

SECTION IV: ENVIRONMENTAL INVENTORY AND ANALYSIS

4.1 TOPOGRAPHY, GEOLOGY, AND SOILS

4.1.1 Topography

Middlesex County is located in the New England physiographic province of the Appalachian Highlands physiographic division, with Townsend being in the Central Uplands of this division. The Central Uplands cover extreme northwestern Middlesex County, extending eastward to about the Nashua River. The landscape is characterized by steep hills dissected by deep, narrow, interconnected valleys (Soil Survey, NRCS). Townsend is characterized by varying topography. Some areas of town are 250 feet above sea level while other areas climb to over 600 feet above sea level. The elevations of the various hills are: Barker Hill in the northwestern section of town - 690 feet; several hills or drumlins surround an unnamed hill of 660 feet in the Townsend portion of Willard Brook State Forest; Pearl Hill in the southwestern portion of town contains similar topography as Willard Brook State Forest; Bayberry Hill at 690 feet is surrounded by hills of similar height in the south central portion of town; Meetinghouse Hill at 420 feet is just east of the center of town; and Townsend Hill in the northeast section of town is 625 feet. Interestingly, this varied topography made Townsend a possible location for Boston's water supply in the beginning of the century. The Quabbin Reservoir area was chosen instead.

Topography plays a key role in many land use decisions. Irregular topography and steep slopes work to limit development potential in a number of ways. Areas surrounding the aforementioned hills create several areas of steep slopes throughout the town. Road construction is difficult on areas of steep slopes greater than 10%. On-site sewage disposal is also limited by steep slopes, primarily due to break out. Services such as water lines are also difficult to install in these areas. There is one section in the southeast portion of town where the land is relatively flat where a 500-house development (Timberlee Park) was built in the 1970's.

Development has occurred primarily in the more low-lying regions along Routes 119 and 13, focused near the three centers in the town. The 1969 Master Plan stated that "the most attractive buildable lands, with outlook and character, are on the hillside and these present difficulties for onsite sewage disposal; and also would be costly to develop municipal sewer and water services for these lands. Thus, any further intensification of residential or commercial development will probably be confined to the area of Townsend that is presently built up, the main corridor".

This statement, for the most part, still holds true today. Development has occurred near the center of town and on or near Route 119 and Route 13. However, Townsend is also experiencing development throughout the town and pressures on our natural resources have increased.

4.1.2 Geology

Knowledge of the local geology is essential in making responsible land use decisions. Development in areas of stratified drift deposits (with high groundwater yield) has the potential to contaminate the public and private drinking water supplies. Areas of till and bedrock may provide too slow a percolation rate to allow the siting of septic systems. Also, the many areas of steep slopes throughout the town may cause breakout problems for private septic systems. All these factors need to be considered in growth planning throughout the town. (See Map 4: Soils & Geologic Features)

Bedrock

The bedrock underlying Townsend was formed 500-280 million years ago. The main formations are Pennsylvanian biotite granite and the Berwick formation. The granite is pink-colored and contains crystals of biotite and magnetite. It is found in the north central part of Townsend, and can be seen in outcrops visible at ground surface. The Berwick formation is a thin-bedded, calcareous sandstone that has been metamorphosed (recrystallized under high temperature and pressure) into a mica schist. It is found along the eastern border of Townsend. Other bedrock units in Townsend include the Fitchburg Complex (another biotite granite), the Worcester formation (a carbonaceous slate), and the Littleton formation (a grey-black mica schist).

Glacial Deposition: Till

Most of what meets our eyes today was created by glaciers about 15,000 years ago. The hills found throughout Townsend are composed of bedrock overlain by till. Till is a poorly sorted mixture of sand, with some silt and even less clay mixed with angular boulders and cobbles. It was either smeared onto the bedrock surface underneath the moving ice, or deposited directly by flowing off the surface of the melting glacier. The amount of till found in these hills varies in thickness, often within the same hill.

In the northwest part of town, the Townsend State Forest contains hills with only 5 to 15 feet of till overlying bedrock. Townsend Hill (in northeastern Townsend) also has thinner till on its slopes, particularly its eastern slope, with till thicker than 15 feet at its summit. Bayberry Hill (in south central Townsend) has a combination of thicknesses, as does the hill south of the Warren and Shirley Road intersection in southeastern Townsend.

Till can form layers that trap water, altering the typical flow of water and occasionally creating perched wetlands on hills and slopes. Townsend Hill, in particular, contains many wet areas along Townsend Hill Road and Wallace Hill Road that prevents development and affects the placement of septic systems.

Glacial Deposition: Stratified Drifts

In Townsend's valleys, the glaciers deposited stratified drifts of material. The flowing water from the glacier's melt-water streams sorted these materials by grain size: coarse gravel and sand were deposited further downstream than the finer silts, sands and clays. No deposits of fine material occur in Townsend, but deposits of coarse sand and gravel occur along the Squannacook River and other larger rivers. Ash Swamp (in northwestern Townsend); Pearl Hill Brook (in southwestern Townsend); from the Harbor Pond as far west as Route 13 and as far south as Bixby Reservoir; and Witch's Brook are all surrounded by this type of deposit.

The coarse stratified materials are extremely permeable and are, therefore, a desirable aquifer. They are also in relatively flat areas, so the town center, West Townsend center, and Harbor Village shopping center have all been constructed in these areas. They also occur near water, so the old Grist Mill and Cooperage, which used water for power, were constructed on this type of deposit in Townsend Harbor. Routes 119 and 13 follow these deposits for almost their entire lengths in Townsend, east to west and south to north, respectively. And, finally, several old gravel pits are located in these deposits, showing that this type of material has a commercial use as well.

Post-Glacial Features

Geologic features that occurred after glaciations include floodplain alluvium, swamp deposits, and artificial fill. Alluvium was deposited by existing rivers. Along the Squannacook River, these deposits consist mostly of sand, fine gravel and silt. Some of these deposits are also found along

Walker Brook and Pearl Hill Brook in West Townsend. Swamp deposits of peat and organic muck surround several marshes, swamps and bogs in town. The only area of artificial fill on the map is the North Middlesex Regional High School in the far east of town.

