Natural Resources

Introduction

Littleton’s abundant natural resources provide the community with clean air, clean water, and important habitat for wildlife. They also contribute to the town’s rural character, economy, tax base, and recreation opportunities. Additionally, the town’s type and distribution of natural resources influences the location and type of development within the community. Unlike many other area towns that have substantial portions of their land in federal or state ownership, most land in Littleton is privately owned. Thus, the future of the natural resource base is dependent on decisions that are made at the town and individual level. This chapter will provide information on the natural resources that exist in Littleton and provide recommendations on how to best protect the quality of these resources in the future while promoting environmentally sensitive development. The natural resources that are analyzed and presented in this section include:

- Climate
- Topography
- Soils
- Water Resources
- Water Supply
- Forest & Farmland
- Conservation Land
- Wildlife Habitat
- Scenic Views

These natural resources create a complex network of green infrastructure that supports the residents of the Littleton. Every effort should be made to recognize the value that this natural capital represents for Littleton, and to preserve and protect these resources for future generations to enjoy.
Climate

Climate is typically defined by the level of precipitation, temperature, and topography. Littleton’s climate is largely a product of the Town’s elevation, latitude, position in the Connecticut River Valley and location on the east coast of North America. Cold, dry air masses originating in sub-arctic North America and warm, moist air from the Gulf of Mexico influence the climate, resulting in relatively cold winters and moderate summers. Littleton generally has its hottest temperature in July and the coldest in January. Precipitation is rather evenly distributed throughout the year; however, it varies annually.

Extreme Weather Events

Like many communities throughout New Hampshire, Littleton must prepare for severe weather events that have been increasing in frequency in recent years, whether that be extended periods of dry, hot weather or extreme snowstorms, characterized as “northeasters” in the colder months. Additionally, the table below includes land use implications related to climate to consider and an array of possible actions the Town may want to consider pursuing.

<table>
<thead>
<tr>
<th>Land Use Implications of Climate</th>
<th>Potential Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenhouse gas emissions exacerbates climate change and its associated effects on a community’s infrastructure, economy, and ecosystems. The two largest sectors contributing greenhouse gases are housing and transportation.</td>
<td>Encourage energy efficient renovations and new construction. Encourage the location of electric car charging stations in Littleton. Pursue the use of alternative fuels in town vehicles and the school bus fleet.</td>
</tr>
<tr>
<td>The variety of seasons contributes to the character of the area, and the variety of recreational and economic activities available. Recognition of the role local activities have on the global problem of climate change will help to preserve these distinct seasons and the industries and character they support.</td>
<td>Encourage carpooling and alternative modes of transportation (biking, walking, public transportation) to reduce automobile emissions in the region.</td>
</tr>
<tr>
<td>It’s important to ensure proper preparation for extreme weather events in town.</td>
<td>Regularly update the town Hazard Mitigation Plan and ensure climate change related natural hazards are incorporated.</td>
</tr>
</tbody>
</table>

Topography

Littleton’s topography is characterized by low-lying river valleys which cover approximately 60% of the town and extensive steep slopes located around some of the higher peaks including Towns Mountain, Parker Mountain, Wheeler Hill, Eustis Hill, Albee Hill, Mining Hill, and Mann Hill. The higher peaks are more prevalent in the eastern part of town. Appendix X features a Steep Slopes map that shows topography in town.

Steep Slopes

Littleton has extensive areas of steep slopes and complex terrain that limit development opportunities in areas of the town. There are approximately 3,550 acres, or 11% of the town, that have slopes greater than 25% grade. Areas with steep slopes are inappropriate for development (in terms of new roads and building sites) due to the increased cost associated with developing in these areas and erosion hazard (see Highly Erodible Soils map). Areas in town with 15 to 25% slopes are also shown on the Steep Slopes
map as they require engineering assistance to fit development proposals to the terrain, especially in the higher end of the slope range. There are an additional 7,000 acres of land with 15 to 25% slopes. This means that about a third of the town has slopes between 15% to 25% grade. Combined with slopes >25%, this resource limits the development potential in about one-third of the town.

Littleton’s topography plays a major role in the location and impact of future development. The table below includes land use implications related to topography and steep slopes, and actions for the town to consider related to preventing erosion and protecting water quality.

