



TOWN OF TOWNSEND
CONSERVATION COMMISSION
272 Main Street
Townsend, MA 01469

OPEN SPACE *AND* RECREATION PLAN

≈

Townsend Conservation Commission
November 1999

TOWN OF TOWNSEND

OPEN SPACE PLAN

	<i>PAGE</i>
I. PLAN SUMMARY	3
II. INTRODUCTION	
2.1 STATEMENT OF PURPOSE	4
2.2 PLANNING PROCESS AND PUBLIC PARTICIPATION	5
III. COMMUNITY SETTING:	7
3.1 REGIONAL CONTEXT	7
3.2 HISTORY OF COMMUNITY	7
3.3 POPULATION CHARACTERISTICS	8
3.4 GROWTH AND DEVELOPMENT PATTERNS	10
IV. ENVIRONMENTAL INVENTORY AND ANALYSIS	11
4.1 GEOLOGY, SOILS AND TOPOGRAPHY	11
4.2 LANDSCAPE CHARACTER	15
4.3 WATER RESOURCES	15
4.4 VEGETATION	17
4.5 FISHERIES AND WILDLIFE	18
4.6 SCENIC RESOURCES AND UNIQUE ENVIRONMENTS	19
4.7 ENVIRONMENTAL PROBLEMS	19
V. INVENTORY OF LANDS OF CONSERVATION AND RECREATIONAL INTERESTS	
5.1 PRIVATE PARCELS	21
5.2 PUBLIC AND NON-PROFIT PARCELS	22
VI. COMMUNITY GOALS	
6.1 DESCRIPTION OF PROCESS	27
6.2 STATEMENT OF OPEN SPACE AND RECREATIONAL GOALS	28
VII. ANALYSIS OF NEEDS	
7.1 SUMMARY OF RESOURCE PROTECTION NEEDS	36
7.2 SUMMARY OF COMMUNITY NEEDS	36
7.3 MANAGEMENT NEEDS, POTENTIAL CHANGE OF USE	36
VIII. GOALS AND OBJECTIVES	36
IX. FIVE YEAR ACTION PLAN	37
X. PUBLIC COMMENTS	44
XI. REFERENCES	45
XII. APPENDICES	45

I. PLAN SUMMARY

This Town of Townsend Open Space and Recreation Plan is the third revision of the plan, the first done in 1966? and the second in 1988.

The Goals and Objectives as written, the unanimous support at the 1997 Annual Town Meeting of increased wetlands protection, the 1999 Charette results, the Conservation Commission's census survey and the informal survey done in November 1997 all demonstrate the town residents belief in the critical importance of protecting the aquifer, its recharge areas, recreational and water supply waterbodies, and protecting and extending wildlife habitats.

The possible regional impact to water supply is an integral part of Townsend's philosophy of protection of the aquifer, recharge areas and water bodies. Relating to wildlife habitat and green corridors, Townsend and Pepperell are actively trying to protect adjoining land tracts still undeveloped butt unprotected. Townsend actively is involved in the Nashua-Squannacook-Nissitissit Regional Preserve Initiative.

Any questions regarding this plan may be directed to Michele Cannon, Chair, Conservation Commission at 508/597-1703. Townsend is a community blessed with an abundance of natural resources. Many of these resources work to serve the needs of the town's residents. An underground water supply, or aquifer, provides drinking water for all the townspeople. The wetland and floodplain areas throughout Townsend work to protect the town from the effects of heavy rains and possible flooding. These same wetlands also provide valuable infiltration or recharge areas for the aquifer which flows beneath a large portion of the town.

Deleted: ¶

The natural resources of Townsend also provide additional amenities to the local residents - amenities with less tangible but, nevertheless, important benefits to all residents of Townsend. One cannot quantify in simple terms the enjoyment a small child receives in seeing a deer for the first time, or canoeing a pristine section of the Squannacook River. Likewise, how does one measure the feeling an elderly resident may receive from walking an unimpeded trail through a number of habitats displaying a variety of flora and fauna. These "natural" experiences cannot be measured in dollars and cents nor, perhaps, in any physical way. Yet, they do have a great value and deserve the town's attention.

It is also important for Townsend to consider the need for active recreation among all ages of its population, from children to the elderly. As Townsend grows, the need for ball fields, parks and recreational programs also grows. If recreational opportunities remain static, a valuable feature of the community may be lost as the town grows in size.

It is obvious to those who live in Townsend that growth is beginning to change the community. Yet, there is still time to retain the character of the area, protect its many natural resources and provide the needed services to its residents. The town has realized that these amenities are not luxuries but essential ingredients in the well-being of the community.

The Townsend Open Space and Recreation Plan, originally part of the Town's updated Master Plan, plays an important role the growing effort to plan for Townsend's future. It represents both a time and a monetary commitment to ensure that the town grows properly. The Open Space and Recreation Plan intends to identify key resources, examine the impact that growth of the town will have on these resources, and provide strategies and opportunities for their protection. The implementation of such strategies will work to protect the public health, ensure the maintenance, as well as residents' enjoyment, of many of the town's natural areas and provide key recreational opportunities where needed.

The Open Space and Recreation Plan, in combination with the Master Plan, requires the broad support of the local residents. With this support, the town can ultimately prepare for its future and maintain the quality of life now enjoyed by its residents.

II. INTRODUCTION

2.1 STATEMENT OF PURPOSE

The Town of Townsend has long recognized the need to effectively balance the competing demands associated with growth and economic development with those for preservation of the natural environment to ensure that future generations will continue to enjoy the benefits and quality of life uniquely characteristic to the town's residents, agricultural interests and business community.

The maintenance of that delicate balance into the future requires not only the commitment of resources, but a framework to guide the town's planning and implementation efforts. Cognizant of the dynamic and evolving demands placed on Townsend's natural resources and environment over time, this update represents the second revision of the Townsend Open Space and Recreation Plan.

Major components of this update continue to focus on the central elements and themes expressed by residents and the business community throughout the Master Planning process and demonstrated through town meeting vote.

The Open Space Planning Components are premised on the following elements:

- Townsend will continue to rely on groundwater resources to satisfy future water supply demands. In addition, on-lot subsurface disposal systems will continue to be used for wastewater management. Given the above, effective planning and management are necessary to satisfy the long-range water supply needs for the Town.

- Preservation of wetlands and wildlife habitat is central to the preservation of Townsend's diverse wildlife community as well as Townsend's agricultural and rural past. This not only provides intangible benefits to residents, it offers a variety of recreational opportunities for hikers, hunters, anglers and naturalists.

- As population growth continues, the Town's recreational needs will continue. Setting aside areas for future recreational use and development is essential to maintaining the quality of life available to residents and visitors.

- Townsend must continue to take an active role working with neighboring communities toward meeting regional goals for the protection of ground and surface water quality, preservation of wildlife habitat and expanding recreational opportunities.

2.2 PLANNING PROCESS AND PUBLIC PARTICIPATION

STATEMENT OF PARTICIPATION AND METHODOLOGY

The foundation of this Open Space and Recreation plan was prepared by IEP, Inc., Environmental Consulting Scientists, under the guidance of the Townsend Conservation Commission and Planning Board, in 1987, with input from several other boards and departments within Townsend, and updated by the Conservation Commission, representatives of sporting clubs, historical interests and the general public, including:

Townsend Assessor's Office
Townsend Historical Commission
Townsend Recreation Commission
Townsend School Department
Townsend Planning Board
Townsend Cemetery and Parks Department
Nashua River Watershed Association
Montachusett Regional Planning Commission

The following state, federal, and county agencies were consulted initially as part of the preparation of this plan and will be consulted before the completion of the revision:

Massachusetts Department of Environmental Management
Massachusetts Historical Commission
Massachusetts Natural Heritage Program
Wildlife
Massachusetts Department of Fisheries and
Middlesex Conservation District
Montachusett Regional Planning Commission
Natural Resources Conservation Services

The goals and objectives of this plan were developed through a number of methods. First, as part of the 1988 Master Plan, approximately 200 survey

questionnaires were distributed; and a follow-up survey was conducted for this revision. It is anticipated that follow-up surveys will be conducted from time to time.

The Conservation Commission framed a questionnaire that was distributed with the Towns' Census mailing in December 1997. At the November, 1997, elections, voters registered which priorities were the most important to them.

In addition, a number of interviews and discussions were held with municipal department heads and officials. These included meetings in conjunction with Master Plan Committee, with the Board of Health, the Planning Board, Conservation Commission, and joint Planning Board/Conservation Commission meetings.

The inclusion of the Open Space and Recreation Plan as a part of the Master Plan triggered a number of meetings, officially titled "Master Plan Meetings", during which open space and recreation often became the focus of discussion. The master planning process also enabled open space and recreation goals to be seen within the context of other long-range town aspirations including growth management, fiscal analysis, capital improvements, traffic, and economic development. All those involved in both the Open Space and Recreation Plan and the Master Plan believe the end products of these efforts represent a strong basis upon which Townsend can prepare for its future, both in terms of soliciting citizen involvement and the identification of a consensus of public planning policy.

III. COMMUNITY SETTING

3.1 REGIONAL CONTEXT

Townsend is situated in western Middlesex County on the New Hampshire Boundary, just north of the city of Fitchburg. As a suburban / rural town, Townsend is now shifting from its historical agriculture-dominated local economy to one where employment is out of town, mostly in the commercial and industrial centers of Nashua, Fitchburg, and Route 495 eastward.

Townsend lies in the Nashua River watershed, and is drained primarily by the Squannacook River and in a few areas by the Nissitissit River and smaller streams. From the historic dam and grist mill at the Townsend harbor, the Squannacook river winds southeast to form the border between Shirley and Groton, and finally joins the Nashua River, where the towns of Ayer, Shirley and Groton meet. Our Aquifer flows in a similar direction and for the most part follows the Squannacook River. The Nissitissit River flows north to the town of Brookline, NH.