4.1.3 Soils

The soils in Townsend have been mapped and interpreted by the Natural Resources Conservation Services (NRCS). The NRCS broke down Townsend's soils into the following classifications:*

(See Map 4: Soils & Geologic Features)

** It should be noted that these general soil areas are made up of a few dominant soils and several other soils of a lesser extent. The soils may have a number of different properties; however, the soils generally hold the same limitations for a specific use (such as home sites or septic/sewage disposal). It is important that any soil determination for a particular use be site-specific. The general soil classification is useful only for an overview of the town and for general planning purposes.*

1. **Canton-Charlton-Hollis Associations:** Gently sloping to steep, very deep to shallow well drained and somewhat excessively drained, loamy and sandy soils formed in glacial till and ice-contact stratified drift; on uplands. This association is mostly in forests. Some areas are in hay land and pasture. Many nearly level to strongly sloping areas are used for home sites. This association has severe limitations for onsite sewage disposal. It is poorly suited to cultivated crops and suited to orchards and pasture where surface stones are removed and slopes do not exceed 15 percent. This association has moderate potential for conifer production. This association can be found in the northwest and southeast portions of the town. These areas are generally mostly forested, with residential development limited by protected open space in both areas of town. Development has been limited to existing roadways.
2. **Hinckley-Freetown-Windsor Associations:** Nearly level to steep, very deep, excessively drained, sandy soils that formed in glacial outwash, and nearly level, very deep, very poorly drained, organic soils. This association is mostly forested. Some areas are cropland. Many nearly level to strongly sloping areas are used for homesites. A few isolated areas are used as sources of sand and gravel. This association has severe limitations for onsite sewage disposal, as the Hinckley and Windsor soils readily absorb but may not adequately treat the effluent from septic tanks. This association is poorly suited to cultivated crops and pasture as the Hinckley and Windsor soils are droughty and require irrigation for optimum crop production. Freetown soils have severe limitations for urban use because they are wetlands. These soils can be found mostly in the central western and northeastern portions of town.
3. **Paxton-Montauk-Woodbridge Association:** Nearly level to steep, very deep, well drained and moderately well drained, loamy soils formed in glacial till; on drumlins and smooth-sloping ground moraines. This association is mostly forest. Some areas are orchards, hay, or pasture. Some nearly level to strongly sloping areas are used for homesites. This association has severe limitations for onsite sewage disposal because of restricted permeability and a seasonal high water table. Where slopes do not exceed 15 percent, this association is well suited to cultivated crops, orchards, pasture, and has good potential for conifer production. Areas with slopes in excess of 15 percent are suitable for orchards, but are subject to erosion. Areas of town with this soil association are the southwest and northeast portions.

4. **Quonset-Carver Association:** Nearly level to steep, very deep, excessively drained, sandy soils that formed in glacial outwash in the northwest part of the survey area. This association is mostly in forests, though some areas are used as cropland. Many nearly level to strongly sloping areas are used for homesites. A few isolated areas are used as a source of sand and gravel. This association has severe limitations for onsite sewage disposal, as the soils readily absorb, but may not adequately filter the effluent from septic tanks. Where slopes do not exceed 15 percent, the soils are suited to cultivated crops and pasture, but are droughty and require irrigation for optimum crop production. These soils are found mostly to the south of Route 119 and to the east of Route 13, all the way to the Groton town border.

4.2 LANDSCAPE CHARACTER

Townsend's Landscape Character has evolved through a combination of three forces: Townsend's natural history, its cultural history and the environmental protections in place to safeguard the natural landscape. The natural history of Townsend is described well in other sections of this plan, but in summary, two major events give Townsend its natural landscape character. The first happened ~300 million years ago and is the development of the underlying bedrock which defines our hill and valley topography. Geographically, the hilly portions of Townsend are mostly in the north and west of Town. The valleys are the Squannacook River Watershed and include the Squannacook River, its streams and tributaries, its surface waters and the floodplain areas including wetlands. The second major natural event, the glacial deposits that surface the native bedrock, occurred 15,000 years ago. The glacial deposits in Townsend, primarily sand and gravel deposits led to droughty and rocky soil and promoted a small industry of mining for those materials. These types of soils are conducive to certain types of agriculture and specific forest types. Most important however, are the water storage capacities of these glacial outflows which have created a large aquifer and a source of water recognized statewide for its high quality.

The cultural history of Townsend has been preserved in three designated historic areas; the Harbor, The Center, and West Townsend. The first settlement at the Harbor was closely tied to that area's natural resources, the 45-acre Harbor Pond resulting from the damming of the Squannacook River in 1733. Townsend's mill industry first developed at the pond overflow. As roadways developed and railroads were introduced, the character of the landscape also changed. The area at the center of town was the intersection of two major roads and churches, the town hall and the towns common were developed in this central location. West Townsend, at first a way station for travelers journeying to western New England, became home to industries with the addition of the railroad.

Development occurred primarily along the roads with huge amounts of farm land or undeveloped land behind. As with most New England towns, as agriculture and manufacturing moved to more lucrative areas, our character shifted. Abandoned agricultural land became forest tracts with historic remnant stone walls the only reminder. Use of the railroad beds was discontinued and remnant trestles remain. The town which had traditionally developed in a linear fashion along connecting roads, started to develop small neighborhood developments and the pressure for better services and schools went hand in hand with population rise. New roads into areas outside of the major river corridors were built to service new housing. On steep land, mostly the houses continued to follow the road. In flatter areas denser neighborhoods were built.

Surprisingly, Townsend development pressure was not as strong as other areas and a combination of state land purchasing and poor development sites on the hills has kept most of the development along the flatter valley areas. Recognition of the importance of the aquifer came in 1986 with the

passage of the Aquifer Protection Overlay District Bylaw which protects the aquifers from new structures and uses considered hazardous. Today in 2011, Townsend remains primarily a hill and valley town with a mostly well protected aquifer. The foresight to protect the three main historic centers has led to a strong historic presence in the town and the abundance of protected open space has led to an environmental ethic of preservation of the rural character and wildlife habitats.

4.3 WATER RESOURCES

4.3.1 Rivers, Streams and Wetlands

Townsend lies almost entirely within the Nashua River Watershed, with over 85% of the town's land draining into the Squannacook River. There are more than 200 acres of open water in the Town, the largest being Harbor Pond covering more than 40 acres, followed by Bixby Reservoir with approximately 18 acres and finally Vinton Pond with slightly less area covered. These major water bodies are used for a variety of recreation purposes, including sport fishing. Under the State Area of Critical Environmental Concern (ACEC) Program, Vinton Pond is designated

as a Great Pond and is afforded more protection from development and degradation. The Department of Environmental Protection (DEP) has determined under the Massachusetts Surface Water Quality Standards that almost all of Townsend's surface water resources are classified as Outstanding Resource Waters (ORWs) because of their value as socio-economic, recreational, ecological, and/or aesthetic resources. The rivers and streams designated as ORWs in Townsend are Bayberry Hill Brook, Bixby Brook, Locke Brook, Mason Brook, Pearl Hill Brook, Pumpkin Brook, Squannacook River, Stewart Brook, Trout Brook, Walker Brook, Willard Brook,

Witch Brook and Wolf Brook, as well as several unnamed streams. Almost the entire town is considered ORW. (See Figure 4.1, ORW Resources) Over the past few years, both state agencies and local boards have put forth legislation and bylaws to ensure protection of Townsend's water resources for the future.

