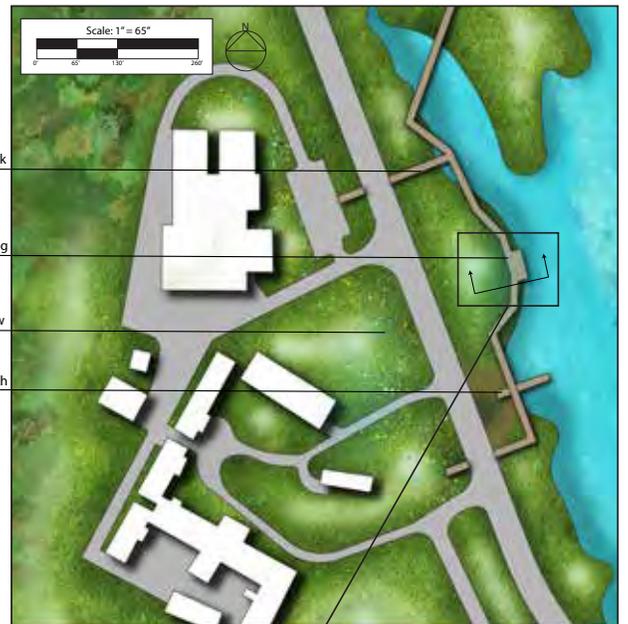
Designer Statement:

I aimed at connecting Vermont's people with its surroundings. Vermont is known for having an incredible 'in touch' experience with its wilderness. I wanted to play in to this, and expand this experience and relationship as much as possible. My design features a series of animal under crossings under Route 30. This will not only allow the preservation of species and populations, but also provide education to the population of Vermont. People can see species in ways that they never would have had the opportunity to before. The underpasses are strategically placed, going from highlands (on the left of the map) to the lowlands (on the right) where it is more moist. My design also features a series of swales, raingardens, and vernal pools that will fill up during rainy season and provide ample spaces for amphibians, primarily to breed and reproduce. Not only will this newly designed water system help to propagate species, but it will also act as a cleaning system. My design directs storm water road runoff into these swales, cleaning them along the way. Once the water reaches the end of the system and is deposited back into the river, it will have been filtered and cleaned of all debris and particles. This is another great opportunity to educate the public on how to properly manage and clean storm water; an increasingly dire problem. My design also connects the existing Brattleboro Retreat Farm to the vacant land across the street. The newly designed community garden, wet meadow, aquatic sport launch, and pedestrian trail offers a variety of different views and activities. It is perfect for a family with children to visit the farm, purchase fresh produce, see where its being grown, and take a lovely 45 minute stroll through the nature path. People of all ages will be able to not only see and learn about dozens of different environmental systems, but be able to experience it on a deeper level than ever offered before.

Zoomed in site plan showing (1) Community Garden Path, (2) Boardwalk to garden connection, (3) Swale System, and (4) Wet meadow Boardwalk



Zoomed in site plan showing (1) Nature Boardwalk, (2) Lookout Deck, (3) Reclaimed wild Flower Meadow, and (4) the New Improved Aquatic Sport Launch



NEWFANE TOWN FOREST

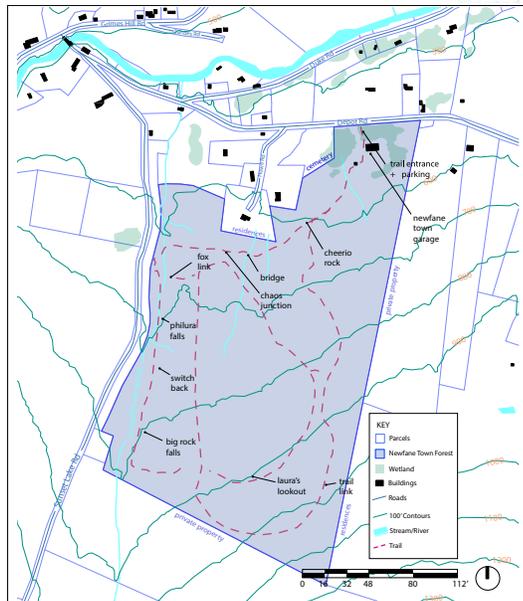
YUHAN LIU & KAYLEIGH LIN
LA 491 | MAY 2024
Instructors: Carolina Aragón & Kate Cholakis



