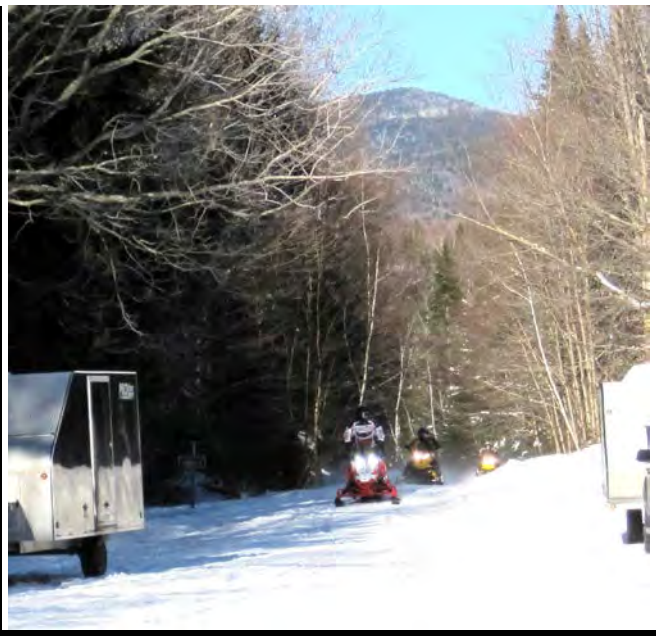
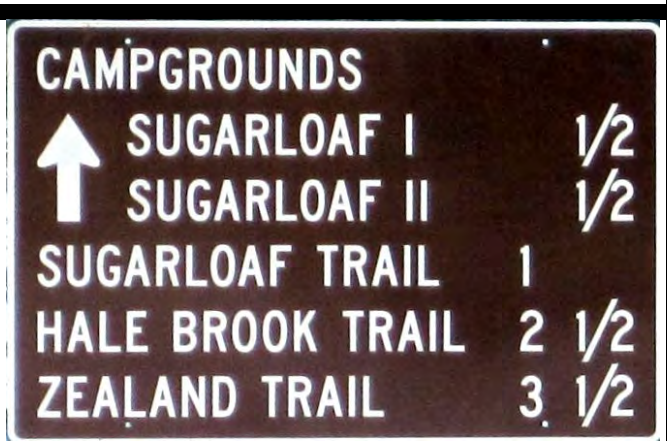
Carroll
New Hampshire





Crossroads for Adventure

DRAFT For Discussion 5-14-15

Carroll
New Hampshire
Crossroads for Adventure

Developed by the
Carroll Master Plan Committee
with assistance from the
Carroll Conservation Commission
and
North Country Council

Adopted by the Carroll Planning Board
***, 2015

Photo credits: Tara Bamford, North Country Council

ADOPTION OF CARROLL, NEW HAMPSHIRE MASTER PLAN

In accordance with New Hampshire RSA 674:4, Master Plan Adoption and Amendment, and New Hampshire RSA 675:6, Method of Adoption, the Caroll Planning Board, having held a duly noticed public hearing on ***, 2015, hereby adopts and certifies the Master Plan dated ***, 2015.

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Date

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Housing

Income

Housing Affordability

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Vision

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APPENDIX A NRI Tables

APPENDIX B NRI Maps

Introduction

The purpose of the Master Plan is to guide the future development of the town. More specifically, it will be used to guide the Planning Board to ensure it carries out its responsibilities in a manner that will best achieve the goals of the community. The Master Plan also represents the Planning Board's recommendations to other town boards and committees and to the voters. The Master Plan is a policy document. It is not regulatory.

The process of developing this Master Plan began with the appointment by the Planning Board, chaired by Donna Foster, of a Master Plan Committee. The Master Plan Committee was comprised of:

George Brodeur, Chair
Michael Hogan
Evan Karpf
Kenneth Mills

North Country Council was hired to facilitate the public participation process and draft the plan document, with the exception of the natural resources section. A Natural Resource Inventory had recently been completed by the Carroll Conservation Commission; North Country Council Planning Coordinator Tara Bamford worked with the Commission to adapt this report to serve as the section entitled *The Land*.

Public input was gathered at several steps through a variety of mechanisms. First, a visioning session was held at the project start to identify the attributes of the community most valued by residents and the issues of most concern. Next a survey was mailed to all households with a voter and/or property owner to follow up on the topics raised at the visioning session. Also, during the development of the plan, North Country Council facilitated a public workshop about the Town Hall to identify what functions served by the current building and/or site are important for town decision makers to hold onto as plans are made to either replace or renovate the existing building. Finally, a public hearing on the draft plan was held on xxx, 2015.

The Master Plan is organized into three sections. The first, *The People*, reports some key demographic and socioeconomic data that is essential to understanding the needs of the community. The second section, *The Land*, describes the natural resources and development limitations that provide the foundation for planning the future development of the town. The third section, *The Future*, reports on the results of the public participation process, the Planning Board's recommendations for achieving the community's goals relative to future land use, and some discussion on what improvements may be needed to certain town facilities to meet the needs of the community.

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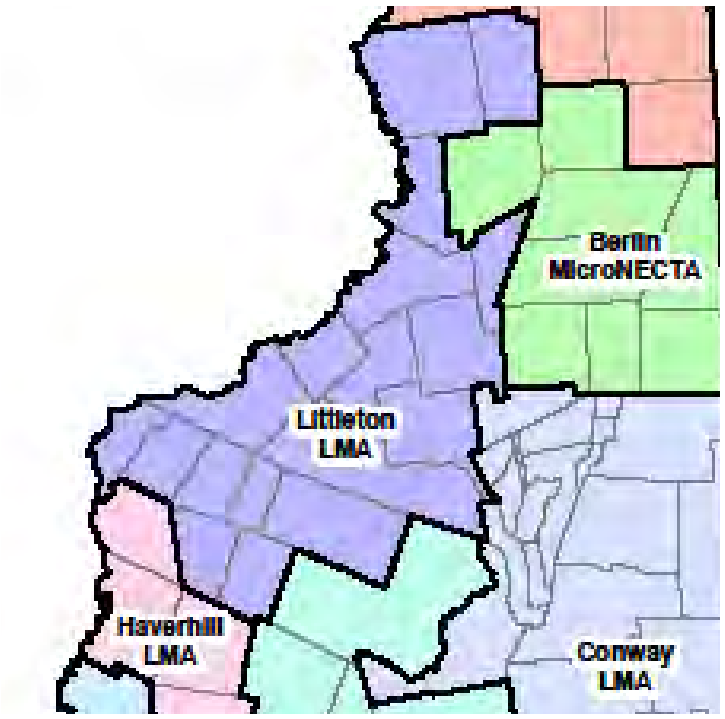
The People

Population

According to the US Census, the population of Carroll was 763 in 2010, up 15.1% from 663 in 2000. However, the population listed in group quarters increased from 9 to 73 over the same period. That means the population in households only increased 5.5% over the ten years. The 690 people living in 309 households represented an average household size of 2.23 persons.

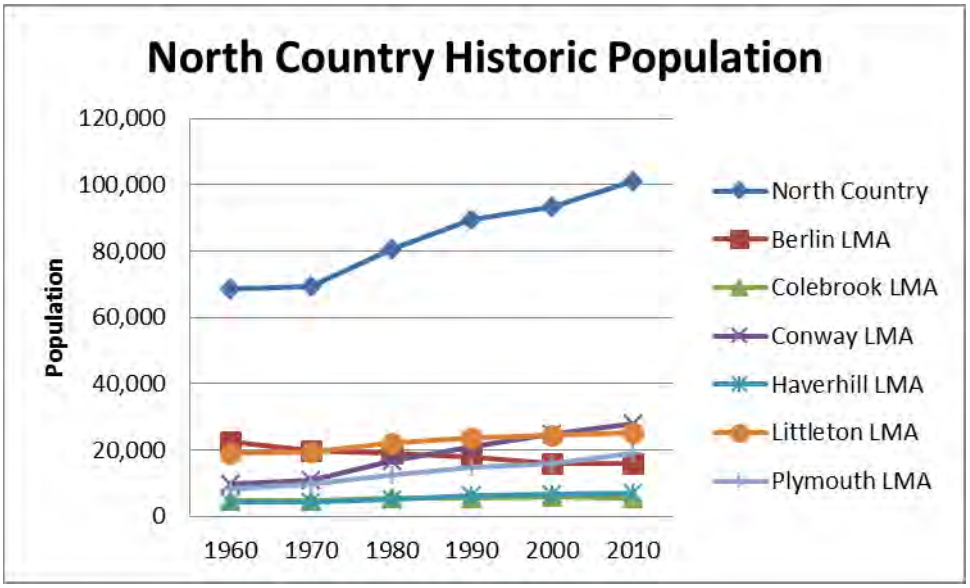
Labor Market Areas (LMAs), based on commuting pattern data, are used by many federal and state agencies for organizing and analyzing socioeconomic data. LMA's tend to more accurately portray the area where residents live, work, shop, and use services, compared with counties which in many cases are merely political boundaries. Carroll is part of the Littleton LMA along with the other communities listed below.



Littleton Labor Market Area

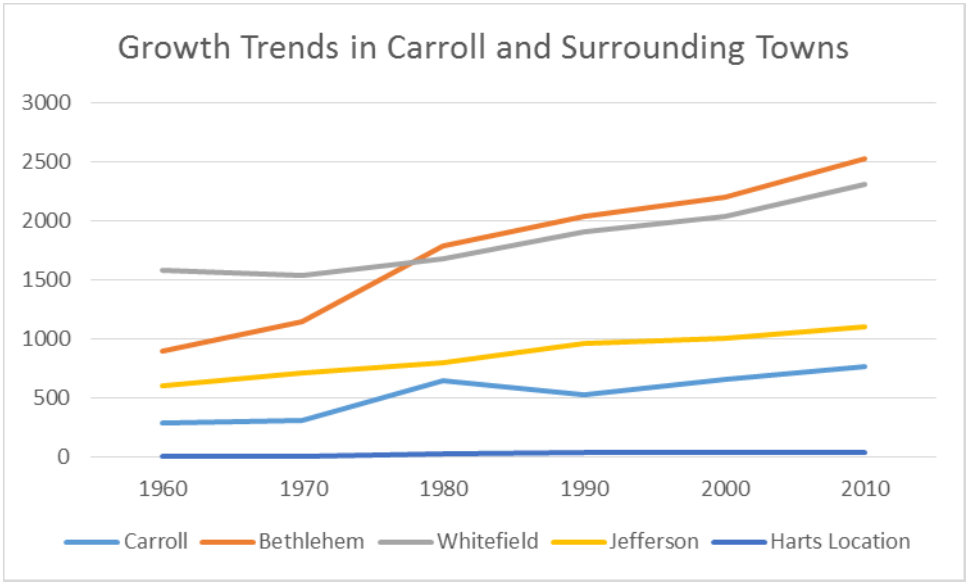
- Bethlehem
- Carroll
- Dalton
- Easton
- Franconia
- Jefferson
- Kilkenny
- Lancaster
- Landaff
- Lisbon
- Littleton
- Lyman
- Monroe
- Northumberland
- Odell
- Stratford
- SugarHill
- Whitefield

As shown below, the population growth in the Littleton LMA has been only moderate over the last fifty years compared with the North Country Region as a whole.



Sources: U.S. Census Bureau, N.H. Office of Energy and Planning

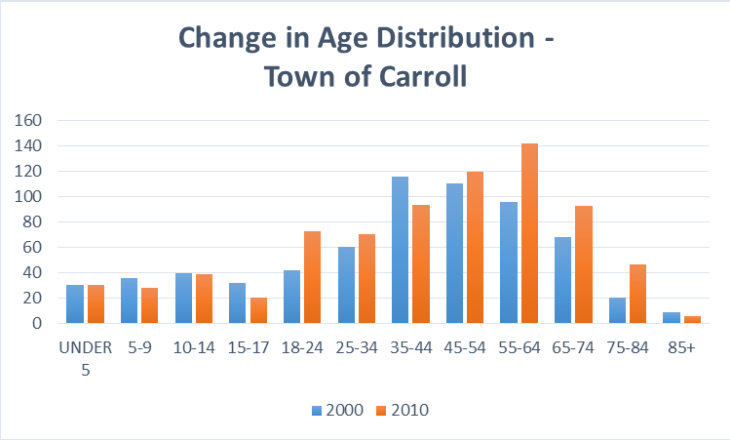
As shown below, despite some changes in growth patterns over the last few decades, Carroll has remained at about the same share of the area population.

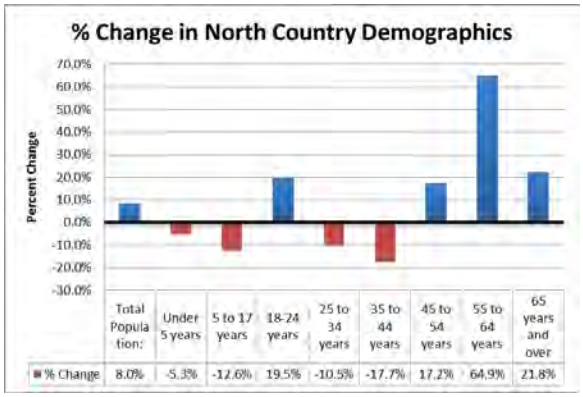


Most of the growth in the past decade in the area and in Carroll itself has been associated with people moving into the area. The number of births and deaths have been similar.

LMA	2000 Pop	2010 Pop	# 2000-2009 Births	# 2000-2009 Deaths	2000-2009 Natural Population Change	Total Net Migration
Carroll	663	763	66	58	+8	92
Littleton NH-VT	24,297	25,406	2,469	2,577	-108	1,001
Sources: U.S. Census 2000 and 2010, NH Vital Records						

As shown below, the age structure of the population has been changing. The decade 2000-2010 saw increases in the proportion of the population over 55 and between 18-24, and slight increases in those between 25-34 and 45-54. Similar patterns were seen throughout the North Country Region and state as a whole. Factors include the "baby-boomers" and "baby-boomer echo," the "graying of the population," and retirees moving to the region. As shown below, a similar pattern is seen region-wide.





Source: US Census 2000, 2010

Housing

The total number of housing units in Carroll was 898 in 2010, up 12% from 799 in 2000 (US Census). In 2000 the US Census counted 427 seasonal units in Carroll. In 2010 this figure was 523. This means all but three of the additional units were seasonal. The number of seasonal units grew at a higher rate than year-round dwelling units area-wide as well; seasonal units represented 16.2% of the total housing stock in the Littleton LMA in 2000 and 18.7% in 2010 (NCC, North Country Regional Housing Needs Assessment, June 2011 Update). Carroll accounted for 15% of the area's increase in seasonal units over the ten year period. In 2010, while accounting for less than 3% of the labor market area's population, Carroll accounted for 19% of the area's seasonal dwelling units.

The most recent data on the type of housing units in Carroll is the American Community Survey Five-Year Estimates 2008-2012. The table below shows the breakdown for Carroll. Carroll has a greater proportion of multifamily units than many rural communities due to the Bretton Woods planned unit development.

Type of Dwelling Unit	**Number Estimated in Carroll**
Single Family	576
2-4 Units	221
5 or more units	104
Mobile homes or other	44
TOTAL	**945**

The number of building permits issued gives us another way to look at recent growth trends. In Carroll, 42 permits were issued during the period 2005 to 2010, a 70.8% decrease from the 144 permits issued from 2000-2005. This is a similar pattern to the -60.9% decrease seen in the number of permits issued through-out the Littleton LMA over the same period. During the latter period studied, the number of building permits issued in Carroll also represented a slightly smaller portion of the total number of building permits issued in the LMA (8.5%) compared with the earlier period (11.4%). This means that growth is both slowing, and possibly also shifting to other communities.

The number of vacant units available for rent as year-round living quarters in Carroll was reported to be 47 in 2010 (US Census). Six vacant residences were for sale. This means the rental vacancy rate was 38.5% compared to 2.5% for a homeowner vacancy rate. For comparison, the average vacancy rate in the Littleton LMA in 2010 was 11.1% for rentals and 2.7% for owned dwelling units.

The figures below show the housing cost trends in the Littleton LMA over the past two decades. As shown, while purchase prices peaked in 2007 and then came back down somewhat, rental costs continued to rise.

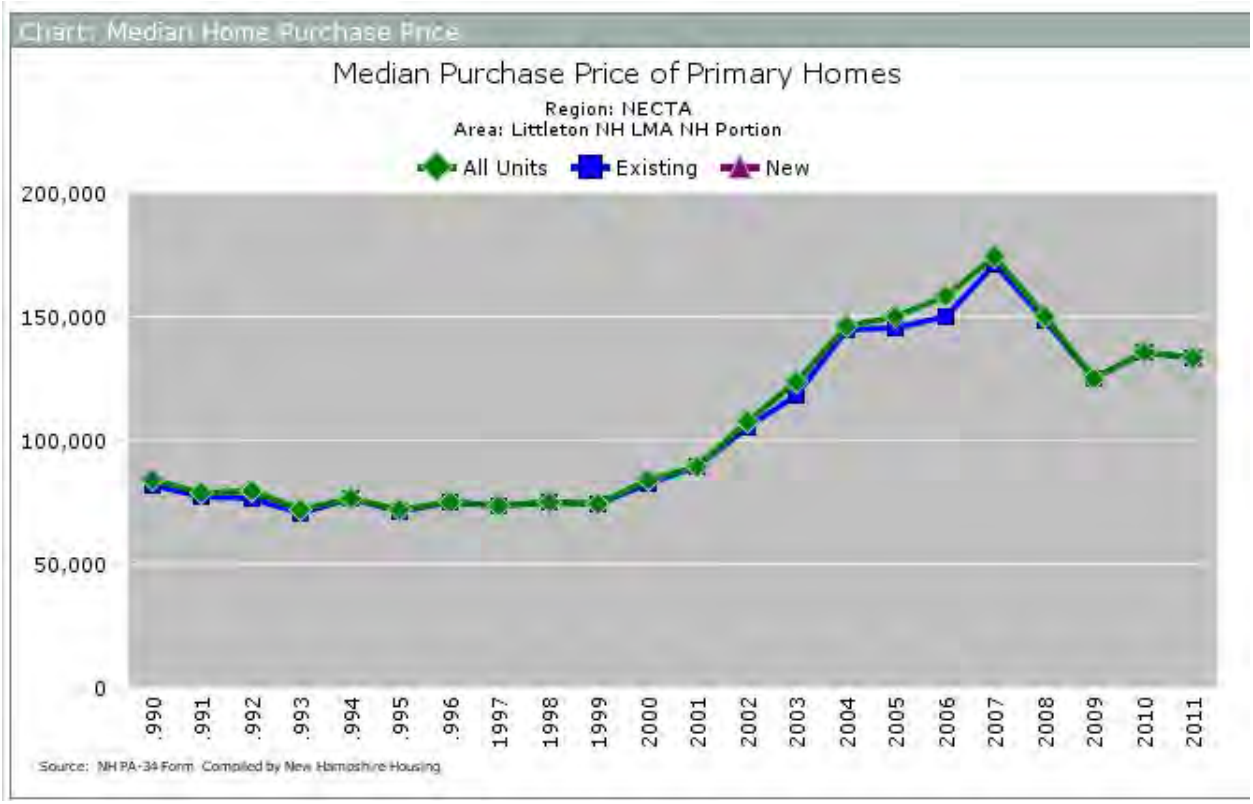
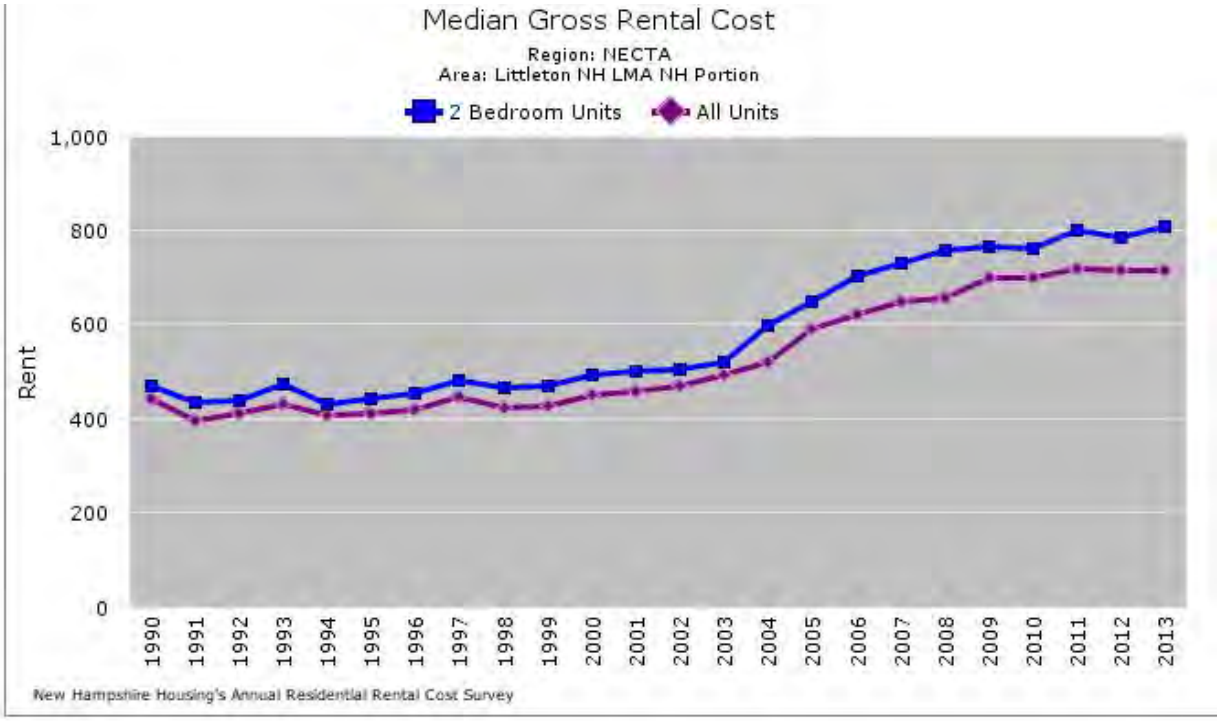


Chart: Median Home Purchase Price
Median Purchase Price of Primary Homes
Region: NECTA
Area: Littleton NH LMA NH Portion
All Units
Existing
New
200,000
150,000
100,000
50,000
0
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Source: NH PA-34 Form Compiled by New Hampshire Housing

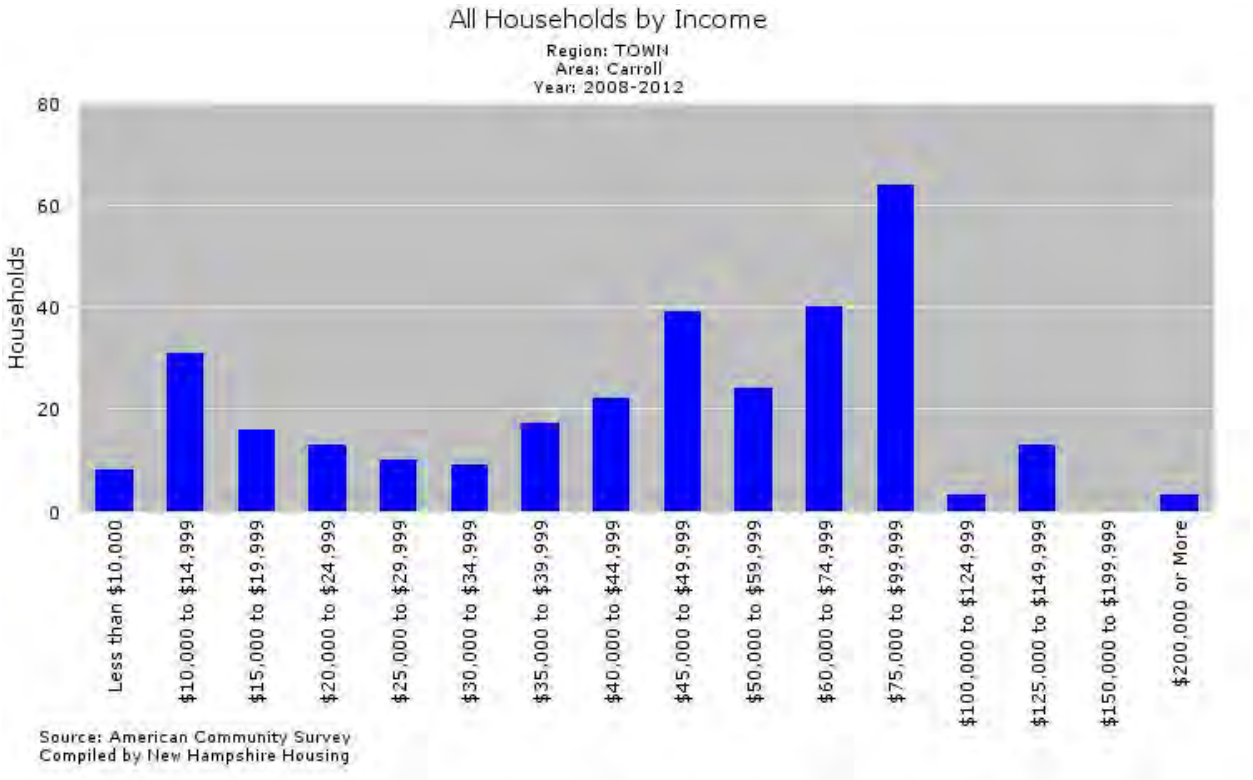

Median Gross Rental Cost
Region: NECTA
Area: Littleton NH LMA NH Portion
2 Bedroom Units
All Units
Rent
1,000
800
600
400
200
0
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
New Hampshire Housing's Annual Residential Rental Cost Survey

Income

Based on American Community Survey Five-Year Estimates 2007-2011, the median household income in Carroll is about $47,330 and the average per capita income is about $24,895. As shown below, these figures are slightly higher than those for Coos County as a whole, but substantially lower than statewide averages. The figures for neighboring towns are shown as well for comparison.

Area	Median Household Income	Per Capita Income
Bethlehem	$50,430	$26,446
Carroll	***$47,330***	***$24,895***
Harts Location	$38,750	$31,614
Jefferson	$53,571	$32,213
Whitefield	$47,617	$24,610
Coos County	$44,419	$24,351
New Hampshire	$64,664	$32,357

The distribution of Carroll households across income categories is shown in the figure below. As shown, the highest category is $75,000 - < $100,100, followed by $60,000 - < $75,000 and $45,000 - <$50,000. The next highest category is $10,000 - <$15,000.



Housing Affordability

Thirty percent of a household income has been used for many years by state and federal agencies as the maximum that can be paid for housing costs while still leaving enough for other basic necessities. Paying more than this means not having enough left for healthy food, day care, health care, reliable transportation, and other basic needs.