<table>
<thead>
<tr>
<th>Land Use Implications of Topography</th>
<th>Potential Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-lying river valleys are often the easiest areas to develop, though they also contain floodplain areas, surface water bodies, and critical wetlands. Minimizing the impact of development in these areas is important.</td>
<td>Consider site plan review regulations to aid in design, and reduce the impact of development in sensitive areas.</td>
</tr>
<tr>
<td>Development at higher elevations on the high peaks and lower hills in Littleton presents a different set of challenges and impacts. Without thoughtful site design, development might disrupt the scenic character of these areas and create negative environmental impacts, such as erosion.</td>
<td>Consider a ridgeline development ordinance or performance standard to limit the impact of developments at higher elevations.</td>
</tr>
<tr>
<td>The variety of topography within Littleton contributes to wildlife habitat and recreational opportunities. Ensuring connections between these distinct areas will ensure the continued health of the organisms using them.</td>
<td>Pursue land protection opportunities that create corridors of contiguous open space.</td>
</tr>
<tr>
<td>The majority of Littleton is covered in slopes of 8-15% which are considered acceptable for development. However, this will have an effect on the future development pattern of the community.</td>
<td>Consider site plan review regulations to aid in design, and reduce the impact of development on steep slopes.</td>
</tr>
<tr>
<td>As steeper slopes are developed costs increase for both the property owner and the community. Construction and maintenance of roads becomes costlier on steeper slopes. Problems with erosion, stormwater runoff, and non-point pollution are also increased.</td>
<td>Consider strengthening regulations relative to erosion and sedimentation control. Consider adoption of a steep slope ordinance or performance standard.</td>
</tr>
</tbody>
</table>

**Soils**

There are over 1,000 different soils in the Northeast with over 70 of them represented in Littleton. Soils data provide insight into how well land in town is able to support various land uses as different soil types have properties that affect permeability, wetness, and susceptibility to erosion.

Littleton’s soils can be broken out in a number of categories including wetland soils, seasonally wet soils, floodplain soils, sand and gravel soils, shallow to bedrock soils, compact till soils, and deep loose till soils. More about these groups can be found in Appendix X. The most prevalent soil types in town include the Tunbridge Rocky soils (25% of town), Peru sandy/stony loam (18.7%) and Berkshire loam (15.7%). Property owners and local officials can obtain area specific soil information from the Grafton County Soil Survey and the Natural Resource Conservation Service (NRCS) Web Soil Survey.
**Productive Agricultural Soils**

Productive agricultural soils are considered to be the most important soils in NH for cropping, hay and forage production, and specialized vegetable and fruit production. Littleton has 1,444 acres of these soils, or about 4.5% of the total land area of the town. Currently, only 8% of these soils are currently protected from development. According to National Land Cover Data (2011), about half of the productive soils are now in forest cover, and another 25% are developed for non-agricultural land uses. Appendix X includes a map of the productive agricultural soils in town.

**Highly Erodible Soils**

Highly erodible soils are associated with susceptibility to erosion risk and are identified through the NRCS soil survey for Grafton County. These soils exhibit particle sizes and soil structure that is prone to erosion by storm water run-off if disturbed. About 14,900 acres or 47% of Littleton has highly erodible soils, found in large, contiguous areas in every portion of town. Nearly 3,200 acres, or 21% of all highly erodible soils in Littleton are found on slopes greater than 25%. Slope and soil type affect how much water infiltrates into the ground and how fast water runs off. The steeper the topography and the greater the rock and clay content in the soil, the faster the runoff and the greater the potential for flooding and soil erosion. Since the erosive power of storm water increases significantly with steeper slopes, these areas are of particular concern when contemplating future land development. New roads are a special concern as drainage from roads traversing steep slopes is difficult to control.

The soils within Littleton play a major role in the location and impact of future development in the community. The table below includes land use implications of soil conditions in Littleton related to development and potential actions the Town can consider.