EXISTING CONDITIONS

Established by the Conservation Commission of Newfane in 2000, the Newfane Town Forest is 162 acres of forest conservation land off Depot Road in Williamsville. It neighbors the Newfane town garage, Williamsville Cemetery, and private residences.

The Newfane Town Forest is located along the Route 30/West River corridor and is one of two town-owned forested parcels. It is also one of the few recreation areas available to Newfane and has potential to intensify its benefits. Connected to a large block of forest with streams flowing into Rock River, these lands serve as an important ecological habitat for a diversity of plant and animal species such as bear, coyotes, deer, moose, bobcat, fisher, songbirds, and fish as well as northern hardwood, transition hardwood, and spruce-fir forests.



TRAIL CONDITIONS



The trailhead is comprised of three trails and begins in a wetland where the pathway switches between dirt and wooden boards. A network of winding brooks require several stream crossings, made up of stones and wooden bridges. Scattered throughout the trail landscape are hardwood forests, mossy logs, stone, and rock walls. Midway, a bench at Laura's Lookout showcases the view towards the hills. Wooden signs and colored tree markers direct hikers through trails and linkages.

ENTRANCE CONDITIONS



Parking lot conditions consist of uneven gravel, no parking delineation, and two entrances (one from Depot Rd and the other from the garage driveway). The Newfane Town Garage, shed, and gravel mounds are located at the end of the driveway. The trailhead entrance begins midway down the driveway near the mailbox to the right.



Existing Entrance Section - Not To Scale
The entrance off of Depot Road caters to cars over pedestrians and bicyclists due to the lack of shoulder space. A parking lot connects to the town garage driveway where the trail entrance begins about 150 feet away. A culvert allows water to flow underneath the driveway and connects the forest blocks. The lot and trailhead are separated by dense forest. The kiosk is found a few steps into the trail.

RESTORATIVE TRAILS

ENHANCING SOCIAL AND MENTAL HEALTH IN NEWFANE

YUHAN LIU & KAYLEIGH LIN
LA 491 | MAY 2024
Instructors: Carolina Aragón & Kate Cholakis

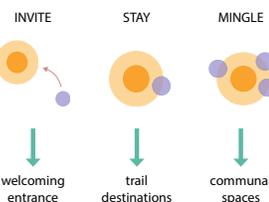


Our design aims to utilize the existing Newfane Town Forest trail system as a healing landscape that addresses social and mental health in Newfane. The design is for both local residents and outside visitors through a self-guided forest therapy trail and increased social spots to encourage community and an overall relaxing experience.

ADDRESSING SOCIAL ISOLATION

Social isolation is the lack of interactions, connections, and a supportive community on the individual and societal level. Lack of connections increases the risk for loneliness, depression, hypertension, and cardiovascular disease. Rural environments and the elderly are more susceptible to these risks. Solutions often consist of enhancing social infrastructure through community involvement; however, our project looked more towards the built environment.

After looking into multiple studies, our group landed on 3 step solution: invite, stay, and mingle. The 'invite' looks at what initially attracts visitors to the site: a welcoming entrance with a clear threshold and wayfinding direction. 'Stay' focuses on what keeps visitors at the site by enhancing destinations along the trails. Lastly, 'mingle' enforces points of interaction by initiating communal spaces. Our group aims to enhance Newfane Town Forest to immediately benefit the town of Williamsville, but also to expand on an existing resource that may recenter the town of Newfane and beyond.