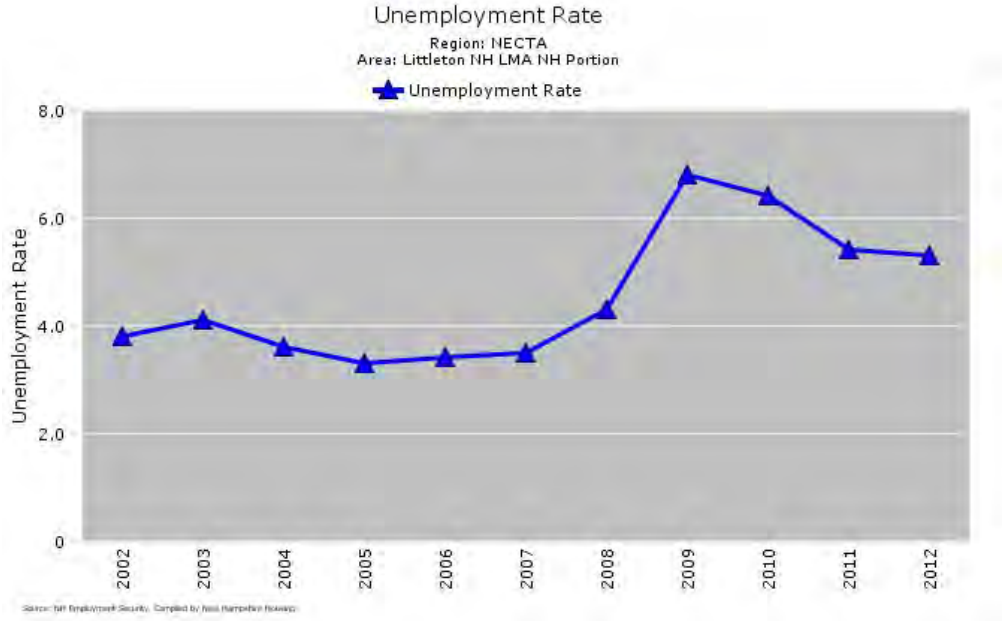
It was estimated using US Census sample data that in 1999 22.7% of owner households and 48% of renter households in Carroll were spending more than 30% of their incomes for housing costs. Using American Community Survey Five-Year Estimates 05-09, it was estimated that ten years later 30.4% of owner households and 35.9% of renter households were paying 30% or more. The figures for the Littleton LMA as a whole were 39% for renters and 29% for owners. (NCC, North Country Regional Housing Needs Assessment, June 2011 Update) The 2010 US Census counted 74 renter occupied housing units in Carroll and 235 owner-occupied units. That means an estimated 27 renter households and 71 owner households in Carroll were spending an amount on housing that did not leave enough for other basic necessities.

Employment

New Hampshire Employment Security Economic and Labor Market Information Bureau reported an average of almost one thousand jobs covered by unemployment insurance in Carroll in 2012. The vast majority were in Accommodations and Food Services with average weekly wages just over $500. The categories with enough data to report without violating privacy concerns are shown in the table below. Employment and wage figures for the same period are also included for the Littleton Labor Market Area (NH portion) for comparison.

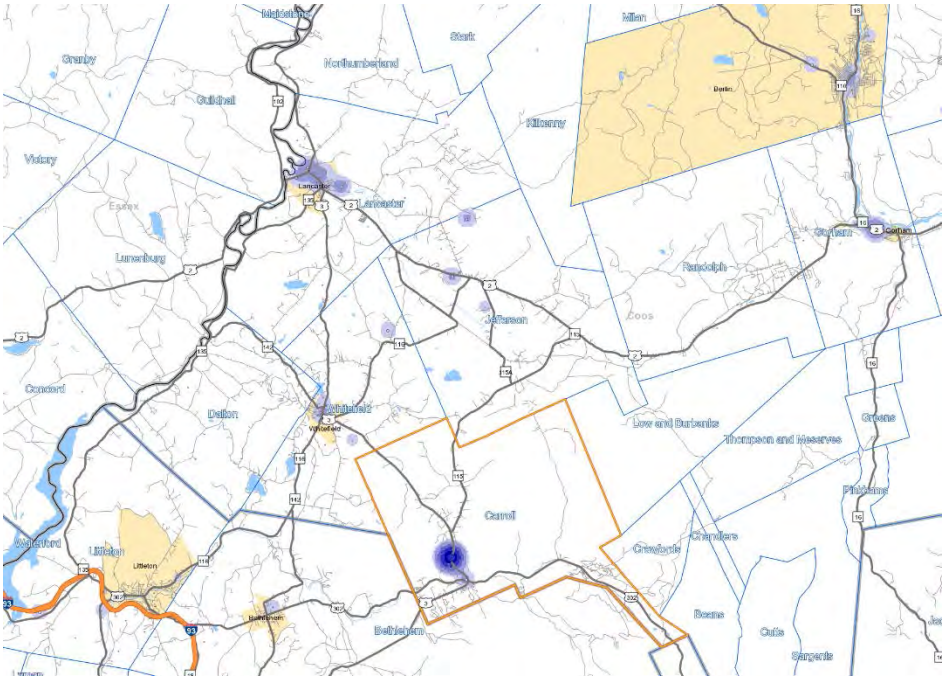
	Carroll			**Littleton LMA**		
Industry	**# of Employers**	**Average Annual Employment**	**Average Weekly Wage**	**# of Employers**	**Average Annual Employment**	**Average Weekly Wage**
Goods Producing						
Animal Production				4	95	$623.51
Forestry & Logging				14	68	$756.39
Construction				71	377	$785.40
Manufacturing				30	1320	$730.76
Service Producing						
Utilities				8	102	$1,567.99
Wholesale				27	138	$1,078.64
Retail	5	52	$366.48	150	2320	$583.97
Transportation and Warehousing	3	84	$850.36	27	260	$669.69
Information				22	122	$891.81
Finance & Insurance				41	226	$746.12
Real Estate				35	153	$590.19
Prof. & Technical				63	266	$1,019.38
Admin. & Waste				34	156	$612.12
Health Care/Social				102	1831	$893.33
Arts, Entertainment, Recreation				21	575	$342.56
Accommodations & Food	9	507	$508.85	95	1573	$374.54
Other Services				67	261	$610.10
Government						
Federal Government	1	2	$529.55	13	85	$947.16
State Government	5	64	$1,152.71	46	368	$713.93
Local Government	1	21	$515.51	46	1258	$652.81
TOTAL	**37**	**984**	**$555.66**	**933**	**11,708**	**$666.63**

Here, the number of residents in the Littleton LMA labor force are shown along with those who were employed each year. The gap represents the unemployment rate, shown in the next figure. As shown, the area's workforce is slightly larger now than when the economy declined in 2009, and the unemployment rate has decreased significantly.

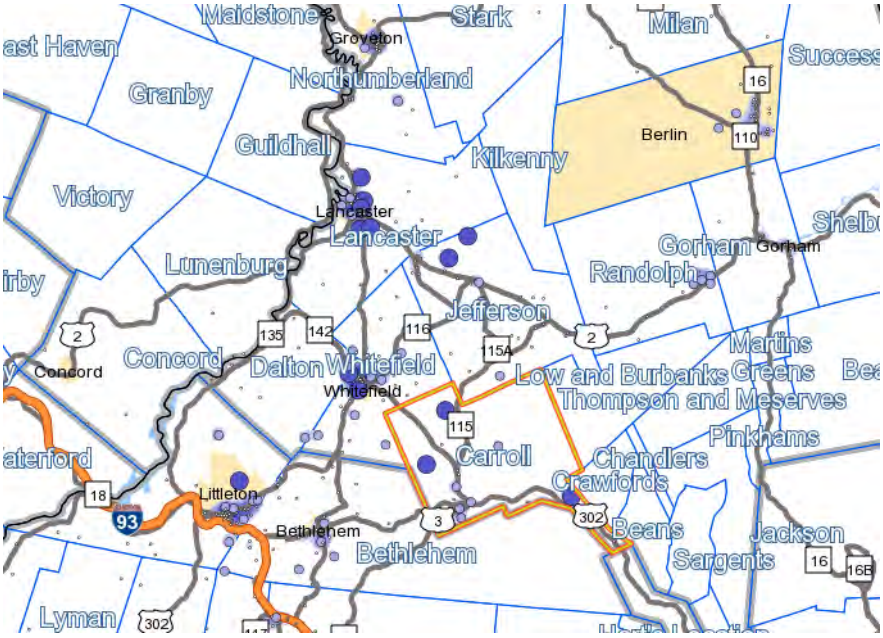


Approximately half of Carroll residents are employed in town and half commute to other communities. Carroll residents on average have a slightly shorter commute time than the average for Coos County (20.3 minutes vs. 22.4 minutes), and several minutes shorter than the average for the state (26.2 minutes) (American Community Survey, Five-Year Estimates 2008-2012).

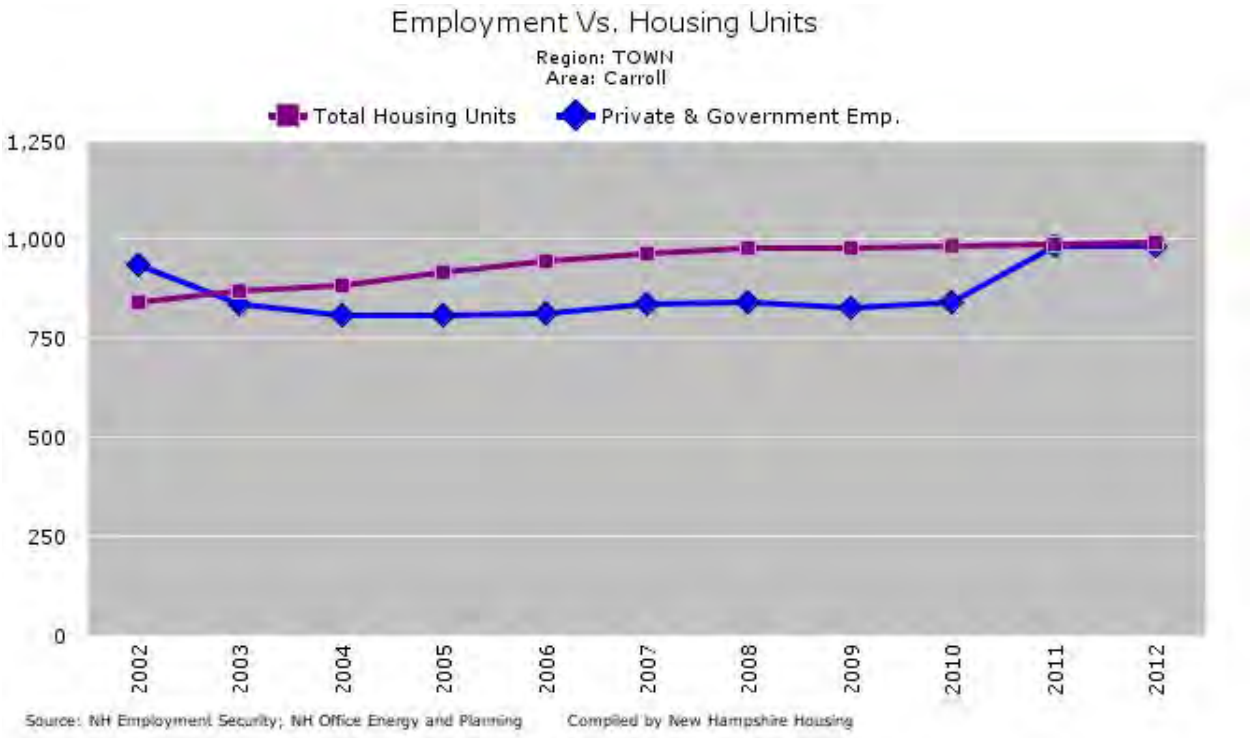
The figure below from the Census Bureau's On the Map shows where those employed in Carroll live.



The next figure shows where those who live in Carroll work.

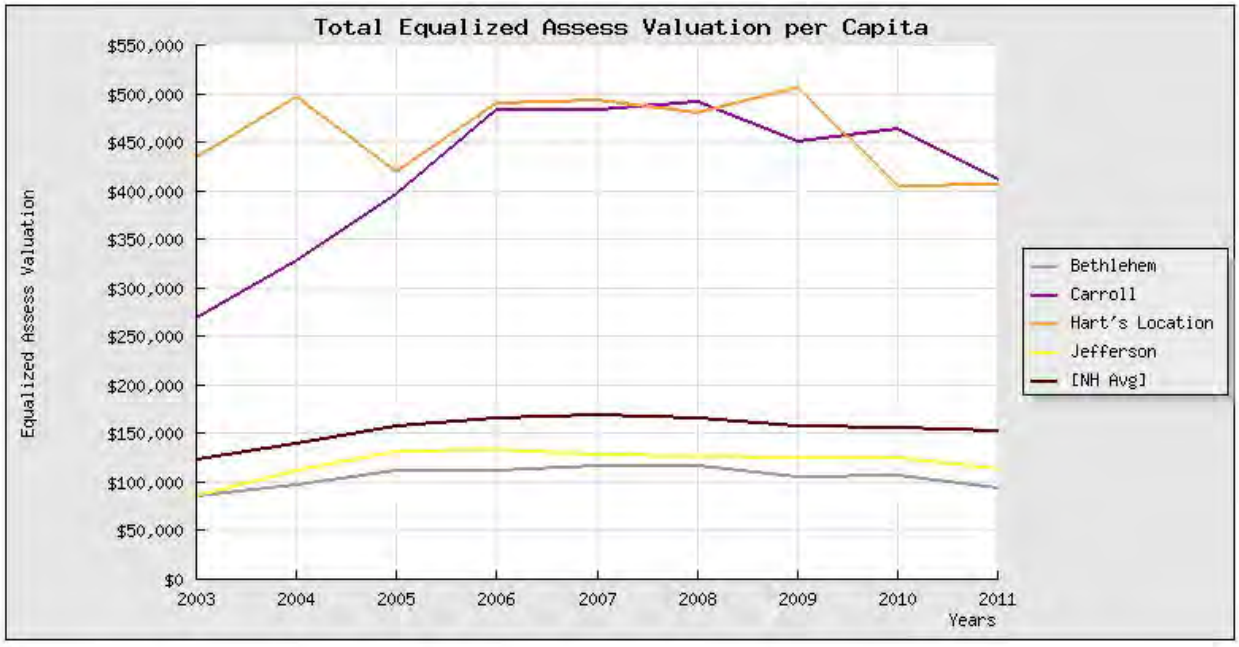


As shown in the figure below, the number of jobs and the number of housing units have remained in balance, with the number of jobs catching back up in recent years.



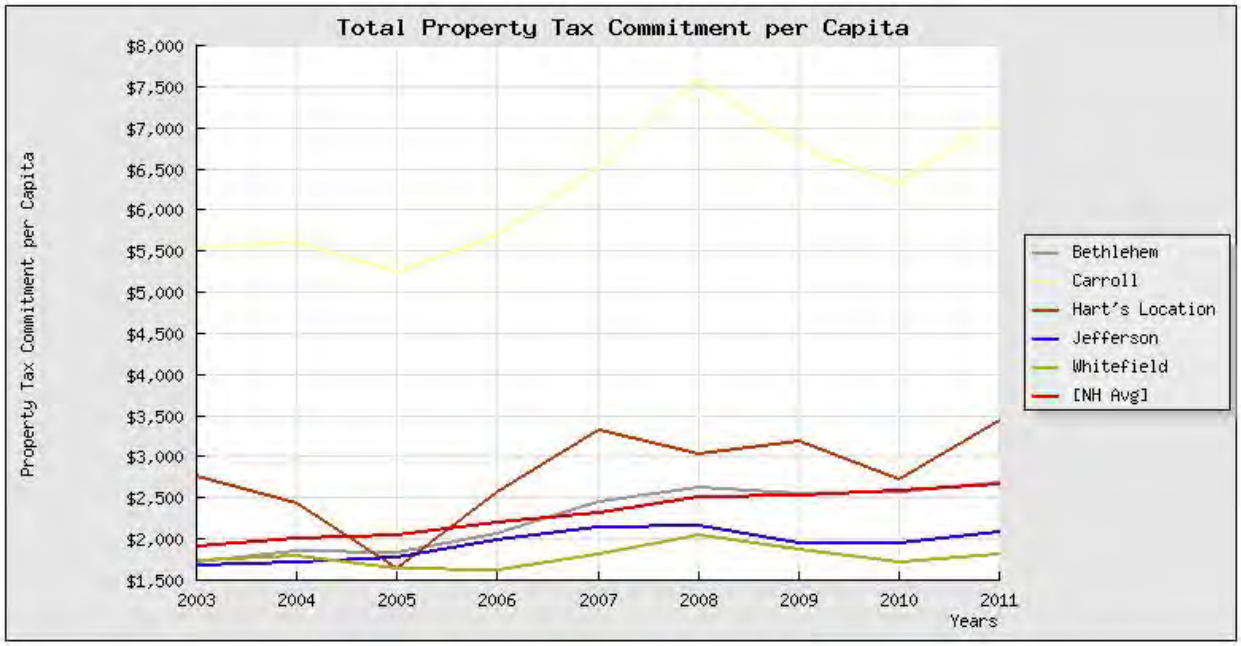
Property Taxes

The town's second homes and Bretton Woods resort area have a mitigating effect on property taxes for residents. Carroll's equalized assessed valuation per capita is shown below along with neighboring towns for comparison. As shown Carroll's property values when looked at on a per person basis are significantly higher than the average for the state.



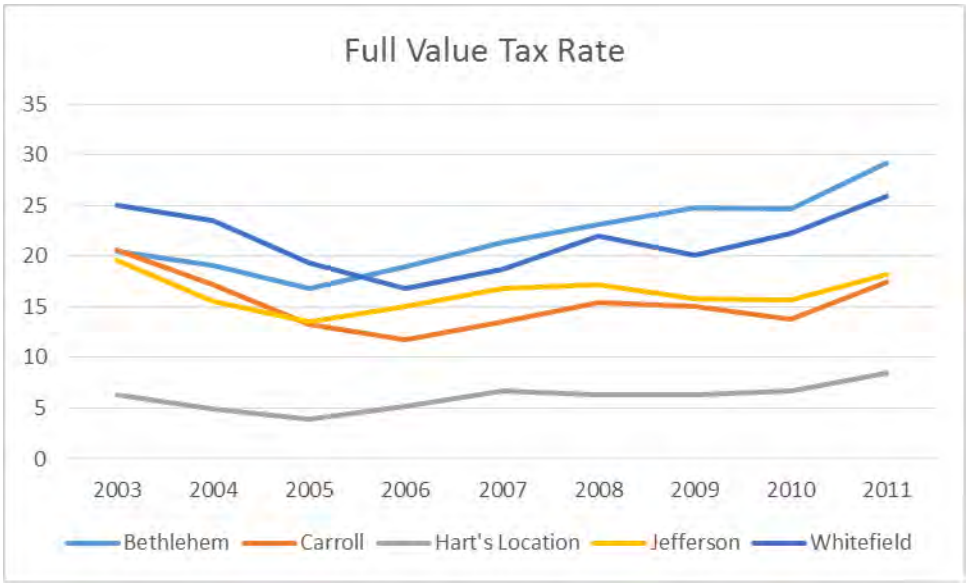
(Source: NH Public Finance Consortium, a Committee of NH Government Finance Officers Association)

The number of second homes along with the value of nonresidential properties enables the Town of Carroll to raise a significant amount of tax revenue per person.



(Source: NH Public Finance Consortium, a Committee of NH Government Finance Officers Association)

When compared to neighboring towns, Carroll's full value tax rate is lower than all except Hart's location.



(Source: NH Public Finance Consortium, a Committee of NH Government Finance Officers Association)

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The Land

The town's landscape and associated natural resources are both drivers of land use and important elements of the town's economic base. The Carroll Conservation Commission compiled this overview of the town's natural environment to guide future planning activities.

Climate

Long-term climate conditions and trends have an influential role on all other natural resources. Temperature, precipitation, and humidity are all factors that determine physical habitats and thus the kinds of plant and animal life that can survive in any particular area. Air patterns and weather systems, seasonal and annual amounts of precipitation, storm frequencies and intensities, freezing dates and heating degree days are among the items that are valuable in community planning and resource management. In addition, precipitation is the major controlling factor of a hydrologic cycle and, combined with river flow data, describes the town's water supply, water quality, and runoff characteristics.

Carroll's climate is largely controlled by four factors: latitude, air masses, elevation and topography. The town has latitude of 44 degrees north, about halfway between the equator and the north pole. This puts Carroll directly in the belt of eastward moving air, which encircles the entire globe in the middle latitudes. These " prevailing westerlies" bring continuously changing weather systems to much of the United States. The primary sources of air and precipitation patterns are the colder masses of land and water to the north. Specifically, the air masses that create Carroll's temperature and precipitation are the continental polar (cold, dry air), maritime polar (bringing cool, moist air from the northeast), and maritime tropical (warm, moist air from the Gulf of Mexico).

The climate varies from season to season because these air masses shift generally to the south in fall and winter, and to the north in spring and summer. As an example, because of its northerly location in summer and its source over the ocean, the air masses are a stronger influence on Carroll's weather in the summer than in any other season, bringing the most intense rainstorms and greater number of thunderstorms than at any other time during the year. The large amount of spring and early summer rainfall comes as a result of the strength and proximity of another air mass. The precipitation caused by this air mass combines with snowmelt to cause the usual but nonetheless worrisome spring flooding.

Elevation and topography are two other factors that affect Carroll's climate. The mass of the White Mountains causes higher rain and snowfall and greater and more variable wind speeds compared to otherwise similar areas. The mountains do cause the weather as a whole to be variable from year to year and within a single day and to be slightly unpredictable.

Temperature

Carroll gets an average of 39 inches of rain per year with about 169 days of precipitation. Snowfall averages about 94 inches. There are, on average, 198 days of sunshine per year in Carroll. *See Appendix A: Table 1, Average Temperatures and Precipitation in Carroll*

- On average, the warmest month is July and the coolest month is January.
- The highest recorded temperature was 93°F in 1982.
- The lowest recorded temperature was -31°F in 1957.
- The most precipitation on average occurs in October.

Precipitation

There is not usually a large variation in rainfall throughout the year. While snowfall and the consequent melt make spring a particularly wet time of year, there is no season that lacks precipitation. The Northeast is considered to be a water-abundant region, but the occurrence of a drought season or year is possible and can affect river flow, municipal and private water supply, and water quality.

Climate Change

State researchers are predicting weather events of stronger intensity than we are observing today. These changes are projected to increase the risk of flooding, increase insect-born diseases, decrease the abundance of sugar maples, and create stresses in our fisheries—all of which will have a negative impact on our economy. In order to adapt to these ongoing changes, plans should be developed to move at-risk populations and critical infrastructure out of harm's way. Further development in risk-prone areas should be avoided. Measures should be taken to protect those areas and populations that can't be moved, and recovery plans should be developed for those areas where impact cannot be avoided or deflected.

See Appendix A: Table 1, Average Temperatures and Precipitation in Carroll

CONSERVATION LAND

The total acreage of the Town of Carroll is 32,187.5 acres (*see Appendix A: Table 2*, *Summary of Political Unit Acreage Report)*. Over half of that acreage is conservation land. The Twin Mountain part of Carroll is bordered to the east by the White Mountain National Forest which accounts for 16,714 acres of Carroll's conservation land (*see Appendix B: Map 1*, *Conservation Land in Carroll)*.

Located along the Ammonoosuc River in the heart of Twin Mountain is a 125-acre lot designated as the Town's Recreation Area (Map 206, Lot 28). North on Route 3 is a 10.9-acre lot in conservation—the site of the NH Fish and Game Fish Hatchery (Map 203, Lot 25).

Further north in Twin Mountain, situated on the east and west sides of Route 3, is a privately owned 66.2 acre conservation easement known as the Flats. The land, formerly owned by the Grantor, Harriet Livingstone, was acquired in 1989 through the NH Land Conservation Investment Program to protect the field for its wetlands, valuable habitats for wildlife, and excellent scenic views. In the easement contract, the Town of Carroll agreed to provide public access to the protected property, to maintain the boundaries of the protected property, and to mow the open fields in the event the grantor fails to mow the fields to protect the scenic beauty of the property. The Carroll Conservation Commission is responsible for monitoring the easement contract.

Pondicherry is a division of the Silvio Conte National Fish and Wildlife Refuge located in Jefferson, Carroll, and Whitefield. It is a conservation partnership between the US Fish and Wildlife Service, NH Fish and Game Department, and NH Audubon. The current size is 6,405 acres. It was first established in 1963 at 312 acres to provide feeding, resting, and nesting habitat for migratory birds at remote Cherry and Little Cherry Ponds. Since 2000, the US Fish and Wildlife Service has acquired over 6,000 additional acres of prime boreal forest, river, swamp, and marsh habitat using Duck Stamp and Land and Water Conservation Funds.

Pondicherry was designated as a National Natural Landmark in 1972 by the National Park Service. It was designated as New Hampshire's first Important Bird Area in 2004. Pondicherry has been a destination for birders since 1899 when Ornithologist Horace Wright began studies here. The Refuge and adjacent lands form the headwaters of the John's River, an important tributary of the Connecticut River. Grassland, shrub-land, and successional forest habitat surrounding the Refuge enhances the diversity of wildlife found here. The view from Cherry Pond of the surrounding White Mountains is considered to be one of the finest in the region.

In June 2011, The Nature Conservancy added 380 acres in the Town of Carroll, connecting the Refuge land to the White Mountain National Forest on the opposite side of Route 115 in the area of the Scenic Overlook and Oleson Memorial Plaque. The acquired tract provides high quality, diverse wetland habitat for waterfowl, migratory birds, black bear, moose, and other wildlife, and helps protect the iconic view of the Cherry Pond from the Route 115 Oleson Overlook. The spruce fir forest, wetlands, and brooks feed Moorhen Marsh in the heart of the Refuge. Funds for the purchase came from the Migratory Bird Conservation Fund derived from the sale of waterfowl hunting licenses and ducks stamps. Hunting and fishing will continue to be allowed.

In March 2014, an important addition to White Mountains National Forest was

completed, involving 370 acres (app. 210 acres in Carroll and app. 150 acres in Whitefield). The land was previously owned by Whitefield Water to protect their water supply. The acquisition will permanently protect the headwaters of Ayling and Bear Brooks, which flow into Pondicherry National Wildlife Refuge and the John's River. Two streams are in the tract—Slide Brook and Leonard Brook. The tract provides an important wildlife travel corridor between low elevation spruce fir around Pondicherry with high elevation spruce fir forest on Cherry Mountain. The land in Carroll is on tax map 406, parcels 1 and 2.

Bretton Woods, located in the lower eastern portion of Carroll and surrounded by the White Mountain National Forest, has its own Concept Plan that provides for a percentage of open space to be maintained in and around any developed area. In 2007, CNL Income Properties and Celebrations Associates began planning the Dartmouth Brook development located off the north side of the Base Station Road. The Ammonoosuc Conservation Trust worked together with NHDES and NHF&G to encourage the creation of a permanent conservation easement within the development to protect the highly valuable wildlife habitat and maintain water quality with a riparian buffer zone. When development was suspended due to economic conditions, these efforts stopped. These conservation partnerships will continue to play an important role in identifying and protecting high priority resource lands when additional phases of the development are planned.