<table>
<thead>
<tr>
<th>Land Use Implications of Soil Conditions</th>
<th>Potential Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil characteristics such as depth, permeability, wetness, and slope can be used to evaluate land to determine development suitability and dwelling unit densities.</td>
<td>Base lot sizes in the rural areas of town (not served by water and sewer) on land capability, taking into consideration the current soil-based lot-size regulations and the desire for forestry, agriculture, conservation, and recreation uses in these areas.</td>
</tr>
<tr>
<td>Locating new development in areas without water and sewer infrastructure requires taking a much closer look at the ability of the soils on the lot to handle a well and septic system discharge. Soil information should be used as a determinant of what constitutes an environmentally sound building lot to prevent degradation of the environment and negative impacts on abutting property owners.</td>
<td>Evaluate future sewer and water line extensions on the land capability of the area being included and the desired development pattern.</td>
</tr>
<tr>
<td>Productive farming soils are important to preserving viable agricultural land in town. This contributes to the local economy,</td>
<td>Utilize the development constraints co-occurrence map, found in Appendix X, to</td>
</tr>
</tbody>
</table>

**About 14,900 acres or 47% of Littleton has highly erodible soils, found in large, contiguous areas in every portion of town.**

4
Water Resources

Water is one of our most precious natural resources. Littleton has an abundance of surface water that provides economic, recreational, and ecological value to the town and region. However, with increased development and human activity, water resources can become depleted and of lower quality. This section of the Chapter will address surface water and groundwater related resources in Littleton.

Watersheds

A watershed consists of the land area that drains into a particular surface water body, including its tributaries. Most watersheds contain several smaller sub-watersheds and eventually drain into the ocean. The western portion of Littleton drains directly into the Connecticut River basin, a major watershed, while the remainder of the town drains into the Ammonoosuc River, a sub-watershed. The size and physical character of a watershed, along with average annual precipitation and variations due to microclimates, influence the quantity of water that is available to a community or region. It is important to recognize the impact of how individual action can impact overall watershed health. Particularly since watershed health is related to the ability of surface and groundwater resources to be recharged.
SURFACE WATER

Rivers, Streams, and Brooks
In Littleton, the Connecticut River forms the entire western boundary of the town, about 16 miles long, and has a drainage area of over 1,600 square miles, with the State of Vermont on the opposite shore. This entire section of the river is part of the Fifteen-Mile Falls Hydroelectric project and consists of Moore Reservoir and Moore Dam as well as Comerford Reservoir and Comerford Dam, the Comerford dam is located in Monroe. Aside from the Connecticut River, there are over 50 miles of permanent streams. The Ammonoosuc River is technically a 4th order stream (a medium sized stream) and approximately six miles of the river flow through Littleton, historically providing hydropower to the downtown.

Lakes and Ponds
Littleton has four lakes or ponds within its borders that are considered “Great Ponds”, over 10 acres in size. They are Moore Reservoir, Partridge Lake, Reynolds Pond, and Comerford Reservoir. Please note that there is no difference between the term “lake” and “pond”. These waterbodies are subject to the New Hampshire Shoreland Water Quality Protection Act which regulates activities within the Shoreland area and is enforceable by the Town and NH DES.

Moore Reservoir
Moore Reservoir is the largest body of water in Littleton and is the upper impoundment of three dams that make up the Fifteen Mile Falls Hydroelectric Project owned and operated by TransCanada. The Moore facility is the largest of the three impoundments and is the only one that can be used to significantly mitigate downstream flooding. The reservoir stretches eleven miles upstream of the 178-foot high dam which is located just upstream of the Route 18 Bridge. Land use around the reservoir is primarily forested, since TransCanada owns nearly all of the land along the shore.

Comerford Reservoir
Comerford Reservoir is the second largest body of water in Littleton and is the middle impoundment of the three dams that make up the Fifteen Mile Falls project. The reservoir stretches eight miles upstream of the 170-foot high dam which is located in Monroe about one mile downstream of the Monroe/Littleton town line. Land use around the reservoir is primarily forested, but includes residential and agricultural uses as well since most of the land is privately owned.

Partridge Lake
Partridge Lake is located at an elevation of 846 feet in the south-central portion of Littleton along the Lyman town line. It drains to the south via Ogontz Lake and Ogontz Brook to the Ammonoosuc River in Lisbon. It is a natural pond with a small dam, which is actually located in Lyman. The 105-acre lake, of which about 100 acres is in Littleton, is heavily developed with over 70 seasonal homes and camps, many of which have been converted to year round use.