NEW ENTRANCE DESIGN



In order to create a welcoming and legible entrance, dense side plantings block the view of the garage from the parking lot while low front plantings allow for drivers to clearly see the trailhead as they pass by. The parking lot is reduced to one main entrance further down Depot Road. A covered pavilion with signage and a wayfinding kiosk welcomes visitors to a picnic area. The trailhead is moved from the driveway to the pavilion.

RESTORATIVE TRAILS

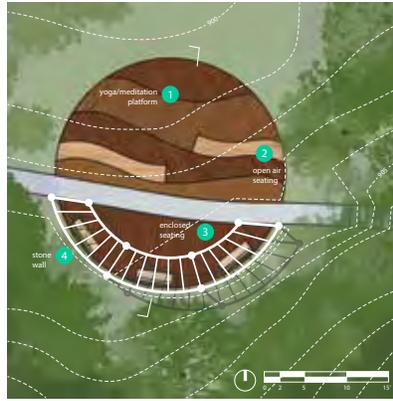
ENHANCING SOCIAL AND MENTAL HEALTH IN NEWFANE

YUHAN LIU & KAYLEIGH LIN
LA 491 | MAY 2024



Instructors: Carolina Aragón & Kate Cholakis

GATHERING SPACES



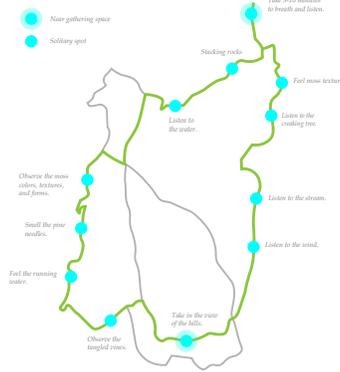
Laura's Lookout
Originally consisting of a solitary bench, Laura's Lookout is transformed into a resting destination overlooking the framed views of the hills beyond. Set within a circular wooden platform, there are areas to sit under shade, benches open to the sky, and a spacious area for group meditation or yoga. The original stone platform under the bench will be brought back as a low stone wall behind the benches and supporting the partial enclosure. The trail separates the solitary seating from the open air activities. Benches without backing are placed as to not disrupt the view (the focus of the area). The wood flooring is a comfortable and appropriate addition to the woodland aesthetic.

FOREST THERAPY TRAIL

Shinrin-yoku is the Japanese word that translates literally to "forest bathing." The phrase refers to the practice of mindfully interacting with nature through the five senses to receive restful and mentally rejuvenating effects. Originally rooted in Japanese philosophy, the idea was encouraged more so in the 1980's in response to fast-paced city life and to increase the value of forest land.

Over recent years, studies have supported nature playing a medical role in improving mental health and wellbeing. Theories such as Roger Ulrich's Stress Reduction Hypothesis and Rachel and Stephen Kaplan's Attention Restoration Theory list possible health benefits such as improving the immune, cardiovascular, and respiratory systems, reducing depression and anxiety, and increasing relaxation and emotions of awe.

Our group proposes a forest therapy trail based on the principles of Shinrin-yoku to encourage restorative mental health using Vermont's natural assets. While one may not need to specifically practice Shinrin-yoku to receive nature's benefits, our group believes that a self-guided forest therapy trail will provide an alternative option that may enhance a visitor's experience of Newfane Town Forest Trails.



Possible sign with forest therapy symbol and invitation description.



The forest therapy trail follows the patterns of Shinrin-yoku: beginning and ending with meditation. The stops focus on particular features that our group found to be sensorially stimulating and refer to the senses: sight, smell, hear, and touch. Examples of stops include exploring the soft textures of moss, breathing in the smell of pine resin, listening to the sound of running water, or taking in the view of the hills.