While Townsend has enjoyed higher income levels than the Fitchburg-SMSA, which extends to the south of Townsend to include the communities Fitchburg, Lunenburg, Leominster and Shirley, it has lower incomes than those obtained when averaging the incomes of households in Townsend, Pepperell and Groton. This difference within the region is likely to occur because: 1) Pepperell

and Groton are closer to Route 495 and Boston than most of the SMSA towns; 2) Groton has historically been a wealthy town; and 3) many of the SMSA towns have historically been lower income towns.

For many years, Townsend has been viewed as a small, quiet town on the New Hampshire border. Within the last fifteen years, however, this vision of Townsend has begun to change. Between the years 1970 and 1980, the population of Townsend increased by 68%. From 1980 to 1985 this population increase was also pronounced - an increase of approximately 14%. 1985 to 1990 showed a population increase from about 8,250 to 8,500 residents. The years 1990 - 1995 showed a decrease in the population and growth rate, however, 1995 to 1999 appear to be showing significant growth.

The closure of Fort Devens, as well as the high cost of housing closer to Route 495 and Route 2 has created a demand for more affordable housing in Townsend. In 1999, there were four subdivision plans filed with the Planning Board and at least three more are expected in the near future. This represented the most dramatic population increase within the Montachusett Regional Planning area. By comparison, the percentage of change for the entire planning region for 1970 to 1985 was only 2%.

Townsend is an active participant and supporters of the Nashua River Watershed Association – Townsend's aquifer being a part of the Nashua River Watershed.

Townsend and Pepperell Conservation Commission plan a joint meeting in the near future to further explore adjoining parcels needed to develop a "greenway" plan for the both town's open space.

3.2 HISTORY OF COMMUNITY

Townsend was settled in the late 1600s and incorporated in 1732. The first meeting house was built in 1730 on top of Meeting House Hill. As the town grew, the meeting house became too small, so a new and a larger one was just behind the first one. The people then wanted a meeting house more centrally located, so the meeting house was moved to the center of town and later became the Methodist church. The land where the first meeting house stood is now a Townsend park, purchased with a Self-Help grant and protecting diverse habitats, open space and wildlife. The Conservation Commission is planning more trails and the development of a "boardwalk" over a wetland area for educational purposes.

As with many other towns in the area, Townsend's early economy was based primarily on manufactured goods produced in a number of mills in the area. The Squannacook River, for the most part, provided the power for the operation of saw and grist mills, a clothing mill, a machine shop and a large two-story factory which produced coopering stock for many years.

The first mill of the town was built in 1733 in Townsend Harbor. The pond at Townsend Harbor came into existence in 1734 when the dam was built for this mill. The Conant House, Grist Mill and Cooperage built around the pond are still standing today

and are part of Townsend's Historic District II.

Townsend also has a long history of agriculture. Though many farms have been sold and the land divided, a few families maintain the agricultural activities that have been performed by their families for years – in some instances, for eight generations.

Three primary areas in Townsend are of historical significance. Townsend Harbor, Townsend Common and West Townsend are all listed in the State Register of Historic Places.

It has been proposed that more action be taken to protect immediately adjoining properties as well as other areas that have significant historical interest. This is particularly important as other structures along Route 119 may contain historical significance while not being located directly within the historic district. Other areas for protection include the remaining local farms, now being threatened with development.

A number of historic structures were identified in the 1969 Master Plan as being of special concern. These included:

- a) The Wood house in Townsend Center.
- b) The Conrad house in West Townsend.
- c) The old West Townsend Inn.
- d) The Cadrette house in West Townsend.
- e) The Willard house near Townsend Center.
- f) The brick round house across from Spaulding School.
- g) The frame round house in West Townsend near the VFW Hall.

While some of these structures are currently within historic districts others, such as the Wood House, the Willard House and the brick round house are not. Any building or proposed building in a historic district must meet specific design guidelines as well as arrangement, texture and similar features.

Discussions with members of the Townsend Historical Commission point to other historical aspects of the town. They noted that the entire Meetinghouse Road is of particular importance. It was the first road in Townsend, has an early cemetery on it and was the area where the first meetinghouse in Townsend stood.

In addition, although the town has not been systematically examined for archaeological sites, the Massachusetts Historical Commission suspects that several may exist. General areas might include those with a diverse environmental setting, and with undeveloped level land near streams and rivers.

3.3 POPULATION CHARACTERISTICS

Townsend's population in 1996 was 9,026. This compares with 8,430 in 1990 and 7,610 in 1980. Housing starts for single family dwellings within Townsend show increased population as well as the potential for subdivisions within the town.. The most recent numbers of single family dwelling permits are 40 in 1996, 29 in 1995, 47 in 1994, 56 in 1993, 38 in 1992 and 36 in 1991. (Source: Annual Reports, Office of Town Clerk and "Townsend at a Glance".)

The following school enrollment projections were compiled by the North Middlesex Regional School District in 1985 and illustrate a moderate but constant school-age population increase. In 1990, school enrollment _____.

In 1982 Townsend, had 2,254 people employed within its border; in 1990, it had 2,827 people employed within its borders.

The 1980 and 1990 U.S. Census provides information on the types of work done by Townsend residents, including those who do not work within the town's boundaries. Data shows that professional specialty, administrative support, clerical, precision production, machinery operators, assembly and executive administrative management were the types of jobs people most often held within each industry.

The relatively affluent nature of a population is indicative of several issues - such as increased expectations for services and, perhaps, a willingness to pay for such services. Combined with labor force, age composition and housing information, the data indicates Townsend's trend toward a primarily single-family residential satellite community to the more urban areas of Boston, Fitchburg and the developing Route 495 "high tech" industries.

Within Townsend's population are a very small percentage of minority residents; approximately 1%. This compares with approximately 4% for the Regional Planning Area.

The largest population group, age 25-44, has increased the most over the 10 last six years. Young working-age persons are primarily responsible for the population increases in this area as are increased numbers of people over age 55.

Townsend showed a significantly higher number of college-educated persons than the SMSA in **1980**. The Townsend figure of 20.1%, however, is very close to the state figure of 20%. Thus, Townsend has a higher educational level than its immediate neighbors, but is comparable with many more urban and populated towns in the Commonwealth. It is likely that this percentage has increased as the percentage of persons aged 25-44 have moved into the area since 1980.

The result of the increase in better educated, working age persons is a change in the lifestyle of town residents. While the reasons for this change are complex, the nearby location of industry and easy access to Boston are factors. What emerges is not simply an increase in population, but different needs and desires of this changing population.

It is interesting to note that population levels projected by a number of organizations have already been exceeded. These include a 1990 estimate of 8,000 people by Community Planning Services in 1969 and a 1990 estimate of 7,204 by the Montachusett Regional Planning Commission in 1977.

3.4 GROWTH AND DEVELOPMENT PATTERNS

Townsend was incorporated in 1732. The first Meeting House was built about 1730 on top of Meeting House Hill. As the town grew, the meetinghouse became too small, so a new and larger one was erected just behind the first one. The people then

wanted a meetinghouse more centrally located, so the House was moved to the center of Town and became the Methodist Church.

Townsend 's major routes include Rt. 119 which connects to Rt. 495 and Rt. 2. Train service to Boston can be obtained from Fitchburg, Leominster, Ayer, and South Acton. The residents of Townsend obtain their drinking water from municipal well fields and private wells. The town does not have a sewer system. All residential and commercial properties have their own septic systems.

In 1980, Townsend had 2,404 housing units. In 1990, Townsend had housing units. Of this numbers, in 1980, 80% were owner-occupied, 17% were rented and the remainder were vacant.; in 1990 TBD .

It should be noted that the total number of housing units in Townsend increased by 1,112 units, or 82% during the period from 1970 to 1980 and TBD from 1980 to 1990. Many of those units are in subdivisions. Housing starts for 1991-1999 show some subdivision development but also the use of ANR (Approval Not Required) residential lot development. In 1998 and 1999, ___ Lots were delineated, in one instance causing the development of a previously wild road, one of the last remaining in Townsend. New residential construction has continued at a mostly steady rate since then, as noted in the following:

1998

1997 - -

1996 40

1995 31

1994 47

1993 56

1992 38

1991 36

1990 22

1989 43

1988 30

1987 60

1986 42

Townsend is experiencing a resurgence of residential growth; most subdivisions have been "sold out" and engineering companies are exploring at least three areas for future subdivisions. The future of Townsend might best be viewed in terms of the amount of developable land left in the town. It has been determined that with the two and three acre zoning bylaw in place (Aquifer Protection Overlay District) The residential properties in the APOD must be at least three acres, outside the APOD , residential lot area must be 2 acres. Townsend has a development capacity for approximately

3,000 single family housing units.* Using the size of household trends with the number of developable residential properties, the possible residential growth could add about 9,000 people to the population. *

A net usable land analysis to determine where land is suitable for intensive-use based on environmental and zoning criteria was conducted by the Student Team of the University of Massachusetts Center for Economic Development, Department of Landscape Architecture and Regional Planning. This analysis also delineated undeveloped land with more than a 25% slope.

IV. ENVIRONMENTAL INVENTORY AND ANALYSIS

4.1 GEOLOGY, SOILS AND TOPOGRAPHY

4.1.1. GEOLOGY

The geologic fabric of Townsend is responsible for the physical setting of the town. The Town's topography, rivers, lakes and wetlands are all a function of the geologic formations found in the area.

The Townsend area consists of two basic geologic units: bedrock and glacial sediments. The bedrock units were formed first during the Paleozoic era approximately 500 - 280 million years before the present. The glacial sediments were deposited during the most recent ice age at the end of Pleistocene Epoch, approximately 15,000 years before the present.