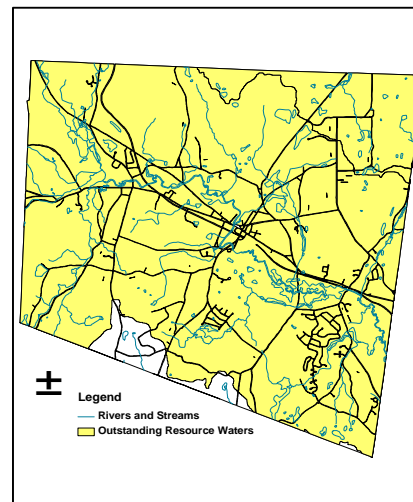


Figure 4.1 ORWs in Townsend

The gem of the Town is the Squannacook River, which arises from Ash Swamp in the northwest and meanders southeasterly through the entire town to Harbor Pond and eventually empties into the Nashua River in West Groton. The Squannacook and its tributaries were afforded a 300' buffer zone protection through the Commonwealth's Squannacook and Nissitissit River Sanctuary Act passed in 1975. The Squannacook provides an excellent platform for wildlife, both resident and transient and is designated a Class B Coldwater Fisheries waterway by the State. The Massachusetts Division of Fisheries and Wildlife (MADFW) stocks the Squannacook River with trout (Brook, Rainbow, and Brown). They stock in several locations including Harbor Pond, and the Squannacook River tributaries of Mason, Walker, Willard, Pearl Hill, Bixby and Witch Brooks, but not Bayberry Hill Brook nor Hawthorne Brook. (See Map 5, Surface Water Resources)

Our waterways and wetland areas provide an environment for a variety of trees such as Red Maple, Alder, Arrow-Wood, and many others. Additionally, our wetlands support growth of plants such as

blueberries, willow, and winterberry. A wide variety of species are helpful in anchoring soils in flood control and storm drainage areas. Our wetland areas and waterways provide the needed aquifer water recharge capacity necessary to assure an adequate supply of clean fresh drinking water. One of the major concerns in ground water pollution is by way of phosphorous. When surface water and ground water is subjected to phosphorous overload from excessive septic system effluent, lawn fertilizers, agricultural fertilizers, impervious surface runoff and animal wastes, it causes excessive weed and algae growth, including toxic invasive varieties. Our groundwater is an extremely valuable resource and a continuum of citizen surveys affirms the Town's goal of protecting these resources.

The Commonwealth extended its wetland and river protection by enactment of The Rivers Act of 1996. In Townsend, residents voted unanimously at the 1997 Annual Town Meeting to extend the Conservation Commission's jurisdiction by amending the Townsend Wetlands Bylaw to include protection of vernal pools and isolated wetlands, and to double possible civil penalties for violations.

Townsend has a large amount of wetlands within its borders. Almost all of the recent development outside of the Route 119 corridor required approval of the Conservation Commission. Townsend Hill Road, Wallace Hill Road and Bayberry Hill Road have unique drainage areas and problems with break-out of groundwater causing serious problems with locating drinking water wells and septic systems. Townsend has several large swamps including Ash Swamp at the headwaters to the Squannacook River, Dead Swamp in the Townsend State Forest and Wolf Swamp to the east of Route 13 north; as well as large swampy areas around several spots on the Squannacook River and Witch Brook; as well as an extensive swamp in and around the Cross Street Public Drinking Water Well. There are two bog areas in town, as well as numerous certified and potential vernal pools. Wetland resource areas provide critical habitat to wildlife and help maintain the aesthetic beauty of our town. They also provide priceless yet "free" services including: drinking water purification, groundwater recharge, flood control, and pollution prevention.

4.3.2 Flood Hazard Areas

The large numbers of streams, including the Squannacook River, combine to produce a significant floodplain area in the town. The most severe flooding occurred along the Squannacook River in 1936. According to the Federal Emergency Management Agency (FEMA), other low-lying areas are subject to periodic flooding including Mason Brook, Walker Brook, Locke Brook, Willard Brook, Pearl Hill Brook and Witch Brook. The largest drainage areas are associated with the Squannacook River (156 square miles), Walker Brook (63 square miles), and Willard Brook (27 square miles). Previous FEMA (Federal Emergency Management Agency) maps were somewhat conservative compared to those issued in June of 2010. (See Map 6, FEMA Floodplains) Floodplain maps and other FEMA resources can be viewed on the Internet at <http://msc.fema.gov>. The increased areas of concern designated by FEMA may serve to deter expansion or new growth in those affected areas, as they are now identified as a greater risk in severe weather conditions and as such may be required to be covered by property or flood insurance.

4.3.3 Water Supply

Two aquifers underlie approximately one half of the Town, and much of the rest of the Town is relied upon for aquifer recharge. The movement of groundwater occurs from the point of highest water table contour to the lowest. This movement is slow but predictable. Unwise land use decisions in one part of the town may affect municipal or private wells in another part of town.

Most eastern Massachusetts communities' high yield aquifers are located within glacial outwash valleys bordered by lower yielding glacial till at higher elevations. This classic hill and valley aquifer is readily apparent along the Squannacook River valley, thought to have been formed by glacial melt-water approximately 15,000 years ago. These coarse sand and gravel deposits can be seen within numerous sand and gravel pits located within the valley itself.

The USGS (United States Geological Survey) identified and mapped "developable" aquifers in Townsend during the late 1970s (USGS Hydrologic Atlas, 1977). Developable aquifers are defined as those capable of yielding sufficient water for industrial or public water supply use. To that end, the town has updated the delineation of primary recharge areas serving the developable groundwater supplies identified by the USGS and the Nashua River Watershed Association (NRWA). This information is being updated to reflect the more current FEMA influence on the USGS findings.