Reynolds Pond
Located about one-half mile northeast of Partridge Lake, Reynolds Pond is a very small body of water with a shallow depth and mucky bottom. With a small watershed, it is a natural pond with a small dam. Reynolds Brook flows to the north directly into the Connecticut River, entering at the Comerford boat launch.

Wetlands
Wetlands are defined by NRCS hydric soils classifications of poorly and very poorly drained soils. They may consist of swampland, bogs, marshes, wet lowland areas, vernal pools, and floodplains. In Littleton there are 103 different wetlands, consisting of 62 with poorly drained soils, 15 with very poorly drained soils, and 26 with soils of both drainage classes. About 3,327 acres, or 10.4% of the town has hydric soils that are poorly drained or very poorly drained. There are no designated prime wetlands in Littleton.

Floodplains
Floods are a natural and normal occurrence in an area of high rainfall. During normal stream flow, water is carried in a river channel. But in times of high runoff, water rises over the banks and flows onto the floodplain. The total acreage of floodplain in Littleton is 1,262 acres, or 3.9% of the town. These floodplain areas are mostly along the Ammonoosuc River, and are located in close proximity to some of Littleton’s most developed areas. A 100-year floodplain is an area that has a 1% chance of flooding in any given year, but recently in NH 100 year floods have been experienced with greater frequency.

Water Pollution
Point and non-point sources of pollution threaten the town’s water quality and can be caused by a variety of land use activities and practices. Point source pollution is linked to a specific pollutant or discharge point that can be identified and physically located. In New Hampshire, NHDES regulates industrial and municipal discharges and privately-owned wastewater management and wastewater
Natural Resource Chapter

treatment facilities which may have a potential impact on water quality due to a direct discharge to groundwater. A groundwater discharge permit is required for such activity. Currently there are no permitted groundwater discharges in Littleton. Another point pollution source in town is the municipal sewage treatment plant outfall, permitted by NHDES, which discharges treated effluent into the Ammonoosuc River.

Nonpoint sources are more difficult to document, trace, or identify since there is generally not a specific point of discharge. Some potential non-point sources are the result of temporary or short-term land uses, such as logging, construction, or agriculture operations. Others, such as stormwater runoff may be short in duration, but are continuous in nature. Waste disposal facilities (septic systems, landfills, junkyards, etc.), highway maintenance (sand, salt, and snow dumping), and hazardous waste also may contribute to nonpoint source pollution. The town should consider best management practices, such as maintaining buffers along waterways, to ensure stormwater runoff is filtered before entering waterbodies.

Water Supply

Aquifers

Within Littleton 2,888 acres, or 9% of the town’s land area, consists of sand and gravel aquifers. Appendix X includes a Water Resources map that show where aquifers are located in town. However, it is important to recognize that only 14.8% of these aquifers are permanently protected. There are three main aquifers in Littleton identified in the report “Geohydrology and Water Quality of Stratified Drift Aquifers in the Middle Connecticut River Basins, West Central New Hampshire”, all of which have relatively low transmissions and are therefore not considered high yielding. These include the Monroe II Aquifer, the Littleton Esker Aquifer, and the Salmon Hole Aquifer.

Land Use Implications of Water Resources | Potential Actions
--- | ---
There is a strong association between activity within the watershed and the quality of lakes and ponds that are fed by those watersheds. Mismanagement in the watershed will adversely affect town waterbodies. | Be alert to the regional impact statute (NH RSA 36:54-58) when reviewing development proposals that may impact shared water resources.

Minimizing the amount of pollutants entering Littleton’s waters will help avoid expensive future expenditures to treat and clean these waters. | Consider adopting site plan review regulations that help manage non-point source pollution and stormwater drainage. The use of green infrastructure solutions can also help to reduce the impact of development.

Minimizing impervious surfaces in groundwater recharge areas will preserve the volume of the local water supply being stored as groundwater and in surface water bodies. | Consider adopting regulations that create maximum impervious surface limits, and encourage the use of pervious structures for areas like parking lots.