The bedrock surface serves as the consolidated physical base of the town and the gravel, sand, silt and clay remnants of glaciation comprise the unconsolidated thin veneer of the aquifer overlying the bedrock.

The main bedrock formations found within Townsend are the Pennsylvanian biotite granite and the Berwick formation. The granite was emplaced during the Pennsylvanian period, 300 million years before the present. It is a massive, pink-colored granite containing crystals of biotite and magnetite. It is found in the north central part of Townsend in outcrops visible at ground surface and underlying glacial sediments. The Berwick formation is a thin-bedded, calcareous sandstone that has been metamorphosed (recrystallized under high temperature and pressure) to 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).

The unconsolidated glacial deposits are divided into two broad classes: till and stratified drift. Till is a poorly-sorted, heterogeneous mixture of sand, silt and clay 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. Till deposited on bedrock is commonly referred to as ground moraine and is usually less

than 20 feet thick. However, in some instances, till fills entire bedrock depressions or forms elongate topographic hills called drumlins.

Stratified drift deposits are comprised of glacially entrained materials that were freed from the ice and transported by melt-water streams, which effectively sorted the material by grain size. Coarse gravels and sands were deposited in fast (high energy) flowing water, while fine silt and clay were transported further downstream. The finer materials were eventually deposited in slow (low energy) flowing streams as on gently sloping outwash plains or still glacial lakes. Because finer-grained material was winnowed by flowing streams, the coarse stratified materials are extremely permeable and are, therefore, a desirable aquifer.

To date, there is little information available on the stratified drift deposits in Townsend. They are currently being studied as part of a Central Massachusetts mapping program being conducted by the United States Geological Survey (USGS). However, the Hydrologic Atlas for the Townsend area (USGS, 1977), does provide a basic delineation of the glacial deposits and a description of their water-bearing potential. According to the USGS, the major stratified drift deposits occur in existing bedrock valleys. The potential well yields from these deposits have been ranked by the USGS and range from 0 to greater than 300 gallons/minute. The high-well yields occur in areas of coarse sands and gravels and the lower yields occur in areas of silts and clays, usually found in till. The depth of the water-bearing sediments (saturated thickness) is also a factor in determining well yield.

Knowledge of the local geology is essential in making responsible land-use decisions. Development in areas of stratified drift deposits (with high ground water 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 break-out problems for septic systems. All these factors need to be considered in growth planning throughout the town.

4.1.2 SOILS

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

* 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. Hinckley-Windsor-Carver Association: Primarily sandy and gravelly soils on 0 to 15% slope. This is the largest association in town, occupying about 31% of the town.

More than half of this is Hinckley soils, with the remaining split between Windsor and Carver soils. In general this soil area runs from the northwest to the southeast through the central part of town. The type of soil and its location holds important implications for development in the town. According to the SCS this association holds only a slight limitation for residential, commercial or industrial use. The area has moderate limitations for agriculture and only slight limitations for sand and gravel operations.

2. Hollis-Canton-Whitman Associations: Stony and rocky, shallow to bedrock soils with many outcrops of ledge; deep, well drained stony soils and very poorly drained glacial till soils. Located primarily in the northeast and northwest parts of town, this association occupies about 11% of the town. The landscape in this association generally consists of rolling and steep hills with bedrock outcrops and numerous wet pockets. Limitations on use are most severe for agricultural, residential, commercial and industrial activities due, mainly, to the bedrock. Only slight or moderate limitations exist for wildlife and recreation.

3. Canton-Hollis-Scituate Associations: Deep, well drained stony soils developed in loose, sandy, glacial till; shallow to bedrock soils and moderately well-drained stony soils developed in dense, compact, sandy glacial till. This soil area occupies about 25% of the town with a landscape of sloping and rolling hills. Most of this soil area occurs in the upland areas throughout the town. Moderate limitations exist for high density residential, commercial or industrial use.

4. Scituate-Millis Association: Deep, moderately well-drained and well-drained stony soils in dense, compact sandy glacial till. Comprising 15% of the town, this association occurs mainly in the south-central part of town and also in the northeast. The gently rolling and sloping hills which make up this association have moderate limitations for home sites and agricultural uses and severe limitations for high-density residential, commercial and industrial use.

5. Muck-Ridgebury-Whitman-Scarboro Association: Very poorly drained organic soils, poorly drained and very poorly drained mineral soils. This final major association comprises about 10% of the town. The soil area is distributed throughout the town and is found along streams and in depressional areas. This area may have severe limitations for any type of development or vehicular use.

6. Other Associations:Paxton-Woodbridge Rumney-Podunk-Suncook

Table 1-1 provides a breakdown of general soil areas.

Table 1-1
Approximate Acreage and Proportional Extent
of the General Soil Areas

General Soil Areas	Acres	Percent*
Hinckley-Windsor-Carver	4,843	31%
Hollis-Canton-Whitman	1,770	11%
Canton-Hollis-Scituate	3,851	25%
Scituate-Millis	2,324	15%
Muck-Ridgebury-Whitman- Scarboro		
Paxton-Woodbridge	777	5%
Rumney-Podunk-Suncook	382	2%
Water	206	1%
Total for Survey Area	15,678	100%
Area Excluded	5,335	25%

* As percent of surveyed area

** The excluded area includes state lands

Topography

Townsend is characterized by varying topography. Some areas of town are 250 feet above sea level while other areas climb to over 700 feet above sea level. In general, the higher regions are located in the western and northern regions of town, with the lower regions in the center and east of town. 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. For example, road construction is difficult on areas of steep slopes. Generally, areas with slopes greater than 10% are not conducive to road development. 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.

Development has occurred primarily in the more low-lying regions along Routes 119 and 13, focused near the center of 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 relatively intense development throughout the town.

4.2 LANDSCAPE CHARACTER

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, Bayberry Hill, and other elevated areas, although pleasant views are present throughout the town.

4.3 WATER RESOURCES

Townsend lies almost entirely within the Nashua River Watershed, with over 85% of the town's land draining into the Squannacook River. There are approximately 206 acres of open water in the town, the largest water bodies being Bixby Reservoir, covering approximately 18 acres; Harbor Pond, covering 42 acres; and Vinton Pond covering 17 acres. Harbor Pond and Vinton Pond are Great Ponds as defined in MGL, Chapter 91, Section 35. All of the surface water resources of the town are classified as Outstanding Resource Waters by the Department of Environmental Protection. This designation recognizes that surface waters within the town constitute an outstanding resource as determined by their outstanding standing socio-economic, recreational, ecological and/or esthetic values. It is one of Townsend's central goals that these waters protected and maintained.

The three major water bodies are used for recreation such as swimming, skating, canoeing and boating, and also support game fish such trout, bass and perch. Development along these ponds, while not extensive, is growing, particularly in the Harbor Pond area. Bixby Reservoir has also seen an increase in residential development over the last ten years. The Vinton Pond watershed is largely undeveloped due to the presence of a 43-acre Girl Scout camp on the southern end of the pond.

One of Townsend's principal attractions are its many streams and rivers. The Squannacook is principal among these rivers. Arising from Ash Swamp, the Squannacook meanders in a southeasterly flow into Harbor Pond and, ultimately, into the

Nashua River. Aside from serving as an excellent area for passive recreation, the Squannacook also provides excellent wildlife habitat for a range of bird and animal species. Many of these streams and rivers are stocked by the Fish and Wildlife Service. The Squannacook River, Mason, Walker, Willard, Pearl Hill, Bixby and Witch Brooks are all stocked with three species of trout (Brook, Rainbow and Brown). Harbor Pond is similarly stocked.

Another important aspect of the Squannacook are the additional streams which drain into its course. Bixby Brook, Witch Brook, Bayberry Hill Brook, Hawthorne Brook, Walker Brook and Pearl Hill Brook all flow into the Squannacook at some point within Townsend. The condition of these streams is of critical importance for not only recreation, but also in the event that Townsend examines some areas for potential surface water supply impoundments. The Nashua River Water Association (NRWA) in their report entitled "Water Supply Protection Study," identified Bixby Brook as having potential water quality problems. Witch Brook was also mentioned in this report as an area of possible concern.

The large number of streams, including the Squannacook River, combine to produce a significant floodplain area in the town. The most severe flooding in recent years 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).

The relationship of these water resources is an important planning consideration. Land use within the watersheds and water quality problems within the streams may eventually become water quality problems in the Squannacook. Of critical importance is the location of the town landfill north of Ash Swamp, and the streams that feed the Squannacook River. This particular threat to the Squannacook is addressed in the Master Plan; and the landfill is the subject to constant monitoring by the Board of Health.

In addition to its stream and river resources, Townsend's residents are aware of the many functions their abundant wetland resources serve. Comprised primarily of red maple, alder, arrow-wood, high-bush blueberry, willows and milkweed, wetlands are significant in varying degrees for flood control/storm drainage prevention, the attenuation of pollution and the protection of fisheries, either outright or through the protection of nursery areas. In Townsend, however, perhaps the major significance for wetlands is the recharge capacities they hold for the town's aquifer areas. The elimination of wetlands, in a sense, is the elimination of water supply.

Townsend's two Great Ponds and reservoir also serve a variety of functions most closely associated with recreation. In order to maintain the quality of these waterbodies, the town should continue to monitor the watersheds and, if possible, their ground water recharge areas. The primary contaminant of concern is phosphorous which can cause excessive productivity (weed and algae growth) or eutrophic conditions. Phosphorous loading can enter the pond through the ground water or over-land flow. Typical sources would include septic system effluent, lawn fertilizers, agricultural fertilizers, road runoff and animal wastes.

The land underlying the Great Ponds are controlled by the Commonwealth and any construction or encroachment into or over these ponds, or modifications to water levels, must first be approved by the Massachusetts Department of Public Works. These ponds are open to the public unless restricted by a special act of the legislature. This does not apply, however, to persons seeking to fish or hunt on great ponds of less than 20 acres if the land surrounding the pond is privately owned. This would apply to Vinton Pond.