Many landowners with 10 acres or more of undeveloped land have placed their land in current use. Approximately 9,410 acres of private land are under Current Use in the category of Forest, Farm, or Unproductive Land.

In summary, conservation lands in Carroll are as follows:

- White Mountain National Forest, USFS
- The Livingston Conservation Easement (known as "The Flats")
- Pondicherry National Wildlife Refuge, USFW
- NH Fish & Game Hatchery
- Town of Carroll Recreation Area

See Appendix A: Table 2, Summary of Political Unit Acreage Report

Appendix B: Map 1, Conservation Land in Carroll

WATER RESOURCES

Watersheds

As early as the 1920's, many federal agencies in the United States used watershed management to control soil erosion and sedimentation. Increasingly, federal, state, and local agencies are focusing on nonpoint source pollution as a primary source of pollution to surface water and emphasizing the importance of planning at the watershed level. Watershed plans can work to improve water quality, manage recreational opportunities, maintain public health, and preserve the aesthetics of rivers and lakes. Community strategies for watershed planning have included the advent of partnerships and collaboration between the public, government agencies, and local organizations.

A watershed can be defined as a natural unit of land within which all water drains to a common outlet. A watershed includes two components: a surface water drainage basin and a groundwater drainage basin. The surface drainage basin is the land area from which all surface water flows toward a surface water body. The groundwater drainage basin is the land area and subsurface through which groundwater drains to a surface water body at a lower elevation. The surface drainage basin may be larger or smaller than the groundwater drainage basin, depending on factors such as soils, slope, and surface cover. One of the most important concepts is that surface water and groundwater are inextricably linked. For example, groundwater and surface water interact where groundwater discharges to lakes, rivers, and in areas where ground conditions impede the drainage of water, such as in wetlands. This means that management of contamination and pollution sources throughout a watershed will benefit both groundwater and surface water.

All of Carroll is located in the Connecticut River Watershed up to the height of land at Crawford Notch. The small portion of town around Saco Lake flows to Maine via the Saco River. Rainwater and snowmelt flow to the Connecticut River via the Ammonnosuc River in the southern part of town, via the Isreal River in the northeast corner of town, and via the Johns in the northwest portion of town. For federal and state purposes, the watersheds follow a naming convention shown below and on the Water Resources Map in the Appendix.

Watersheds	Sub Watersheds
Upper Connecticut River	Mill Brook
Connecticut-John River to Waits River	Johns River
Saco River	Forest Lake-Bog Brook

See Appendix B: Map 2, Aquifers/Watersheds in Carroll

Surface Waters

One of the most important natural resources is water. Maintenance of a quality water supply in ample quantity, prevention of point and nonpoint sources of pollution, and management of water resources for recreation and wildlife habitat should be a high priority.

Lakes and Ponds in the Town of Carroll

Carroll has two lakes—both located in the Bretton Woods section of town. Saco Lake is in

National Forest Service land. The Ammonoosuc Lake is a man-made lake located behind the AMC Highland Center. A goal of the 2010 Crawford Stewardship Project is to rehabilitate the dam at the Ammonoosuc Lake and preserve this habitat. In addition, small ponds have been identified in the Twin Mountain section of town, identified by tax map locations. They are:

Twin Mountain Area:	Map 206, Lot 53
	Map 206 Lot 102.5 & 102.6 King's Pond
	Map 409 Lot 8
	Map 416 Lot 22
Bretton Woods Area:	Saco Lake
	Ammonoosuc Lake (historic man-made)
	Map 419 Lot 15

Rivers and Streams in the Town of Carroll

The Ammonoosuc River is a 4th Order river that runs through the southern edge of town. Meaning " fish place," the Ammonoosuc River attracts fisherman, campers, and sightseers. Realizing the important significance as both a recreational attraction and a natural resource, the Ammonoosuc River was elected into the NH River Management Program in 2007 as a Designated River. The town is an active participant on the Ammonoosuc River Local Advisory Committee to cooperative with the other Ammosoosuc River communities on the management of this important regional economic asset. The Committee (ARLAC) adopted a management plan that focuses primarily on education and best management practices to maintain the currently high water quality in the river. Several streams of different orders also flow through Carroll providing additional aquatic habitat, surface water, and scenic beauty. In 2005, the Profile School in Bethlehem and Horizons Engineering of Littleton evaluated the culverts, bridges, and mainstream dams within the Ammonoosuc River to determine which structures presented a barrier to brook trout passage. Their report identifies sites that should be given high priority for brook trout passage improvements and raises awareness of the existence of the fish passage problems and the implications of blocking off natural brook trout habitat. In 2010, Horizons applied for grant money to replace a perched culvert on Tuttle Brook near the Town Recreation Area. Unfortunately, the grant was denied. Future efforts should continue to correct fish passage obstructions along the Ammonoosuc River whenever possible.

Below is a list of streams in Carroll, including their order and their relationship to the Ammonoosuc River. *See Appendix B: Map 3, Water Sources in Carroll: Streams, Ponds, Wetlands.*

Twin Mountain Area:	Little River 3rd Order	Ammonoosuc River Tributary
	Tuttle Brook 2nd Order	Ammonoosuc River Tributary
	Alder Brook 2nd Order	Ammonoosuc River Tributary
	Cherry Mountain Brook 2nd Order	
	Carter Brook 1st Order	
	Carroll Stream 3rd Order	
	Bear Brook 1st Order	
	Bear Brook 2nd Order	
	Bog Brook 3rd Order	
	Leonard Brook 1st Order	
	Black Brook 2nd Order	Ammonoosuc River Tributary
	Zealand River 3rd Order	Ammonoosuc River Tributary
Bretton Woods Area:	Deception Brook 3rd Order	Ammonoosuc River Tributary
	Dartmouth Brook 2nd Order	Ammonoosuc River Tributary
	Crawford Brook 3rd Order	Ammonoosuc River Tributary
	Sebosis Brook 2nd Order	Ammonoosuc River Tributary
	Saco River	
	Elephant Head Brook	
	Gibbs Brook	

Groundwater

Twin Mountain has two sources for its municipal water supply—Cherry Mountain and Little River**.** Bretton Woods provides water to their residents by the privately owned Rosebrook Water Company.

The highest yielding aquifers in Carroll exist along US Route 3 and Paquette Drive in Twin Mountain, along Route 302 at Old Cherry Mountain Road, and at the ski resort in Bretton Woods. In 2004, Carroll added an Aquifer Protection District in the zoning ordinance. This stratified–drift aquifer is identified on the Carroll Drinking Water Resource Map. The purpose of the ordinance is to preserve, maintain, and protect from contamination existing and potential groundwater supply areas and to protect waters that are fed by groundwater. This protection is accomplished by regulating the land uses which contribute pollutants to designated wells and/or aquifers identified as being needed for present and/or future public water supply.

Water Quality Threats

Nonpoint pollution is defined as pollution that originates from multiple sources and is released over a wide land area and not from a specific location. Common nonpoint sources are runoff from roadways and parking lots, construction sites, excavations, lawns, and golf courses. This runoff, if not managed properly, could contaminate streams, lakes, wetlands, and groundwater.

The Department of Environmental Services (DES) regulates and monitors all underground storage tanks (UST) that store more than 110 gallons of gasoline, diesel fuel, motor oil, used oil, or other regulated substances. Leaks or spills from these containers can contaminate surface and ground water supplies. In addition, fumes from a leaking tank can collect in areas such as basements, living spaces, and garages and pose a serious threat of explosion, fire, and asphyxiation. The DES OneStop Data site lists 17 property locations in the Town of Carroll that have or had a history of a UST. It also includes information on the status of the UST including removal or remediation projects for known leaking tanks. The data lists 7 UST locations where leaking tanks occurred and have been or are still in the process of remediation. Since its closure, the Old Carroll Landfill located on New Straw Road has been monitored on a yearly basis. These sampling activities are performed in accordance with the DES Groundwater Management permit and will continue until 2030.

Floodplains and Fluvial Erosion Hazard Areas

Floods occur in Carroll periodically depending on storm patterns, snow melt, and ice jams. As recent as 2011, flooding of the Ammonoosuc River was seen as a result of ice jams and Hurricane Irene. The flooding of the Mt. Washington golf course as well as Base Road, and Upper Ammonoosuc Falls and the resulting damages have been pictorially recorded. There is a U.S. Geological Survey gauging station located on the Ammonoosuc River at river mile 35 in Bethlehem Junction. Records for this 87.6 square mile area have been maintained since August 1939.

In 2011, Dr. John Field completed a study on the fluvial geomorphology of the Ammonoosuc River. The results of the geomorphic assessment identified fluvial erosion hazard areas, that is, areas where the river is likely to move through either gradual erosion over time, or suddenly during an extreme storm event, such as by cutting off a meander. Dr. Field's report also discussed potential

causes of flooding and erosion hazards, areas of increased sediment loading, and degraded aquatic habitat. The report offers a number of restoration projects to address these hazards and habitat concerns including corridor protection, riparian buffer planting, removal of floodplain constraints, bank stabilization with bioengineering methods, and encouraging meander formation along straightened reaches. *See Appendix B: Map 4, Ammonoosuc River Fluvial Erosion Hazard*

Riparian Buffers

The shorelines of rivers, streams, and ponds are important for wildlife habitat and water quality. The NH Water Quality Protection Act, RSA 483-B (formally called Comprehensive Shoreland Protection Act) establishes a "protected shoreland" of 250 feet, including a 150-foot wide vegetative buffer. The Act affects fourth order or higher rivers (such as the Ammonoosuc River), lakes, ponds and artificial impoundments of 10 acres or larger, and tidal waters. Certain activities are restricted or prohibited and others require a state permit from NH Dept. of Environmental Services. For a summary of requirements, go to the Water Division of State of NH DES website.

Riparian buffers are important for all wetland areas, streams, lakes and ponds, certain impoundments, not just those regulated under state law. In fact, in recent years in Northern New England it has been the more upland streams with narrow valleys and shallow soils where the most damage has occurred during severe rains.

Natural vegetation along streams and ponds stabilizes stream banks, moderates the impact of heavy rains, and filtering and capturing sediments and pollutants from runoff, slowing of flood waters, providing shade to lower water temperatures (cooler water holds more oxygen, important for aquatic animals), and offering wildlife nesting habitat, food sources, migration routes for birds, and travel corridors for animals.

See Appendix A: Table 3, Summary Shoreline Buffer Acreage Report

See Appendix B: Map 2, Aquifers/Watersheds in Carroll

Map 3, Water Sources in Carroll: Streams by Order, Ponds, Wetlands

Map 4, Ammonoosuc River Fluvial Erosion Hazard Zones (2 pages)

VEGETATION

The kind of vegetation that is native to an area is primarily influenced by climate, topography, and soils. Sugar maple, yellow birch, and beech—the key species of the predominant northern hardwoods—cover the lower and middle slopes of Carroll. Other major species include red maple, white birch, hemlock, and white pine. These trees and others associated with the northern hardwood type usually grow on sites that are moderately well drained or poorly drained.

At lower elevations, well-drained soils of the valley provide good sites for stands of white pine. The higher elevations and cooler temperatures of the peaks encourage an intermixing of spruce-fir among the northern hardwoods. Red spruce and balsam fir are common along the ridges and in pockets. Major hardwood species include sugar and red maples, yellow and white birches, beech, and white ash.

The NH Wildlife Action Plan (WAP) identifies the following critical habitat types in Carroll:

Floodplain Forest

Grasslands

Marsh & Shrub Wetlands

Peatlands

Vernal Pools (likely but not mapped)

Hemlock-Hardwood-Pine Forest

High Elevation Spruce-Fir

Lowland Spruce-Fir Forest

Northern Hardwood-Conifer Forest

There are four major forest types in Carroll ranging from Northern Hardwood Conifers to Lowland Spruce Fir. According to the NH WAP Habitats Map, the majority of the High Elevation Spruce-Fir Forest is located within the boundaries and management of the National Forest. Although a matrix of forest types are within the National Forest, a good majority of Lowland Spruce-Fir Forest is located in the undeveloped northwestern section of Twin Mountain. This particular forest type is an important habitat for the American Marten, which is listed in the state as a threatened species. *See Appendix A: Table 5, NH Natural Heritage Bureau, Habitats and Species of Concern in Carroll.*

The majority of Carroll provides a predominant forest habitat, but other important habitats can be located on the WAP Map.

- A 66-acre **grassland habitat**, maintained under a conservation easement, is located along Route 3 in Twin Mountain.

- **Peatlands and shrub wetlands** can also be found in the undeveloped northwestern section of Twin Mountain.

- The Ammonoosuc River is a 4th order Designated River that runs along the southern border of Carroll. According to the WAP Habitats Map, **floodplain forest habitats** can be found all along the River corridor

- **Vernal pools** are likely to be located in Carroll but verification of their location requires field observations or knowledge from local residents.

The Highest Ranked Wildlife Habitat Map (*see Appendix B: Map 5)* depicts habitats that are ranked as highest quality on a statewide, regional, and local scale. The areas of Highest Ranked Habitats in Carroll not including the White Mountain National Forest are located in northern Twin Mountain along area streams and their tributaries including the Carroll Stream, Bear Brook, Carter Brook, Cherry Mountain Brook, and Leonard Brook. High ranked habitat areas are also seen in the Bretton Woods section of town within the developed resort area and along the Ammonoosuc River floodplains.

The areas of Highest Ranked Habitat in the Biological Region are located in the undeveloped northwestern region of Twin Mountain and the southern border of town along the Ammonoosuc River.

See Appendix A: Table 4, Summary Palustrine Wetlands Acreage Report

Table 5, NH Natural Heritage Bureau, Habitats and Species of Concern in Carroll

See Appendix B: *Map 5, Highest Ranked Wildlife Habitat by Ecological Condition in Carroll, NH Wildlife Action Plan*

Map 6, Wildlife Habitat Land Cover in Carroll, NH Wildlife Action Plan

WILDLIFE

Nearly half of the land in Carroll is part of the White Mountain National Forest, which is actively managed to preserve critical and diverse habitats and which supports an abundant wildlife population. Towns such as Carroll, which are within or border large protected areas, play an important role in providing forested corridors for wildlife that require larger base areas, such as bobcat, bear, moose, American marten, and lynx, and riparian travel corridors along rivers and wetlands. These corridors provide an important link between unfragmented blocks of habitat and sources of food and water.

Economic Value of Wildlife

Tourism has driven the economy of Carroll since the early 1820s. Wildlife viewing is often perceived as an adjunct tourist activity, when, in fact, it provides more economic fuel than people realize. In 2006, NH residents and nonresidents involved in game and nongame recreation spent more than $222 million in trip-related expenses in New Hampshire—**of which $116 million related to wildlife viewing.** Fishing brought in an estimated $88.6 million that year and hunting brought in $17.6 million for trip-related expenses alone. Expenditures in NH for trips and equipment for wildlife viewing, fishing, and hunting totaled more than $520 million (*2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation,* US Fish and Wildlife Service and US Census Bureau).

USDA calculates **total spending/year for White Mountain National Forest visitors at $145.7 million** (2005 National Visitor Use Monitoring Program). *See Appendix A: Table 6*, *Annual Total Spending in White Mountain National Forest*.

Land Use Development and Wildlife

In addition to critical habitats, certain habitat features are important to many wildlife species:

- **Wildlife travel corridors,** both riparian and forested, offer connectivity between primary habitats and watersheds in Carroll. The Ammonoosuc River offers a variety of pristine habitats and the corridors allow seasonal movement between habitats for food, cover and water, as well as dispersal (establishment of new territories).

- **Wetland complexes and vernal pools** (depressions and pools that dry up for a portion of each year) serve as critical breeding habitats for amphibians and reptiles, as well as food sources for many species. Surrounding upland areas to wetlands and vernal pools (a minimum of 300 yards) are vital to their life cycle.

- Other habitat features important to wildlife are **mast stands** (oak, beech and other "hard" food sources, as well as soft mast, such as berries), **shrub borders** of at least 20 feet separating fields and forests, and **deer wintering areas** (dense softwood stands with crown cover greater than 60%).

Birds

Over 140 bird species have been identified in the town of Carroll including bald eagle, osprey, Bicknell's Thrush, and black-backed woodpecker. Some are year-round residents, some fly from as far as Central and South America, and some Arctic and Sub Arctic species spend their winter in Carroll. Many make their spring and fall migration along the Ammonoosuc River and some can be seen en route to nearby Pondicherry Wildlife Refuge. Others find the variety of diverse habitats ideal nesting grounds and many of these migratory songbirds call the White Mountain National Forest their summer home. Several open areas in the town of Carroll have been identified as prime habitat for American Woodcock.

Fish

The Ammonoosuc River provides habitat for many cold and warm water fish species. The list of fish commonly found in the Ammonoosuc River and various tributaries in town include: brook trout, rainbow trout, Atlantic salmon, longnose sucker, longnose dace, blacknosed dace, slimy sculpin, and creek chub.

The Ammonoosuc River is stocked annually with rainbow, brook, and brown trout. According to NH Fish & Game, the Ammonoosuc River is suitable for wild, self-sustaining populations of brook trout. Brook trout is included in the NH Wildlife Action Plan as a "Species of Greatest Conservation Need." Critical habitat found within the corridor includes deep pools, such as Lower Falls. Smaller pocket pools and spring seeps are scattered throughout the system, which provide cool water refuge necessary for summer survival of cold water species. Additionally, the many tributaries of the Ammonoosuc River provide critical habitat for cool water refuge and spawning for trout and salmon.

The Ammonoosuc River has been identified by the US Fish and Wildlife Service as an important cold water fishery. Atlantic salmon fry have been stocked in the river as part of the federal Atlantic Salmon Restoration Program since 1990. Sampling efforts have shown some success, finding salmon that are one, two, and three years of age. Damage from Hurricane Irene to the White River National Fish Hatchery in Vermont resulted in a total loss of their salmon. This facility was the primary distribution of salmon fry for the Connecticut River Watershed. This loss as well as years of poor return rates resulted in the unfortunate termination of this program.

Mammals

Mammals such as deer, moose, lynx, and bear have large range and territory requirements. The proximity of the National Forest results in animal/human interaction, made more difficult when humans feed animals. Opportunistic species, such as fox and coyotes, can pose concern to humans as well as their domestic pets. Beavers can have both a positive and a negative impact on the environment. When beavers build dams, they create new wetland environments for other species. These wetlands can help slow erosion, raise the water table, and help purify the water. Beavers can play a major role in creating a more diverse habitat. When beavers abandon their lodges and dams, aquatic plants take over the pond. Eventually, shrubs and other plants will grow and the area will

become a meadow. The shrubs in the meadow will provide enough shade to allow tree seedlings to grow and the land will turn into a woodland area. Beaver dams can also cause problems. Dams can slow the flow of water in streams and cause silt to build up, and some other species can lose habitat. Dams can also cause flooding in low-lying areas.

In spring 2010, an early emergence of bats was observed in the Mt. Washington/Bretton Woods and Base Station Road areas. Dead bats (little brown bats) were collected, tested, and confirmed positive for White Nosed-Syndrome. NHF&G, USFS and USF&W are not aware of any known hibernaculum in the area; the closest is over 13 miles away. The agencies are working on locating a hibernaculum in the area that could be of significant size. Some of the live bats observed were big brown bats, which are known to hibernate in buildings, including the Cog Railway buildings, as well as caves and mines. White Nose Syndrome has not been detected in bats living in buildings. Currently, five of the eight species of New Hampshire bats are affected by White Nose Syndrome, including the common little brown bat. One species, the northern long-eared bat, has now disappeared from hibernacula all over the Northeast. Bats play an important role in the ecosystem—in addition to eating millions of insects, bats are also pollinators.

Rare Species and Species of Special Concern

See Appendix A: Table 7, NH Species of Greatest Conservation Concern

The NH Natural Heritage Bureau indicates two vertebrate mammal species for the town of Carroll—the Northern Bog Lemming, listed as "species of special concern," and the American Marten listed as "threatened." Only three specimens of Bog Lemming have been recorded in NH in the past 100 years, one of which is a historical record for the town of Carroll. The Bog Lemming is probably the least understood mammal species in NH due to its rarity. The American Marten can be found in spruce/fir habitat types and in areas with blowdowns and course woody material.

Historic records and photographs exist of Canada lynx in the town of Carroll and a documented lynx crossing occurred in nearby Jefferson in the winter of 2006. Recent evidence (Nov. 2011) also indicates the presence of a breeding population of lynx in Northern New Hampshire. With its large range requirements, and presence of suitable habitat, the possibility of lynx returning to the area in the future may be a possibility.

NH Fish and Game has a database which outline habitat types and species associated with them. The database further indicates species identified as "wildlife species of special concern." Although a formal inventory has not been done, several of these species have been documented in the town of Carroll.

See Appendix A: Table 6, Annual Total Spending in White Mountain National Forest

Table 7, NH Species of Greatest Conservation Concern

See Appendix B: Map 5, Highest Ranked Wildlife Habitat by Ecological Condition in Carroll

Map 6, Wildlife Habitat Land Cover in Carroll

SOILS

The surface layer of the earth is composed of organic and inorganic materials that represent a multiple use resource for human activity. A soil profile provides information concerning the capability of land to support various land uses. Depth of soil type, permeability, wetness, slope and susceptibility to erosion are factors to be considered when developing land.

In Carroll, variations in topography and parent materials have contributed to the formation of almost 40 soil series. Soil maps are based on extensive field work by trained soil scientists. An individual unit on the soil map contains one of two dominant soils or soil phases and is named after the dominant soil. Other kinds of soils, too small in acreage to map, may occur within the mapped unit. This places a certain limit to the accuracy of the soil map, as its scale may not allow accurate classification and location of each small area of soil. An on-site evaluation may be necessary to understand the soil characteristics on a lot of a few acres or less.

Soil scientists describe soils and soil phases by particle size and shape, color, compactness, moisture content, structure, permeability, and texture. This measureable data is used to determine the capability of land to support various land uses. Each soil phase includes a profile of favorable and unfavorable attributes of the soil for different land uses.

Six soil condition groupings are found in Carroll and are listed and defined as follows:

Group 1: Wet Soil Conditions

These are poorly and very poorly drained soils that are wet most of the year. Water table is at or near the surface seven to twelve months of the year. Some of these soils are ponded or have standing water on them most of the year.

Group 2: Seasonal Wet Conditions

Included in this group are moderately well drained soils that have a water table 1 to 2.5 feet below the ground that keeps the soil wet from late fall to late spring and during wet periods of the year.

Group 3: Sandy and Gravelly Soil Conditions

This group consists of well drained to excessively drained soils formed in sand and gravel. Slope range from nearly level to very steep.

Group 4: Shallow to Bedrock Soil Conditions

This group consists of shallow to bedrock soils mixed with pockets of deeper soils. The shallow soils predominate and have formed in a thin mantel of glacial till underlain by

bedrock at about 20 inches. In some places it is four or five feet below the ground surface

and in other places the bedrock is exposed at the surface as rock outcrops. Slopes range from gently sloping to steep.

Group 5: Hardpan Soil Conditions

The soils in this group are well drained and have formed in compact glacial till. A hardpan layer is generally encountered about 1.5 to 3 feet below the ground surface. Slopes are gently sloping to steep. Water generally moves down slope over the hardpan layer and comes to the surface as seep spots especially after prolonged rains.

Group 6: Deep Stony (Non-Hardpan) Soil Conditions

This group consists of well drained to somewhat excessively drained sandy or loamy soils that formed in stony glacial till. Slopes range from gently sloping to steep. The water table is commonly more than 4 feet below the ground surface throughout the year.

The soils in the town of Carroll have a certain degree of limitation on their various uses. Closer analysis of soil type in a specific area will determine the soils' estimated degree and kind of limitation for uses that include dwellings, septic systems, streets and parking lots, and camping areas.

See Appendix A: Table 8, USDA Soils Legend and Drainage Class, Coos County

Table 9, Summary Forest Soil Group Acreage in Carroll

Table 10, Summary Soil Farmland Class Acreage in Carroll

See Appendix B: *Map 7, Soils in Carroll by Drainage Class*

Map 8, Soils in Carroll by Forest Group

Map 9, Soils in Carroll by Slope

SURFICIAL GEOLOGY

Surficial geology is concerned with those deposits above bedrock. The surface layer of weathered material—soil—is not included in the study of surficial geology. Surficial deposits are unconsolidated, loose conglomerations of rock fragments.

Surficial deposits in Carroll are the result of glaciation. There have been several periods of glaciation, with the most recent period ending ten to twelve thousand years ago. As the glaciers advanced, the bedrock was scraped and gouged, and this material was picked up and moved along. This glacial advance, or scraping, did not drastically alter the topography of the area; the profile of the mountains appears much as it did before the Ice Age. However, the glaciers did had a great impact on the appearance of the valleys. As the climate warmed and the ice retreated north, it deposited two major types of material—till and glacial outwash deposits.

Till is composed of a mixture of soil and rock fragments that were scoured loose by the moving ice, carried for a distance, then deposited. It is generally highly compacted and contains many large angular stones and boulders. Till covers most of the mountainous and hilly areas of Carroll, ranging in depth from 0, where bedrock is exposed, to about 40 feet.

Outwash deposits were caused by glacial meltwaters. They are the stratified sand and gravel deposits which are found along the Ammonoosuc River. Outwash deposits are important economically for mining purposes, but they also serve as major groundwater recharge areas.

BEDROCK GEOLOGY

Bedrock geology is concerned with the underlying " hardrock" or ledge. Formed hundreds of millions of years ago, Carroll's bedrock is composed of mostly igneous rocks, such as granite, and metamorphic rocks, such as schist. The metamorphic rock was formed under heat and pressure from many layers of mud, sand, and silt and was later uplifted by the earth's internal forces. Igneous rocks, while in a molten state, forced their way upward and formed metamorphic rocks. The youngest bedrock in town was formed during the Carboniferous age, approximately 200 million years ago. Being the least eroded of all the bedrock in the region, these rocks made up the rugged scenic areas of the White Mountains.

SLOPE

Slope is the amount of rise or fall in feet for a given horizontal distance. It is expressed in percent. An 8% slope means that for a 100-foot horizontal distance, the rise or fall is eight feet. Slope is one of the major characteristics of landform, which presents limitations for development. As slopes become steeper, the cost of building generally increases. In addition, steeper slopes indicate there is a greater chance of erosion, structural problems or water pollution. In general, slopes over 15% are considered too steep to provide adequate sites for roads, homes, septic systems and the like. Suitable uses for such areas are forest production, wildlife, recreation, and grazing. Slopes in Carroll range from level to nearly vertical on some mountainsides. *See Appendix B: Map 9*, *Soils in Carroll by Slope*

GRAVEL EXCAVATIONS

Sand and gravel deposits from glacial activity make Carroll a good location for excavations. Residents in the town were concerned about the expansion of the then Twin Mountain Sand & Gravel commercial excavation operation as reflected in the 1996 landmark case of Whitcomb vs. Town of Carroll. The ZBA addressed several excavation applications during that period, but those that were granted were small, time-limited operations which are now inactive. The Whitcomb operation, however, now owned by Pike Industries, is still an active excavation, along with the NH DOT excavation—both located in the southeast area of the Town. As of 2009, the Town faced another excavation case, Rines vs. Town of Carroll. This excavated property is located off Route 3 adjacent to the Town Hall lot.