The health of Littleton’s wetlands is critical to the function of natural systems within the community. If they are destroyed or degraded, Littleton’s water resources (quantity and quality) will suffer, and many animal species will disappear. | Work to update and implement the Littleton Prime Wetlands Study, and any proposed prime wetlands should be certified by the NH Wetlands Bureau.

Consider creating a wetland setback buffer requirement for development and septic systems.

Snow storage or “dumping” in sensitive areas can have a negative impact on the natural systems in Littleton. | Consider increasing the setback requirement in the zoning ordinance from 25 feet to 50 feet for snow storage areas near delineated wetland.
Natural Resource Chapter

Snow removed from streets and parking areas should be stored away from wetlands and water bodies.

It is important to point out that small wetlands (under three acres) are usually not shown on the USDA Natural Resource Conservation Service (NRCS) Soil Maps. The Town should support the formation of a wetland bank in the Ammonoosuc River Watershed.

The recreation and tourism value of Littleton’s natural resources is directly linked to their health and the absence of pollutants. Consider reducing the required road widths and other requirements for new development that increase impervious cover.

Continue to monitor and document all underground storage tanks in Littleton. Promote Best Management Practices (BMPs) to reduce non-point pollutants from industrial, commercial and residential developments. Require stormwater maintenance plans for industrial, commercial and large residential developments.

Forests & Farmland

FARMLAND

Traditional agricultural land use in Littleton today is minimal. Littleton has one remaining dairy farm, but no land is currently being tilled for corn, grain, or other row crops. As identified in the soils data for Littleton, there is a limited amount of productive agricultural land available. These 819 acres of agricultural land, accounts for 2.5% of the total land area in Littleton. Farmland has decreased since the 2004 Master Plan, where the approximate total area of farmland cover was 3.5% of the total land area.

The agricultural land in Littleton is most commonly used for hay production, grazing of livestock, or is “idle”, meaning kept open by “brush hogging” or mowing every year of two but not producing a crop. According to the National Land Cover Dataset (2011), 483 acres of farmland is in pasture or hayfield. 353 acres are in crop cultivation. Within ten years, idle farms will be considered forested land if left unattended, with loss of views and valuable wildlife habitat. No inventory of new niche market agricultural operations exists for Littleton, but there is an opportunity to encourage growth in this small but critical land use.

<table>
<thead>
<tr>
<th>Land Use Implications of Agricultural Activities</th>
<th>Potential Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preserving the possibility of farming in the future adds to the sustainability and resilience of the community. If agricultural resources are covered with homes and businesses, they will not be viable options for producing goods locally in the future. This could become a necessity if global food distribution systems change, and is already preferred as the local food movement has grown over the past decade.</td>
<td>Identify organizations to partner with and then pursue protection of agricultural land through outright purchase, purchase of easement/development rights, and donations.</td>
</tr>
</tbody>
</table>
There is an economic benefit when produce and products are generated locally, and the land does not require the high level of Town services that development demands.

Consider requiring open space developments in areas involving agricultural land. Concentrate all the development on the non-agricultural land areas.

Agricultural lands add to the visual and habitat diversity of the landscape, and contributes to the character of the community.

Work to make all of Littleton’s land use regulations “farm friendly” and support non-traditional agricultural operations (small scale, seasonal, organic, specialty or “niche markets”). Utilize the State of NH Local Regulation of Agriculture Toolkit and other resources to ensure Littleton is providing opportunities for farming to occur at various scales throughout town.

**FORESTS**

Protecting forests is incredibly important in maintaining the town’s character, protecting valuable industries, such as timber harvesting, and for preserving wildlife habitat, water quality, scenic values, and recreation opportunities. Littleton is 84% forested, including 26,963 acres within the town. In Littleton forests, northern hardwood predominates as the major type of tree present with white pine being a strong second. Much of the forest land in Grafton County is a mix of hardwood and softwood species including white pine, hemlock, red spruce, balsam fir, black spruce, beech, red maple, sugar maple, yellow birch, red oak, black cherry, white ash, and white birch.