On a local level, Townsend has moved to protect its wetland resources through the passage of a local wetlands bylaw. In addition, the Squannacook River has limited protection under the Squannacook and Nissitissit Rivers Sanctuary Act (MGL Ch. 132A, Section 17)(Appendix ____). The act prohibits new discharges to the two rivers, except from one and two-family residential dwellings, and named tributaries (those which feed the Squannacook). The town further moved to protect the Squannacook by passing a zoning setback for construction and vegetation removal from the banks of the river at annual Town Meeting in April 1986.

The Commonwealth has extended its wetlands 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.

A scheduled check of water quality in many of the streams and ponds has also been carried out over the last ten years. This is providing valuable data to determine trends and problems. However, the Nashua River Watershed Association has stated that the interpretation of these trends and water quality data is not an easy task, and recommends a more thorough analysis of the accumulated data.

Water Supply

Townsend derives all of its drinking water from ground water. This refers to the water which occurs in the saturated portion of the subsurface.

The geologic deposits which transmit this ground water are referred to as an aquifer. The aquifer is shown on Map OS-4(a), attached.

Townsend actually overlies two aquifers. In total these aquifers underlie about one-half of the town. The movement of the ground water occurs from the point of the highest water table contour, or gradient, 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.

As in most Eastern Massachusetts communities, high yield aquifers within the town 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, which was formed through glacial meltwater approximately 50,000 years ago. These coarse sand and gravel deposits can be seen within numerous sand and gravel pits located within the valley itself.

The United States Geographical Survey identified and mapped "developable"

aquifers in Townsend during the late 1970's (USGS Hydrogeologic 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. This update was performed through review of local topographic relief and available subsurface data. This delineation is shown in Figure OS-4(a).

The town currently has two wells serving 1,200 businesses and homes. The most productive of these wells, the Main Street wellfield, produces about 70% of the municipal water in the town. The Cross Street well, used mainly as a backup, produces additional town water. The Witch Brook well (private water company) provides water to the Timberlee Park development (approximately 580 homes).

These 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. First is a 400-foot radius around the well, representing an arbitrary designation by the Department of Environmental Protection. The town's water department is currently in the process of updating the cones of influence for the town's wells, and public hearings will be held to affirm these delineations this summer (1997).

The second zone is the primary recharge area, or stratified drift deposits, feeding the well. The final zone is the till area, also contributing water to the well, but at a less significant rate.

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 designation to the primary recharge area. However, other regulatory means, such as large lots and the prohibition of hazardous chemical disposal (both of which Townsend now employs) also help to prevent future contamination.

It should be noted that nearly half of Townsend overlies its aquifer areas, as earlier stated, the existing and future source of the town's drinking water. Three aspects of the aquifer should be noted. First, it lies predominantly below Route 119, a largely undeveloped section of town, programmed for significant commercial and industrial growth. Secondly, the aquifer stretches into adjoining towns, thus, highlighting the need for not only town management of ground water resources but regional cooperation and resource management as well. Finally, and most importantly, large portions of Townsend are still available for residential development, with a large percentage of this land overlying the aquifer.

The Townsend Water Department was engaged in codifying the town wells zones of influence and passed a bylaw for increased protection of those zones on April, 1998.

4.4 VEGETATION

Forests

Summary: According to the USDA Townsend is approximately three quarters forested. Since forests are instrumental in providing scenic and recreational opportunities, produce clean air, reduce run - off, flooding, and moderate climate it is essential that Townsend protects this resource as part of the effort to maintain the town's quality of life.

The role of forests.

There are large tracts of forest throughout Townsend. Large blocks of forest have high scenic, recreation and conservation values. 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 is immeasurable. Additionally, because many animal species are "area dependent", or need large tracts of forest to survive, large blocks of forest are critical conservation resources.

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, modification of environmental extremes, particularly air temperature, water flow, and air composition, help to make Townsend a healthy, pleasant place in which to live.

Description of the Forests.

There are large tracts of continuous forest in the northern part of town owned by Fisheries and Wildlife that are either white pine stands or oak - hickory. These tracts are managed by the state with annual selective cutting. There are other tracts of large size of mostly pine and hardwood mix owned by Fisheries and wildlife, Department of Environmental Management and two sportsman clubs. There are pockets of aspen - grey birch and elm, ash and maple and even several American elm found throughout town.

Recommendations for Forest Protection.

In order to protect its forests and the benefit they provide, Townsend can seek to protect key areas with conservation restrictions and outright acquisitions. Upland forests habitat contiguous with wetlands are particularly valuable. The diverse ecotones between these systems provide scenery and wildlife habitat. This is also true for forests on flood plains surrounding streams, rivers and ponds. The town for its own part needs to aggressively manage and replace trees, and can protect existing trees with ordinances in old and new neighborhoods. Subdivision permitting is a valuable tool for protecting trees and tracts of forest if given priority. The management of trees and the management of publicly and privately owned wood lots are needed.

Open fields:

Open fields lend to the rural life style of Townsend. We are fortunate to have several family run farms in barns and fields. Many species, such as the bobolink, require old field environments to live. The ecotone found between forest and open field is

especially rich in animal and plant species. Open fields offer scenic panoramas and add to rural characters. 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.

4.5 FISHERIES AND WILDLIFE

Rare Species/Wildlife

The amount of wetlands, woodland and undeveloped land in general supports a diverse range of wildlife in Townsend. According to the Massachusetts Natural Heritage Program, a breeding site for the Great Blue Heron (*Ardea Herodias*) is located in the Squannacook River Wildlife Management Area (owned and managed by the Massachusetts Division of Fisheries and Wildlife (MDFW)). This "watch list" species was recently removed from the "rare species" list. In addition, a number of notable species inhabit the Central Massachusetts region. **Appendix 1** identifies some species that, while not officially identified in Townsend, possibly frequent the area. Casual sightings of all the listed species, with the exception of Cougar, are frequently reported to the Conservation Commission. An effort to log these sightings will be undertaken in the near future.

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 MDFW as being of regional importance. Many of these parcels (with the exception of Dead Swamp) are privately owned. A wide variety of wildlife can be supported by these wetlands and also their bordering vegetation. The MDFW believes Townsend contains many excellent wildlife habitats - primarily due to its wetlands, forests and rivers. The Northeast Wildlife District Headquarters identified Ash Swamp and the adjacent area, the wetlands on both sides of Meadow Road, and the wetlands to the west of Harbor Pond as being prime wildlife habitat. In addition to the usual species found in these regions (such as deer, squirrel, etc.), beaver, otter, muskrat, fox, fishers and numerous waterfowl can be found in Townsend. According to Wildlife District Headquarters, some of the prime habitat has been lost to recent residential development.

The diversity of wildlife communities in Townsend offers excellent opportunities for recreation use of fish and wildlife resource. 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.

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 wildlife and a healthy biological community.

Notable potential wildlife areas were detailed in the 1974 Natural Resources Program for Townsend, compiled by the Middlesex Conservation District. and the

4.6 SCENIC RESOURCES AND UNIQUE ENVIRONMENTS

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 and other elevated areas, although pleasant views are present throughout the town.

The Squannacook River
Ash Swamp
Bixby Reservoir
Vernal Pools
Isolated Lands subject to flooding
Agricultural properties

4.7 ENVIRONMENTAL PROBLEMS

Summary:

Townsend lies in the Nashua River Watershed. It is drained primarily by the Squannacook River but in a few areas the Nissitissit River, and smaller streams. Townsend derives all of its drinking water from ground water which occurs in the saturated portion of the subsurface. The aquifer is the geological deposits which transmit ground water. Townsend actually overlies two aquifers. Over the last fifteen years Townsend Land Use Boards have protected its aquifer through Zoning Bylaws, Wetland Bylaws, Well Head Protection Bylaws, and Hazardous Materials Bylaws. Although important regulations are in place to protect the future water supply of Townsend we are still faced with several environmental problems.

Water Supply:

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 wellfields 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 ground water 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.

Hazardous Materials:

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.

Underground Storage Tanks:

In 1984, the Nashua River Watershed Association sited concerns of fourteen underground storage tanks within well watersheds needing to be pressure-tested and repaired or replaced as appropriate. Our hazardous waste coordinator and fire chief has tested all commercial tanks and required replacement of them. He is aware of the serious threat of contamination near existing or potential water supplies and has been aggressive in rectifying the situation so much that 98% of the tanks have been upgraded to double wall storage. The only single wall tanks remaining are owned by Lorden Oil and are situated on Cross St. and Highland St. which is in Zone I of the Cross Street Well. They are being required to replace them in the next six months or they will be closed. The biggest problem facing the town presently is the residential and agricultural underground storage tanks. The Fire Chief reports there are no records due to the past practices of not requiring permits when they were installed in homes. The only legal route to replace or repair the older homes tanks is if an upgrade or new installation of a tank requires a permit. Then he is able to bring them into compliance.

Septic Systems:

Townsend at present is not sewered. We depend upon individual on-site septic systems for wastewater disposal. System failures are common, however, the recently revised Title 5 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 waterbodies. 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.

Landfill:

Solid waste in Townsend is disposed of in our landfill located near the head waters of the Squannacook River (Ash Swamp) and adjacent to Walker Brook. The final leachate lagoon directly discharges into Walker Brook which drains into Ash swamp. Due to the sensitivity of the area in which our landfill has been placed, and the inability of the town to manage our landfill successfully, the landfill poses a severe environmental problem. In particular, at the present time it does not meet the requirements of the permit issued by the Department of Environmental Protection. This is an issue presently being addressed before the town. We also have an old inactive landfill on Turnpike Rd. which is suspected to be leaching into the adjacent Squannacook River.