TOPOGRAPHY

Carroll's highest elevations are found in the eastern half of town, especially within the White Mountain National Forest. Two prominent peaks are Mount Deception located on the eastern border of Carroll and Cherry Mountain running through the center of the town. Mount Deception is the highest peak reaching an altitude of 3,671 feet. Cherry Mountain, at a height of 3,182 feet, also includes the peaks of Owl Head at 3,248 feet and Mount Martha at 3,563 feet. Appleby Mountain (2,310 ft), Little Mount Deception (2,428 ft), Beech Hill (2,200 ft) and The Humps (3,012 ft) are also identifiable features.

The Twin Mountain section of town lies in the valley west of Cherry Mountain and along the Ammonoosuc River, while Bretton Woods sits in the Ammonoosuc River valley in the southeast portion of town.

See Appendix B: Map 10, Topographical Map of Carroll

SCENIC RESOURCES

Carroll is located in the heart of the White Mountains. Two Scenic Byways converge in Twin Mountain: the Presidential Range Trail, and the Nationally-designated White Mountains Trail. Thousands of tourists are drawn to our scenic town every year, which is why our scenic resources relate directly to the economic stability of the town. Some of the more important natural and scenic areas in Carroll include:

Mount Washington

The White Mountain National Forest/ Presidential Range

The Historic Mount Washington Hotel

The Ammonoosuc River

Fall foliage in the National Forest

Pondicherry National Wildlife Refuge

Wildlife viewing, hunting, and fishing

Crawford Notch

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The Future

Public Workshop

To begin the update of the Carroll Master Plan, the Carroll Planning Board enlisted the assistance of North Country Council to plan and facilitate a public meeting to begin to shape a vision statement to guide the direction of the plan. The March 7, 2013 public meeting was organized into three parts:

1. Brief introduction to master plan purpose
2. Participants were asked to write down what they felt were the three most important qualities of the town for the Planning Board to have in mind as they draft the plan.
3. Responses were collected and grouped by North Country Council planners who then together facilitated discussion on each topic, e.g., what are the issues, needs etc. It was noted that there would be a lot of overlap among categories since all elements of a plan, like all elements of a community, are inter-related.

Results

Natural Resources

Observations

- There is still lots of potential future growth at Bretton Woods
- Twin has been growing but most of the new development is taking place off of the main roads
- Much of the town will remain forested as it is National Forest
- All issues are related to natural resources, e.g., tourism
- Everything depends on clean water
- Wildlife sightings have increased – in some cases due to increased populations, in other cases due to increased development leading to more interaction

Needs

- Standards for appropriate development to protect resources
- Improved stormwater management systems
- Review zoning – densities, open space development
- Ridgeline development standards
- Preserve hillsides/steep slopes
- Control sprawl

- Maintain open spaces
- Preserve and protect the River – scenic value
- Preserve flood storage capacity by preventing development within floodplains
- Understand wildlife corridors/crossing and reduce human-wildlife conflicts

Retain People/Population

Observations

- Young people are leaving due to lack of jobs
- There are no recreation opportunities for young people that don't want to recreate outdoors
- Motels have been lost

Needs

- Regulation needs to be balanced with growth opportunities
- Need to increase year-round jobs and businesses
- Need sewer to attract business, e.g., on US 3 in Twin
- Need infrastructure in industrial zone – roads, water, sewer - could town fund it to prepare for/enable growth

Infrastructure/Route 3 Sewer

Observations

- Twin lacks direct access to Interstate 93
- No sewer in Twin – population is small
- Need business management training for small business growth and retention
- Radon is an increasing concern in private wells

Opportunities

- Twin is at the crossroads of two major Routes – US 302 and US 3
- New innovative wastewater treatment technologies may enable businesses to locate in areas without sewer, and may lower water usage for business
- TIF districts possible
- Strong Career Technical Education program may help keep young people here via job training
- Town has water system – drilled well near river with adequate future supply

Increase Commercial Business

Observations

- Food stores have closed – two small convenience-type stores remain, groceries must be purchased out of town

- Difficult to attract retail business
- Retail space exists, but no renters are willing to locate here
- Low numbers of visitors in spring and fall hurt existing business and prevent new business – no critical mass < > no infrastructure
- One dimensional economy – tourism only

Needs/Desires

- Small grocery store
- May not want to be Vail, but something smaller

Tourism/Recreation

Observations

- Winter sports, esp. snowmobiling and to some extent skiing as well, are not a reliable source of business due to poor snow years
- US Route 3 geometry may cause some potential customers to drive through without noticing a town
- Trucks and commuters traveling long distances are important considerations re through-traffic – don't want to stop to patronize local business, or be behind someone who might

Opportunities

- 4,600 cars per day travel through town on US 302
- Increased hiking and multi-use trails
- Walking trail, potential dog park

Needs

- Need NHDOT to work with town on traffic calming on US 3 through Twin
- Community (incl. Bretton Woods and Twin) needs to come together to accomplish goals

Need for Increased Parking (consensus that this is probably not a priority)

- Town would need to purchase land or use private properties for large events, status quo may be ok right now
- Some trailhead parking areas are too small for peak use, that may be ok

Standards for Appropriate Development

Currently

- Have guidelines re "New England feel", e.g., color, finishes
- Bretton Woods – cluster; Twin – more traditional zoning

Desired changes

- No big boxes
- Upgrade zoning ordinance to incorporate some conservation subdivision concepts

Need for Increased Broadband/Cell Service

- Need to expand coverage area and increase reliability

Civil/Civic Participation

Observations

- Bretton Woods and Twin are separated by several miles of national forest
- No local school
- Only two churches remain active – not here for social ties or after church shopping/eating
- The town doesn't get together as a town enough
- Bretton Woods year-round residency declining, driven by economic conditions and aging population
- Bretton Woods residents don't generally serve on town boards
- Small group of town volunteers wearing many hats

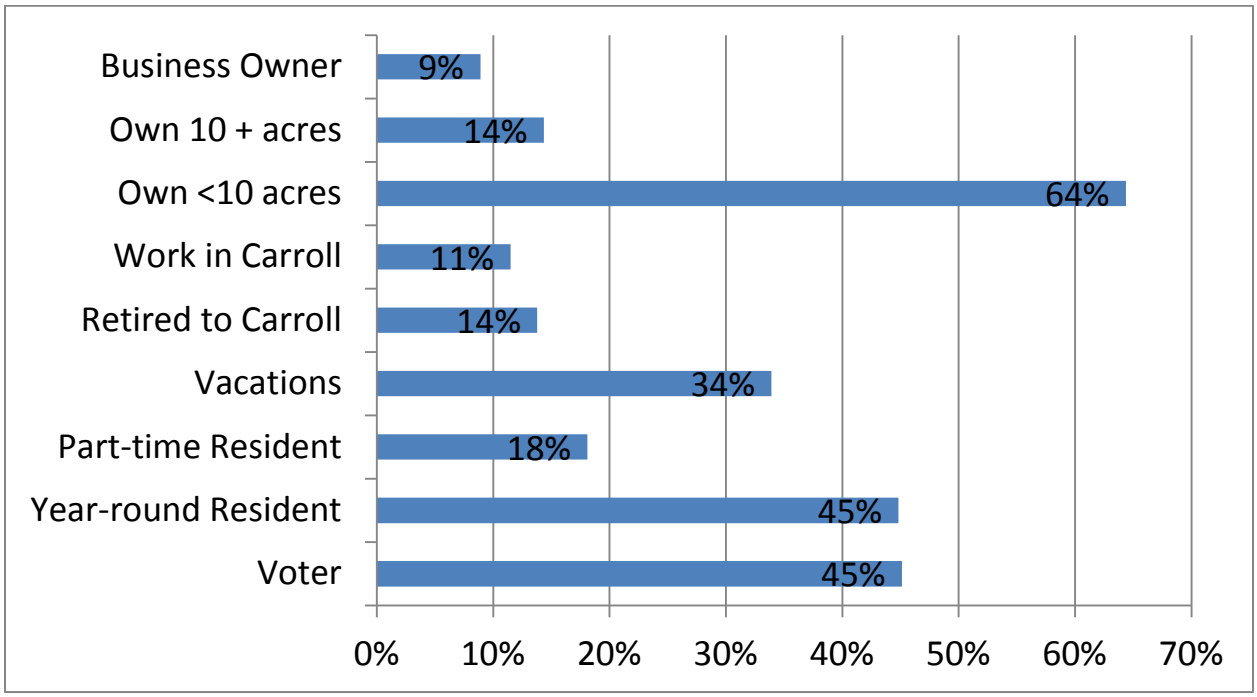
Opportunities to Build On

- Snowmobile club very active, social events such as dinners and dances
- Covered dish suppers, fundraisers
- The master plan update

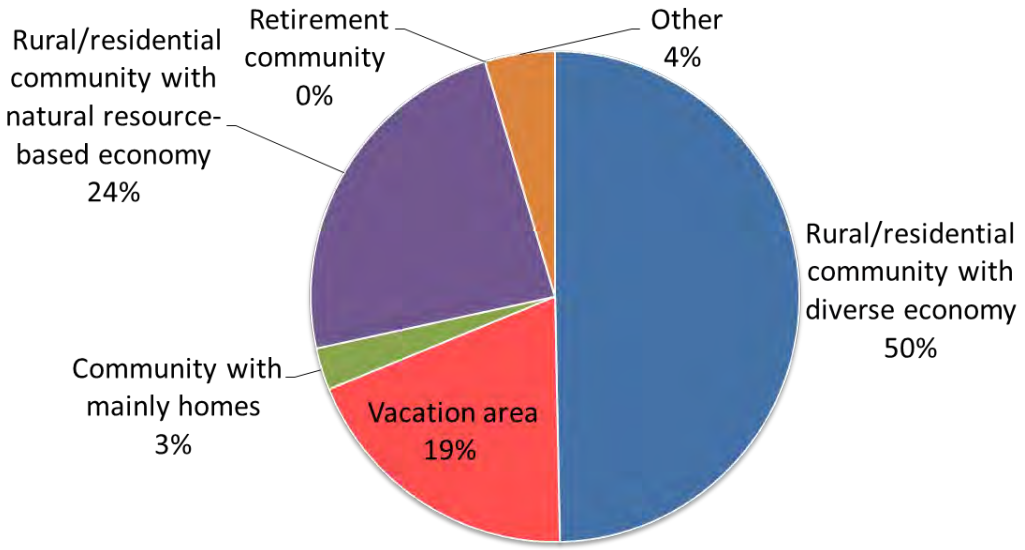
Survey

A survey was developed by the Master Plan Committee with the assistance of North Country Council and mailed to the 1,169 valid addresses of households with a voter and/or property owner. The survey allowed for more than one response per household. A total of 348 responses were received for a response rate of 30%.

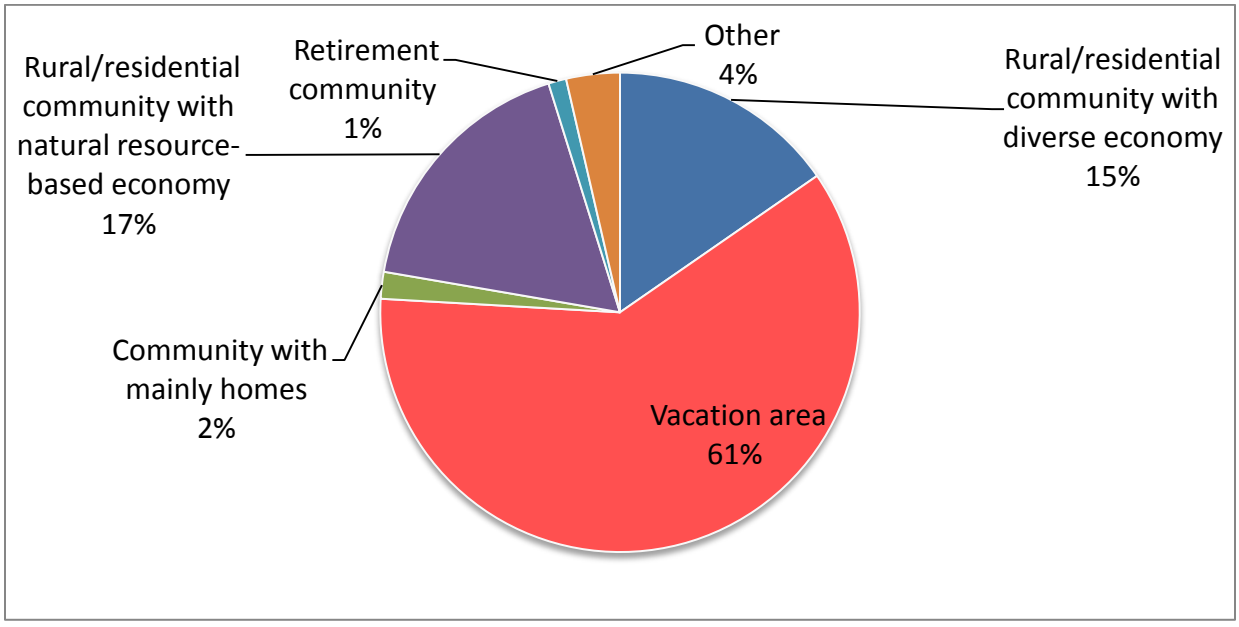
The majority of respondents own less than 10 acres in town. Forty-five percent are Carroll voters and 45% are year-round residents of Carroll.



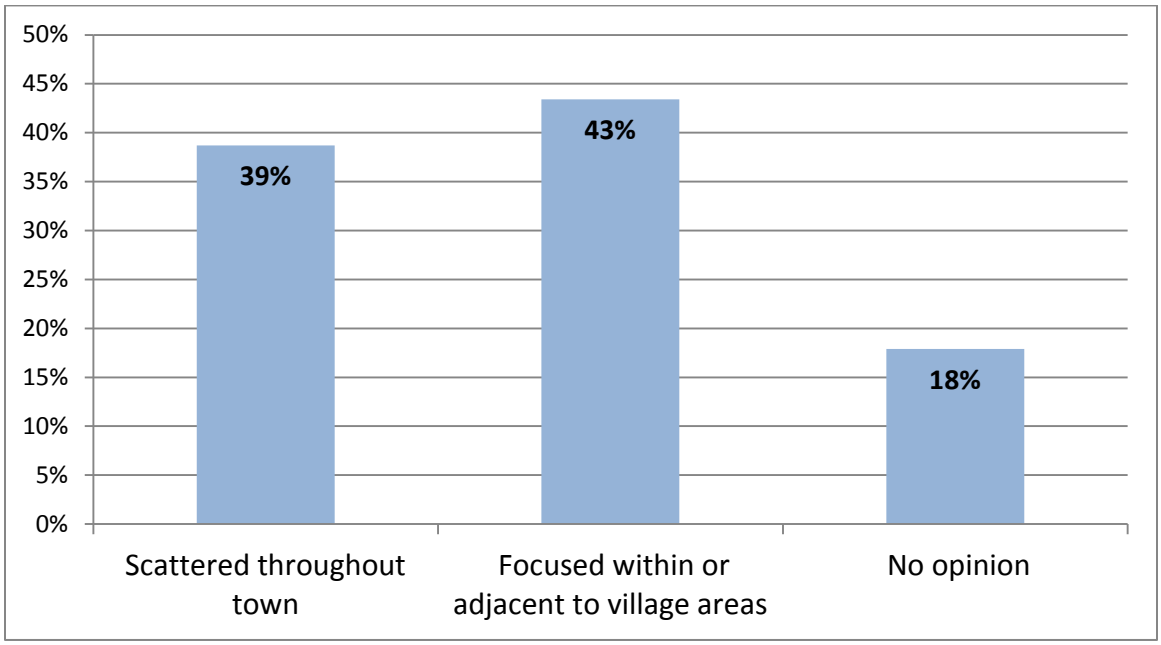
Respondents were asked what kind of community they would like the Twin Mountain area of Carroll to be 15 years from now. Fifty percent chose "rural/residential community with diverse economy." [Do you want the write-in answers, for example, to this "other", in an appendix?]



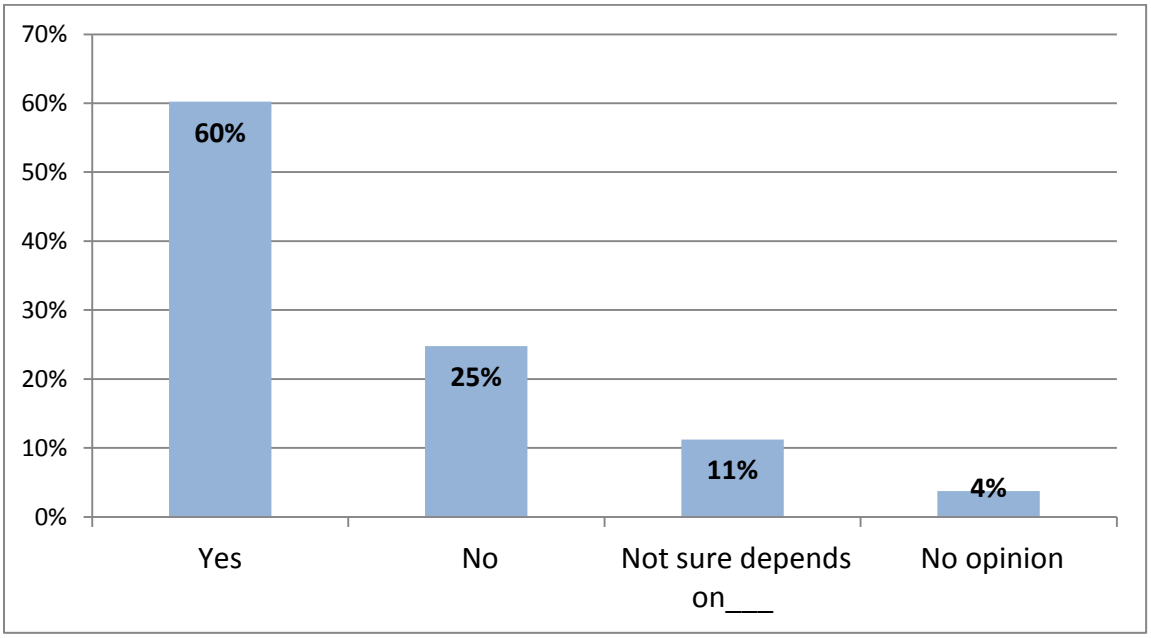
Respondents were next asked what kind of community they would like the Bretton Woods area of Carroll to be 15 years from now. Sixty-one percent chose vacation area.



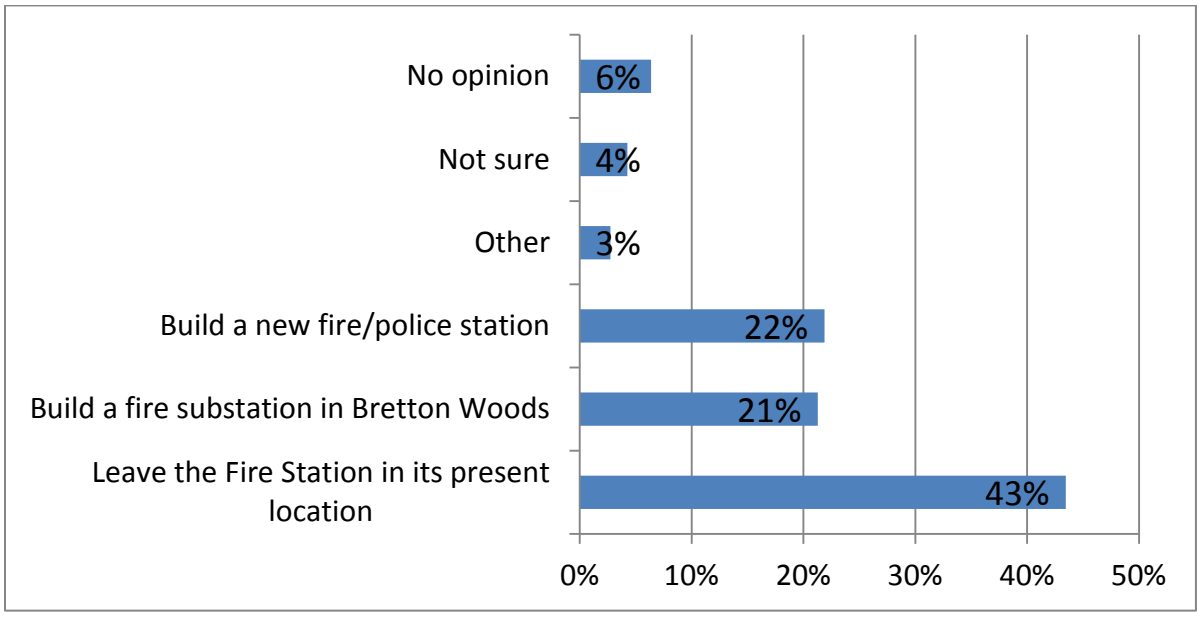
Results were less decisive when it comes to how new development should be sited. Forty-three percent responded that they would like to see the majority of new development be "focused within or adjacent to village areas;" 39% chose "scattered throughout town."



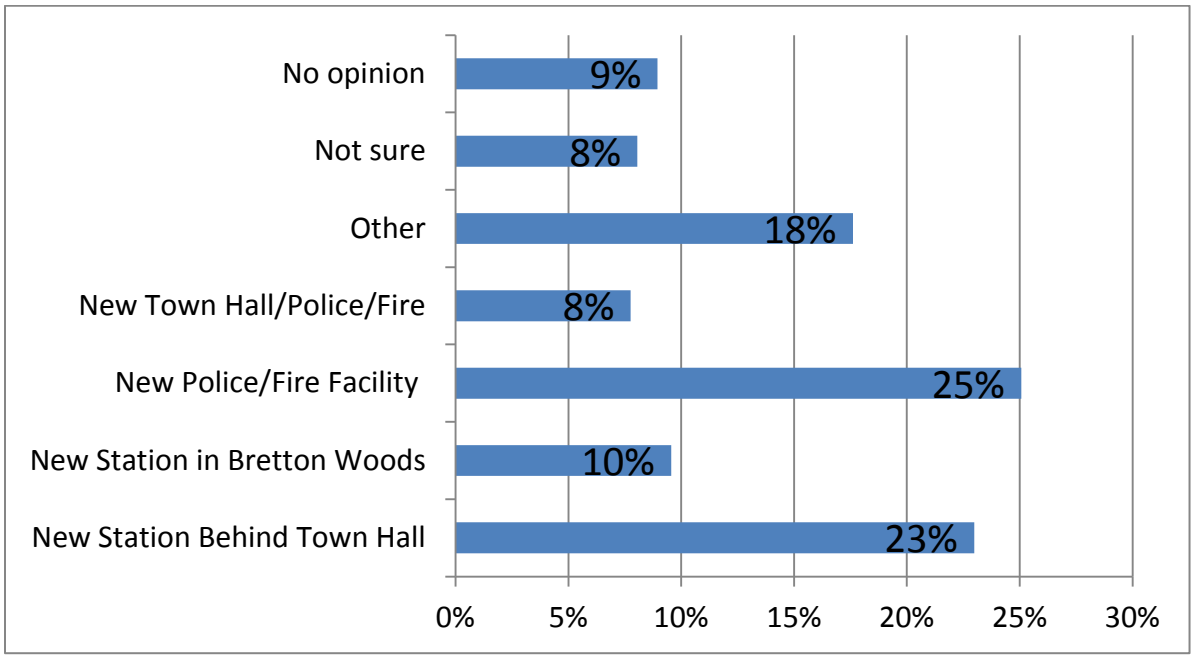
Respondents showed strong support for "enhancing the village area at the junction of US 3 and US 302 to make it more of a real town center," including, for example, relocating other town services to this area, adding an attractive parking area and green space that could be the focal point for outdoor events, and making a walking path for visitors.



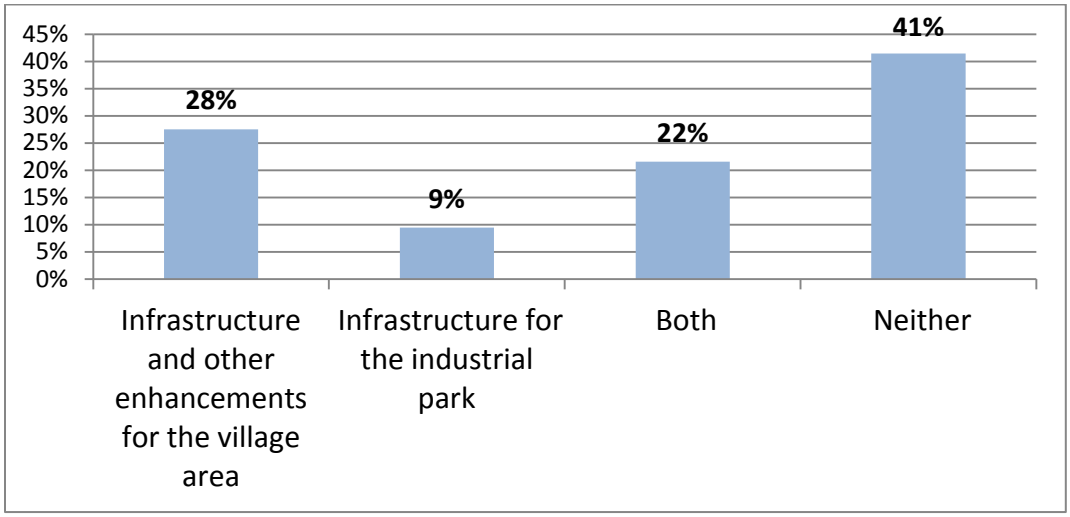
Respondents were asked which option they prefer of three that have been brought forward for the fire station. The choice receiving the highest number of responses was leaving the fire station in its present location.