The wells draw their water from a specific section of the aquifer, referred to as a recharge area. Recharge areas are determined by a number of factors, including ground water flow, varying geological composition of the aquifer, and the pumping rates of each well. Three specific zones exist within the recharge area itself. The first is a 400-foot radius known as Zone I which must be owned by the municipality. This is a protective radius required by the DEP in accordance with 310 CMR 22.02 around the wells or well fields with approved yields of 100,000 gallons per day or greater. The second zone or Zone II is the areas of aquifers which contribute water to a well under the most severe pumping and recharge conditions that can be realistically anticipated (180 days of pumping at safe yields, with no recharge from precipitation). It is bounded by the groundwater divides, which result from pumping the well and by the contact of the aquifer with less permeable materials such as till or bedrock. In some cases, streams or lakes may act as recharge boundaries. In all cases, Zone II shall extend up gradient to its point of intersection with prevailing hydro geologic boundaries (a groundwater flow divide, a contact with till or bedrock, or a recharge boundary). The final zone or Zone III is the till area, also contributing water to the well, but at a less significant rate. Zone III means that land area beyond the area of Zone II, from which surface water and groundwater drain into Zone II. The surface drainage area as determined by topography is commonly coincident with the groundwater drainage area and will be used to delineate Zone III. In some locations, where surface and groundwater drainage are not coincident, Zone III shall consist of both the surface drainage and the groundwater drainage areas. (See Map 7, Water Supply Resources) The Townsend Water Department codified the town well zones and the Town passed a Groundwater Protection Bylaw in 1998 and further clarified and amended it in 2009. A municipal water conservation ban is scheduled for implementation in 2012. There is also an Aquifer Protection Overlay District Bylaw which prohibits certain types of uses and presence of hazardous materials for any new construction or reuse.

Protection of the Town's water supply may take a number of various routes. Town acquisition of land is the best way to prevent future contamination. This acquisition should occur beyond the 400-foot Zone I designation to the primary recharge area of Zone II. However other regulatory means, such as large lots and the prohibition of hazardous chemical and medical disposal also help to prevent future contamination. As noted earlier, Townsend overlies its aquifer areas, which is the present and future source of drinking water. Three aspects of the aquifer should be noted: First it lies predominantly south of Route 119, a moderately developed residential area of town; secondly, the aquifer stretches into adjoining towns, amplifying the need for local and regional ground water resource management; finally, despite state agency and local conservation purchases, large portions of Townsend are still available for residential development, with a large percentage of this land

overlying the aquifer. Strategic parcels should be considered for purchase by the town when they become available if they are within Zone II of the current well sites.

4.4 VEGETATION

4.4.1 Forests

According to the USDA, Townsend is approximately three quarters forested. Townsend's forests are used extensively by the public for recreation, hiking and mountain biking, and hunting and fishing. Large masses of greenery provide visual screens and add to the undeveloped, rural character, especially when they mask development as they do in Townsend. Because of sheer size, such forests offer excellent opportunities for large secluded trail systems. These systems afford citizens the chance to exercise, relax, find solitude, and study the natural world. The effects of such places on a town's quality of life are immeasurable. Additionally, because many animal species need large tracts of forest to survive, these are critical conservation resources. Upland forest habitat contiguous with wetlands is particularly valuable. The diverse ecotones between these systems provide scenery and wildlife habitat. Townsend is abundant with these types of habitats with its many streams and wetlands within and bordering forests.

Forests also provide an element of the quality of life of our community not generally thought of. The vegetative cover of the landscape positively affects the town by controlling erosion caused by precipitation, modifying temperature, and modifying environmental extremes, particularly air temperature, water flow, and air composition, all helping to make Townsend a healthy, pleasant place to live.

Townsend State Forest is made up of large tracts of continuous forest in the northern part of town owned by the State Department of Conservation and Recreation (DCR). These forests are either white pine stands or oak-hickory. These tracts are managed by the state with annual selective cutting. Willard Brook and Pearl Hill State Parks represent another large forest tract in the southwest corner of the town. There are other tracts of large size of mostly pine and hardwood mix owned by the MADFW and DCR along the Squannacook River in the center and southeastern sections of town. There are pockets of aspen - grey birch and elm, ash and maple and even several American elm found throughout town.

Townsend has more than 1,300 acres of forest land protected under Chapter 61. In order to qualify for the Chapter 61 program, a landowner must have 10 or more contiguous acres of forest land and a long-term commitment to improving the "quality and quantity" of timber on that land. Other values such as wildlife, aesthetics, and recreation can also be incorporated into the management goals of the property through the Forest Stewardship Program. An approved, Forest Management Plan describing and mapping property resources and stating management objectives is required to guide stewardship of the property. This plan is based on the landowner's objectives and is renewed every ten years to reflect changing conditions, goals, etc.

4.4.2 Open fields

Open fields lend to the rural life style of Townsend. Townsend has over 1,100 acres of agricultural land under Chapter 61A, much of it family owned farms. Many species, such as the bobolink, require old field environments to live. The areas found between forest and open field is especially rich in animal and plant species. Open fields offer scenic panoramas and add to rural character. Every effort should be made to support local farming and to lend assistance to owners of old farms to keep the pressures of development from swallowing them up.

4.4.3 Public Shade Trees

In 1896, Townsend adopted a General Bylaw entitled Streets and Sidewalks which has within it a section on the Protection of Trees which prohibits the use of any public tree for any use which would damage the tree such as affixing a sign, tying up livestock, etc. In 1899, the town voted to accept Massachusetts General Law Chapter 190, Acts of 1896 concerning the preservation of shade trees and election of a Tree Warden. In 1974 the town accepted Massachusetts General Law Chapter 40, Section 15C known as the Scenic Roads Act; declaring all roads of Townsend as “Scenic Roads”, with the exception of State numbered Routes 119 and 13. The Planning Board added procedures for removing public trees to their Rules and Regulations at that time. A public hearing is required any time a person or organization would like to remove trees from any scenic road as part of a project or individual action. The Tree Warden, along with the Planning Board, makes the decision on the removal of trees.

4.4.4 Unique Natural Resources

As of this date, there are 47 certified vernal pools in Townsend with several more potential vernal pools. According to NHESP, there are no rare or endangered plant species in the town. There are two areas of town that are considered bogs and are within protected open space. The Squannassitt Area of Critical Environmental Concern (ACEC) was designated in December 2002. (See Section 4.6 for discussion of this unique area)

4.5 FISHERIES AND WILDLIFE

In Townsend there are a number of species that make their homes in interior and riverside local forests and woodlands. These areas support mostly small rodents and mammals such as mice, voles, cottontail rabbit, gray and red squirrels, chipmunks, bats, muskrats, minks, weasels, woodchucks, beavers, otters, and porcupines. Raccoon, skunk, and opossum are common and have become a nuisance in some locations particularly as predators of precious turtle eggs. More secluded forests are home to larger wildlife such as coyotes, foxes, bobcats, and deer. Fisher have been seen occasionally in Ashby and Townsend. Residents also report seeing the occasional moose and bear. In addition, many types of birds inhabit the woodlands including blue jays, robins, sparrows, orioles, owls, woodpeckers, wild turkeys, grouse, pheasant, woodcock, and a great variety of songbirds.

