

Town of Carlisle Open Space & Recreation Plan 2005

Carlisle, Massachusetts
June 2006



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Note: All maps, boundaries, and data in this report are approximate or subject to error. Please refer to official information on file in Carlisle Town Hall.

Open Space and Recreation Plan 2005

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List of Abbreviations

ADA	Americans with Disabilities Act
ANR	Approval Not Required
APR	Agricultural Preservation Restriction
BFE	Base Flood Elevation
CCF	Carlisle Conservation Foundation
CDP	Community Development Plan
CLT	Carlisle Land Trust
CMLC	Carlisle Municipal Land Committee
CMR	Commonwealth of Massachusetts Regulation
ConsCom	Conservation Commission
CPA	Community Preservation Act
CPC	Community Preservation Committee
CR	Conservation Restriction
CRAC	Conservation Restriction Advisory Committee
DBA	Doing Business As
DEM	Department of Environmental Management
DPW	Department of Public Works
FEMA	Federal Emergency Management Agency
GBFSP	Great Brook Farm State Park
GIS	Geographic Information Systems
gpm	gallons per minute
MAGIC	Minuteman Advisory Group on Interlocal Coordination
MAPC	Metropolitan Area Planning Council
MGL	Massachusetts General Law
MLC	Municipal Land Committee
MTBE	methyl tertiary-butyl ether
NEFF	New England Forestry Foundation
NEMBA	New England Mountain Bike Association
NESWC	North East Solid Waste Committee
NHESP	Natural Heritage and Endangered Species Program
NPS	National Park Service
ONB	Old North Bridge Pony Club
OS&R	Open Space and Recreation
PH	Priority Habitat
RecCom	Recreation Commission
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SROSC	Senior Residential Open Space Community
SuAsCo	Sudbury, Assabet, and Concord
TTOR	The Trustees of Reservations
USDA	United States Department of Agriculture
WH	Wetlands Habitat
WPA	Wetlands Protection Act

Section 1: Plan Summary



Section 1: Plan Summary

Historically a farming community, Carlisle is a small bedroom community consisting of 9,913 acres (15.4 sq. miles) located 18 miles northwest of Boston and 8 miles southeast of Lowell. A long tradition of two-acre zoning together with a wealth of conservation land has helped maintain the highly valued rural appearance of the town. Low-density housing combined with significant undeveloped land disperses Carlisle's 5,300 citizens for an average population density of about 342 persons per square mile. Carlisle has permanently protected approximately 3,208 acres, or about 32%, of its undeveloped land (Open Space) as of May 2005. Overseers of this Open Space include the Carlisle Conservation Commission (ConsCom), the Carlisle Conservation Foundation (CCF), The Trustees of Reservations (TTOR), Harvard University, the Commonwealth of Massachusetts, and the federal government. Private citizens have contributed approximately 496 acres of Carlisle's Open Space by means of permanent Conservation Restrictions (CRs) on their properties.

Carlisle enjoys a long history of publicly supported efforts to preserve its rural appearance. Over the years since the early 1970s, various study groups have ranked saving Carlisle's rural aspect as the highest priority in shaping the town's future. Participants in community planning days have been characterized as "very proud and fiercely protective of the Town's bucolic, small-town character" (*Carlisle Mosquito*, 28 March 2003). Because much of the best land for building in Carlisle has already been utilized, developers are seeking ever more creative ways to use more marginal land for new homes. Of special concern for Carlisle with its limited affordable housing are 40B developments that have the potential for serious environmental and visual impact. Through careful planning, Carlisle is attempting to balance the desirability of its rural appearance with the reality of new development.

In addition to a wealth of Open Space for passive recreation such as walking and nature study, Carlisle citizens also enjoy a variety of active recreation facilities including playing fields, tennis courts, playgrounds, a fitness course, and a running track. The town provides a riding ring on public property for an area youth Pony Club. The Recreation Commission (RecCom) has recognized and responded to the needs of a diverse population in providing active recreation facilities and programs.

Looking to the future, this 2005 Open Space and Recreation Plan states the need to preserve additional open space for groundwater protection, conservation, and recreation as the population increases. Groundwater issues will become more significant in the future as increased numbers of households provide for their own well water and sewage disposal needs, many in denser 40B developments that override 2-acre zoning. Additional acquisitions of conservation land should serve to enhance existing and create new wildlife corridors and walking-trail linkages between already protected areas. The Plan also encourages the support of agricultural efforts by local farmers in order to save what remains of Carlisle's farming tradition.

Adding recreational facilities addresses the increased demands of a growing and diverse population. This Plan supports the short-term and long-term goals articulated by RecCom to increase the number of playing fields, basketball and tennis courts, and baseball diamonds.

In addition, Carlisle needs to continue to improve handicap accessibility to both recreational facilities and conservation lands.

Recognizing Carlisle's community vision and its needs in the areas of conservation and recreation, this Plan includes objectives that will help to meet four primary goals.

Goal 1: Maintain the rural character of Carlisle.

Goal 2: Protect the town's environment.

Goal 3: Meet the town's recreational needs.