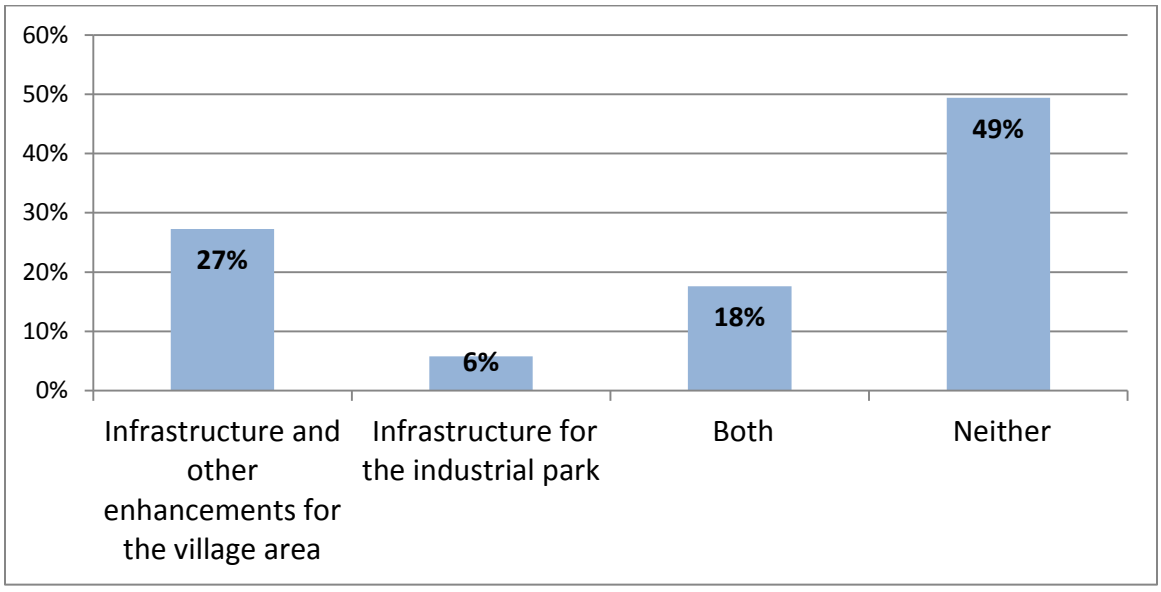
The survey also asked about the future of the police station which is currently located on Route 3 South within rented space. Several committees have worked, in the past, to resolve the Police Station problem. Respondents were asked to choose among three options under consideration by the Town Facilities Committee. Respondents were divided among several alternatives.



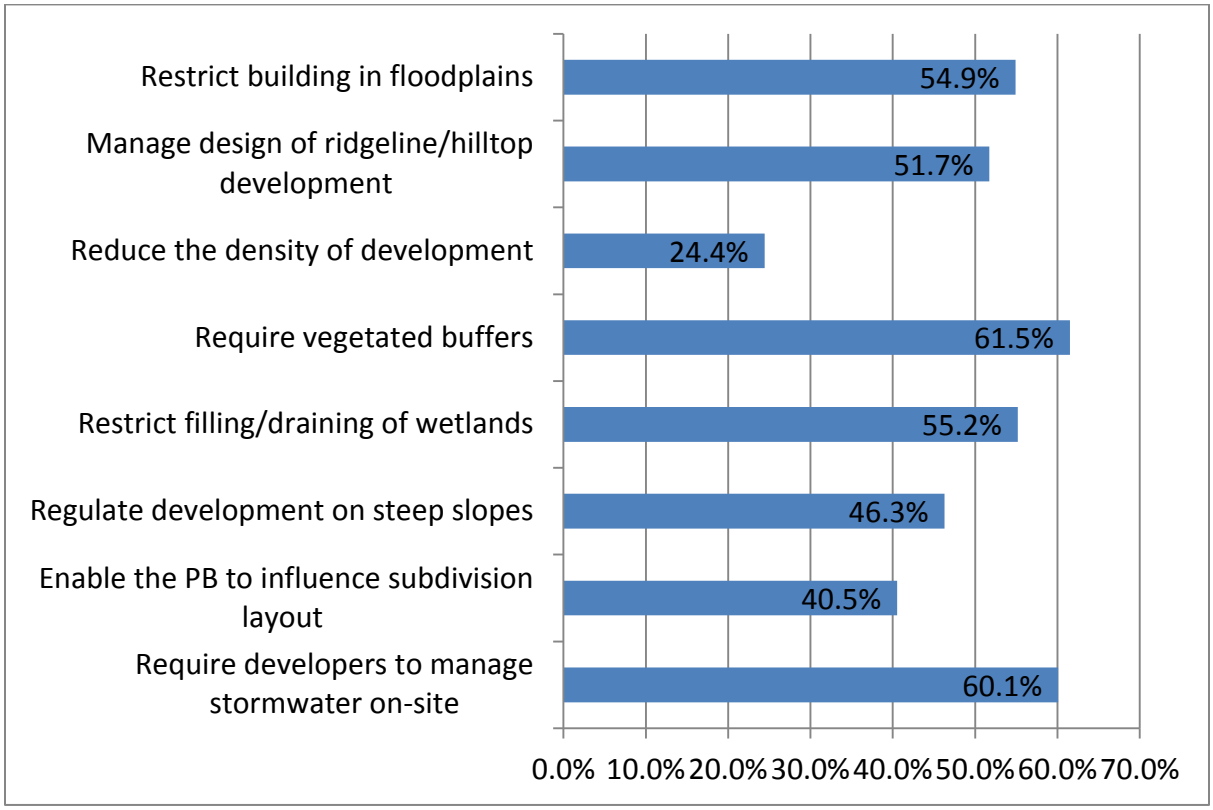
Next, respondents were asked about possibilities that have been discussed for attracting businesses to create year-round jobs in Carroll, specifically, (a) to provide sewer and other amenities to enhance the village area at the junction of US 3 and US 302, and (b) to provide roads, water and sewer to the area set aside for an industrial park off New Straw Road. When asked if they would support some initial investment of town funds in either (or both) of these options in order to encourage private investment, neither activity was supported.



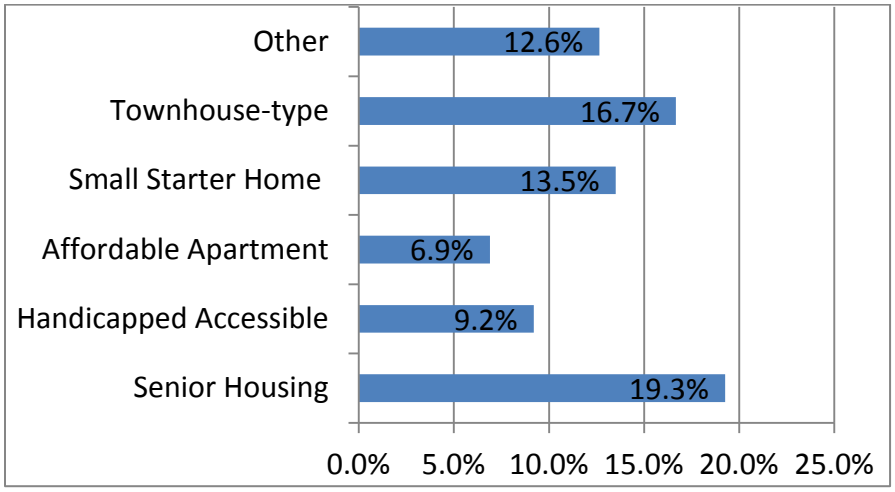
When the town adds or improves infrastructure in an area, property values generally increase. A TIF District (Tax Increment Financing) is a tool that enables the increased property tax revenues that result from that increase in value to be used by the town to pay for those infrastructure improvements. Respondents did not support a TIF District for the village are or for the industrial park.



Our natural resources, clean environment and scenic beauty provide an important part of the foundation for our economy. Survey respondents expressed support for several planning and zoning tools available for the town to manage the siting and impacts of development. Results were similar for resident and nonresidents respondents.



When asked if they or a family member would live in a different type of housing in Carroll than they do now if it was available in the next ten years, senior housing received the highest number of responses.



The survey also asked about special places or buildings in town that respondents would like to see conserved. The Town Hall, stone churches, and Fosters Crossroads stood out as the highest priorities of survey respondents.

Vision for the Future of Carroll

The town of Carroll grew up around a rich history in tourism and other natural resource-based industries. The scenic beauty and outdoor recreation opportunities make this one of the best known destinations in northern New England.

For many who call it home, job opportunities have declined, due to the economy in the short term and to the changing character of family vacations in the longer term.

The Carroll community envisions a future where the local economy has been strengthened by building on the natural resource base and adapting to current trends to offer tomorrow's opportunities. This means:

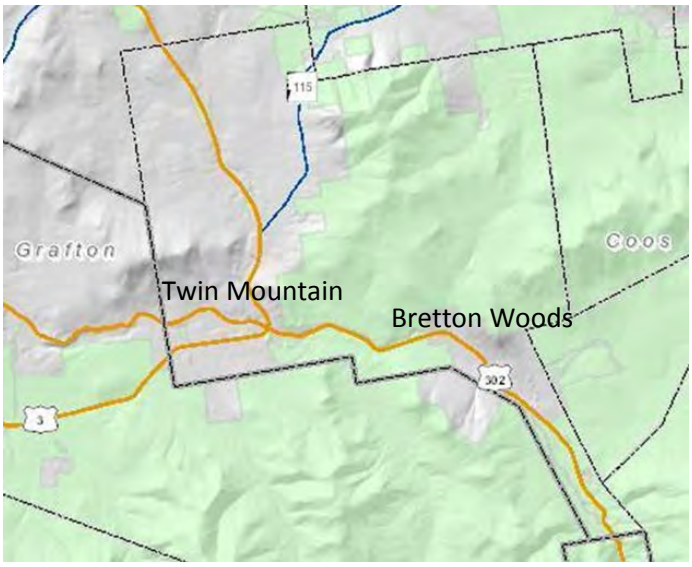
- Providing the infrastructure needed for economic growth.
- Creating economic diversity to ensure stability during challenging economic times.
- Involving everyone with an interest in the future of the community, from Bretton Woods as well as Twin Mountain, in developing and implementing plans and celebrating successes.
- Making Twin Mountain an attractive commercial center meeting the everyday needs of residents and visitors.
- Encouraging growth throughout town and managing that growth to ensure it is compatible with protection of natural and scenic resources.
- Ensuring that continued development at Bretton Woods meets the needs of tomorrow's vacationers, second home owners and retirees, while maintaining scenic beauty.
- Collaborating with the White Mountain National Forest to encourage a sustainable flow of timber for the forest products industry along with varied high quality recreation opportunities.

Land Use

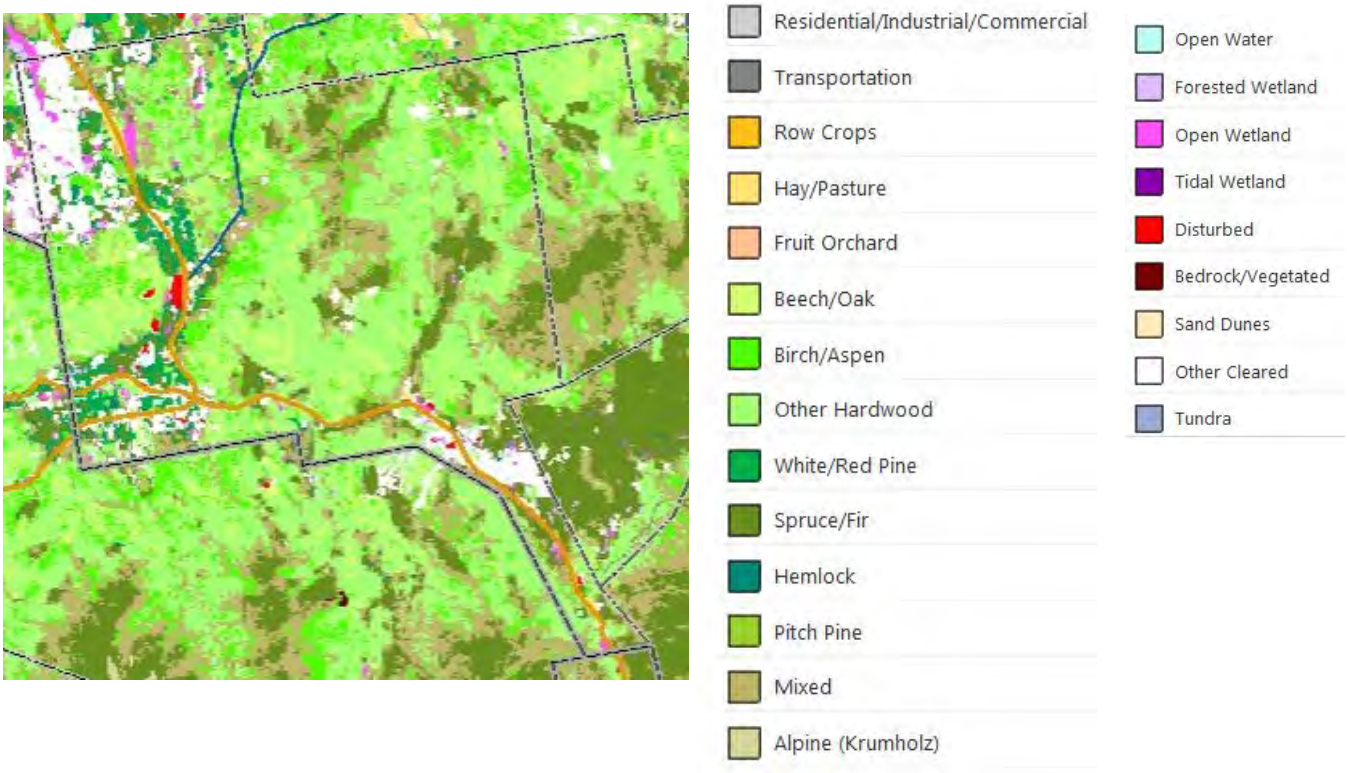
The following preface to the *1987 Town Plan* sets the stage for today's land use patterns and land use issues facing the community today.

> *In 1772, 25,000 acres of land initially known as Bretton Woods was granted to a group of men by King George's Royal Governor of his New Hampshire Province, John Wentworth. It wasn't until 1832 that the Town was incorporated to include the settlements of Twin Mountain, Crawford's and Fabyan. Its name was changed to Carroll to honor the heroes of the Revolutionary War by the State Legislature.*
>
> *Carroll's early history is tied to the tourist industry. As early as 1803 travelers were making their way to Carroll to "experience" the mountain trails and air that lacked any allergy-type pollen. It was during this time that the Grand Hotels were appearing to take their place in Carroll's history. With the establishment of the railroad system, Carroll insured its place as a tourist attraction for over 70 years.*
>
> *The early economy of Carroll was based on the tourist and lumbering industries. The lumbering industry was at its peak in the late 1800's with the Zealand Village lumbering operation. This operation was owned by James Everell Henry and was located between Fabyan and Twin Mountain. The early lumbering industry died out in the early 1900's. Today's lumbering operations are a small part of the Town's economy.*
>
> *Today the Town of Carroll still caters to the tourist trade. The construction of motels along most of the major highways emphasizes this fact. The emergence of the "second" home in the North Country has also been felt in Carroll. Many new and pending homes are targeted for the second home market.*

Land use patterns in Carroll continue to be shaped by topography, transportation corridors, the forest and associated recreation opportunities. As shown in this map from *NH GRANIT's GRANITView*, the Twin Mountain area of Carroll is at the crossroads of US 302 and US 3; Bretton Woods is to the east of Twin Mountain. In between these two developed areas, and comprising most of the eastern side of town, is White Mountain National Forest. Much of the National Forest area is mountainous.



As sown in the Landsat land use/land cover data show below, also from GRANIT, the majority of the town is forested, even outside of the National Forest. Developed areas are shown in and around Twin Mountain and along US 3 North and a short distance up NH 115.



The two distinct development centers of Carroll - Twin Mountain and Bretton Woods - along with the continuing growth of the leisure industry and the location of the town at a major crossroads a short distance from Interstate 93, make Carroll perfectly situated to continue to play a major role in the region's tourism industry. In addition, the quality of life and recreation opportunities found here have the potential to attract the young entrepreneurs of today and tomorrow. Carroll offers an amazing variety of high quality outdoor experiences: both downhill and Nordic skiing at Bretton Woods Ski Area, guided trips and educational programs at the AMC Highland, multi-use winter trails in and around the National Forest, abundant hiking and wildlife viewing opportunities, fishing in the Ammonoosuc and its tributaries, and the Presidentials and Pondicherry National Wildlife Refuge nearby.

Land Use Recommendations

Some proactive steps need to be taken by the town in order to fully capitalize on its assets:

- Review the residential densities allowed in each zoning district to ensure that the town encourages a variety of residential options. This should include low density rural living with privacy and income producing activities allowed, provided that noise, lighting, odor, traffic and appearance do not detract from the ability of current or future neighbors' enjoyment of their property. In addition to the needs of our growing senior population, the interest in denser, walkable neighborhoods is also increasing among young people. More compact neighborhoods should be encouraged in areas served by town water.

  Care must be taken to ensure that the residential "feel" in different residential zoning districts remains distinctive. This can be accomplished without increasing the minimum lot size. Density-based zoning and meaningful differentials between the setbacks and frontage requirements between districts can ensure that some areas continue to feel rural, some feel like neighborhoods, and some feel like a village.

- Review the Industrial zoning district boundaries to ensure that is still a viable plan for all of the properties involved. For example, the communities needs and the region's business strategies have both changed since the old landfill was designated for a industrial park. This might be explored as a possibility for a small senior housing complex in concert with AHEAD and private developers. Investment in the industrial park was not supported by survey respondents, while a need for senior housing was indicated.

- Review the businesses allowed in each zoning district to ensure that they are both forward-looking and compatible with the type of residential feel desired in each district. Consider ways to focus future development in the Twin Mountain village area on businesses that complement activities at Bretton Woods and in the National Forest, and those that serve the needs of residents. Remain distinctive from Littleton. Focus on businesses that support outdoor recreation and those that will reinvigorate community vitality by bringing people together. Consider incorporating more performance-based zoning into the ordinance.

- Work with the town's tourist businesses with assistance from NH Department of Resources and Economic Development to market the many high quality outdoor recreation opportunities available in Carroll for both the year-round resident and visitor.

- Take advantage of the differences between Twin Mountain and Bretton Woods to market to potential residents and businesses; diversity means more choices, and more types of people who can find their needs met here.

- Develop a master plan for the town center area. The options for providing the future needs of the community for a town hall - rehabilitating the existing structure or constructing a new one - are still under consideration. As part of that project, a committee should be formed to develop a plan for the surrounding area. Much work has gone into providing some wonderful focal points for this town center. This includes a gazebo with wi-fi, information kiosk, and historic railroad engine and car. The view from the gazebo area is beautiful in all seasons. However, the enjoyment of this location is easily missed. Signage is inadequate for visitors who might be looking for information or a rest stop to take in the view. Also, School Street as an entrance is poorly marked and unattractive.

Once one is parked at the gazebo area, it is evident that safety improvements are also needed, as some local traffic uses School Street as a short cut around the light at the intersection of US 302 and US 3. Improvements could easily be made to better meet the needs of both residents and

visitors. For example, the entrances could be made more attractive and signage added. The roadway could perhaps also be reconfigured to discourage cut-through traffic while still enabling access from either end. An area designated as a park-and -ride would increase resident interest in this area. As part of an overall master plan for the town center, NHDOT should be invited with the assistance of NCC to discuss options for increasing the safety of pedestrians wishing to cross the adjacent U.S. highway, such as crosswalks and a pedestrian-activated light. Sidewalks go up US 3 North and US 302 West from the Town Hall area, but there are no crosswalks at the intersection to connect the segments of the village area. This linkage will be a key part of restoring the "village feel" to Twin Mountain. Walking paths with linkages to surrounding trails would also provide additional benefits by encouraging longer visits to the town center.

- Continue to work closely with the owners of the Mount Washington Resort at Bretton Woods to ensure that the concept plan is reviewed and updated as needed. Care must be taken, for the benefit of both the Resort and the town as a whole, to maintain Bretton Woods and Twin Mountain as distinct and complementary commercial areas.

- Unsightly unused buildings and signs detract from the economic vitality of the community. Review land use regulations to ensure that it is easy for landowners to renovate, rehabilitate, or demolish buildings that can no longer serve an economically viable purpose. Unsafe structures should be demolished, and signs and other improvements kept up in an attractive manner. Zoning should incorporate the flexibility needed to redevelop nonconforming sites.

- Amend the zoning to accessory dwellings a Permitted Use in the RU district. This is an easy way to enable homeowners who need physical assistance with some of the tasks of aging in place, or additional income, to use their existing property to meet their own needs. At the same time, additional low rent housing units are made available to the area's seniors and young residents who are just starting out. Continue to allow two-family dwellings as a Permitted Use in the RB and R-1 districts.

- Promote stewardship of the town's scenic and natural resources by conducting events aimed at increasing civic pride coupled with education on best practices, such as: erosion and sedimentation control when logging; restoring and maintaining vegetated buffers along rivers and streams; protecting wetlands and their buffers; and making buildings on slopes less visible through selective cutting and consideration of colors/surfaces that will blend in.

- Strengthen the town's land use regulations to prevent stormwater runoff from lowering the water quality in the towns rivers and streams. For all subdivisions and developments requiring site plan review, require that the quantity of stormwater leaving the site is the same or lower than prior to the project, and that the quality is the same or better. Requiring developers to manage stormwater on-site was supported by 60% of survey respondents. Special attention needs to be paid to those developments on steep slopes and those which are associated with an increase in impervious surfaces (including gravel). Best management practices for the storage and handling of toxic and hazardous substances are also essential to ensure that these materials do not enter stormwater.

- Amend the zoning ordinance to prohibit construction in the mapped 100 year floodplain and in the mapped fluvial erosion hazard areas. Development in areas known to be subject to periodic flooding, or in the likely path of the future course of the river, threatens lives and property, puts emergency responders in needless danger, and burdens taxpayers. Restricting building in these areas was supported by a majority of survey respondents.

- Amend the zoning ordinance to require vegetated buffers along surface waters. This was favored by over 60% of survey respondents. To maintain the high quality of surface waters it is necessary to keep development separated from rivers and brooks and to maintain a vegetated buffer along them. Shoreline vegetation and the layer of organic matter that builds up underneath it, slow down stormwater and trap sediment and other pollutants before they reach the river or brook. Vegetation also provides for necessary shade for aquatic species. Following a thorough review of available research and consultation with natural resource professionals and state and federal regulators, new Hampshire experts recommended a minimum naturally vegetated buffer width of 100 feet for removal of pollutants and some of the needs of the wildlife (*Buffers for Wetlands and Surface Waters: A Guidebook for New Hampshire Communities*, Chase, Deming, and Latawiec, 1997). The 100 foot width had been shown to be associated with 70% of better removal rate for pollutants. In Carroll, only the mainstem of the Ammonoosuc River is protected under the state's Shoreland Water Quality Protection Act, and the standards associated with the Act do not provide adequate protection.

- Amend the zoning ordinance to restrict the filling/draining of wetlands. This was favored by a majority of survey respondents. Wetlands protect water quality by removing excess nitrogen and trapping sediments and associated contaminants, such as metals and phosphorous. Wetlands also help reduce floods by acting like a sponge, slowing runoff

from upland areas and releasing water slowly, reducing peak flood flows downstream. During dry periods, wetlands help keep brooks flowing, because groundwater is often discharged into wetlands.

Town Facilities and Services

Town Hall

The Town Hall is used for the town offices, town record storage, and library. In addition, there is a gymnasium used for sports and special events. The kitchen area provides space for meetings of town boards. The original building was built in 1895 as an elementary and high school with the gymnasium added in 1949. The school closed in 1968 and the building was renovated in the early 1970s to be used as the Town Hall and offices. Because all offices were located on the second floor, and thus not handicap accessible, an addition of about 1,233 sq. feet was built in 2001 to house the Town Clerk/Tax Collector's and Selectmen's Offices, which allowed these to all be on the first floor.

Currently, neither the amount of office space nor the facility itself is adequate for today's needs. Energy efficiency is one of the primary concerns. The main boiler, though rebuilt about twenty years ago, is inefficient by today's standards and so uses an excessive amount of oil. Over 4,403 gallons of oil are used to heat the building. Electric use is also high as the lighting is out of date. Other issues include inadequate record storage, lack of usable space in the basement, lack of handicap access to the second floor, and some additional fire and safety concerns. The cost of renovation has been estimated at $1,684,386 with an elevator, or $884,386 with the elevator held for a later phase (G. Brodeur, November 2014).

In 1998, the town purchased approximately 13 acres adjacent to the Town Hall. Options have been explored for replacing the current building on the site. The cost of replicating the existing Town Hall's spaces and functions has been estimated at $3,095,360 with an elevator added, and $2,295,360 with the elevator held for a future phase (G. Brodeur, 2014). While there may be less expensive options for providing the town's basic needs, respondents to the survey conducted in conjunction with this Master Plan indicated that the existing Town Hall is highly

valued by residents. To explore this issue further, the Master Plan Committee and Planning Board hosted a workshop in November 2014 with the help of North Country Council staff. There were fifty-five participants in the workshop.

Participants in the Town Hall workshop identified these functions as important to have in Carroll's town hall:

- Administration of town, record keeping
- Gathering place – public & private functions that need large hall and kitchen
- Center/foundation of town, sense of community
- Place for youth recreation
- Place for seniors
- Food pantry
- Place for new residents to learn about the town
- Place of history
- Emergency services, shelter
- Library

The following attributes were identified by participants in the Town Hall workshop as what a town hall in Carroll needs to have in order to provide the functions and values listed above:

- Adequate office space
- Library space/shelves
- Hall for 200 people + kitchen + bathrooms
- Vault
- Meeting rooms/function spaces incl. gym and food pantry
- Energy efficiency/alt. energy sources/green
- Security system, lighting
- Parking, easy access to main roads
- Generator/shelter area
- Accessible to all residents

In addition to cost, workshop participants identified the following as important considerations in the decision of whether to renovate the existing Town Hall or replace it with a new structure:

- Sentiment
- Priorities for spending
- One building vs more than one
- What are other towns doing

- What would happen to existing town hall if build new one/demo costs
- Police and fire needs/benefits of complex
- Land costs
- Timeline/urgency
- Moving costs/ temporary office space
- Funding sources

Library

The library, located in the Town Hall, currently provides books for all ages, audio books, movies and educational DVDs, and internet access. There is also a summer reading program for children, and a program for adults featuring local authors. The library would benefit from increased inventory and increased hours of operation. In addition, as discussed above, the facility is in need of modernizing and upgrading. The possibility of building a new library in combination with a historical society museum and meeting rooms has been explored.

Schools

Carroll's school system is a part of the White Mountains Regional School District SAU #36 which includes Whitefield, Dalton, Jefferson, and Lancaster.

Grades K-8

Whitefield K-8 School serves students from Whitefield, Dalton and Carroll. The 52,200 s.f. building was built in 1992. The Kindergarten program is a ½ day 5 day a week program; Grades 1-6 are in self-contained classrooms; and Grades 7-8 travel to different teachers in different subjects.

According to the **White Mountains Regional School District Assessment of Educational Facility Needs K-12**, prepared in 2007 by New Hampshire Administrators Association, the facility has limitations. These include: lack of separate locations for the cafeteria, gymnasium, and music area; the fact that the current playground is located away from the school building; a need for additional space for additional programs and support services; and uneven heating and ventilation system.