<table>
<thead>
<tr>
<th>Land Use Implications of Forest Land</th>
<th>Potential Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest resources provide habitat, erosion control, water filtering, improved air quality, carbon sequestration, temperature regulation, and other critical ecosystem services. These resources also pay their own way in terms of Town services.</td>
<td>Littleton should continue to have a licensed forester inspect all logging jobs to insure compliance with wetland and erosion and sediment control regulations.</td>
</tr>
<tr>
<td>Responsible harvesting of forest resources supports the local economy and provides access to local forest products. The working landscape contributes to the character of the North Country.</td>
<td>Educate landowners and foresters about sustainable forestry practices. Pursue land conservation projects that include large unfragmented blocks of forest land.</td>
</tr>
<tr>
<td>Clear cutting and disregard of BMP’s can result in erosion and non-point source pollution that creates problems for abutters and the community.</td>
<td>The minimum lot size in zones with valuable forest resources should be examined. Subdivision of land into small units makes logging difficult.</td>
</tr>
</tbody>
</table>

**Conservation Land**

Conservation areas are those lands protected for the foreseeable future through outright preservation by governmental or conservation organizations or through conservation easements. There are 2,717 acres of conserved land per the GRANIT system’s conservation and public lands dataset. This equates to about 8.5% of the town’s land area. The largest area of conservation land in Littleton is part of the TransCanada owned lands by Fifteen Mile Falls, totaling to 2,400 acres managed by the New England Forestry Foundation. The town has protected 125.6 acres of land and include areas such as Pine Hill Park, Dell’s Park, and Kilburn Crags.
The Conservation Commission has identified the following specific areas that need permanent protection for a wide variety of natural resources, wildlife and recreation purposes.

- Parker Mountain (between Farr Hill Road and Broomstick Hill Road and Manns Hill)
- The higher elevations of Walker Mountain Ridge
- Town’s Mountain
- Mount Misery
- Dalton Ridge-west end
- West Littleton

**Current Use**

NH RSA 79A allows landowners to place certain types and sizes of land in a tax abatement program based on their current land use. There is ample open space in Littleton that is in current use, which is a temporary form of land protection.

Littleton’s conservation lands have an effect on land use decisions and impact the character of the community. The table below includes land use implications related to open space protection and potential actions for the town to consider.

<table>
<thead>
<tr>
<th>Land Use Implications Related to Protection of Open Space</th>
<th>Potential Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservation lands provide habitat, recreational opportunities, and protect critical natural resources. These resources also pay their own way in terms of Town Services. Conservation lands contribute to Littleton’s character as a community and support its quality of life.</td>
<td>Consider increasing efforts to secure conservation easements on undeveloped land with significant natural resources, and lands adjacent to permanently protected parcels (i.e. land along Moore Reservoir) in order to preserve contiguous corridors or undeveloped land.</td>
</tr>
<tr>
<td>Consider budgeting for land protection. Consideration should also be given to using a greater portion of the penalty payments received for land taken out of current use to help fund this activity.</td>
<td>Partner with other conservation-based organizations working in Littleton and the region to increase funds, access a wider audience, and pursue land protection efforts that will benefit the community and the region. The development of extensive mountain bike trails and other recreation opportunities in Littleton over the past decade have attracted visitors and new residents, and should be considered when protecting future parcels of land.</td>
</tr>
</tbody>
</table>

**Wildlife Habitat**

The NH Fish and Game Department’s Wildlife Action Plan (NHWAP) includes an extensive, science-based analysis of the condition of wildlife habitat for the entire state. Appendix X shows the Wildlife Action Map for the Town of Littleton. According to the NHWAP, wildlife habitat is ranked in 3 tiers. These include Tier 1 (highest ranked habitat in state), Tier 2 (highest ranked habitat in biological region), and
Tier 3 (supporting landscapes which protect integrity of Tier 1 & 2). Littleton falls within the Vermont Piedmont biological region, a small and environmentally unique ecological zone that is more like Vermont than the majority of New Hampshire. The town has large areas of both Tier 1 and Tier 2 habitats which are currently both undeveloped and unprotected, especially in the northern half of the town. There is 16,270 acres of priority wildlife habitat in Littleton falling in either Tier 1, 2, or 3 of the NHWAP. This equates to approximately 50% of the town’s land cover. Only 1,427 acres, or 8.8%, of this priority habitat is permanently protected.