Goal 4: Proactively manage land use in town.

In order to address each of these goals, various town boards and interested groups devised their five-year action plans, or initiatives, for 2005 through 2010. The groups involved in constructing plans for the next five years are the Conservation Commission, Planning Board, Recreation Commission, Board of Health, Finance Committee, Council on Aging, Pedestrian and Bike Safety Committee, Trails Committee, and Pony Club. The groups intend to support each other and work together to meet goals that recognize Carlisle's past and anticipate its future as a special place to live, interact, and play.

Section 2: Introduction

- A. Statement of Purpose
- B. Planning Process and Public Participation



Section 2. Introduction

A. Statement of Purpose

Purpose of the Plan

The 2005 Open Space and Recreation Plan has been developed to help Carlisle identify its current resources, both physical and cultural, and to enable Carlisle to clarify its goals in the areas of open space, conservation, and active and passive outdoor recreation.

Carlisle prepared an Open Space Plan in 1979 and again in 1987, under the masterful direction of Kay Kulmala. In 1994, the plan was revised according to the Commonwealth's 1990 requirements for OS&R plans; this plan was revised again in 2000. The current document is a revision of the 2000 Carlisle Open Space and Recreation Plan.

Accomplishments from 1999 through 2004

The Town of Carlisle is making significant progress in its efforts to protect open space permanently, thus providing passive and active recreational facilities for its own citizens as well as for visitors. As of May 2005, Carlisle has protected approximately 3,208 acres of natural space, an increase of 465 acres since the 2000 Open Space and Recreation Plan. Protected open space to date comprises approximately 32% of Carlisle's total acreage of 9,913 acres. This progress is evidenced in the areas of land acquisitions, protection of land, land use, and legal issues.

Land Acquisitions

Since 2000, the Town of Carlisle received approximately 127.4 acres of land through direct acquisition involving both public and private entities.

ACQUISITIONS BY THE TOWN OF CARLISLE

Since 2000, Carlisle has acquired three parcels.

Great Brook Estates Conservation Parcel

The Great Brook Estates conservation parcel consists of 3.7 acres of protected open space bordering Great Brook Farm State Park. It provides for public access from the neighborhood to trails in the park.

Hart Farm Estates Conservation Parcel

The Hart Farm conservation parcel consists of 13.5 acres of protected open space as part of 78 acres deeded to the town generally. The parcel provides public access to trails from the neighborhood to Great Brook Farm State Park and increases the conservation of sensitive wetlands located within a Rare Species Habitat polygon designated by the Natural Heritage and Endangered Species Program (NHESP).

Benfield Land Parcel A Conservation Land

Carlisle recently used Community Preservation Act (CPA) funds to buy a piece of land known as Benfield Parcel A. The option to purchase the 45-acre parcel of undeveloped woodlands and fields was facilitated by the Carlisle Conservation Foundation (CCF). The town committed itself to providing space for a playing field for active recreation, limited community housing, and

conservation, leaving 26 acres of the property as conservation land that Carlisle is protecting with a Conservation Restriction.

ACQUISITIONS BY THE COMMONWEALTH OF MASSACHUSETTS

Since 1999, the Commonwealth of Massachusetts added 21.6 acres of farmland to its holdings in Great Brook Farm State Park.

ACQUISITIONS BY THE CARLISLE CONSERVATION FOUNDATION

The Carlisle Conservation Foundation (CCF) is a private organization committed to protecting the rural character of the town through the conservation of open space. Since 1999, CCF has acquired 26 contiguous acres west of West Street between Log Hill Road and Acton Street. CCF has acquired an additional 61 acres of the Benfield property as permanent open space protected by Conservation Restrictions and a Conservation Restriction on a further 72 acres of the Benfield property, with some 34 of those acres being in permanent no-build zones along South and West Streets.

OPEN SPACE CREATED BY DEVELOPMENT OF CLUSTER HOUSING

By encouraging developers to consider cluster zoning, the Planning Board has protected 45% of the cluster development property as open space (Table 8). Out of 309 acres of recent cluster development projects comprising nine neighborhoods, 138 acres are designated as open space, some of which is town-owned. One of the cluster development projects, Hart Farm Estates, donated an additional 65 acres of open space to the town in conjunction with its planning.

Land Protections

INITIATIVES OF THE CARLISLE CONSERVATION FOUNDATION

In the OS&R plan of 2000, the Carlisle Conservation Commission recommended the acquisition of land to “provide a large conservation area in the under-served southwest sector to create a western corridor from the Chelmsford border to the Concord line” (Town of Carlisle Open Space and Recreation Plan 2000, January 2000) in order to increase the inventory of protected open space in that area. In the ensuing five years, a concerted effort by the Carlisle Conservation Foundation and the Town has resulted in significant progress towards achieving this goal.

CCF has acquired over 26 contiguous acres west of West Street between Log Hill Road and Acton Street. In addition, CCF has acquired over 61 acres of the Benfield property as permanent open space to be protected by Conservation Restrictions. Other landowners along the corridor have received or are applying for Conservation Restrictions on fifteen different parcels adjoining CCF property that will add over 110 acres of new protected open space and strictly limit development to building envelopes on nine parcels of the Benfield Property. These additions connect to and supplement the existing Spencer Brook Reservation and Bisbee Conservation Land.