Grades 9-12

Carroll's Grades 9-12 attend classes at White Mountains Regional High School. The High School was opened in 1966 and is located off of Route 3 on Regional Drive. The 109,085 s.f. one-story building sits on 391 + acres. This school offers a wide range of curriculum, including career and technology education, honors, and advanced placement. Students have the options of taking courses through Littleton High School's Technical Programs and New Hampshire Technical College.

According to the **White Mountains Regional School District Assessment of Educational Facility Needs K-12**, prepared in 2007 by New Hampshire Administrators Association, the facility has limitations. These include: the current classroom size of 750 s.f. does not meet the current guideline of 800 s.f.; the age, location and number of bathrooms / locker rooms in the facility are inadequate; there are an insufficient number of small work spaces to be used for teachers, meetings and department heads; there are locations that are not readily handicapped accessible; and current heating and ventilation system is poor and uneven.

Future Needs

Based on the **White Mountains Regional School District Assessment of Educational Facility Needs K-12**, 2007, by New Hampshire Administrators Association, the current growth trends for the district are as follows:

From the 2009/10 school year to the 2013/14 year, the district has declined 6% in K-12 enrollment. It is predicted that over the next 5-10 years K-12 student enrollment will continue to decline. (New Hampshire Administrators Association)

Transportation

Federal and State Highways

In New Hampshire, public highways are divided into both “functional classes and “legislative classes.” These classes determine funding and responsibility for maintenance. According to NHDOT (2012), there are 19.354 miles of legislative Class I highway, or primary state highway, in Carroll. This is comprised of US 3 and US 302. US 302 is a principal arterial and US 3 is a minor arterial under the state’s functional classification system. In Carroll there are also 9.297 miles of Class II highway (DOT 2012), or secondary state highway. These are NH 115, Lennon Road,

and Base Station Road. NH 115 functions as a minor arterial, while Lennon Road and Base Station Road are considered minor collectors. The cost of maintaining these highways is paid by the state. In addition, there are 7.139 miles of road maintained by the White Mountain National Forest (DOT 2012).

As shown below, traffic on US 3 has increased since 2007. In some locations, data indicate a slight decrease in between 2007 and the most recent counts. This may be due to the recession that began in 2007-2008 along high fuel prices decreasing travel. On US 3, data indicate an increase in traffic in the Twin Mountain area, but not at the town lines. Significant increases were seen on NH 115.

Annual Average Daily Traffic

	2007	2008	2009	2010	2011	2012	2013	2014
US 302 west to east								
Bethlehem town line	2800			2400			2900	
East of US 3	3500			4200			4200	
Ammonoosuc River bridge	3200			2700			3900	
Carroll-Hart's Location town line		2200			2700			2300
US 3 south to north								
Bethlehem town line	4100			3200			4100	
South of US 302			4300			5100		
North of Fieldstone Lane (near Fire Dept.)	5600			5300			6400	
South of Ledoux Drive (near UPS)			4700			5300		
Whitefield town line			2500			2300		
NH 115 south to north								
0.75 miles east of US 3			2800			3300		
Jefferson town line			2600			3100		

(Source: NCC and NHDOT)

The Twin Mountain area of Carroll is at the crossroads of several Scenic Byways. The White Mountain Trail National Scenic Byway enters town on US 3 from Franconia and heads east on US 302 toward Bartlett. The same segment of US 302 is also part of the Presidential Range Trail, a state Scenic Byway. US 3 heading north from Twin Mountain to Whitefield, and NH 115 to US 2 to the north are also part of the Presidential Range Trail.

Town Roads

The town is responsible for the maintenance of Class V highways. NHDOT records currently show 11.121 miles as of 2015, although several other roads have been accepted by the town in recent years bringing this figure up over 14 miles. Summer maintenance, such as road reconstruction and resurfacing, culvert replacements, roadside mowing, bridge repair and maintenance, and maintenance of street signs, and snowplowing and sanding in winter, are annual projects done by the town's Highway Department. Due in part to deferred maintenance, the estimated cost of needed improvements on town roads was estimated to be over $1 million in 2013. A regular program of repair and maintenance such as is now being established by the Road Agent is needed to eliminate the need for rehabilitation or reconstruction due to deferred maintenance. A Road Surface Management System (RSMS) such as the one supported by the UNH Technology Transfer Center is one way to prioritize improvements for incorporation into the town's capital improvement program. RSMS is a systematic computerized method for ensuring road maintenance funds are spent in the ways which will prove to be the wisest long term investment.

In addition to highways maintained by the state, town, US Forest Service, and the 14.219 miles owned and maintained by private landowners, Carroll also has 0.772 miles of Class VI highway. Class VI highways are public ways which have been discontinued or have not been maintained by the town for year-round travel for five or more years. (RSA 229:5 VI and VII). State law (RSA 674:41) provides that no permit can be issued for building on a Class VI road or private road not approved by the Planning Board unless the Selectboard votes to issue permits on that section of road and the applicant has filed a waiver of the town's responsibility for maintenance and liability for damages with the Registry of Deeds. The law also provides for the Selectboard to provide the Planning Board with an opportunity for review and comment. To ensure that relevant issues are discussed and considered by the two boards ahead of time, and that all applications are evaluated against the same criteria, it is recommended that communities adopt a Class VI highway ordinance.

Highway Garage

The Highway Garage and Yard is adequate, except for a need for additional storage for seasonal equipment and spare parts for a variety of public works needs, including water main piping, valves, and hydrants. The suggestion has been made to negotiate with the federal government to acquire two buildings located off of Harmony Hill Road. These structures have not been used in years and the site is conveniently located in close proximity to the US 3/ US 302 intersection.

Other Modes of Transportation

Nearby interstate highways provide residents, business and visitors to Carroll with access to large commercial airports in Montreal, Que. ; Manchester, N.H.; and Boston, Mass. In addition there are two small local airports. Twin Mountain Airport is a privately owned/public-use airport with a paved 2,640' x 60' runway. There is a small building that serves as a terminal building and a tiedown apron for aircraft. The Mount Washington Regional Airport is located nearby in Whitefield. The airport is equipped with a 4,001 x 75 foot paved runway with pilot activated lighting. Portions of the itinerant operations that occur during the summer months are corporate turboprop/jet aircraft and charter aircraft that transport passengers to the Mount Washington Resort - Bretton Woods. The airport is operated and managed by the Mount Washington Regional Airport Commission, which is comprised of ten (10) surrounding Towns in a cooperative financial agreement to support the airport. The Town of Carroll is not currently a member of the Commission.

The nearest passenger rail connection is in White River Junction, Vermont. Freight rail in nearby Whitefield feeds into the Main Line connecting Portland to Montreal in Groveton.

Bus service to major cities can be accessed via Concord Coach Lines in Littleton or Berlin.

Assistance with Transportation

A network of human service, health care and volunteer drivers meet some of the needs of the town's nondriving population. These include:

- American Cancer Society - rides to treatment with volunteer drivers
- Caleb Interfaith Volunteer Caregivers - rides for medical/recreational/social trips for seniors with volunteer drivers
- Easter Seals - services for the disabled
- Granite State Independent Living - services for the disabled
- Tri-Country CAP -North Country Transit - rides for seniors and the disabled
- Veterans Administration - Non-emergency medical rides for veterans

In addition, North Country Rideshare helps residents get access to the state's free on-line carpool matching service.

Water

The Town of Carroll water system services a total of 415 lots throughout the Town and 6 lots in the town of Bethlehem. The current service area includes Route 3 South with branches to those roads off of Route 3 South. Route 3 North services Twin View Drive, Evan's Road to approximately halfway along the road, ending before the area known as the 'Flats'. There is no municipal water service to Lennon Road. Water service continues west on Route 302 to Blueberry Road with no service to Blueberry Road, and east to the lot of the location formerly known as Mooseland Grill. Portions of each zoning district - R-1, R-B, IND and RU - are served by the town water system.

In 1994, the source of water for the Carroll water distribution system changed from dams on the Little River in Bethlehem, serving the south end of town, and on Cherry Mountain Stream in Carroll, serving the north end of town, to three wells adjacent to the Ammonoosuc River at the site of the current Carroll Recreation Area. The distribution system was installed in the 1930s and 1940s, built by the WPA. The changes were mandated by the federal government requirements necessitating that Carroll discontinue both surface water sources. Of the three wells, only two are currently active and capable of providing 250,000 gallons of water per day. The current peak water use during the summer averages 100,000 gallons per day. The two operating wells are gravel packed wells at a depth of 60' to 70'. This location was near the mid-point of the distribution system. The piping from the wells is connected to the distribution system on Riverside Drive in front of Foster's Crossroads Store off Route 3. The dams at Little River and Cherry Mountain Stream were each replaced with 160,000 gallon water storage tanks that were sized to provide water and fire protection for the town through the existing fire hydrants and distribution system. The wells are controlled by a pump house located adjacent to the wells where metering, testing and treatment are conducted.

Although the distribution system was installed in the 1930s by the WPA, a number of water mains have been added as part of the development of specific subdivisions, including Ruth Road, Brian's View, Ridgeview Drive, Mahlyn Drive, Woodcrest, and Sugarloaf Drive. Other improvements have included extension of the water main to Route 3 from the Little River supply main, and upgrade of undersized piping along Little River Road for fire protection. Water waste has been greatly reduced by locating and repairing leaks that had been in place for many years. Upgrades to pump house and storage tank systems were recently made as well, including changes to the pumps to increase efficiency.

The system capacity at the wells, pump house and storage is adequate at this time to support growth in and around the Twin Mountain area of town. However there are needed upgrades to

continue to provide a reliable and cost effective water system. Tank stirring systems need to be installed in the Little River and Cherry Mountain Tanks to prevent the water from freezing in the winter. Without stirring the water in the tanks, ice forms in the tanks and floats up and down within the tanks. This movement of ice causes abrasion of the fiberglass tank liner and can cause tank failure. Ice in the tanks reduces the capacity of liquid water to provide fire protection for the town in an emergency. The Little River Tank cannot currently have a tank stirring system installed because there is no electric power to the tank to operate a stirring system. Because there are several (21) owners of the right-of-way to the Little River Tank, and the tank is located in the town of Bethlehem, it has been very difficult to acquire the necessary permissions for installing electric power poles to bring electricity to the Little River Tank. Solving this problem is a priority since damage from ice has caused damage to the fiberglass liner of this tank (which is in the process of being repaired). In addition, the town should own the land on which the water tanks are located.

The existing storage tanks can be expanded by extending them vertically. However, doing so would increase the static pressure of the water within the distribution system. Since much of the piping within the distribution system is over 80 years old and consists of a variety of materials (cast iron, transite, ductile iron, copper, galvanized, and plastic), increased water pressure would likely result in additional water main breaks. The replacement of the 2 inch piping along Route 302 west with 6 inch piping for fire protection has been identified as one of the highest priority improvements to the distribution system.

In addition, the river crossing in the Ammonoosuc River is in danger of failing since it is exposed to the ravages of changes in river water velocity and depth. There may be unknown leaks in the existing river crossing piping. Replacing this piping by punching a new main under the river is a great priority. Failure of the existing piping would cut off all water to the north of the river from the wells and the pump house.

Bretton Woods Water & Sewer

Residential units at Bretton Woods and the Mount Washington Hotel are served by the Rosebrook Water Company. This system serves a population of 1,050 via 407 connections (NHDES). In 2014, the Public Utilities Commission approved the transfer of Rosebrook Water Company Stock from BW Land Holdings, LLC to REDUS NH Water Co., LLC, a holding company formed by Wells Fargo to assume ownership of the system as part of a foreclosure settlement against BW Land Holdings, LLC. Prior to the change in ownership there had been several compliance failures relative to PUC requirements. The PUC determined that the Wells Fargo-held REDUS NH Water Co., LLC will be able to properly manage the system.

The Bretton Woods development is provided wastewater treatment by Resort Waste Services. It is a nonprofit organization owned by the user members and run by a board of directors. They are currently completing an asset management study to look at capital needs.

Solid Waste

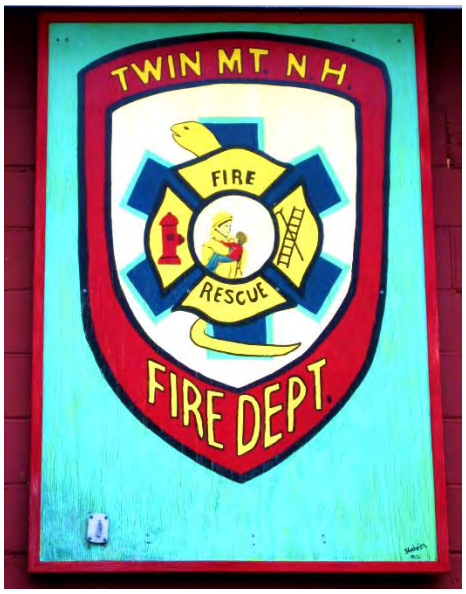
At this time the Transfer Station is adequate for the disposal needs of the town.

Emergency Services

Police

The Police Department is currently in a rented building on US 3 South. Over the last ten years, different proposals brought before the town to build a new Police Station and/or a combination Police and Fire Safety Complex were rejected by voters. Most recently, in March 2015, voters rejected ballot articles to expend funds to develop concept drawings and specifications for a Safety Complex or a combination Town Hall/Safety Complex. Survey responses showed that residents are of many different opinions as to the best approach to this need. Further work is needed to develop consensus on a plan.

Fire



The current fire station building located in the Twin Mountain area of town contains one office section and another that houses apparatus etc. The office section has two offices, a training/general use room and one bathroom. The garage area has five bays across the front of the building and one located in the back. There is another bathroom and a kitchen area in that section. The building is handicapped accessible and contains an emergency generator.

There are currently unmet needs of concern to the Fire Department. One is that the current building is not large enough to house a ladder truck. A ladder truck is needed to provide fire protection to the Mount Washington hotel and Bretton Woods Condominiums. Another need if for a fire station nearer to the Bretton Woods area of town to improve response times and lower insurance rates. This could be achieved by either developing a town safety facility closer to Bretton Woods or by developing a substation in the Bretton Woods area, equipped with an ambulance and a piece of firefighting apparatus.

Ambulance

The town provides its own ambulance service as part of the Fire Department The two town-owned ambulances are housed at the Fire Station. There are two full-time Fire/Ambulance certified emergency personnel in addition to the volunteers.

Emergency Management

In 1941 the Office of Civil Defense was established to coordinate civilian defense efforts with the Department of the Army during WWII. In the 1950's and early 1960's, known as the "Cold War", more emphasis was placed on regional and local efforts to protect the homeland and citizens from harm and disruption that might result from nuclear war. Those of us growing up in those years can recall school house drills encompassing "Duck and Cover" and the ubiquitous bright yellow and black "Fallout Shelter" sign in every school and public building across the United States directing us to safety. Communities sounded daily Air Raid signals atop public building and fire stations, and local radio and TV stations broadcast monthly checks of the "Conelrad" radio system. In the early 1980's as the threat of nuclear war diminished, and the "Cold War" receded in memory, more emphasis was placed on preparing measures to mitigate the effects of natural and manmade disasters. Civil Defense morphed into a new agency called Emergency Management.

In accordance with federal and state laws, the Town of Carroll established as part of their local government, the position of Emergency Management Director (EMD) for the town. The EMD serves directly under the Selectboard and his duties include coordinating the town's response to natural and manmade disasters.

Emergency Operations Plan (EOP)

The town of Carroll last completed an EOP in 2008. The EOP follows a model developed by the NH Department of Safety, Office of Emergency Management. This plan describes the basic mechanisms and structures by which the Town of Carroll would respond to potential and actual emergencies. To facilitate an effective response to a critical incident, the EOP incorporates a functional approach that groups the types of assistance to be provided into Emergency Support Functions (ESFs) (i.e., communications, transportation, shelter, etc.). Each ESF is assigned a primary or co-primary agency based upon current roles and responsibilities. Other departments may be designated in a support role. For example in the case of a ski lift derailment, the Fire Department would be primary and the EMS would be co-primary departments in-charge. The Police Department, Highway Department and Health Officer would support their efforts, to ensure a positive and effective response.

The following natural or man-made hazards are the prime consideration of the Emergency Operations Plan:

Multiple Vehicle Accident	Haz Mat Incident
Snow and Ice Events	Long Term Power Outage
Flooding/Major Erosion	Landslide
Water Disruption/Outage	Wind Storm
Hurricane	Forest Fire
Train Wreck/Derailment (Cog)	Major Food Borne illness
Plane Crash	Bomb Threat/Blast
Nuclear/Biological/Chemical Threat	Pandemic

The Emergency Operations Plan should be reviewed and updated at least every two to three years to ensure that accurate and timely information is available for stakeholders when important decisions are contemplated. Exercises on a variety of scenarios are also important for training and for identifying any gaps in the plan.

Emergency Operations Center (EOC)

It is imperative that the town of Carroll establish and maintains an Emergency Operations Center as part of the emergency preparedness program. The EOC is where department heads, government officials and volunteers gather to coordinate their response to a critical incident. The EOC goes into operation when elected officials decide that the situation is serious enough to require a coordinated and other-than-routine response is warranted. Plans are developing to possibly establish an EOC in the current fire station. Any new government buildings

contemplated in the future should consider the possibility that they also house an EOC or a shelter for residents in time of an emergency.

Emergency Shelter

Currently the town does not maintain a shelter for residents or potential victims of disasters or critical incidents. Town officials need to consider protecting its vulnerable citizens and employees in order to preserve life and property.

Hazard Mitigation Plan

Hazard mitigation plans identify ways that the community can reduce the losses of life and property when an extreme weather event or other disaster occurs. The Selectboard has recently adopted the *CARROLL HAZARD MITIGATION PLAN UPDATE 2014*. There are many benefits to implementation of this plan. Implementation will be a benefit to residents, businesses, visitors and property owners in terms of safety and protection of property. In addition, unnecessary cost to tax payers will be prevented. And finally, implementation increases safety for the emergency responders who must risk their lives to try to save people and property during disasters.

Cemeteries

The town is responsible for three cemeteries: Crawford, Rosebrook, and Straw. The town's cemeteries have great historical value as many important figures in the history of the White Mountains are buried here. The Board of Cemetery Trustees has been implementing a ten year plan to restore and regularly maintain the cemeteries. In addition to landscaping and entrance improvements, the work to restore broken and leaning stones is nearly complete. The final restoration step will be an acid cleaning of all stones. In addition, gravesites are boing cataloged.

Capacity is not an issue. The Board of Trustees reports that there are 500 plots available that can potentially accommodate 2,000 people.

Recreation

The town recreation area is located off of US 3 on Lake Road. The Recreation Committee strives to provide a positive, enjoyable community experience through all of their traditional and nontraditional activities and facilities. The recreation area includes a playground, basketball court, baseball and recreational field. Activities include a summer camp program for the children of Carroll and surrounding towns. Some modernizing and upgrading is also needed. In addition, the recreation area would benefit greatly from a pool instead of the small pond currently used for swimming, and an area for a skating rink for winter activities.

Residents of and visitors to Carroll also have an abundance of four-season outdoor recreation opportunities offered by the White Mountain National Forest, Bretton Woods Ski Resort, AMC Highland Center, the Ammonoosuc River, and a network of multi-use trails. Together these provide access to fishing, hiking, snow-shoeing, cross-country and downhill skiing, snowmobiling, ATV?, camping, nature study, and golf.

Broadband and Telecommunication Service

In the Twin Mountain area of the Town of Carroll telephone service other than wireless is provided by Fair Point Communications. Service is provided through land line connections that are supported by the telephone pole infrastructure in town. Fair Point Communications also provides broadband, internet service via a 2-wire copper telephone line known as Digital Service Line (DSL). Broadband is defined as access that is at least 768 kbps downstream and 200 kbps upstream.

Time Warner provides coaxial cable service that includes TV, internet and home security to the Twin Mountain Community.

The Bretton Woods area of the Town of Carroll receives voice, video and data service through Bretton Woods Telephone Company, a privately owned and operated company. The Bretton Woods infrastructure is 100% optical fiber. There are 52 TV channels available to its customers of Bretton Woods Telephone Company with video entertainment available as well. The company provides both local and long distance telephone service. Future plans only include the expansion of the optical fiber network to any future development in Bretton Woods.

Facilities Recommendations

Town Hall

- Continue to explore the cost and feasibility of renovating the existing Town Hall/Library in comparison with a replacement facility on the same site.

Schools

- Continue to participate in the regional school system, making necessary facility upgrades as needed for health and safety and future success of graduates.

Transportation

- Explore the purpose of land and buildings off of Harmony Hill Road for additional public works storage.
- Stay abreast of federal and state transportation program and funding sources, and advocate for Carroll's needs to NHDOT and the North Country Transportation Advisory Committee.
- Explore utilizing a road surface management system to prioritize/time the backlog of needed road improvements in the most cost effective manner.
- The Selectboard and Road Agent should continue to regularly evaluate the maintenance needs of town roads, and budget to perform needed maintenance in a timely manner to ensure that deferred maintenance does not result in additional cost to the tax payer.
- The Selectboard and Road Agent should update NHDOT annually when any private roads have been accepted as town roads to ensure that the increased Class V mileage is used in block grant aid calculations.
- The Planning Board should ensure that private roads built for subdivisions are built to appropriate standards through the approval and inspection process, and that they have an entity and funding mechanism in place to perform ongoing maintenance if/while the road remains private.
- The Selectboard and Planning Board should work together on a town policy regarding building on a Class VI road.
- Carroll leaders should advocate for residents' needs in regional transportation planning initiatives through such means as representation on the North Country Transportation Advisory Committee and input to the Grafton-Coos Regional Coordination Council.

Water

- Acquire the land under both water tanks.
- Acquire the rights to install the electric service needed to install tank stirring systems and install in both tanks. Ice formation diminishes storage capacity and damages the tank liners.
- Replace the main under the Ammonoosuc River; it is a crucial link between the water system's two tanks.
- Upgrade the 2" main along US 302 West to 6" and extend to and up Blueberry Hill.
- Construct water main along Lennon Road and down NH 115. This would require a booster pump station.
- Replace water main along Parker Road and Parker Road extension along its entire length. The existing main consists of several kinds and sizes of water mains making it difficult to procure parts when repairs are needed.
- Develop a plan for upgrading the distribution system and implement the plan over a number of years based on residents' ability to absorb the costs.
- When considering expansions of the service area, prioritize those zoning districts where business development and dense residential development are desired.

Emergency Management

- Update the Emergency Operations Plan and review it annually.
- Conduct emergency response exercises annually with area towns.
- Establish an Emergency Operations Center.
- Establish an emergency shelter with a generator.
- Review the Hazard Mitigation Plan annually to identify opportunities for implementation.

Emergency Services

- Address the lack of fire protection in closer proximity to Bretton Woods.
- Address the need for a ladder truck and a facility in which to house it.
- Continue plans for a new town-owned safety complex to house fire, police, and ambulance equipment.

Cemeteries

- Continue regular maintenance.

Recreation

- Continue a regular program of modernizing and upgrading the town recreation area.
- Replace the pond with a pool.
- Create an area for a skating rink in the winter.

Appendix A NRI Tables

Monthly Averages for
Twin Mountain, NH (03595)
[English | Metric]

The Weather Channel

Jan	25°F	5°F	15°F	4.65 in.	64°F (1950)	-31°F (1957)
Feb	29°F	8°F	19°F	4.21 in.	62°F (1994)	-28°F (1962)
Mar	36°F	16°F	26°F	4.61 in.	70°F (1998)	-19°F (2007)
Apr	49°F	29°F	39°F	5.46 in.	86°F (1990)	-6°F (1974)
May	61°F	40°F	51°F	5.19 in.	89°F (1962)	17°F (1968)
Jun	70°F	49°F	60°F	5.29 in.	90°F (1995)	26°F (1988)
Jul	74°F	54°F	64°F	5.05 in.	93°F (1982)	32°F (1968)
Aug	73°F	52°F	63°F	5.35 in.	91°F (1975)	31°F (2000)
Sep	66°F	45°F	56°F	4.97 in.	92°F (2002)	21°F (1980)
Oct	54°F	34°F	44°F	6.56 in.	82°F (1963)	3°F (1972)
Nov	42°F	25°F	34°F	5.63 in.	73°F (1950)	-5°F (1989)
Dec	31°F	13°F	22°F	5.19 in.	67°F (2001)	-21°F (1980)

Summary Political Unit Acreage Report

Date Generated: 06/27/2008
Reporting Units: acres

Town of Carroll

FIPS	7030
Town Name	Carroll
County	Coos
RPC	North Country Council
Total Acreage	32187.5
Land Area	32079.1
Surface Water Area	108.4

Summary Shoreline Buffer Acreage Report

Date Generated: 03/16/2012
Reporting Units: acres

Town of Carroll

Acreages presented here are based on surface water features selected from the New Hampshire Hydrography Dataset (see metadata for a listing of the FCODES used) and may differ from previously reported totals.

FIPS	7030
Town Name	Carroll
County Name	Coos
Total Acreage	32187.5
Surface Water Acreage	108
Perennial/Intermittent Streams and Shoreline Length (feet)	1028507.4
Perennial/Intermittent Streams and Shoreline Buffer at 50ft	2184.7
Perennial/Intermittent Streams and Shoreline Buffer at 100ft	4325.2
Perennial/Intermittent Streams and Shoreline Buffer at 150ft	6405
Perennial/Intermittent Streams and Shoreline Buffer at 200ft	8396.8
Perennial/Intermittent Streams and Shoreline Buffer at 250ft	10278.8
Perennial/Intermittent Streams and Shoreline Buffer at 300ft	12057.2
Perennial Streams and Shoreline Length (feet)	350569.5
Perennial Streams and Shoreline Buffer at 50ft	643.3
Perennial Streams and Shoreline Buffer at 100ft	1275.9
Perennial Streams and Shoreline Buffer at 150ft	1897.5
Perennial Streams and Shoreline Buffer at 200ft	2509
Perennial Streams and Shoreline Buffer at 250ft	3108.6
Perennial Streams and Shoreline Buffer at 300ft	3696.9

Summary Palustrine Wetlands Acreage Report

Date Generated: 03/16/2012
Reporting Units: acres

Town of Carroll

FIPS	7030
Town Name	Carroll
Town Acres	32187.5
Emergent Wetlands	93.1
Forested Wetlands	347.9
Scrub-Shrub Wetlands	399.6
Other Palustrine Wetlands	43.1
Total Palustrine Wetlands	883.7
Percent of Town	2.7

Town Flag	Species or Community Name	Listed? Federal	Listed? State	# reported last 20 yrs Town	# reported last 20 yrs State
Carroll					
	Natural Communities - Terrestrial				
***	High-elevation spruce - fir forest system	–	–	1	10
	Natural Communities - Palustrine				
	Acidic riverside seep	–	–	Historical	4
**	Moderate-gradient sandy-cobbly riverbank system	–	–	1	8
**	Sugar maple - ironwood - short husk floodplain forest	–	–	1	6
	Plants				
***	Broad-leaved Twayblade (*Neottia convallarioides*)	–	T	1	23
*	Heart-leaved Twayblade (*Neottia cordata*)	–	T	1	23
	Hidden Sedge (*Carex umbellata*)	–	E	Historical	12
	Inflated Sedge (*Carex bullata*)	–	E	Historical	5
	Kidney-leaved Violet (*Viola nephrophylla*)	–	E	Historical	8
	Mountain Firmoss (*Huperzia appressa*)	–	E	Historical	14
	One-leaf Orchis (*Amerorchis rotundifolia*)	–	E	Historical	1
	Scirpus-like Sedge (*Carex scirpoidea*)	–	T	Historical	13
	Viviparous Knotweed (*Bistorta vivipara*)	–	E	Historical	5
	Vertebrates - Mammals				
**	American Marten (*Martes americana*)	–	T	1	144
	Northern Bog Lemming (*Synaptomys borealis sphagnicola*)	–	SC	Historical	3

Listed? E = Endangered T = Threatened SC = Special concern M = Monitored

Flags **** = Highest importance
*** = Extremely high importance
** = Very high importance
* = High importance

These flags are based on a combination of (1) how rare the species or community is and (2) how large or healthy its examples are in that town. Please contact the Natural Heritage Bureau at (603) 271-2214 to learn more about approaches to setting priorities.