Road Maintenance and Drainage:

At present, the Town of Townsend Highway Department disposes of snow contaminated with road salt near or close to the Squannacook River. Dumping in groundwater recharge areas can pose a threat to groundwater quality. Spring street sweepings harbor contaminants and have a similar threat when dumped in vulnerable areas. Old drainage systems need to be reviewed and evaluated as to their discharge. Roadside runoff contains hazardous materials threatening our water resources. Communication between the Highway Department and the Conservation Commission is essential for success in this area.

Overview of the Squannacook River Problems:

The Nashua River Watershed Association, other agencies and the local public have found the Squannacook River to have a considerable variety of water-related problems and issues within its boundaries. Black Rock and Adams Dam have severe riverbank erosion problems, although Black Rock had bank stabilization repairs in the last five years. The Squannacook River Protection Plan, prepared by NRWA in 1996, addresses the scope of surface and groundwater issues, existing and potential problems, point and non-point sources, agricultural and commercial land use conflicts recreational and water supply resources, and more. Some specific issues addressed are eutrophication, sediment transport, landfills, underground fuel tanks, West Townsend Municipal wellfield area, Cross St. well, Witch Brook well, chemical storage, agriculture problems, septic systems, septic disposal, acid rain, and snow disposal are possible problem areas. Due to the high recreational use of the Squannacook River by fisherman, swimmers and boaters, trash is increasing in areas where vehicle access is close.

SEWAGE DISPOSAL

Townsend relies on on-site sewage disposal, either through septic systems or cesspools, for sanitary waste disposal. Problems may arise from this method of disposal,

particularly in dense residential developments. In other areas of Massachusetts, elevated nitrate levels in private wells have been observed as areas change from rural to more concentrated residential use.

V. INVENTORY OF LANDS OF CONSERVATION AND RECREATIONAL INTERESTS

5.1 PRIVATE PARCELS

Chapter 61 - Forest Lands

In 1988, acres of lands in Chapter 61 amounted to	981.83 acres
Chapter 61A	940.00 acres
Chapter 61B	219.00 acres
TOTAL 1988 CH. 61 LANDS	2,140.00 acres

In 1998, acres of lands in Chapter 61	1,515.00 acres
Chapter 61A	1,128.52 acres
Chapter 61B	610.38 acres
TOTAL 1997 CH 61 LANDS	3,253.90 acres

Chapter 61 of the Massachusetts General Laws provides for reduced real estate taxes for forest lands meeting the chapter's classification standards. The law applies to all parcels of 10 contiguous acres or more which have been certified by the state forester as being under an approved forest management plan. A tract is assessed at 5% of fair market value with a minimum valuation of \$10 per acre. This is not entirely a preservation law, as trees may be cut with 8% of the stumpage value paid to the town. However, the law does retain the land as open space, although not in perpetuity. A land owner may enter or exit the program as he wishes, although a penalty must be paid upon leaving the program. The plentiful forests within Townsend make this program particularly important to the town as a method of preserving forests/open space.

Chapter 61A, adds a degree of protection for farmlands in the Commonwealth. Chapter 61A provides for a use value assessment of at least five acres of agricultural and horticultural land which has grossed a minimum of \$500 annually for the last two years. If the farmer who has joined the program sells his land to a developer while still in the program, the law provides for partial recapture of lost taxes. In general, the program allows the farmer to be taxed on the use of his land (farming) rather than its value on the open real estate market.

While the land is not free from development pressures and not technically "open space", it is open at the present time and provides residents many of the benefits (views and vistas) of open space. The program should not be confused with the Agricultural Preservation Restriction Program, where the development rights to farmlands are obtained - ensuring the protection of these farmlands forever.

Chapter 61B - Recreation Lands

Chapter 61B assessment property is similar to that of Chapter 61 and Chapter 61A lands, except that they are lands classified for recreational use. According to this program, recreation lands must be greater than five acres, retained in a substantially wild, natural or open condition, and be open to the general public or members of a non-profit organization. Such lands shall have taxes reduced by at least 75%.

Lands held in 61B - Recreation in 1988 amounted to 219.8 acres.
61B lands in 1997 have increased to 610.38 acres.

A 1998 listing of owner, map/blk/lot and acreage are attached as appendix 2 to this plan.

5.2 PUBLIC AND NON-PROFIT PARCELS

State Parks/Forests

1. Pearl Hill (as part of Willard Brook)

- (51) Camping Sites
- (8) (approximate) miles of hiking trails
- (3) Picnic areas
- (1) Ball field
- (1) Pond for swimming (has lifeguards)

This 1,000-acre park averages about 150 day visitors during the summer, with a peak of about 400 on a busy day. After having been closed for a few years, Pearl Brook Park has reopened and enjoys a steady stream of visitors in the summer months.

2. Townsend State Forest

Townsend State Forest is approximately 2,500 acres in size. There are no designated trails in the park, but there are access roads that serve as paths and trailways. These trails are used for hiking, horseback riding, biking and snow mobiling. The State Forest as well as the State Park form a nearly contiguous stretch of open space in the northern part of Townsend. The Department of Forest and Parks is actively pursuing the protection of "connector" parcels.

3. Squannacook River

Squannacook River is also part of the State Park and Forest System in Townsend. The 300 acres of park land contains opportunities for canoeing, fishing and cross-county skiing, outdoor education and nature walks.

(WILDLIFE REFUGE)

C. Conservation Land.

Old Meetinghouse Park 255 Acres. Passive recreation

Lunenburg Rd. 11.5 Acres Passive recreation

D. Private Facilities NEEDS UPDATING

1. Welch's Field (Privately owned Little League field) now public
2. Doran Field (Privately owned, undeveloped)
3. Girl scouts - Vinton Pond 725 acres
4. VFW Park and Pond 2.1 acres
5. Conservation Land Trust - Pheasant Ridge 41.1 Acres

E. Small Town-Owned Facilities

1. Howard Park (Passive recreation and playground equipment); decaying exercise loop
2. Lower Common (Picnicking and playground equipment)
3. Sumac Drive 2.5 acres Edge of Pond used for ice skating and fishing.

Summary of Inventory
TO BE UPDATED

Tax Exempt Land in 1998:

State Owned	5660.07 acres
Town Owned	641.20 acres
Non-Profit	252.90 acres
Northern Middlesex Regional School District	
	99.19 acres
	____ acres

Reduced Tax Land:

Chapter 61	981.00 acres
Chapter 61A	940.36 acres
Chapter 61B	219.80 acres
	2,140.00 acres

1988 TOTAL TAX EXEMPT AND REDUCED TAX LAND
8,257.94 ACRES

TAX-EXEMPT LAND IN 1997:

State Owned	5,660.07 acres
Town Owned	641.20 acres
Non-Profit	252.98 acres
Northern Middlesex Regional School District	99.19 acres

TOTAL 6,401.24 ACRES

TAX REDUCED LAND IN 1997

Chapter 61	1,515.00 acres
Chapter 61A	1,128.52 acres
Chapter 61B	610.38 acres

TOTAL 3,253.90 ACRES

TOTAL TAX-EXEMPT AND TAX REDUCED LAND IN 1997
9,655.14 ACRES

The total tax-exempt lands in 1988 represented 29% of Townsend's total land mass (20,499 acres). The total of tax-exempt lands together with the reduced tax lands is approximately 39% of the total land area of the town.

In 1997, total tax-exempt lands represented about 32% of Townsend's total land mass. The total of tax-exempt together with reduced tax lands is approximately 40%. Open Space is remaining stagnate while the population has increased from 8,430 in 1990 to 9,026 in 1996.

Much of the open space land is contained within the State Forest and Park System (Willard Brook Pearl Hill, Townsend State Forest and Squannacook River). The most significant portion of this land is in the northern half of town (Townsend State Forest), although significant sections of state land are located in the southwest section of town (Pearl Hill) and the southeast section of town (Squannacook River).

The town-owned lands represent a small percentage of the total open space in Townsend. An important part of this land is managed by the school system and contains most of the town's active recreational facilities. These areas are located

primarily along Route 119.

The non-profit lands are mostly owned and managed by civic and/or church organizations. The amount of land within this category is small; however, these organizations hold the potential for both recreational opportunities and land preservation.

The reduced tax lands provide significant open space reserves, although Chapters 61, 61A and 61B do not ensure permanent protection from land development.

When examining Townsend's open space, the initial impression is that the town is well-endowed with public lands. However, the town itself controls a very small area of land with the Conservation Commission owning only approximately 267 acres. While the amount of public land is substantial, much of the land was purchased by the commonwealth while considering standards applicable to a statewide need rather than the local needs of the townspeople of Townsend. In fact, several open space and recreation needs identified in the following sections are not being met.

VI. COMMUNITY GOALS

6.1 DESCRIPTION OF PROCESS

FORMULATION OF GOALS AND OBJECTIVES

Several methods were and will be, employed to determine the open space and recreation goals and objectives of the residents of Townsend. First, the opinions of residents, board members and citizens' groups were solicited. And will be updated in November 1997. A sample questionnaire is attached as Appendix 3

A number of discussions and hearings also took place as part of the 1988 Master Plan but specifically concerning the Open Space and Recreation Plan. Critical issues articulated during the all-boards and Planning Board meetings are listed in Figure 1. As this list demonstrates, conservation and recreation issues were high priorities at both meetings.

More meetings were held specifically regarding the Open Space and Recreation Plan. Other meetings took place solely with the Conservation Commission (November 12, 1986) and with the Open Space and Aquifer Protection Subcommittee (March 9, 1987; Winter/Spring 1996-1997)

The role of these meetings was particularly valuable in assessing the goals and objectives for Townsend and, later, the Five-Year Action Plan. The goals were first discussed at a joint Planning Board/Conservation Commission meeting. These general goals were developed into a more refined set of goals based on that discussion as well as the survey questionnaire results.