Waterways, water bodies, and other wet areas in town tend to provide suitable habitats for fish, amphibians, reptiles and other birds that enjoy the water. The Squannacook River supports a cold water fish population, primarily through stocking with trout. In addition, amphibious species such as frogs, salamanders, and toads tend to make their homes near local waters in wetlands, as do water-loving birds such as Great Blue Heron, geese, and ducks. The most common reptiles include garter and black snakes, and snapping, painted, and spotted turtles. Red-backed salamanders are common under rotting logs. Spotted salamander populations have been declining, and blue-spotted salamanders are considered rare. (NRCS, 2009)

According to the Massachusetts Natural Heritage and Endangered Species Program (NHESP), there are thirteen species of fish and wildlife that are considered endangered, threatened or of special concern indigenous to Townsend. Of these thirteen, eight are vertebrates and five are invertebrates. There are also 47 certified vernal pools and hundreds of potential vernal pools (PVPs). There is a large cluster of vernal pools in the northeastern part of town that provide particularly good habitat for species that depend on this environment for breeding. The clusters mean that there are alternate

habitats if something happens to one pool, and slightly different conditions in each may provide different habitats for pool dependent species. (MADFW, 2011) Certifying the PVPs would provide more protection to these wetlands and the species that use them. The Conservation Commission and the Friends of Willard Brook have led campaigns to certify all vernal pools on public property and some private property of willing residents. (See Map 8: NHESP Priority Habitats of Rare Species)

The amount of wetlands, woodland and undeveloped land in general supports a diverse range of wildlife in Townsend. The MADFW provided information for this Open Space and Recreation Plan which is in Appendix B and includes a list of Townsend's rare & threatened species, natural communities, and fact sheets describing BioMap2 components. Excerpts from this letter are presented here:

"The best Blandings Turtle (Threatened) populations in Massachusetts are in the towns around the Nashua River valley. Townsend provides important Blandings habitat in the wetlands along the Squannacook River, its tributaries, and across the eastern part of town in a variety of habitats....Wood Turtles (Special Concern) live in streams and associated uplands; in Townsend, one of the best regional populations is in some of the same areas as the Blandings in Townsend....The incidental capture of the smaller Wood Turtle population, along with a small population of Eastern Box Turtles within BioMap2 Core habitat is actually a demonstration of the strengths of the Cores as tools for biodiversity protection. Eastern Box Turtles are terrestrial turtles, inhabiting a variety of dry and moist woodland habitats, with the core of their Massachusetts populations occurring in the southeastern part of the state.

American Bitterns (E) are one of a group of birds called secretive (or inconspicuous) waterbirds. These heron-like birds nest and forage in marshes that have dense cattails, tussock sedge or shrubs. They are very sensitive to disturbance. Vesper Sparrows (T) are grassland birds whose habitats often include taller woody vegetation interspersed within the grassland. The habitats are typically dry, well-drained sites with a mixture of short grass, bare ground, and shrubs, trees, or other high structures from which males can sing, including telephone lines and poles.

Bridle Shiners (SC) are small minnows (<2inches long) that are found in clear water in slack areas of streams and rivers and are also found in lakes and ponds.

Several species that are no longer listed under MESA (the Massachusetts Endangered Species Act) remain of conservation concern. Spotted Turtles (delisted) use a mix of habitats – dry open uplands for nesting, and forested and non-forested wetlands and their edges for basking, foraging, mating, and over wintering. Vernal pools and larger wetlands are important for Spotted Turtles.

The rare invertebrates that are known from Townsend are all aquatic species found in or along the Squannacook. Two species of rare mussels (Triangle Floater (SC) and Creeper (SC)) known from Townsend require clear water in streams and ponds. Seven species of rare dragonfly species occur in similar areas along the Squannacook....The multiple species of dragonflies and freshwater mussels present in the Squannacook emphasize the quality of the river and its water, and its importance in providing habitat for a variety of species, common and rare.

Townsend has several BioMap2 areas – the areas of most importance to protect in order to maintain the biodiversity of the town, region, and state. BioMap2 cores were produced by

NHESP to identify the areas of most importance for biodiversity: they are based on known locations of rare species and uncommon natural communities, and incorporate the habitats needed by those species to maintain the local populations....There are also areas of Critical Natural Landscape (CNL) the protection of which will enhance the viability of the BioMap2 areas and pick up large Landscape areas that are themselves very important for all species....Both Core Habitat and CNL areas are intended as targets for land acquisition to protect the biodiversity of Townsend. Land that abuts currently protected open space within the BioMap2 Cores or CNL should be targeted for acquisition. Many of the polygons of both aspects of BioMap2 extend into other towns: these large polygons provide opportunities to protect large unfragmented areas that will provide the best opportunities to limit further species loss from the town and region.” (NHESP, 4/8/2011)

Numerous wildlife co-exist in the wetlands in the town, particularly along the Squannacook River. However, the large wetland areas in Ash Swamp, Dead Swamp, Wolf Swamp and the Meadow Road wetland all were identified by the MADFW as being of regional importance. Many of these parcels (with the exception of Dead Swamp) are privately owned. The diversity of wildlife communities in Townsend offers excellent opportunities for recreational use of fish and wildlife resources. Scientific, cultural and recreational values are associated with the wildlife and natural communities. Hunting remains a popular recreational pursuit in Townsend. Fishing also is a major form of recreation in many of the tributaries of the Squannacook River. (See Map 9: NHESP BioMap2 Areas)

In order to maintain wildlife, an effort must be made to protect their habitat. In general, the preservation and maintenance of a diversity of wildlife habitats is critical to ensure that populations of all native wildlife species continue to be represented in Townsend. There are a number of factors which determine the survival of a species, such as quantity of food, shelter and necessary breeding environment. As Townsend develops, consideration of these factors should be part of many land use decisions. The Commonwealth demonstrated this attitude by including wildlife as a significant interest under the Wetlands Protection Act. The diversity of habitat, as currently seen in Townsend, means a diverse wildlife and a healthy biological community. The MADFW continues to purchase strategic parcels of land in order to preserve large tracts for habitat.

4.6 SCENIC RESOURCES AND UNIQUE ENVIRONMENTS

4.6.1 Scenic Landscapes and Geologic Features

Due to the town's varying topography, elevated hills and open fields, a number of scenic features are evident. The residents are most familiar with these areas and have pointed out a number they would like to see maintained. These views add a great deal to the rural nature of the community and serve to enhance the quality of life for Townsend's residents and those who drive through the town. These vistas are primarily from Townsend Hill, Barker Hill, Bayberry Hill and other elevated areas, although pleasant views are present throughout the town. Some of the resources and unique areas the residents would like protected are the Squannacook River, Ash Swamp, the Town Common, Bixby Reservoir, vernal pools, isolated lands subject to flooding and agricultural properties. (See Map 10: Unique and Scenic Features) There are still a number of farms located in Townsend and this is evident by the many hay field and production fields dotted throughout the landscape. All along most of the rivers and streams in town there are scenic vistas and plentiful wildlife habitat.