Annual Total Spending by Spending Category

Annual Total Spending Associated with National Forest Visits* by Spending Category†

Spending Category‡	Total Spending Associated with Non-Local§ Visits ($1,000s)	Total Spending Associated with Both Local and Non-Local§ Visits ($1,000s)
Lodging	40,004	40,959
Restaurant	24,205	26,240
Groceries	14,675	16,446
Gas & Oil	18,468	21,865
Other Transportation	763	795
Activities	10,622	11,991
Admissions/Fees	15,132	17,289
Souvenirs/Other	8,963	10,106
Total	132,832	145,690

Selected Forests	Round 2
White Mountain NF (FY 2005)	

* A National Forest Visit is defined as the entry of one person upon a national forest to participate in recreation activities for an unspecified period of time. A National Forest Visit can be composed of multiple Site Visits.

† Dollar figures are expressed in 2007 dollars and include spending on the forest and within 50 miles of the forest boundary. Spending associated with "non-primary" visits is not included.

‡ Definitions of the spending categories are available in "Spending Profiles of National Forest Visitors, NVUM Four-year Report" by D.J. Stynes and E.M. White (2005), available online: http://www.fs.fed.us/recreation/programs/nvum/NVUM4YrSpending.pdf.

§ "Non-local" visits are those where the individual(s) traveled greater than approximately 50 miles from home to the site visited.

Individuals are urged to consult an economist when interpreting the NVUM economic tables.

TABLE 2-1. Species of greatest conservation concern. E = NH endangered (List revised 2001), T = NH threatened (List revised 2001), SC = NH species of special concern (List revised 2000), RC = Regional conservation concern (Therres 1999), FE = Federally endangered (current 8/05), FT = Federally threatened (current 8/05), BGP = Only included in the New Hampshire Big Game Management Plan (Appendix E)

Taxa
Invertebrates
Freshwater molluscs
Brook floater, E, RC
Dwarf wedgemussel, E, FE
Eastern pondmussel, RC
Insects
Barrens itame
Barrens xylotype
Broad-lined catopyrrha
Cobblestone tiger beetle, T
Cora moth
Frosted elfin butterfly, E
Karner blue butterfly, E, FE
Persius duskywing, E
Phyllira tiger moth
Pine barrens zanclognatha moth, T
Pine pinion moth, T
Puritan tiger beetle, FT
Ringed boghaunter, E
Sleepy duskywing
White Mountain arctic
White Mountain fritillary
Vertebrates
Fish
Alewife
American brook lamprey, RC
American eel
American shad
Atlantic salmon
Atlantic sturgeon, RC
Banded sunfish, RC
Blueback herring
Bridle shiner, RC
Burbot
Eastern brook trout
Finescale dace
Lake trout
Lake whitefish
Northern redbelly dace
Rainbow smelt
Redfin pickerel
Round whitefish, RC
Sea lamprey
Shortnose sturgeon, E, FE
Slimy sculpin
Sunapee trout, E
Fish (continued)
Swamp darter
Tessellated darter
Amphibians
Blue-spotted salamander, RC
Fowler's toad, SC
Jefferson salamander, SC, RC
Marbled salamander, E
Mink frog
Northern leopard frog, SC, RC
Reptiles
Black racer
Blanding's turtle, SC, RC
Eastern box turtle, RC
Eastern hognose snake, T, RC
Ribbon snake, RC
Spotted turtle, SC, RC
Smooth green snake, SC
Timber rattlesnake, E, RC
Wood turtle, SC, RC
Birds
American bittern, RC
American black duck
American pipit, SC
American woodcock
Arctic tern, T
Bald eagle, E, FT
Bay-breasted warbler
Bicknell's thrush, SC, RC
Black guillemot, SC
Canada warbler[2], RC
Cerulean warbler, RC
Common loon, T
Common nighthawk, T
Common tern, E, RC
Cooper's hawk, T
Common moorhen
Eastern meadowlark
Eastern towhee
Golden eagle, E, RC
Golden-winged warbler, SC, RC
Grasshopper sparrow, T
Great blue heron
Horned lark
Least bittern, SC
Least tern, E, RC
Birds (continued)
Nelson's sharp-tailed sparrow, SC
Northern goshawk
Northern harrier, E, RC
Osprey, T
Palm warbler
Peregrine falcon, E
Pied-billed grebe, E, RC
Piping plover, E, FT
Purple finch
Purple martin, E
Purple sandpiper
Red shouldered hawk, SC
Roseate tern, E, FE
Ruffed grouse
Rusty blackbird, SC
Salt marsh sharp-tailed sparrow, SC, RC
Seaside sparraw, SC
Sedge wren, E, RC
Semipalmated sandpiper
Spruce grouse
Three-toed woodpecker, T
Turkey, BGP
Upland sandpiper, E, RC
Veery[2]
Vesper Sparraw
Whip-poor-will, SC, RC
Willet, SC
Wood thrush[2]
Mammals
American marten, T
Black bear, BGP
Bobcat, SC
Canada lynx, E, RC, FT
Eastern pipistrelle, SC
Eastern red bat, SC, RC
Eastern small-footed bat, E, RC
Hoary bat, SC, RC
Indiana bat, FE
Moose, BGP
New England cottontail, SC, RC
Northern bog lemming, SC, RC
Northern myotis
Silver-haired bat, SC, RC
White-tailed deer, BGP
Wolf, FT

[1]In addition to the above species of greatest conservation concern, a non-breeding birds profile was completed to assess concentrated wintering and migratory areas of New Hampshire.
[2]Canada warbler, veery, and wood thrush assessments were incarporated into matrix forest habitat profiles (See Appendix B).

TABLE A - FINE TEXTURED SOILS

(Compiled from USDA-NRCS NH Statewide Numerical Soils Legend, April 2010)

County Name	Map Unit Symbol	Map Unit Name	Parent Material	Drainage Class
Coos	406A	Medomak, frequently flooded	Silty Alluvial	very poorly
Coos	433A	Grange, poorly drained	Glaciofluvial	poorly
Coos	505A	Cohas, occasionally flooded	Alluvial	poorly
Coos	549A	Peacham, very stony	Firm, compact, silty, till	very poorly
Coos	589A	Cabot	Firm, compact, platy till	poorly
Coos	589B	Cabot	Firm, compact, platy till, 3-8% slopes	poorly
Coos	589C	Cabot	Firm, compact, platy till, 8-15% slopes	poorly
Coos	590A	Cabot, very stony	Firm, compact, platy till	poorly
Coos	590B	Cabot, very stony	Firm, compact, platy till, 3-8% slopes	poorly
Coos	590C	Cabot, very stony	Firm, compact, platy till, 8-15% slopes	poorly
Coos	633A	Pemi	Marine or Glaciolacustrine	poorly
Coos	646A	Pillsbury, poorly drained	Firm, compact, platy till	poorly
Coos	646B	Pillsbury, poorly drained	Firm, compact, platy till, 3-8% slopes	poorly
Coos	646C	Pillsbury, poorly drained	Firm, compact, platy till, 8-15% slopes	poorly
Coos	647A	Pillsbury, poorly drained, very stony	Firm, compact, platy till	poorly
Coos	647B	Pillsbury, poorly drained, very stony	Firm, compact, platy till, 3-8% slopes	poorly
Coos	647C	Pillsbury, poorly drained, very stony	Firm, compact, platy till, 8-15% slopes	poorly
Coos	768A	Peacham-Wonsqueak-Cabot association, extremely stony	Firm, compact, silty, till	very poorly
Coos	769B	Monarda-Burnham association, very stony	Firm, compact, silty, till 3-8% slopes	poorly
Coos	770B	Monarda-Telos association, very stony	Firm, compact, silty, till 3-8% slopes	poorly
Coos	825B	Pillsbury-Peacham-Peru association, very stony	Firm, compact, platy till, 3-8% slopes	poorly
Coos	832A	Peacham-Wonsqueak-Pillsbury association, extremely stony	Firm, compact, silty, till	very poorly
Coos	865B	Bemis-Surplus association, very stony	Firm, compact, platy till, 3-8% slopes	poorly
Coos	895A	Bucksport	Muck Organic Freshwater	very poorly
Coos	964B	Howland-Cabot association, very stony	Firm, compact, platy till, 3-8% slopes	poorly
Coos	965B	Cabot-Howland association, very stony	Firm, compact, platy till, 3-8% slopes	poorly
Coos	105A	Rumney, frequently flooded	Alluvial	poorly
Coos	209A	Charles, frequently flooded	Silty Alluvial	poorly
Coos	600	Endoaquents, loamy	Loamy Alluvial	
Coos	224C	Bemis, very stony	Firm, compact, platy till, 8-15% slopes	poorly
Coos	246B	Lyme	Loose or firm loamy till, 3-8% slopes	poorly
Coos	247A	Lyme, very stony	Loose or firm loamy till	poorly
Coos	247B	Lyme, very stony	Loose or firm loamy till, 3-8% slopes	poorly
Coos	247C	Lyme, very stony	Loose or firm loamy till, 8-15% slopes	poorly

Summary Forest Soil Group Acreage Report

Date Generated: 11/03/2011
Reporting Units: acres

Official Data for the Town of Carroll

Areas within the White Mountain National Forest in Coos County are not mapped by NRCS.

FIPS	7030
Town Name	Carroll
County Name	Coos
Status	Official
Total Acreage	32187.5
Mapped Soil Acreage	15416.2
IA (deeper, loamy textured, moderately well, and well-drained	6176.4
IB (sandy or loamy over sandy textures and slightly less fertile than those in group IA)	1918.5
IC (outwash sands and gravels, somewhat excessively to excessively drained and moderately well drained)	2099.9
IIA (similar to groups IA and IB, except physically limited due to steep slopes, bedrock outcrops, etc.)	794.2
IIB (poorly drained soils, seasonal high water table generally within 12" of surface)	3135.8

Summary Soil Farmland Class Acreage Report

Date Generated: 11/05/2007
Reporting Units: acres

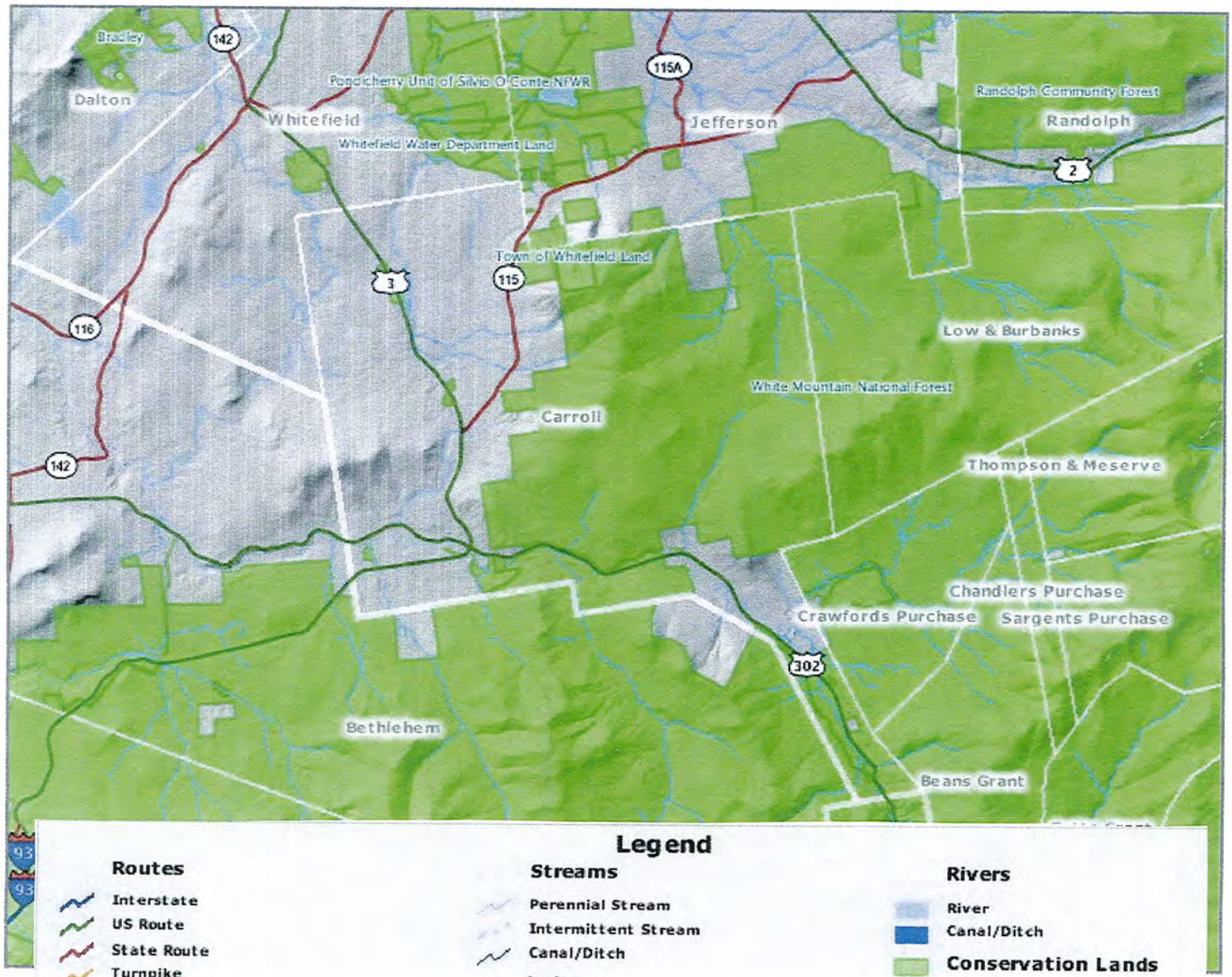
Official Data for the Town of Carroll

FIPS	7030
Town Name	Carroll
County Name	Coos
Status	Official
Total Acreage	32187.5
	15598.4
Prime farmland	409.7
Farmland of local importance	3036
Farmland of statewide importance	78.5
Conditional prime farmland	0

Appendix B NRI Maps

NH GRANIT DATA MAPPER

Land Conservation: Conservation Land Carroll



Location Map

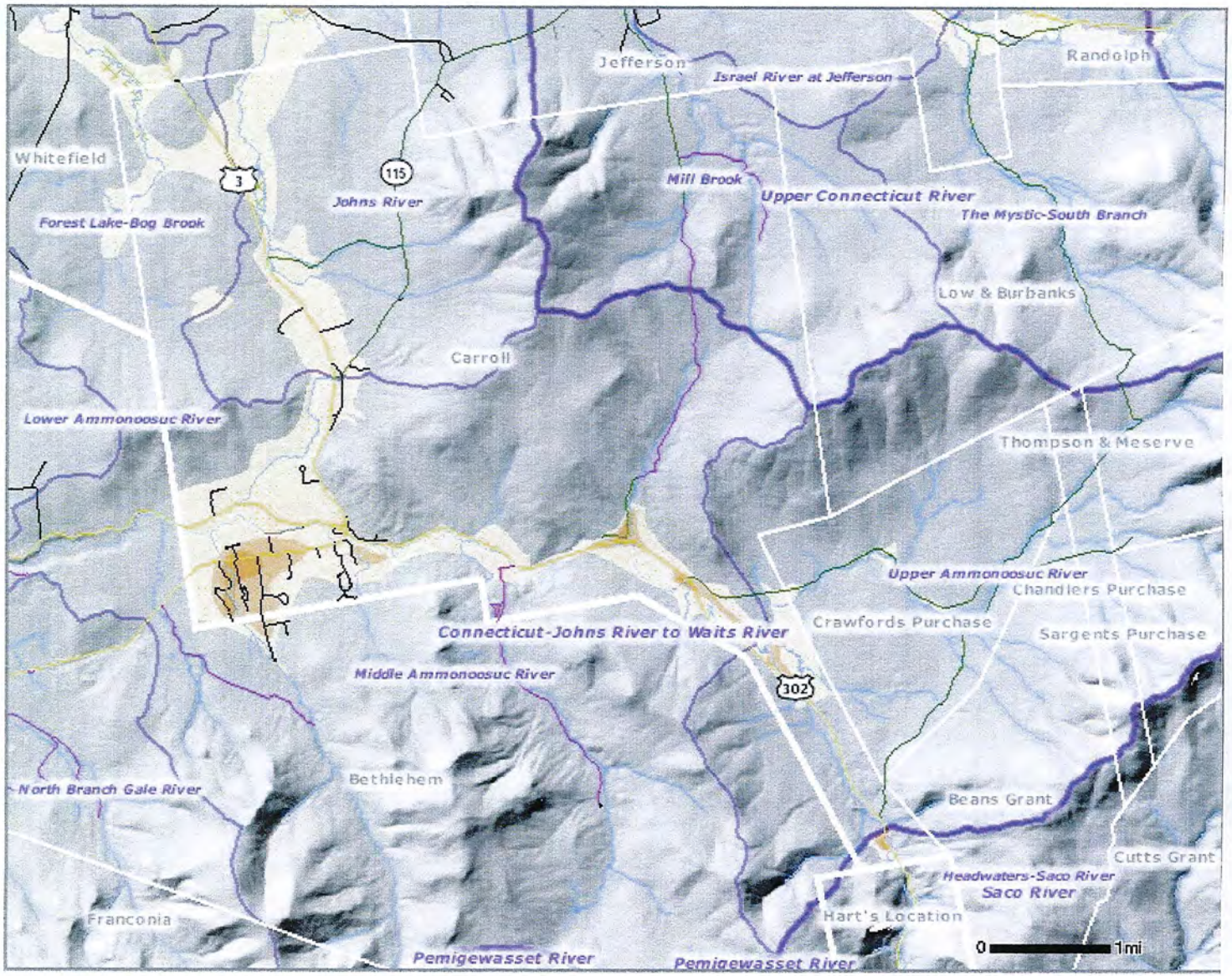
Map Produced:
March 16, 2012

GRANIT Complex Systems Research Center

UNIVERSITY of NEW HAMPSHIRE

NH GRANIT DATA MAPPER

Water Resources: Aquifers/Watersheds



Legend

Roads
- Class I: primary system
- Class II: secondary system
- Class III: state recreational
- Class IV: within compacts
- Class V: municipal
- Class VI: unmaintained municipal
- Class VII: federal highway

Political Boundaries
- State
- County
- Town

Watersheds

Subwatersheds

Stream Type
- Perennial Stream
- Intermittent Stream
- Canal/Ditch

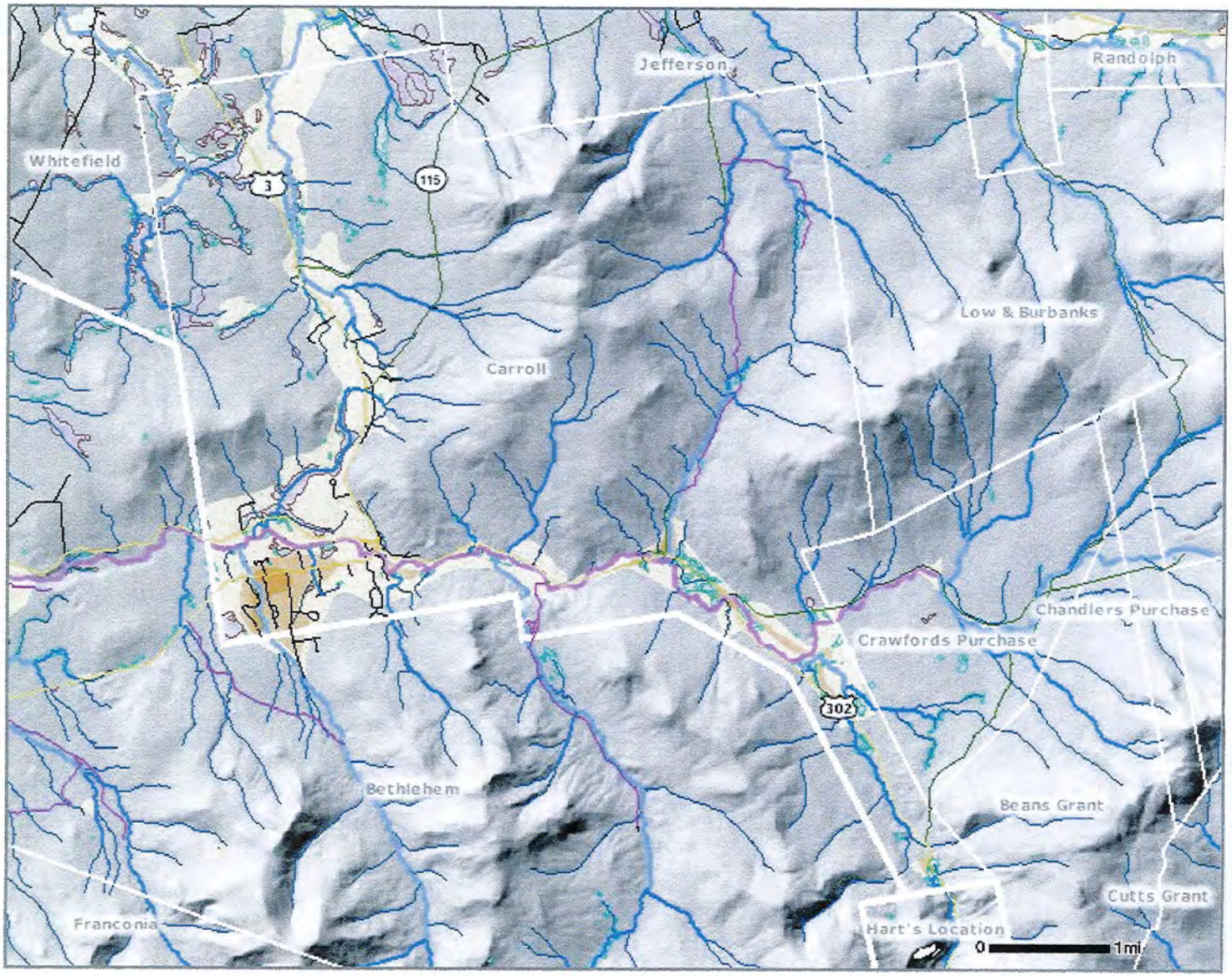
Water Bodies
- Lake/Pond
- Reservoir
- Swamp/Marsh

Other Water Features
- River
- Spillway
- Inundation Area
- Dam/Weir
- Canal/Ditch
- Rapids

Aquifer Transmissivity
- Less than 2000 ft²/day
- 2000-4000 ft²/day
- Greater than 4000 ft²/day

NH GRANIT DATA MAPPER

Water Resources: Water Sources



Legend

Roads

- Class I: primary system
- Class II: secondary system
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- Class IV: within compacts
- Class V: municipal
- Class VI: unmaintained municipal
- Class VII: federal highway

Political Boundaries

- State
- County
- Town

Stream Order:All

- 1st Order Stream
- 2nd Order Stream
- 3rd Order Stream
- 4th Order Stream
- 5th Order Stream
- 6th Order Stream
- 7th Order Stream