Uncommon Habitats

The NH Fish and Game Department’s Wildlife Action Plan (NHWAP) has mapped numerous habitat types found in New Hampshire. Some of these are “matrix habitat types” that are quite common while others are “patch habitats” that are typically smaller in extent and scattered in distribution.

About 72% of habitat types in Littleton fall into the matrix habitat category, these being Northern Hardwood/Conifer and Hemlock/Hardwood/Pine forest habitats. Patch habitats total about 12% of the town’s land area, and include ten specific habitat types, show in Table X. The remaining habitat types by percentage are developed land and water.

Two-thirds of the patch habitat types are either Lowland Spruce/Fir or Grassland habitats. Lowland Spruce/Fir habitat is fairly common across the North Country, but not in Littleton. Grasslands are most often associated with farmed hay fields and pasture. The balance of the uncommon patch habitats is rare across New Hampshire with the exception of Appalachian Oak/Pine which is at the northernmost limit of its range in Littleton. With the exception of the Lowland Spruce/Fir component, all the patch habitats are small features and scattered widely across Littleton. Note that some larger parcels of land contain several occurrences of these small habitat types, each with its own special plant and animal ecology.

Wildlife Types

The diverse habitats of Littleton include wetlands, upland hardwood and softwood forest, all of which provide home to a diverse array of mammals, birds, amphibians, reptiles, and insects. The better-known mammal species include moose, white-tailed deer, black bear, rabbit, squirrels, skunks, woodchucks, eastern coyote, beaver, muskrats, raccoons, otter, mink, bats, possum, red fox, fisher, and bobcat.
Amphibians such as the spotted salamander, newts, toads, tree frogs, bullfrogs, and the morning spring peeper abound at the water’s edge. Reptiles include four types of turtles and eleven species of snakes including garter, milk snake, and the back racer. Nearly 200 species of birds can be found in their various habitats in the area including hawks, 25 species of warblers, and many different species of finches, owls, and flycatchers. Many different types of waterfowl reside in the area including Canada geese, mallards, blacks, wood ducks, and mergansers. Blue heron can often be seen in streams and wetland areas.

### Land Use Implications of Wildlife Habitat

<table>
<thead>
<tr>
<th>Land Use Implications of Wildlife Habitat</th>
<th>Potential Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitat is easily fragmented by new development. This disrupts the landscape and impacts wildlife movement and survival.</td>
<td>Consider protecting areas that are known to support or have the potential to support important wildlife. Prioritize habitats for protection that are unique to specific species in the area and provide additional benefits to the community.</td>
</tr>
<tr>
<td>Wildlife resources are critical to many recreational activities that support open space conservation (i.e. hunting, fishing, hiking, biking, and bird watching).</td>
<td>Work to preserve corridors between habitats and protected open space to facilitate the movement of animals in the region and locally. Provide opportunities for the public to learn about local wildlife and potentially view it.</td>
</tr>
</tbody>
</table>

### Scenic Views

Preservation of viewsheds is important to maintaining the rural and small-town character of the Town as well as maintaining Littleton’s attractiveness to tourists and locals. A list of scenic views identified in the Littleton Natural Resources Inventory is located in Appendix X. Scenery and aesthetics, although subjective in nature, are significant natural resources that can be studied, analyzed, and protected. The NH Supreme Court has ruled that aesthetics is a legitimate local planning concern, contributing to quality of life, tourism, and economic development.

### Land Use Implications of Scenic Views

<table>
<thead>
<tr>
<th>Land Use Implications of Scenic Views</th>
<th>Potential Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenic views contribute to Littleton’s community character. This is significant to residents and visitors alike.</td>
<td>Conduct an inventory of scenic resources and viewsheds within the community.</td>
</tr>
<tr>
<td>Viewsheds are composed of many unique properties under different ownership. This makes preserving the scenic view difficult.</td>
<td>Consider conducting an inventory of all roads in Littleton to determine if they should be classified as scenic or non-scenic. Pursue protection of key parcels within the identified scenic viewsheds, and provide guidelines for new development in these areas.</td>
</tr>
</tbody>
</table>