The Conservation Commission then addressed these goals and objectives as did the Open Space and Aquifer Protection Subcommittee. The result is a set of goals and objectives which, while written by IEP in 1988, reflect the general views of Townsend's residents (through the survey questionnaire and demonstrated at Town Meeting) and

directly reflect the goals and objectives of active boards in town (the Planning Board and the Conservation Commission)

The goals and objectives were also presented to the public at meetings.

6.2 STATEMENT OF OPEN SPACE AND RECREATIONAL GOALS

In March of 1999, the town Master Plan Committee held a Charette workshop which had about 80 attendees. A diverse group was represented as delineated in the Charette summary which is attached. There was a general consensus by the varied groups that the most important goal for the town is to maintain its rural character. The term "rural character" has not been definitively defined, but the areas that were identified as needing the most concentration protecting open space (32%), proactive land use planning (16%), identify and maintain town character (14%) and protecting water quality (14%). The Charette was a follow-up to a survey sent to each household during the annual census in 1997. The results of the survey

Introductory Policy Questions

Most Critical Planning Issues Facing Townsend

ALL-BOARDS MEETING

1. Water Quality
2. Preservation of Open Space (e.g. Agricultural land)
3. Waste Disposal
4. Recreation
5. Traffic/Circulation
6. Management/Form of Government
7. Implementation
8. Funding (taxes, grants)
9. Education
10. Industry (Type, amount, location)
11. Business (Quality, Quantity, Type location)
12. Pollution
13. Acquisition of Municipal Land

PLANNING BOARD

1. Maintain rural character
2. Preservation of Open Space
3. Water Quality
4. Downtown Development (Character, Parking)
5. River Resource - Protection and development
6. Route 119 (Regional Impact)
7. Location of Commercial Space
8. Sewer
9. Bedroom Community v. Employment
10. Affordable housing
11. Solid waste - Landfill
12. Energy Planning
13. Recreation and State Forest

14. Historic Preservation
15. Cooperation between departments
16. Quality of Life
17. Affordable housing - elderly
18. Aesthetics
19. Infrastructure
20. Public participation - consensus building
21. Population growth

The following are Goals and Objectives identified in 1988. This section contains notations relating to progress as of 1997, as well as continued goals. The Planning Board and Conservation Commission will begin joint meetings this fall to review goals and objectives.

Goals and Objectives

- I.** Maintain high quality drinking water both now and in the future for the residents of Townsend.
- a) Identify and purchase undeveloped areas critical for ground water recharge utilizing state and federal grant programs when available.
 - b) Continually strengthen aquifer protection district legislation.
 - c) Develop a strong system of health regulations through amendments to Title V, ensure enforcement of recent state underground fuel tank regulations, continue to implement local hazardous materials handling and storage bylaw, and establish plans for maintenance of septic systems.
 - d) Examine health regulations pertaining to septic system permits and add more stringent regulations where necessary to protect lakes, reservoirs, and ground water quality.
- 1997 * Townsend has participated in two septic repair programs in the last two years and has signed an agreement to become involved in the State Revolving Fund program to target sensitive areas for septic upgrades, such as abutting rivers and streams.
- e) Identify and protect future municipal well sites, including delineation of zones of contribution to those wells.
- 1997 * The Water Department is preparing to codify zones of contribution at the April, 1998, Town Meeting. Draft Zone delineations are attached as appendix 4.
- f) Encourage flexible site development to protect ground water through the use of transfer of development rights (TDR's), cluster

zoning, and the attainment of conservation restrictions and easements.

*1997 TDR and cluster zoning are incorporated in the zoning Bylaws

- g) Identify and reduce the impact of road salting, road drainage, and agricultural run-off.
- h) Determine the impact of proposed developments on water resources and watersheds.
- I) Work with area towns in Massachusetts and New Hampshire to create a long-range regional water resource protection and supply plan.

* 1997: actively participating in the Nashua River Watershed Association and Protection Planning.

- j) Establish a public awareness program regarding septic system maintenance and hazardous waste disposal.

* 1997: the Low-interest Septic loan program has been advertised by press release and at the Annual Town Meeting. The State Revolving Fund Program will be posted in a similar manner.

Household Hazardous Waste Days have been re-established semi-annually and the town now has a monthly paint recycling drop-off operated by the Fire Department.

- k) Increase the area and scope of the testing of town water. Include tests for volatiles and metals.

2.. Ensure the quality, vibrancy and continued usage of the Squannacook River and its tributaries.

- a) Vigorously enforce 300-foot setback along the Squannacook River and named tributaries and the intent and purpose of the Squannacook and Nissitissit Rivers Sanctuary Act. NOTE: Expanded Conservation authority unanimously approved at Annual Town Meeting, April, 1997.
- b) Implement, whenever possible, recommendations of Nashua River Water Association in its Squannacook River Protection Plan and its recent 20/20 Vision.
- c) Establish important public access points for swimming, fishing, and canoeing and work for their protection by acquisition or easement.

*1997: proposed handicapped and elder trails for Squannacook River by Trout Unlimited and by the Town in the Leng Property.

- d) Develop greenway trail systems through the securement of easements and purchase along the Squannacook River. (Leng Property acquisition).
- e) Develop public information campaign devoted to the Squannacook River and its many uses.

3. Protect and maintain the quality of all surface waters in Townsend, including wetlands.

a) Complete diagnostic study of Harbor Pond. Implement recommendations.
NOTE: Study was completed and partial implementation has occurred. Additional protections to be proposed in the near future. A annual review of monitoring elements is to be implemented by the Conservation Commission or a specially designated subcommittee.

b) Continue and broaden the scope of the semi-annual monitoring of surface water quality in the town's lakes, reservoirs, streams, etc., paying particular attention to the water quality downstream and downgradient of the landfill.

c)

NOTE: The Board of Health is actively monitoring and is at this time implementing the landfill standards of the state. The Board of Health works closely with DEP.

c) Map all wetland areas within Townsend. Use state agencies, regional schools, etc. to do such research and mapping. **NOTE:** Mapping begun using GIS system at MRPC.

d) Strengthen the town's existing Wetlands Bylaw. Develop new rules and regulations, including performance standards. **NOTE:** Wetland's Bylaw strengthened at 1997 Annual Town Meeting. The Conservation Commission is actively integrating Best Management Practices into its Rules and Regulations.

4. Retain the natural character and natural heritage of Townsend.

a) Actively promote and pursue the use of special tax assessment programs under MGL, Chapters 61, 61A, and 61B.

b) Identify important parcels and exercise the option to purchase MGL, Chapter 61, 61A, and 61B lands, if they become available.

c) Promote the use of agricultural preservation restrictions on valuable and scenic farmlands.

d) Seek land grants and gifts for recreational use.

e) Establish a public awareness program on Townsend's scenic lands.

f) Work for the protection of all wildlife areas.

g) Identify and pursue options for the preservation of historical sites within the town.

h) Work to establish scenic easements where possible to maintain and enhance scenic views.

i) Encourage limited and cluster development in areas determined to be of scenic value.

j) Enact a transfer of development rights bylaw to protect scenic vistas.

NOTE: TDR bylaw in place, NO TRANSFERS TO DATE (1997)

k) Form a local Open Space Trust to promote and accept gifts of open space.
NOTE: The Conservation Land Trust is active. (1997)

5. Provide increased access to state and town lands deemed to hold a conservation value.

a) Identify parcels crucial for access to town conservation and recreation

areas and lands.

- b) Develop access areas to Vinton Pond.
- c) Develop ramps, where appropriate, to achieve handicapped access.

NOTE: Handicapped access ramps are now installed at Town Hall and parking is designated at all public facilities. A handicapped access for fishing is proposed on the Squannacook River and a handicapped trail is to be established on the Leng property once the acquisition is completed.

6. Develop active recreation facilities.

- a) Purchase lands for development of facilities and fields.
- b) continue to encourage private developers to include areas for active recreation in their developments, particularly in areas of town where none now exist.
- c) Identify and purchase lands suitable for small playgrounds or "tot lots", particularly in areas of town where none now exist. NOTE: "Tot Lot" built at Spaulding Elementary School and facility was funded and maintained by a gift from a resident.
- d) Work to coordinate the actions of the School Department, Recreation Commission and all other boards involved in recreation decision-making to maximize the use of all facilities.

7. Provide for maintenance of conservation lands and recreational facilities.

- a) Continue the combined efforts of both the School Department and Recreation Commission to appropriate funds for facility repair (as was done at Spaulding School).
- b) Work to establish a yearly budget through the Recreation Commission, Conservation Commission and School Department for maintenance of conservation/recreation facilities. Seek assistance from volunteer organizations such as the scouts, etc.

8. Establish a linked system of open space/recreation available to all town residents.

- a) Establish abandoned railroad rights-of-way as bike and walking trails throughout Townsend.
- b) Identify possible linkages to town and state-owned properties, including linkages with abutting communities.

1997: Pepperell and Townsend have begun preliminary discussions about greenways and connections of open space for recreational use and migratory purposes.

- c) Work to acquire or protect by easement those areas linking public lands.
- d) Require private developers to set aside key linkage parcels through MGL Chapter 41, Section 81-U.

*1997 this has been included in all recent subdivisions and is now being negotiated

with a 10-house development along Haynes Rd (not a subdivision - lots are ANRs).

- e) Encourage cluster developments where linkages have been identified.
- f) Produce a brochure and map that displays the trails available for public use.
- g) Work on the establishment of trails for the handicapped.

Recreation Needs

The population of Townsend is currently slightly more than 9,200. This figure holds a great deal of meaning when attempting to determine recreational facility needs in Townsend. The NRPA has developed suggested facility development standards by population. These standards are listed in Appendix _.