Water Bodies

- Lake/Pond
- Reservoir
- Swamp/Marsh

Other Water Features

- River
- Spillway
- Inundation Area
- Dam/Weir
- Canal/Ditch
- Rapids

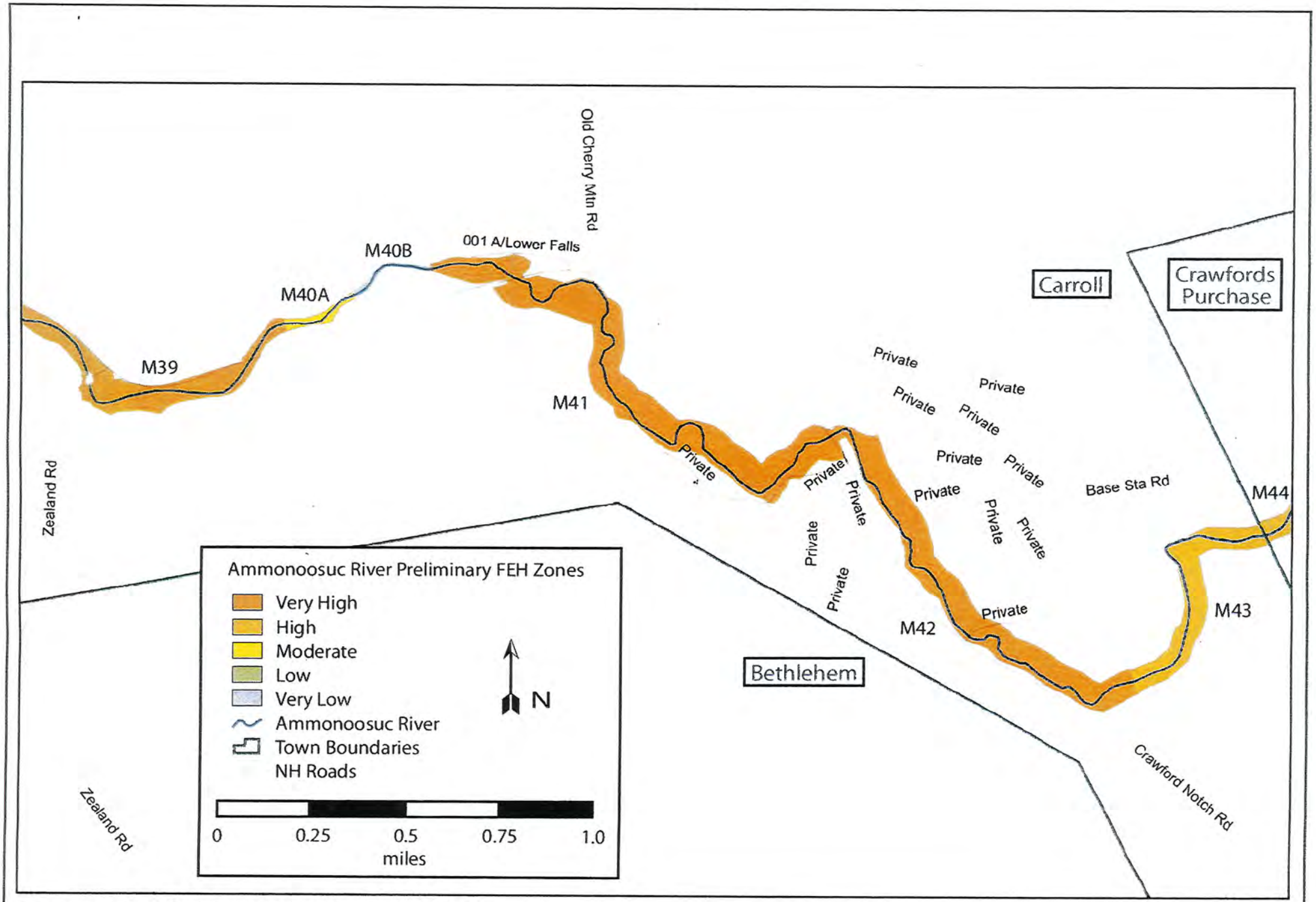
Hydric Soils

Wetlands

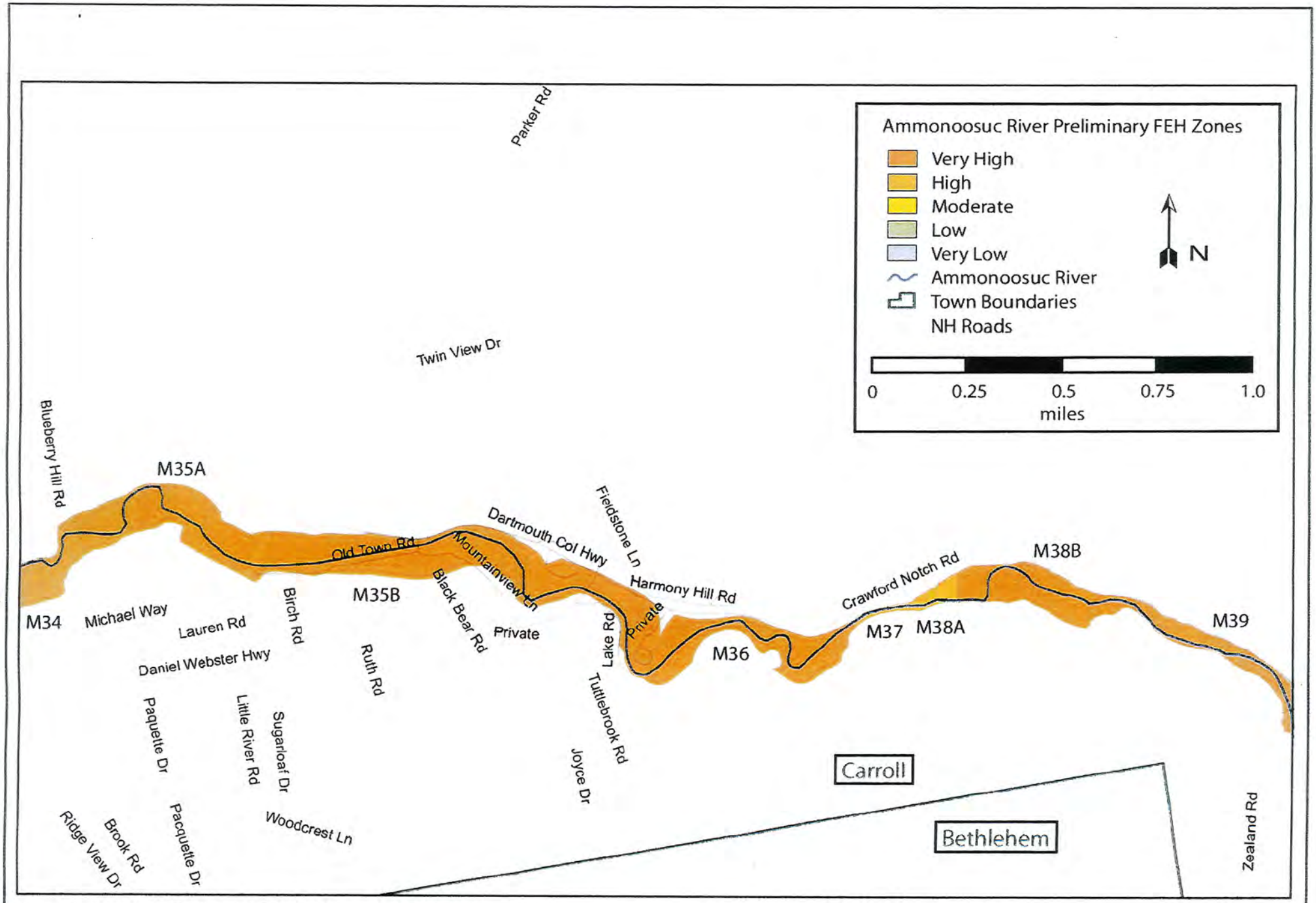
- Estuarine
- Lacustrine
- Marine
- Palustrine
- Riverine

Aquifer Transmissivity

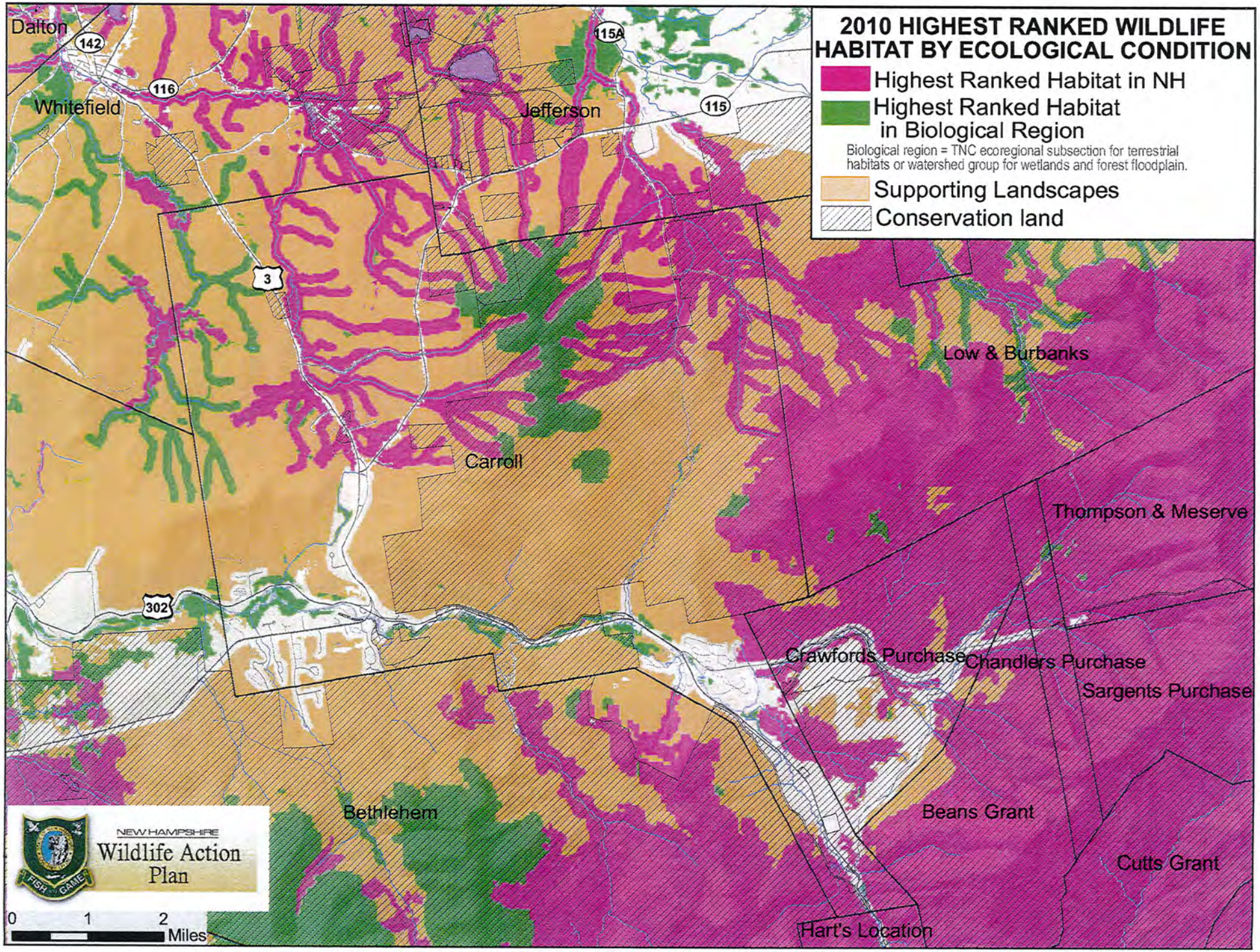
- Less than 2000 ft²/day
- 2000-4000 ft²/day
- Greater than 4000 ft²/day



Ammonoosuc River Preliminary FEH Zones - Carroll (13 of 13).



Ammonoosuc River Preliminary FEH Zones - Carroll (12 of 13).


2010 HIGHEST RANKED WILDLIFE HABITAT BY ECOLOGICAL CONDITION
Highest Ranked Habitat in NH
Highest Ranked Habitat in Biological Region
Biological region = TNC ecoregional subsection for terrestrial habitats or watershed group for wetlands and forest floodplain.
Supporting Landscapes
Conservation land
Dalton
142
116
Whitefield
Jefferson
115A
115
3
Carroll
Low & Burbanks
Thompson & Meserve
302
Crawfords Purchase
Chandlers Purchase
Sargents Purchase
Bethlehem
Beans Grant
Cutts Grant
Hart's Location
NEW HAMPSHIRE
Wildlife Action Plan
FISH AND GAME
0
1
2
Miles

NEW HAMPSHIRE WILDLIFE HABITAT LAND COVER 2010

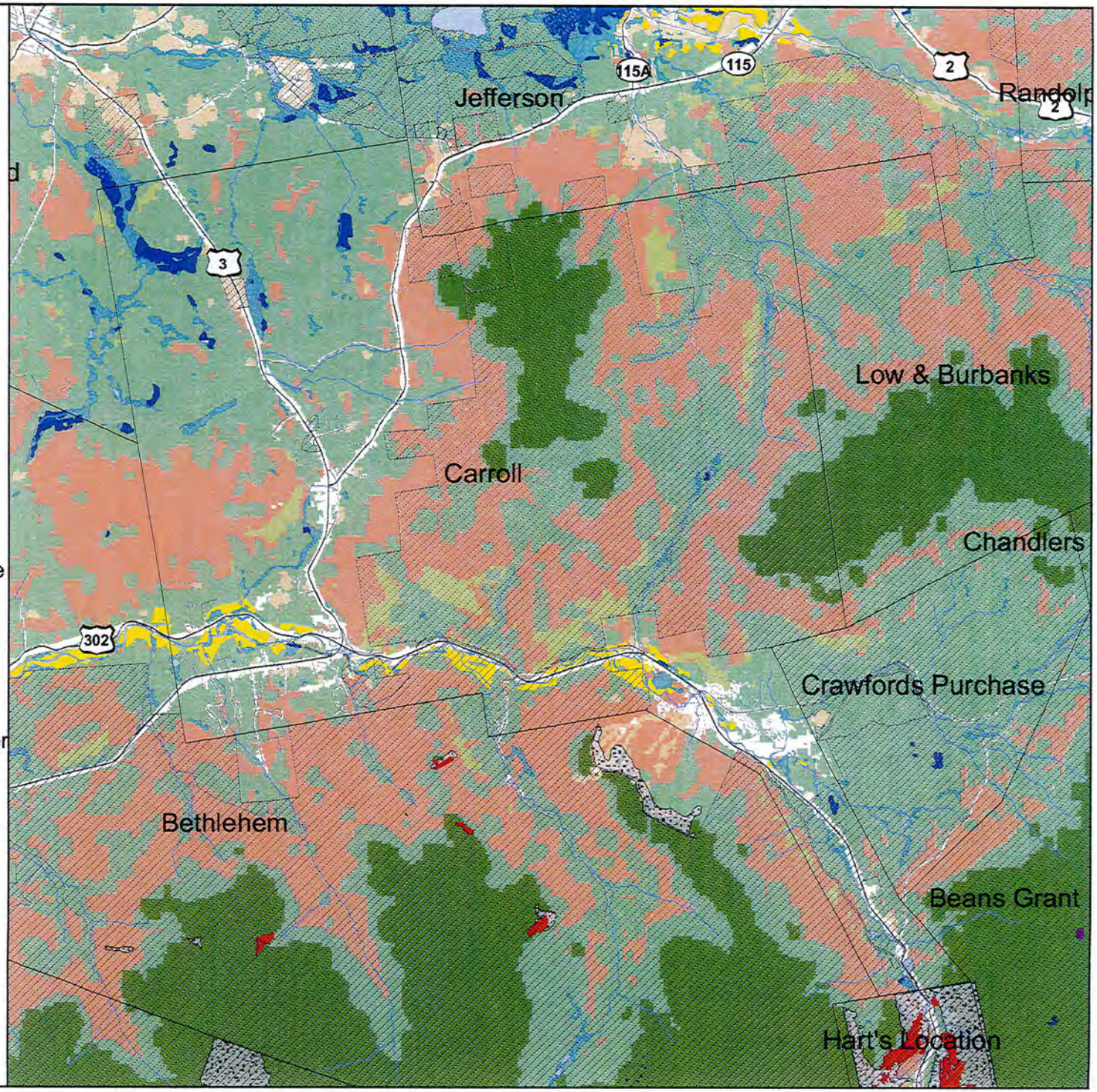
Locations of known and potential critical wildlife habitat in the state.

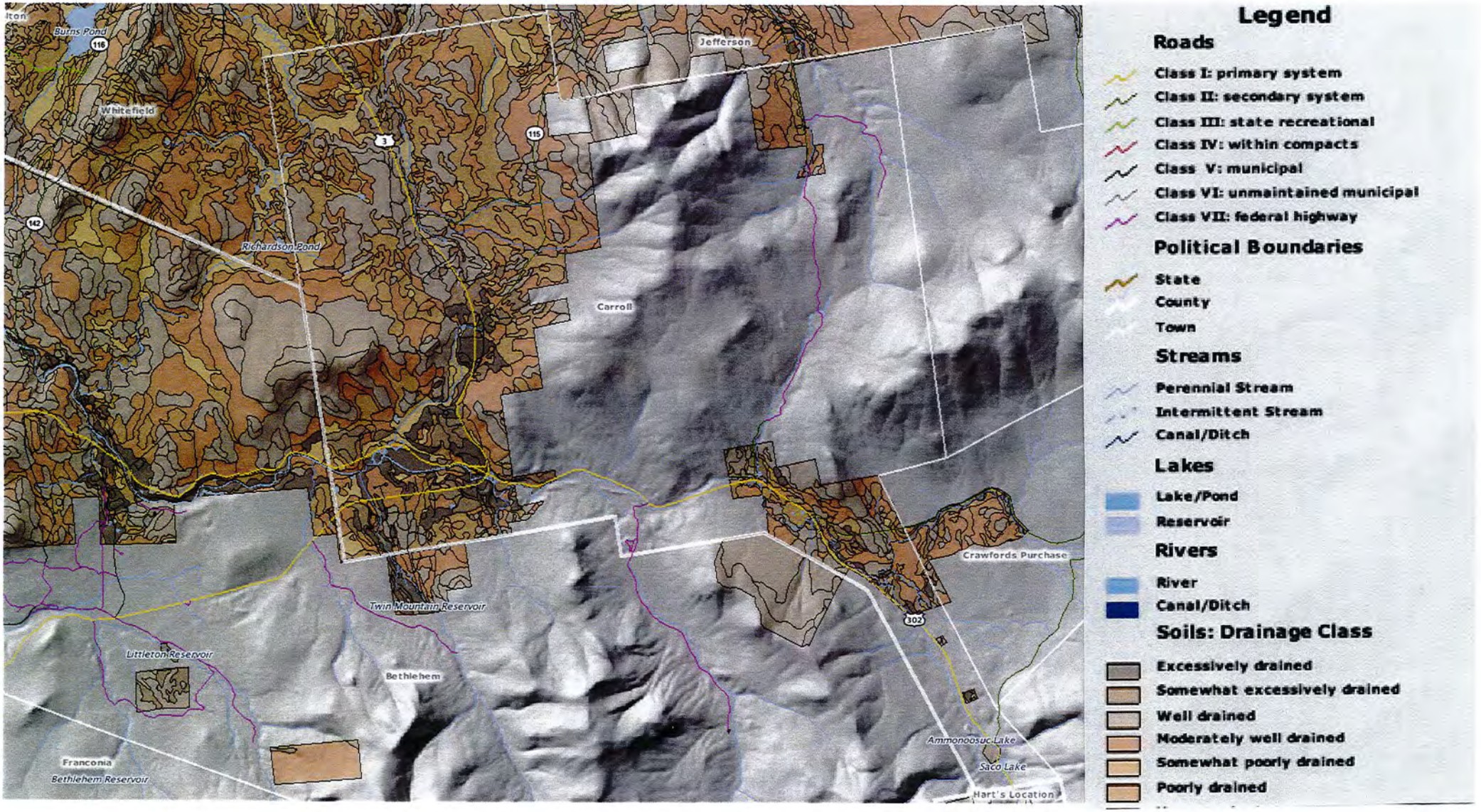
- Coastal Island
- Dune
- Salt marsh
- Peatland
- Wet meadow/Shrub wetland
- Forest Floodplain
- Grassland
- Pine barren
- Cliff
- Rocky ridge or Talus slope
- Alpine
- High-elevation Spruce-fir
- Lowland Spruce-fir
- Northern hardwood-conifer
- Appalachian oak-pine
- Hemlock-hardwood-pine

Developed or Disturbed

NEW HAMPSHIRE Wildlife Action Plan

0 1 2 Miles

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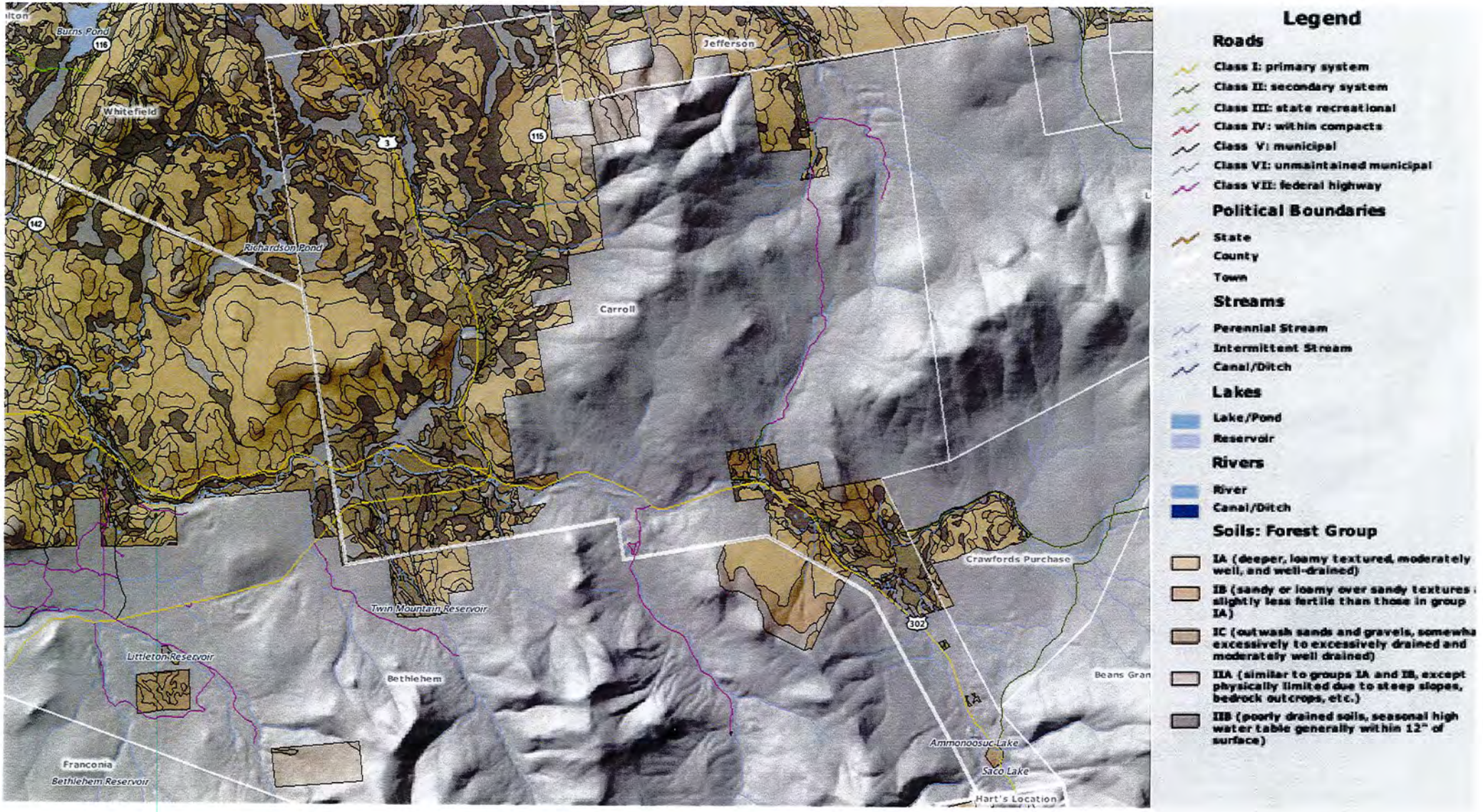
Class V: municipal
Class VI: unmaintained municipal
Class VII: federal highway
Political Boundaries
State
County
Town
Streams
Perennial Stream
Intermittent Stream
Canal/Ditch
Lakes
Lake/Pond
Reservoir
Rivers
River
Canal/Ditch
Soils: Drainage Class
Excessively drained
Somewhat excessively drained
Well drained
Moderately well drained
Somewhat poorly drained
Poorly drained
Burns Pond
Whitefield
Jefferson
Richardson Pond
Carroll
Crawfords Purchase
Twin Mountain Reservoir
Littleton Reservoir
Bethlehem
Franconia
Bethlehem Reservoir
Ammonoosuc Lake
Saco Lake
Hart's Location
116
115
3
142
302


Burns Pond
116
Whitefield
3
115
142
Richardson Pond
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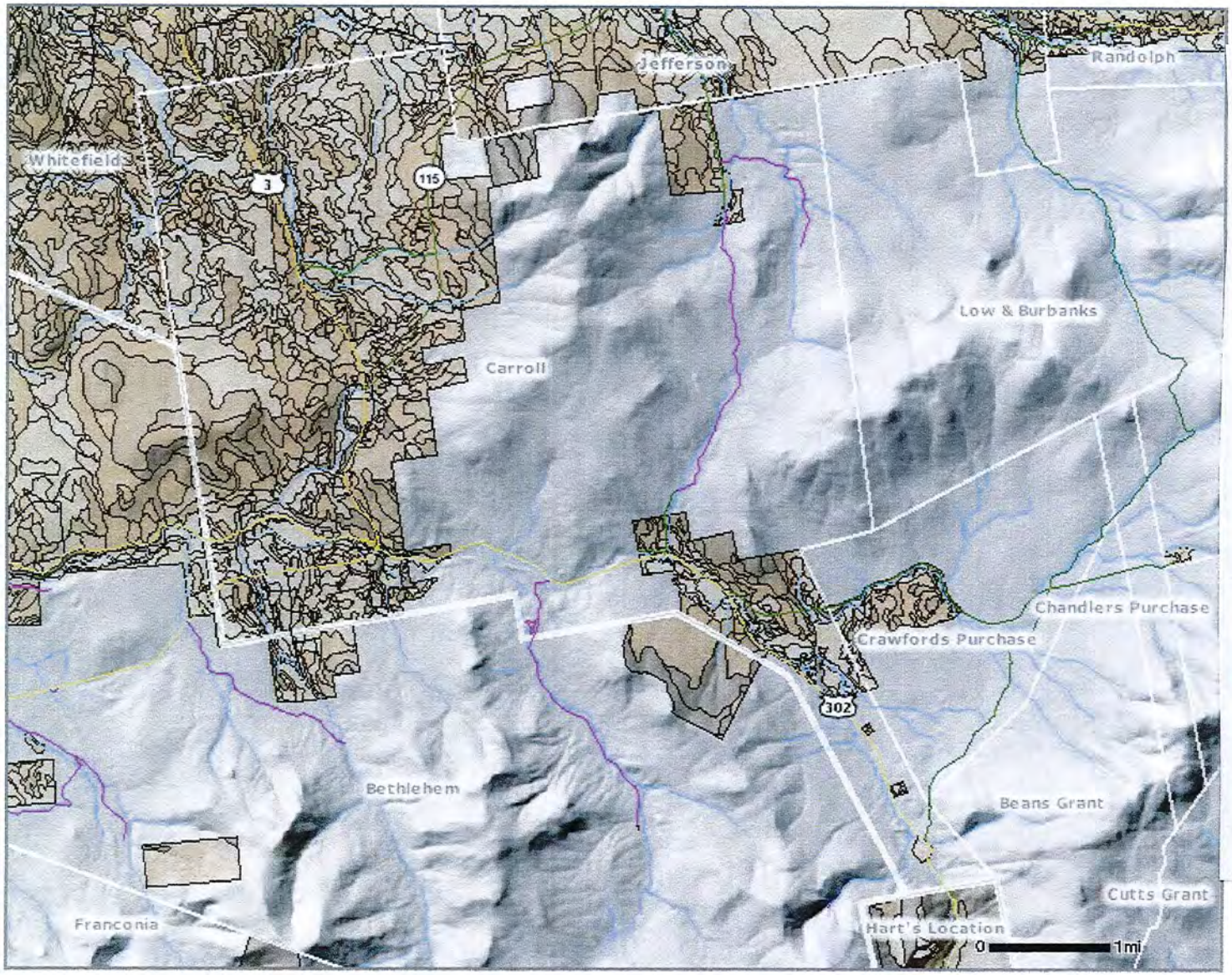
IIA (similar to groups IA and IB, except physically limited due to steep slopes, bedrock outcrops, etc.)
IIB (poorly drained soils, seasonal high water table generally within 12" of surface)

NH GRANIT DATA MAPPER

Soils: Slope Carroll



Legend

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- Class I: primary system
- Class II: secondary system
- Class III: state recreational
- Class IV: within compacts
- Class V: municipal
- Class VI: unmaintained municipal
- Class VII: federal highway

Political Boundaries

- State
- County
- Town

Streams

- Perennial Stream
- Intermittent Stream
- Canal/Ditch

Lakes

- Lake/Pond
- Reservoir

Rivers

- River
- Canal/Ditch

Soils: Representative Slope

- 5%
- 10%
- 15%
- 25%
- 35%
- 45%

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