In 1974 the Planning Board adopted the Scenic Roads Act under MGL Ch. 40, Section 15C and designated all of the roads of Townsend, with the exception of Routes 13 and 119, as scenic roads

and subject to a Planning Board public hearing before any trees are cut or removed or stone walls are removed or relocated.

There are several geologic features in Townsend that are scenic and unique. In the Townsend Hill Wildlife Management Area owned by the State in the northern part of town, there is a deep ravine that affords beautiful vistas. In the Townsend State Forest north of Turnpike Road, there is a quarry that is privately owned. There are many abandoned gravel pits in town, some private, but most owned by the State and Town that afford unique wildlife habitats and successional plant growth. Townsend is abundant in sand and gravel, as is evident by the number of gravel pits located in town. Some pits are still operational and afford their owners an income from the product. In the valleys of the many hills in town there are mostly coarse glacial stratified deposits and the hills are mostly composed of shallow bedrock overlain by thin and thick till.

4.6.2 Cultural and Historic Areas

Townsend has three Historic Districts, one in each of the three “village” areas. Historic District I is in the center of town and includes town-owned buildings such as Memorial Hall built in 1894 and serving currently as town offices; and the “Town Hall Annex” building, which is the first bank building in town built in 1915 and currently vacant; and the Town Common which serves as a meeting place for a variety of activities and events. Also included in Historic District I are several residences, four buildings which serve as private business locations and two churches.

Historic District II is located in “the Harbor” which is the “village” in eastern Townsend where the Squannacook River becomes the Harbor Pond. In this District there are several buildings owned by the Historical Society and serve as cultural and historical evidence of Townsend’s past. There is the Spaulding Grist Mill, where the grinding stones of this mill were driven by a horizontal wheel powered by water from the Squannacook River. The mill processed corn and grain grown by local farmers until it closed in the 1920s. It is currently closed to the public while under repair. Another property is the Reed Homestead where four generations of the Oliver Reed family owned and occupied this Federal dwelling, built circa 1809. A room with murals attributed to Rufus Porter, itinerate painter, inventor and founder of The Scientific American Magazine, and are a special feature of the house. A rare early country clothing collection and Victorian gardens with authentic plantings can be found here. Then there is the Cooperage, built in 1733, it began as a mill for sawing boards. It was later converted to a fulling mill. In the mid-1800s it housed the barrel-making business of E. Spaulding, when the six-sided cooper fireplace was added. Later a riverside restaurant occupied the premises. Now it houses an attractive gift/antique shop. The building was acquired by the Townsend Historical Society from the Society for the Preservation of New England Antiquities. The final building in the Harbor owned by the Historical Society is the Harbor Church. Built in 1853 as a Unitarian meetinghouse, the building was closed and abandoned as a church after just a few years. It stood empty until its development as a theater and community center in the late 1800s. Now it serves as an occasional meeting place and spot for weekend antique sales. There are also several residences captured in Historic District II and two buildings used for private businesses.

Historic District III is located in the third “village” of West Townsend. Two buildings in this district owned by the town are the West Townsend Fire Station, built in 1900, and the West Townsend Reading Room, built in 1930. The Fire Station is still being used as a fire station and the Reading Room is used as a meeting place for various organizations and can be rented out for

functions. Other properties in this district include private residences, private businesses and one church.

4.6.3 Unique Environments - ACEC

In December 2002, the Massachusetts Secretary of Environmental Affairs designated the Squannassit Area of Critical Environmental Concern (ACEC). (See Figure 4.2, Squannassit ACEC) ACECs are places in Massachusetts that receive special recognition because of the quality, uniqueness and significance of their natural and cultural resources. These areas are identified and nominated at the community level and are reviewed and designated by the state's Secretary of Environmental Affairs. ACEC designation creates a framework for local and regional stewardship of critical resources and ecosystems. Townsend contains 40%, or 15,050 acres, of the Squannassit ACEC which covers approximately 70% of Townsend. According to the 2001 State BioMap about 46% of the Squannassit ACEC is BioMap Core Habitat and 33% is designated as Supporting Natural Landscape. As of 2009, there are 36 Natural Heritage Certified Vernal Pools within the ACEC, as well as 369 Potential Vernal Pools as identified through photo-interpretation in the 2001 Mass Aerial Survey of Potential Vernal Pools. While not all of these locations will turn out to be real, certifiable vernal pools when checked on the ground, a high percentage will be functioning vernal pools. State-wide there is an average density of 5.574 Potential Vernal Pools per 1000 acres. By contrast, in the Squannassit ACEC, the average density of PVPs is 9.844 per 1000 acres, about 1.75 times the state average.

The Squannassit ACEC connects with the boundary of the Central Nashua River Valley ACEC to the south, along the Nashua River corridor, and is adjacent to the Petapawag ACEC, which is located along and to the east of the Nashua River, from the Town of Ayer north to New Hampshire. The Squannassit and Petapawag ACECs share the Nashua River corridor and its associated physical, biological and cultural resources and history.

Although the two areas were nominated and designated as separate ACECs, it is important to state that the Nashua River corridor is a central resource feature of both of these ACECs (as well as a central feature of the Central Nashua River Valley ACEC).

There is highly significant drinking water resources present within the ACEC. These include portions of several high-yield aquifers as defined by the United States Geological Survey (USGS) in the areas of Pearl Hill-Willard Brook and Witch Brook in Townsend. Extensive medium-yield aquifers are located along the length of the Squannacook River in Townsend. According to the Squannassit ACEC designation report, the wetland resource areas included in the ACEC are significant to the protection of groundwater supply and private water supplies, the prevention of pollution, flood control, the prevention of storm damage, the protection of fisheries, and the protection of wildlife habitat – all of which are public interests defined in the Wetlands Protection Act and regulations promulgated there under. The area lies at the transition between two major

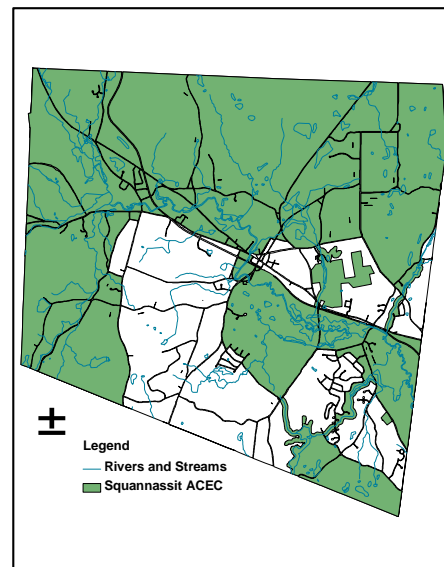


Figure 4.2 Squannassit ACEC in Townsend

forest biomes, the northern hardwood-hemlock-white pine forests which extend into Canada, and the central hardwood-oak-hickory forests which extend to Georgia. Both biomes exist together in varying combinations throughout the Squannassit ACEC, resulting in diverse mixtures of vegetative species. According to the nomination report, the five largest tributaries to the Nashua River in this area flow to the southeast, while the Nashua River flows to the north. The direction of flow of the tributaries is controlled by deep underlying bedrock valleys. The report states that the confluence of diversity of topography, soils, hydrology, and vegetation is unique and has, in turn, resulted in a corresponding diversity of habitat types and therefore of biodiversity. Agriculture and forestry are important components of the overall resource complex. The area contains unique and highly significant archaeological and historical resources, as well as scenic landscapes of statewide significance.