Using NRPA recommended standards, it would appear that the town has sufficient recreational facilities. Within Townsend are five (5) baseball fields, five (5) softball diamonds, four (4) soccer fields, seven (7) usable tennis courts, two (2) football fields, seven (7) outdoor basketball goals and five (5) indoor gymnasiums with basketball goals, one (1) field hockey field and five (5) gyms.

The total for these facilities measured against the town's population, indicates an adequate number of principal recreational facilities.

A few problems arise with this analysis, however. First, with the exception of a couple of baseball fields, all facilities are located within the schools in town. One of these, Northern Middlesex High School, is a regional school district, serving Townsend, Ashby and Pepperell. All schools report heavy use of their fields without accounting for use outside school programs.

Fortunately for the town and its residents, an amicable relationship exists between the schools and the departments supplying recreation in the town. In fact, the School Department and the Recreation Commission recently appropriated \$40,000 to rehabilitate fields at Spaulding School.

There are, however, a number of factors that indicate a definite future need for facilities - particularly town-owned facilities. The most obvious factor pointing to the need for facilities is that the town currently does not own any active recreational facilities, designed specifically for use by town residents. Secondly, as the town's population increases, as it has done dramatically, additional facilities will be needed. A projected population of 13,960 in the year 2000 (based on a continuation of population increases in the last five years) would indicate further needs. The need for future active facilities may be heightened by continuing growth among the town's school-age population. Townsend residents, as voiced in the survey questionnaire, would like to see more indoor recreational activities. This appears to be both a real and perceived need. Other than the schools, no indoor facilities exist. Scheduling at these sites during off-hours becomes a problem.

The Townsend Recreation Commission has expressed a desire to expand currently existing programs. Presently, the Commission runs some sports programs (basketball,

swimming), an arts and crafts program in the summer, and a preschool Program. The Recreation Commission reports that all are well attended and verge on being overcrowded. Additional programs are limited by the availability of facilities.

The schools also wish to expand their programs. At the high school, three field hockey teams currently use one field. There are no tennis courts at the high school. Football practice takes place on the baseball field.

Thus, despite the NRPA standards, there does appear to be a need for new recreational facilities. The high school hopes to solve part of the problem by developing a new football practice field and soccer field adjacent to their current fields.

Two privately owned fields, (**Doran and Welch fields**) have historically been used for recreation by the town and are now Town property. It is extremely important that these fields remain open for recreation. The town should thus watch these parcels closely and move to purchase, if possible, either or both fields for town-sponsored recreation.

In sum, the need for new recreational fields was expressed by both the School Department and the Recreation Commission. The primary need according to the Townsend Recreation Commission is for baseball, softball and soccer fields. The School Department is currently working to address their specific needs. However, even after purchase of fields, the issue of maintenance must be addressed. Currently, there is no separate budget within the town to provide for maintenance of facilities (including small parks). Such a budget will need to be developed on a yearly basis as the town moves to purchase facilities and develop additional programs.

A. Recreation Needs by Area and Special Groups

Townsend is a large town covering over 20,000 acres. Until recently, residential development has been sparse with the exception of the areas immediately off the main thoroughfare - Route 119.

This holds important implications for the development of open space and recreational facilities in the town. As the town grows and residential densities increase, recreational facilities will be needed in areas other than the Route 119 region.

It is obvious that anyone living on or near Route 119 has some type of facility nearby. These are mostly in the form of community parks (the three schools). The facilities in these "parks", while serving mostly school children, appears adequate to serve the more dense regions along Route 119.

In addition to the Route 119 planning area, it is important to briefly review recreation needs within three distinct areas in town; Townsend Harbor, Townsend Center and West Townsend.

Within Townsend Harbor is the High School and Doran field. This appears to provide an ample amount of recreation for residents in the area. What might be needed in this area is a small playground for children. This could be constructed on existing town- or school-owned land.

Townsend Center has more than an adequate amount of recreation to service the area including a small playground on the common. In addition, the two schools and Howard Park also provide recreational opportunities.

West Townsend appears to be more in need of facilities than other neighborhoods in town. Basically, the Welch ball field is all that is available. Taking into account the relative low residential density of West Townsend, a small neighborhood park with playground equipment and another small ball field might be appropriate for this area.

Another area where a small park might be needed to serve the residents of the immediate area is in the development above the Bixby Reservoir. As the service circles show, the radius of any facility does not extend to this area. As development takes place within this area, a small recreational facility might be appropriate.

A final area that has seen rapid residential development, but without any facility development, is Timberlee Park. While the area is partly served by the high school and a small playing field, the amount of development may call for additional parks or playgrounds to serve the residential development.

Regarding passive recreational needs in Townsend, there appears to be little need for purchasing lands solely for that purpose. A good deal of state and town land is available for hiking, bird watching, canoeing and nature study. There is a need, however to identify and publicize these areas so all residents are aware of these opportunities. However, there may be lands that serve a number of functions including passive recreation, wetland and floodplain protection, wildlife habitat and aquifer protection. These areas would be extremely valuable and, based on a site specific review, may warrant acquisition and/or protection.

The idea of linking open space areas has already been discussed. One linkage proposal that should be examined in greater detail is that of turning the B & M Railroad line (now condemned) in to a bicycle route. In viewing the existing open space it becomes clear that such a venture might link state forest, fish and wildlife, and town-owned properties. It might also help ease pedestrian and bicycle traffic along Route 119 and serve as a bridle path as well.

Townsend's elderly residents (9% of the population is over 60 years of age), appear to be satisfactorily served at this time. Two organizations, the Council on Aging and the Golden Age Club, run various activities. According to group members, these activities (such as arts and crafts) are sufficient for the present. More active pursuits are left up to individual members.

A real need has emerged with regard to handicapped residents' access to a number of open space areas in town. This would include increased access to public facilities and in the future, a specific trail for handicapped residents. The town must also consider the implications of the Department of Interior's 504 Regulations. This requires that every town have a plan for handicapped access in order to apply for state grants.

VII. ANALYSIS OF NEEDS

7.1 SUMMARY OF RESOURCE PROTECTION NEEDS

7.2 SUMMARY OF COMMUNITY NEEDS

Summary of Needs Analysis

The relatively sparse development of Townsend outside the center of town does not call for a major development of recreational facilities at this time. Most needs focus on maintaining what is currently used, scheduling more efficiently, and strengthening the local Recreation Commission. Another soccer field or a multi-purpose field would be appropriate for the town. Development of the small parks mentioned earlier would also be appropriate. In addition, as new residential development takes place in some of the outlying areas, it is strongly urged that the Planning Board encourage developers to set aside open space, small playgrounds or a ball field whenever possible within developing subdivisions. This recreation set-aside could be accomplished utilizing Townsend's revised "cluster" zoning bylaw or the provisions of MGL, Chapter 41, Section 81-U. This will work to give Townsend a well-distributed system of open space and recreational facilities. The development of a bike trail also merits serious research and would provide an excellent linkage opportunity for the town.

7.3 MANAGEMENT NEEDS, POTENTIAL CHANGE OF USE

VIII. GOALS AND OBJECTIVES

IX. FIVE YEAR ACTION PLAN

The heart of this and any open space and recreation plan lies in an effective action plan. The action program should be seen as a series of recommended achievable steps, carried out over a five-year period, ultimately resulting in the accomplishment of a number of goals noted throughout this plan. Without such an action program and also a commitment to implement these actions, the planning process would be of little value.

The action plan presented below is based on the defined goals and objectives developed by Townsend and, also, a careful analysis of the needs of the town. It reflects the problems and opportunities facing Townsend relative to parks, recreation and conservation. More importantly, the plan reflects the town's agenda for the next five

years as it works to preserve the natural resources and improve recreational opportunities within the local environment.

A number of criteria enter into the development of an action program. The plan should represent more than a wish list of acquisitions over the next five years. Such acquisitions may be neither realistic or prudent. Townsend has clearly stated its desire for an action plan that represents an effective meld of acquisition, regulatory strategies, non-regulatory strategies and, also, special studies of locally pressing issues. The Five-Year Action Plan (**Map OS-7**) thus indicates specific parcels and the most relevant strategy for their protection.

Other factors enter into the development of the action program and the attempt to establish the importance of particular parcels. All strategies and actions should be directly related to the goals and objectives defined earlier. More significantly, certain parcels to be acquired or specific regulatory strategies may work towards accomplishing a number of goals. For instance, a parcel may be important for water supply, protection of wetlands and wildlife habitat. Another factor to be considered is how realistic a proposed acquisition or strategy may be. A town may wish to protect the recharge area to their wells, however, purchase of the entire area may be too costly and, thus, unrealistic. Finally, the action program should be taken for what it is - a recommended series of steps over the next five years.

Many residents have expressed the desire to continue to target the Squannacook River for protection in year one, for instance, would eliminate valuable recreation and conservation (most specifically well area protection) opportunities that may arise during that year. The following action plan must be considered flexible, therefore. If a potential acquisition listed under year four presents itself in year two, the town should consider the acquisition. Similarly, if a particularly valuable resource area is threatened, the town may wish to pursue a protection strategy immediately. In fact, the town may wish to view the Five-Year Action Plan as a desired end - or having all listed actions either accomplished or underway by the end of year five.

The Townsend Open Space/Aquifer Protection Subcommittee has listed their priorities for acquisition/protection for the next five years. This is shown in Appendix and is generally reflected in the following five-year action plan. The Subcommittee's list represents the ideal scenario for regulation/acquisition rather than reflecting opportunities as they become available. This "wish" list should then be seen, barring any other factors, as the ideal way for the town to proceed. The Subcommittee also developed a series of actions the town might pursue related to specific goals.

Fiscal Year One

1.0 Land Acquisition/Conservation Strategies

Acquire key parcel(s) located in recharge areas to public wells.
Acquisition will be based on what parcels provide the highest degree of protection to wells and wildlife corridors.