MAPLE VALLEY: A MODEL MOUNTAIN RESORT IN A CHANGING CLIMATE

Beloved Places: River & Road, Vermont's Route 30 & West River Corridor

Student: Viktor Schneider

Instructors: Carolina Aragón & Kate Cholakis



CONCEPT STATEMENT:

The design goal is to envision the currently abandoned and once-thriving Maple Valley Ski Area as a modernized yet affordable and sustainable attraction for the West River Corridor. The site will connect the corridor by serving as a place of gathering with both paid and free recreational activities for locals and outsiders all year long.

As winters become shorter and more unpredictable, ski resorts are facing uncertain futures and are becoming unreasonably expensive. Ensuring low lift ticket costs by keeping power usage at a minimum is essential to creating a place where everyone feels welcome and is necessary for a sustainable future for the sport of skiing.



BASE AREA SITE PLAN
SCALE: 1" = 50'
Contours: 5'

- 1 Chairlift 1
- 2 Brewery Terrace & Lawn
- 3 Ski & Mountain Bike Slope
- 4 Base Lodge Terrace
- 5 Base Lodge & Brewery Balcony
- 6 Historic Maple Valley Signage
- 7 Culvert Underpass
- 8 River Path & Picnic Lawn
- 9 River Overlook
- 10 The West River
- 11 Synthetic Snow Slope
- 12 Route 30
- 13 Overflow Parking Area
- 14 T-Bar Lift
- 15 Chairlift 2
- 16 Hiking Trail to the Top

FULL SITE CONTEXT



Legend:
Hiking Trail (Red), Bike Trails (Blue), Winter Ski Trails (White), Lifts (Orange), Synthetic Snow Surface (Light Blue)

SECTION CONTEXT



Keeping lift ticket costs at a minimum is a must. Turning off the chairlifts and only using the T-Bar on as many days as possible would significantly lower power usage and ensure that skiers and mountain bikers can enjoy mountain activities without paying what surrounding resorts are demanding.

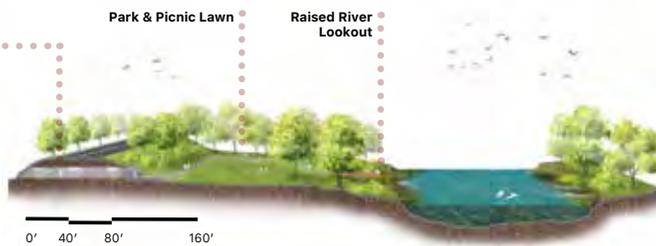
Culvert as a **Pedestrian Tunnel Underpass** which connects base area to the riverfront & encourages public use.



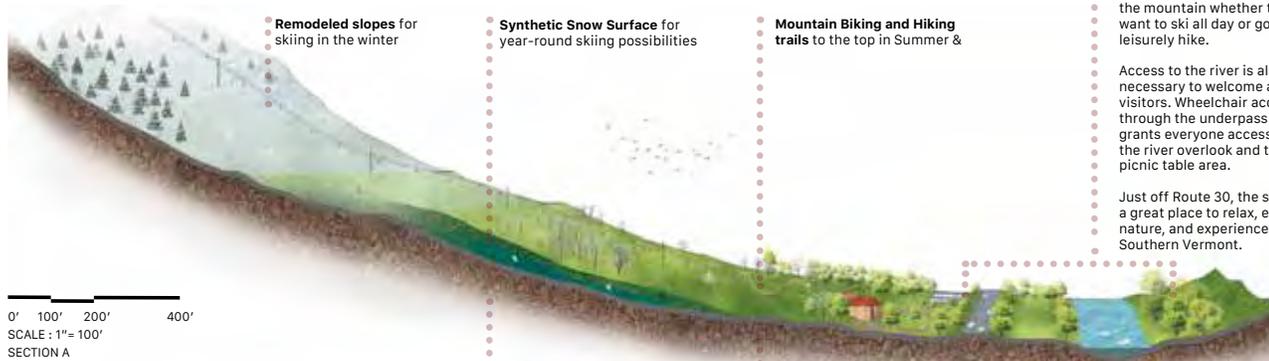
Current Condition



Precedent in Hvide Sande, Denmark



SCALE: 1" = 40'
SECTION B



SCALE: 1" = 100'
SECTION A

The site includes public and paid attractions for all visitors to enjoy. While lifts will require a ticket, a hiking trail ensures that people have access to the top of the mountain whether they want to ski all day or go for a leisurely hike.