There are approximately 2,310 acres of farmland within the ACEC, 6% of the total ACEC acreage. This MassGIS land use coverage data can be separated into the following categories: cropland, 1,385 acres; pasture, 650 acres; orchard, 215 acres; and nursery, 60 acres. The largest amounts of cropland within the ACEC are located in Pepperell (approximately 405 acres) and Townsend (385 acres). The largest amounts of pasture within the ACEC are located in Pepperell (approximately 275 acres) and Townsend (195 acres). Both the Squannacook and Nissitissit Rivers are on DEP's "Alert Status". While achieving water quality standards for a Class B Cold Water Fishery and Outstanding Resource Water, issues relating to increased development and subsequent loss of riparian cover and increase in impervious areas pose a serious threat to these watersheds. Increasing water withdrawals will impact stream flow and habitat and augment the impacts of increasing temperatures and bacterial contamination during wet weather events. (State ACEC Website, 2011)

4.7 ENVIRONMENTAL PROBLEMS

Over the last twenty-five years, the residents of Townsend have protected its aquifer through Zoning Bylaws. Although important regulations are in place to protect the future water supply of Townsend we are still faced with several environmental problems.

4.7.1 Hazardous Waste and Brownfield Sites

According to data maintained by the Massachusetts DEP Bureau of Waste Site Cleanup, there are a number of properties in Townsend that are confirmed hazardous waste sites or have experienced reportable releases of chemicals in the past ten years. A comprehensive list of areas of chemical releases and spills, as well as their current remediation status, can be found in Appendix C and on Map 11: Environmental Issues. There is a 2 acre site on Turnpike Road that was a rudimentary dump site that could potentially fit into the Brownfield Program.

Townsend has auto body shops, repair shops, service stations, vehicle fleet maintenance, a highway department, and manufacturing within its aquifer district. These businesses use significant amounts of toxic material such as solvents, paint thinners, oils, and degreasers. None of these businesses have been identified with any groundwater contamination as of yet, but hold the potential.

The Town of Townsend participates in the Devens Regional Household Hazardous Products Collection Center, where, for a fee, residents can bring their hazardous waste. The Center is open twice a month from March through December. The Townsend Highway Department collects waste oil once a month from residents. A total of 9,783 gallons of waste oil has been collected from 2004 through 2010. (Townsend Annual Reports 2004-2010)

4.7.2 Landfills

The Town's Landfill located on Greenville Road was capped in 2004. The landfill needs to be monitored for 30 years, including gas and water monitoring wells which are analyzed for contaminants in the leachate ponds and infiltrate water that may pollute our groundwater. The Board of Health has contracted with Weston & Sampson to conduct testing on the collection lagoons to gather data for eventual shutdown of the treatment system which could happen as early as 2020.

The Landfill also serves as a recycling center where residents can bring bulky items for a nominal fee. The curbside trash and mandatory recycling program continues. For 2010 the town collected 370 tons of paper, 296 tons of glass, cans and plastic and 2,984 tons of trash, which is 33 tons less trash than collected in 2009. The community is urged to "Reduce, Reuse, Recycle".

(2010 Townsend Annual Town Report)

4.7.3 Erosion and Sedimentation

There are no constant and significant problems with erosion in Townsend, as most are short-term and related to particular development projects. Specific areas at risk for erosion in Town, if developed, are those areas with slopes from 8 to 15 percent and greater. This should be noted, as slope conditions usually do not prevent development but do increase costs, and if care is not taken, can lead to serious environmental problems.

Areas in Townsend that are at risk from sedimentation are generally waters with substantial floodplains or with excessive slopes at their shore lands. The areas falling into the first category are the banks of the Squannacook River and some of its tributaries that tend to be eroded and wash downstream when waters rise during heavy rainfall and flood them out. In addition, there occasionally are developments under construction that increase sedimentation due to inadequate or failing erosion and sedimentation control. In all cases, the sedimentation that occurs contributes heavily to non-point source pollution and causes water quality problems. To mitigate these conditions, erosion should be carefully monitored and Best Management Practices (BMPs) adhered to as outlined in Townsend's Stormwater Bylaw and the Department of Environmental Protection's Stormwater Management Policy Handbook.

4.7.4 Chronic Flooding

Most areas in Townsend that are at risk of flooding are those areas near rivers, streams and wetlands. The land in Townsend that is most susceptible to being submerged from a storm event is the Squannacook River shore lands and some of its tributaries. The meandering nature of the Squannacook has created a substantially sized floodplain; creating large buffers between the rivers edge and buildable upland areas. However, some portions of the Squannacook are developed and are subject to periodic flooding which is created by runoff from snowmelt or long term rain events. While development immediately adjacent to the rivers is limited by existing zoning bylaws, low-lying areas near ponds and brooks tend to see the brunt of any flood damage that does occur.

4.7.5 Septic Systems

Townsend at present is entirely private septic systems for wastewater disposal. System failures are common, however, the recently revised Massachusetts Title V regulations seem to gradually support repair. Older homes along the Squannacook and its tributaries often have cesspools and failing systems, which contribute to the nutrient enrichment, oxygen depletion and bacterial contamination of the water bodies. The issue of on-site sewage disposal is an important

consideration when examining the high number of private wells in Townsend. This factor and the low pumping rate restrict this “zone of contribution” to a limited land area. The abundance of steep slopes in town also restricts locations of private septic systems. The Townsend Board of Health regulations prohibit leaching fields within 100 feet of a wetland and 200 feet of a perennial stream.

4.7.6 Stormwater

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, parking lots, sidewalks, and streets prevent stormwater from naturally soaking into the ground. Stormwater can pick up sand, debris, chemicals, pesticides, fertilizers, oils, salt, litter and other pollutants and flow into a storm drain or directly into a lake, stream, river or wetland. Anything that enters a storm drain is discharged into the water bodies we use for public drinking water, swimming, boating and fishing.