1.1 Relationship to Identified Goals

- a) Aquifer protection.
- b) Other goals may include:
 - o Protection of wetland areas
 - o Preservation of cultural and natural heritage of town
 - o Habitat protection

1.1.2 Funding*

- a) Aquifer Land Acquisition Program.
- b) Self-Help Program.
- c) Municipal borrowing, subject to voter override of Proposition 2 112.

2.0 Regulatory Strategies

a) Pursue Open Space Preservation Development (OSPD) (cluster zoning) on parcels identified as having critical resource values. Make cluster zoning a viable alternative to conventional development design, while more clearly defining the number of developable parcels through the requirement of water and soil testing on delineated lots. The current Zoning Bylaw requires only a grid pattern delineation with no supporting data.

b) Strengthen Title V through amendments to town's existing health regulations.

- c) Examine opportunities to strengthen aquifer protection district legislation.
- d) Continue to implement 300-foot setback on Squannacook River.
- e) Ensure enforcement of recent state underground fuel tank regulations.

2.1 Relationship to Identified Goals

- a) Aquifer protection.
- b) Linkage/trail system/protection of Squannacook River.
- c) Protection of wetland areas.
- d) Protection of pond and lake areas.
- e) Habitat corridor creation and protection.

3.0 Non-Regulatory Strategies

- a) Upgrade and make more attractive the current transfer of development rights bylaw (TDR).
- b) Pursue additional Chapter 61A opportunities as well as agricultural preservation and conservation restrictions.

- c) Continue combined efforts of school and recreation departments to maintain recreational facilities.
- d) Maintain the Open Space/Aquifer Protection Subcommittee to work on the recommendations of this plan.
- e) Publicize need to maintain septic systems and encourage repair programs and opportunities.

3.1 Relationship to Identified Goals

- a) Protection of ground water.
- b) Protection of Squannacook River/open space linkage.
- c) Preservation of natural and cultural heritage of town.
- d) Provide and maintain recreational facilities.

4. Special Studies

- a) Identify parcels crucial for aquifer protection including an examination of future municipa
- b) Develop town-wide linkage plan and identify points of public access to town and state facilities.
- c) Continue with feasibility aspect of Harbor Pond study.
- d) Research and mobilize support for increasing the holdings of the Townsend Conservation Land Trust.

B. Fiscal Year Two

1.0 Land Acquisition/Conservation Strategies

Work to acquire designated parcel(s) along the Squannacook River and/or its tributaries, including Ash Swamp. Such an acquisition would be based on resource value availability, cost, and an examination of alternative strategies for protection.

1.1 Relationship to Identified Goals

- a) Preservation of the Squannacook River.
- b) Linkage of open space/greenbelt.
- c) Aquifer protection.
- d) Wildlife, scenic preservation.

1.1.2 Funding*

- a) Self-Help Program
- b) Municipal borrowing, possibly subject to voter override of Proposition 2 1/2.
- c) Cooperative strategy between town and state agencies (i.e. Division of Fisheries and Wildlife).**

- * Funding possibilities may be greatly enhanced by the passage of a statewide Land Bank Bill

- ** After discussing funding opportunities with state officials, it has become increasingly clear that projects which use various revenue sources (i.e. Fisheries and Wildlife, **DEP's Aquifer Land Acquisition**, and Self Help) bear a greater chance of funding. At this time, the Commonwealth is seeking to maximize the dollars it spends on land acquisition.

2.0 Regulatory Strategies

- a) Implement feasibility aspect of Harbor Pond Clean Lakes Study.
- b) Strengthen the town's existing wetlands bylaw, including the development of performance standards.

2.1 Relationship to Identified Goals

- a) Protection of ponds and lakes.
- b) Protection of wetland areas.
- c) Protection of ground water resources.

3.0 Non-Regulatory Strategies

- a) Require developers to set aside key parcels, through MGL, Chapter 41, Section 81-U, particularly in areas of town where little active recreational facilities exist.
- b) Work to acquire conservation restrictions on key parcels, where costs for purchase may be prohibitive, or entire parcel is not needed to accomplish goal.
- c) Establish program of septic system maintenance.

3.1 Relationship to identified Goals

- a) Development of recreational facilities.
- b) Preservation of natural and cultural heritage.
- c) Providing access to town and state lands.
- d) Linkage of open space lands/greenbelt.
- e) Protection of ground water.

4.0 Special Studies and Planning Concerns

- a) Attempt to map all wetland areas within Townsend, exclusive of state-owned lands.
- b) Form a committee to examine feasibility of bike trail along B & M Railroad track.

- c) Identify and indicate parcels along Squannacook River where further purchase, development of easements and restrictions are needed to more fully protect the river.

4.1 Funding

- a) Local appropriations.
- b) In-kind services.
- c) Cooperative efforts of town in conjunction with Nashua River Watershed Association.

C. Fiscal Year Three

1.0 Land Acquisition/Conservation Strategies

- a) Acquire, if necessary, lands suitable for active recreation. Such purchase should be undertaken only if previous efforts to obtain recreation lands through other means have not been successful.
- b) Purchase lands for current well protection or future well protection. Such purchase should, if possible, work to accomplish a number of additional goals.

1.1 Relationship to identified goals

- a) Protection of aquifer.
- b) Provision of recreational facilities.

1.2 Funding

- a) Federal land and Water Conservation Fund.
- b) Aquifer Land Acquisition.
- c) Self-Help Program.

2.0 Regulatory Strategies

- a) Implement newly developed rules and regulations for town wetland's bylaw.
- b) Implement transfer of development rights bylaw for the protection of scenic vistas.
- c) Continue use of flexible site development opportunities.

2.1 Relationship to Identified Goals

- a) Protection of wetland areas.
- b) Establishment of greenbelt/protection of Squannacook River.
- c) Protection of ground water.
- d) Preservation of town's cultural and natural heritage.

3.0 Non-Regulatory Strategies

- a) Establish yearly budget for recreation department to maintain and provide small facilities for its lands and also provide additional programs.

3.1 Relationship to Identified Goals

- a) Provision and maintenance of recreational facilities.

4.0 Special Studies

- a) Examine and recommend improved management of land and road runoff and examine salting practices on Route 119.
 - b) Examine and recommend increased handicapped access areas needed
 - c) Conduct inventory of additional town historic sites.
 - d) Begin study of long-range water resource protection and supply plan.
- where

4.1 Funding

- a) In-kind services where possible with Recreation Commission lead on handicapped access needs.
 - b) Local revenue sources.
 - c) Combined efforts of local towns lying within watershed and the NRWA. Examine grant opportunities.
- taking

D. Fiscal Year Four

1.0 Land Acquisition/Conservation Strategies

Acquire parcels identified as keys to linkage plans and/or important for access to town, state and lands holding important conservation values.

1.1 Relationship to Identified Goals

- a) Establishment of trail system/access and greenbelt.

1.1.2 Funding

- a) Self-Help Program.
- b) Municipal borrowing.

2.0 Regulatory Strategies

- a) Implement recommendations arising from study of road and land runoff and salting practices on Route 119.
- b) Examine and move to expand existing historic districts if necessary.

2.1 Relationship to Identified Goals

- a) Protection of ground water.
- b) Protection of wetlands/ponds/Squannacook River.

3.0 Non-Regulatory Strategies

- a) Continue to seek opportunities for establishment of bike/bridle trail along B & M Railroad track.

3.1 Relationship to Identified Goals

- a) Establishment of trail linkage.
- b) Provision of recreational opportunities.

4.0 Special Studies

- a) Develop map of trail systems, open space lands and lands of conservation interest for distribution to public.
- b) Examine all future water supply opportunities, including analysis of Witch Brook well.

4.1 Funding

- a) Local revenue sources.
- b) Local Conservation District with matching local funds if needed.

E. Fiscal Year Five

1.0 Land Acquisition/Conservation Strategies

- a) Purchase lands within areas deemed important for future public water supply.
- b) Acquire lands suitable for small playgrounds or "tot lots" in areas where a clear need is determined.

1.1 Relationship to Identified Goals

- a) Protection of ground water.
- b) Development of active recreation facilities.

2.0 Regulatory Strategies

- a) Examine all strategies proposed in this plan and work for implementation of those not yet achieved.

The implementation of this program will require a significant amount of work. A number of boards and departments should be involved. The Planning Board, Conservation Commission, Water Department and Recreation Commission will be the lead agencies. However, the extent of this work would appear to require another group to coordinate these actions of the various boards. For this reason it is important that the Open Space/Aquifer Protection Subcommittee remains in existence to help with the implementation and perform necessary research when needed.

X. PUBLIC COMMENTS

There has historically been strong public support for Open Space, Recreations areas and protection of our aquifer and watershed. More residents are directly involved through sporting organizations, scouts, commissions, committees and active participation is regional versions of the above.

As the 1997 version has not yet been updated, 1998 public comments will be included prior to the April 1998 town meeting by holding public meetings on the goals, objectives and priorities of this plan.

XI. REFERENCES *

some sources stated in plan and not cited in this space
but will be included at a later date
other sources to be contacted; referenced
Montachusett Regional Planning Commission
Massachusetts Department of Employment and Training
1990 U.S. Census
Massachusetts Municipal Association
1988 Townsend Mater Plan - IEP, contractor
Townsend Assessor's Office

XII. APPENDICES

12.1 Wildlife listing

12.2 Public survey questionnaire prototype/ responses to be included

12.3 Nashua River Watershed Squannacook River protection statement - Draft

12.4 Land use listings

12.5 MAPS

Zoning - very difficult to read to be updated by Planning Board
for Zoning Bylaw revision

Geological - to be reduced from 4x7

Soil Types by development limitations - to be created

Wildlife areas - IEP, 1988, nds updating

Scenic Vistas - IEP, 1988, nds updating

Aquifer - updated Conservation Commission May,1977

Protected Parcels /Unprotected Parcels IEP, needs updating