Access to the river is also necessary to welcome all visitors. Wheelchair access through the underpass grants everyone access to the river overlook and the picnic table area.

Just off Route 30, the site is a great place to relax, enjoy nature, and experience Southern Vermont.

Inspired by a precedent in Copenhagen, Denmark called **"Copenhill"**. In this project, designed by BIG, skiing is introduced to an unlikely environment with Neveplast material on a sloped rooftop.



Mountain hiking trails include viewpoints inspired by **Path of Perspectives** designed by Snohetta in Innsbruck, Austria.

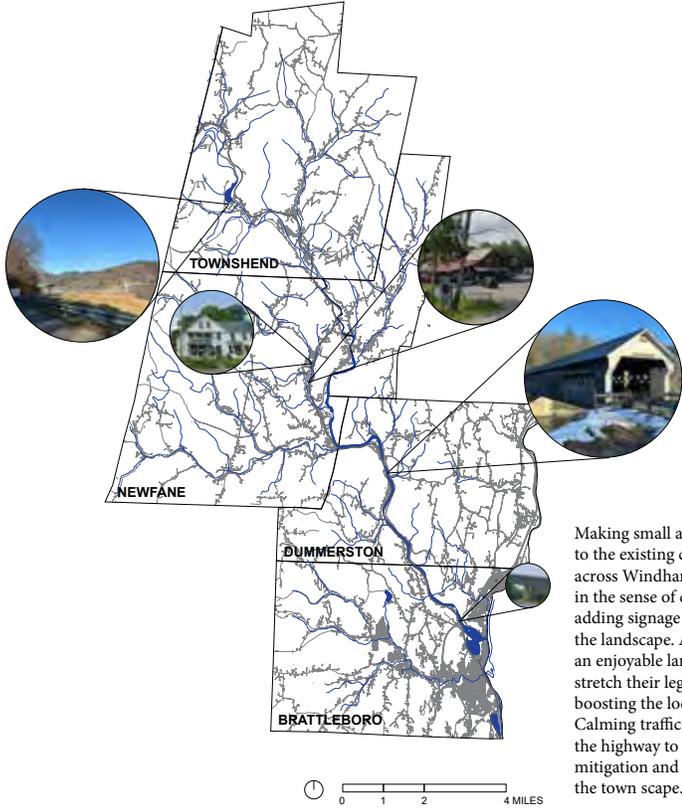


WEST RIVER RIDE

CHRISTINA STAKUTIS

Beloved Places: River & Road, Vermont's Route 30 & West River Corridor

Instructors: Carolina Aragón & Kate Cholakis



Making small and distinct changes to the existing congregation spaces across Windham County. Aiding in the sense of community by adding signage and connection to the landscape. Allowing travelers an enjoyable landscape to stop, stretch their legs, eat a meal--all boosting the local economies. Calming traffic at key points in the highway to aid in accident mitigation and interaction with the town scape.