In 2003 the Town of Townsend was required by the Environmental Protection Agency (EPA) to apply for a National Pollutant Discharge Elimination System (NPDES) Phase II permit. This permit was received and must be renewed every five years. The Phase II permit requires municipalities and operators of construction sites to prevent sediment and other pollutants from washing into nearby streams, rivers and lakes. In response to this requirement, Townsend successfully passed at Town Meeting in the fall of 2007 a Stormwater Bylaw and an Illicit Discharge Elimination Bylaw. Under the new bylaws, construction that would disturb a minimum of one acre is required to obtain a Stormwater Permit from the Planning Board. This applies to residential as well as commercial and industrial sites. (Townsend Stormwater Committee pamphlet)

The Townsend Highway Department monitors and repairs all of the stormwater structures in the town including cleaning catch basins and piping infrastructures and sweeping the streets in the spring to remove potential contaminants from the roadways. There are several locations throughout the town that need drainage improvements and the Highway Department gets to these as time and budget allow.

4.7.7 New Development

Due to the extensive wetlands and steep slopes in town, new development is difficult to locate. Engineers are forced to develop creative house lots to “fit” houses onto the land while avoiding wetlands and slopes. The Conservation Commission has a 50 foot no build zone within their regulations that keeps structures from encroaching on these important resources. The Commission is working on revising their regulations to require a 75 foot no build zone to better protect the wetlands. As noted in Section 3.4.3, all of the subdivision developments in the 2000s have been Open Space Preservation Developments, creating more dense neighborhoods with open space donated to the town. Due to the extensive endangered species habitat in Townsend, new development increasingly must file applications for approval with the Natural Heritage and Endangered Species Program.

4.7.8 Ground & Surface Water Pollution

Potential sources of ground and surface water contamination in Townsend include failed septic systems, a golf course, construction sites, sand and gravel mines, intensive agricultural operations, and the former landfill/transfer station. A 1984 study by the Nashua River Watershed Association produced vital data concerning Townsend’s water supply. A number of concerns had been identified by the town as they examined their present and future water supply. These concerns included high nitrate and sodium levels, potential contamination threats to the town’s well fields

and increasing water demand by a rising population. Septic systems, road salt, farming and increased industrial and residential development compromise Townsend's water supply. Since groundwater is anticipated to satisfy the town's long-term water supply needs, protection of groundwater quality is of paramount importance, particularly over primary recharge areas located along the Squannacook River valley. The most common contamination source is effluent from septic systems, specifically, nitrogen. The conservative chemical nature of nitrogen means it is not appreciably removed as it moves through the ground water system. Road salts follow this same general pattern and may end up in a public well as sodium.

Private wells serving single-family dwellings draw groundwater from a very limited portion of the aquifer. These wells are generally shallow and may penetrate only 10' to 12' into the aquifer. Although the dimensions of this area are small (a technical report on Cape Cod estimates the captive area for a private well to be 400 feet in length by 100 feet in width), the potential for a "short circuiting" between on-site septic systems and wells does exist. Likely contaminants to private wells include nitrogen, salts and household hazardous waste.

4.7.9 Impaired Water Bodies

According to the State, Townsend currently has no impaired water bodies. Instances of septic breakthrough, stormwater runoff and agriculture runoff negatively affect the water bodies in town. Elevated phosphate and nitrate levels can foster cultural eutrophication negatively impacting recreational opportunities (boating, fishing and swimming). According to the 1998 Nashua River Watershed Report Card, the Squannacook River between Harbor Pond and Hollingsworth & Vose in West Groton is rated as on alert for chemistry and swimming and partially supportive of biology due to elevated temperature readings above those protective for a cold water fishery. Downstream of Harbor Pond there are increasing water quality problems due to high levels of fecal coli form, low dissolved oxygen, erosion leading to sedimentation, increasing siltation and noxious aquatic and invasive weeds in Harbor Pond itself. (Nashua River Watershed Association Five Year Action Plan 2003-2007.)

4.7.10 Forestry Issues

According to the USDA, Townsend is approximately three quarters forested. Townsend's forests are used extensively by the public for recreation, hiking, mountain biking, hunting and fishing. Large masses of greenery provide visual screens and add to undeveloped, rural character, especially when they mask development as they do in Townsend. Because of sheer size, such forests offer excellent opportunities for large secluded trail systems. These systems afford citizens the chance to exercise, relax, find solitude and study the natural world. The effects of such places on a town's quality of life are immeasurable. Additionally, because many animal species need large tracts of forest to survive, large blocks of forest are critical conservation resources. The vegetative cover of the landscape positively affects the town by controlling erosion caused by precipitation, modifying temperature, modifying environmental extremes, particularly air temperature, water flow and air composition, and help to make Townsend a healthy, pleasant place in which to live. Townsend's forestry issues are similar to other towns in our area: acid rain, hemlock and maple diseases, and imported and destructive insects and plants. There are significant amounts of invasive plant species all around the town. The invasive Asian Longhorn Beetle has not been detected in Townsend as of yet.

4.7.11 Invasive Species

There are several locations in town where there are invasive species. Some examples are invasive aquatic plants in the Harbor Pond, bittersweet all over town, Japanese knotweed in roadside drainage areas, etc. The pond at Pearl Hill State Park recently underwent various techniques by DCR to rid the pond of invasive weeds. There is an invasive stand of *Phragmites* in the Dead Swamp in Willard Brook State Forest that DCR and the Friends of Willard Brook will be treating and removing in 2013. Both the Planning Board and the Conservation Commission have a policy of recommending native plants and prohibiting known invasive species for any construction projects.

4.7.12 Environmental Equity Issues

In evaluating the open space and recreation locations in town, there are open space parcels throughout the town and not concentrated in one area for hiking/walking/nature viewing. The State's landholdings are numerous and afford many types of passive recreation, including hiking, biking, fishing, swimming, and nature viewing. For active recreation such as ball fields, tennis courts and basketball courts, residents must travel to one of the three school complexes. The tennis and basketball courts at the middle school were recently upgraded and repaired and are now useable by the public. There are playgrounds associated with the elementary and preschool properties, but these are located in the center of town and must be driven to if you live outside the center of town. The area known as Timberlee Park, a 500 home subdivision has no playground or useable ball fields. There also is no playground in West Townsend. There is one town-owned ball field in West Townsend that the Little League utilizes. There is also an area called Squannacook Meadows which is leased by the local soccer organization, however, problems arise with this use as it is a prime endangered species habitat. Most of the active recreation facilities in town are owned by the school. There have been preliminary discussions regarding a 20-acre town-owned parcel being developed into an active recreation location, including soccer fields, baseball and softball fields, skate park, walking/jogging paths, and playgrounds and picnic areas.