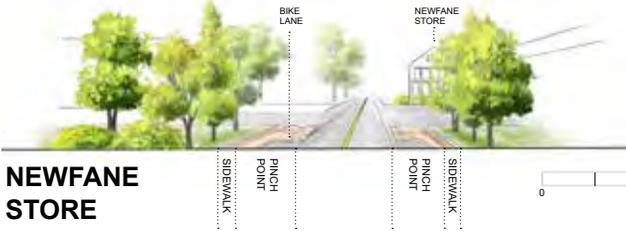
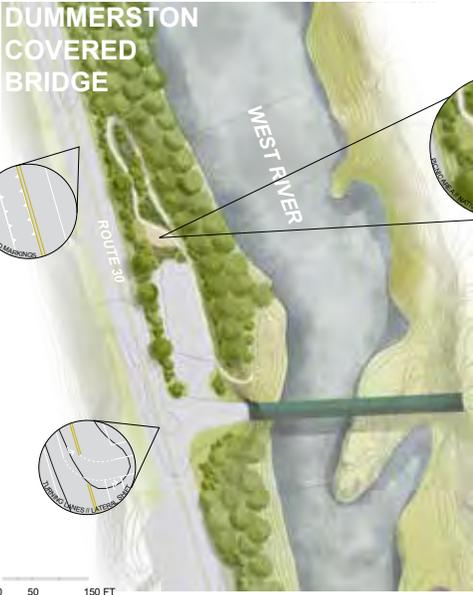
TRAFFIC CALMING MEASURES



ROAD MARKING
INDICATES TO DRIVERS INCOMING RESIDENTIAL ZONE

LATERAL SHIFT
REDIRECTS DRIVERS TO SLOW SPEEDS

GATEWAY PLANTING
INDICATES TO DRIVERS INCOMING RESIDENTIAL ZONE



Brattleboro Battles Invasive's

Identifying Invasive Species Through Recreation & Education

Work By: Dan McColgan

Instructors: Carolina Aragón & Kate Cholakis



Beloved Places: River & Road, Vermont's Route 30 & West River Corridor

DESIGN STATEMENT

To help with the identification and in mitigating the spread of invasive species through community education and engaging residents in outdoor recreation. By increasing informational signs & creating opportunities for community members to learn and engage with nature it fosters a sense of community



What Are Invasive Species?

Defined by invasivespeciesinfo.gov, is that of a non-native (or alien) to the ecosystem under consideration and, whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

Risks Of Invasive Species

Invasive species can pose a significant threat to native and plant communities. Invasive species can lead to the extinction of native plants and animals, destroy biodiversity, and permanently alter habitats.

Invasive Species In Brattleboro

Leaf Identification

- Heart Knotweed
- Spotted Knotweed
- Japanese Knotweed
- Winged Knotweed

Identifying Emerald Ash Borer

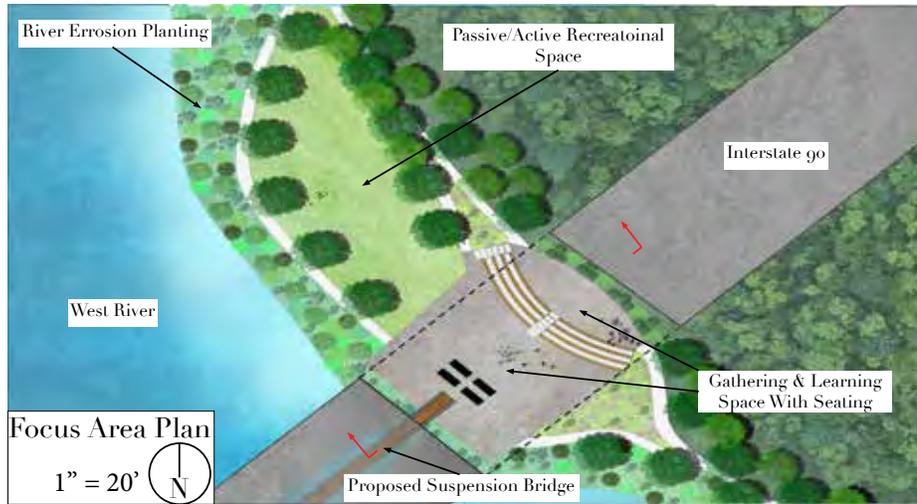
Watch for all of these traits and have the ash-boring Emerald Ash Borer to your ash tree.

Verify the signs of EAB:

- Small holes in the bark
- Wormholes in the bark
- Wormholes in the wood
- Wormholes in the soil
- Wormholes in the trunk
- Wormholes in the branches
- Wormholes in the twigs

JUMPING WORM KEY ID FEATURES

1. They are small, dark, and cylindrical.
2. They are very active and jump when disturbed.
3. They are found in soil, mulch, and compost.
4. They are found in areas with high moisture.
5. They are found in areas with high organic matter.



Precedent Images

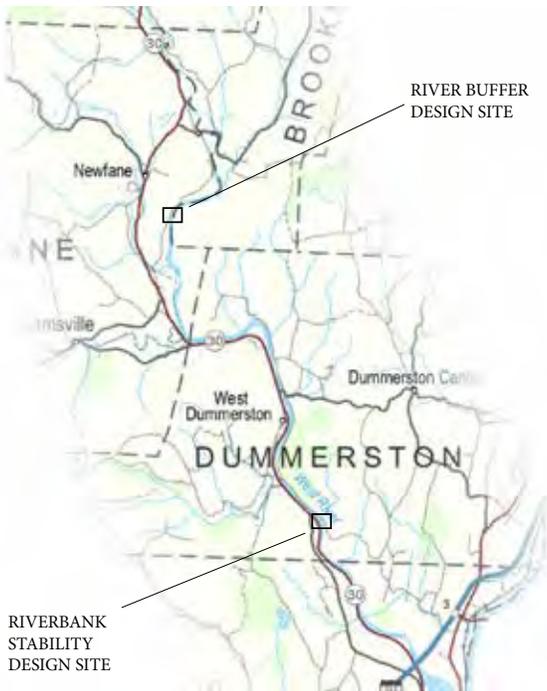


LONGITUDINAL AND LATERAL RESTORATION ALONG THE WEST RIVER CORRIDOR

Beloved Places: River & Road, Vermont's Route 30 & West River Corridor

Student: MATTHEW VELASQUEZ

Instructors: Carolina Aragón & Kate Cholakis



RIVER BUFFER



RIVERBANK STABILITY



CONCEPT STATEMENT

Develop conceptual strategies to combat issues that development in the past has caused for the West River Corridor, from Brattleboro to Jamaica, through the restoration of its longitudinal and lateral health and stability.

RIVER BUFFER

Establishments along the West River, private or public, creep right up to the water's edge and cut down the majority or all of the existing natural vegetation buffer. After the horrific floods the area faced from Irene, ineffective berms were built along the edge. This project aims to bring back a stronger vegetation buffer to the settled sides of the West River and simultaneously remove the ineffective berms.

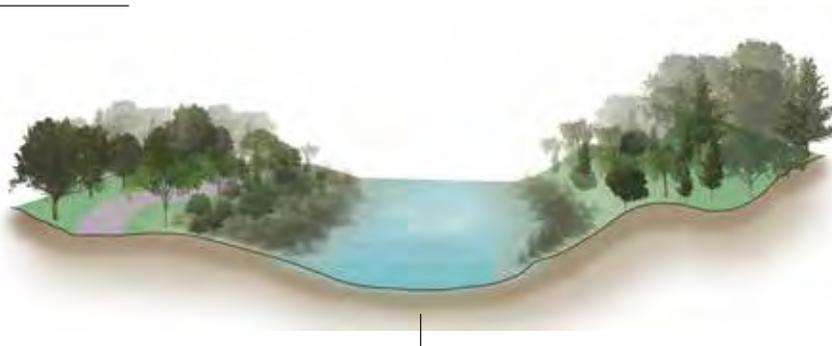


PRECEDENT: HOUSATONIC RIVERWALK, GREAT BARRINGTON, MA



RIVERBANK STABILITY

The riverbank focus area looks at the invasive plant problem that riverbanks along the West River and its tributaries face. Large deposits of invasive plant seeds end up getting deposited and grow in masses at banks along the river. These invasive plants have roots that are too short to combat the constant erosion the banks experience.



PRECEDENT: RIVERBANK MANAGEMENT WINCHESTER, MA