Finally, CCF obtained and made available to the Town an option to purchase a 45-acre parcel known as Benfield Parcel A using funds from the Community Preservation Act (CPA). The Town purchased Parcel A in April 2004. This parcel includes 26 acres of permanently protected conservation land, with the remainder of the property available for limited community housing, one ball field, and additional protected open space. This purchase, when combined with conservation land nearby in Acton and Conservation Restrictions and other protection for land

nearby in Concord, helped establish the Western Corridor. Carlisle envisions a trail network that will allow public access to some of the properties and eventually connect to more distant protected open spaces in Acton and Concord.

Other Carlisle Conservation Foundation initiatives include facilitating the 1999 Wang-Coombs land purchase of 35 acres of conservation land under an Agricultural Preservation Restriction (APR) by the town. In the process of negotiating the land deal, CCF and the Planning Board protected 78 contiguous acres of back land in the Hart Farm Estates, ultimately reserving 65 acres as a potential future water resource and over 13 acres as town conservation land. CCF also facilitated permanent CR protection for 65 acres at Clark Farm including the entire hayfield between School Street and Concord Street and a public trail through the hayfield. CCF has been instrumental in promoting several of the Open Space and Conservation Cluster Developments, an alternative to conventional development that resulted in an additional 138 acres of protected, undeveloped land in town. CCF facilitated the purchase by the Commonwealth of more than 8 acres (two building lots) that were added to Great Brook Farm State Park in May 2000. This facilitation included a fundraising effort that contributed more than \$88,000 to help the Commonwealth meet a bargain purchase price.

CONSERVATION RESTRICTIONS

Since 2000, the Town of Carlisle has added permanent protection by Conservation Restriction (CR) to 67.6 acres of its publicly owned conservation land and to 214.4 acres of privately owned land resulting from the generosity of individual citizens. On privately owned land, the Conservation Restrictions may or may not allow public access.

A Conservation Restriction, particularly a permanent CR, is an important tool for land protection. Conservation Restrictions on potentially vulnerable land in town help Carlisle retain its rural character, protect its water resources, and provide wildlife habitat and corridors. Conservation Restrictions also increase the potential for trail connections, both between already existing conservation properties in Carlisle and also into the surrounding public lands of contiguous towns. CRs also help control future development.

The Western Corridor has especially benefited from CR protection initiatives. In this area of town, several large unprotected parcels of land exist with valuable wetland and woodland habitat and with treasured rural agricultural vistas. Since 2000, the effort to permanently protect land in this area has been well rewarded with several very generous property owners placing permanent Conservation Restrictions on their properties, adding over 170 acres of permanently protected private land to the town's inventory. Additionally, owners of land near the center of town and near the Estabrook Woods have also placed CRs on their lands. The result of this generosity has been that, since 2000, 214.4 acres of privately held land has become permanently protected from further development or is subject to limited (one house per parcel) development.

PROTECTION OF SPECIFIC PARCELS

Greater Estabrook Woods

Greater Estabrook Woods consists of approximately 1,750 acres of forest in Carlisle and Concord that includes a core land holding of Harvard University (Estabrook Woods) and surrounding, conservation-restricted lands in the two towns. Protection of the surrounding properties in Carlisle was achieved through the cooperation of Harvard College, the Carlisle Conservation

Foundation, the Town of Carlisle, Carlisle's Conservation Commission, The Trustees of Reservations, the Massachusetts Division of Conservation Services, the Concord Conservation Land Trust, and the Town of Concord.

A total of 413 acres of the Greater Estabrook Woods is now protected in Carlisle with permanent Conservation Restrictions or a recorded permanent Statement of Public Charitable Obligation. Since 1994, 67.6 acres were acquired by the Town of Carlisle, 25.8 acres were acquired by the Carlisle Conservation Foundation, and 98.1 acres were protected by Conservation Restrictions placed by three individual land owners. Since 2000, permanent Conservation Restrictions protect all of these properties (Table 9).

In 2002, an informal group called the *Estabrook Council* was formed with representatives from the various parties that hold land within the Greater Estabrook Woods both in Carlisle and in Concord. Its mission is to establish and to facilitate communication with and between abutters, landowners, holders of conservation restrictions, and conservation groups; to reinforce current protections and to add protections as needed; to encourage use of Estabrook Woods for field research; to work to preserve and protect additional abutting lands over time; and to monitor misuse and foresee and mitigate problems that arise.

The Council has been successful in establishing good communication among interested parties, in contacting property owners in the area, and in placing signs near public entrances to the woods to alert users of the private or public ownership of the properties. The Council is working on mapping the entire Greater Estabrook Woods.

The Council is composed of representatives from Harvard College, the Carlisle Conservation Restriction Advisory Committee, the Carlisle Conservation Foundation, the Carlisle Conservation Commission, interested Carlisle citizens, The Trustees of Reservations, the Concord Conservation Land Trust, the Concord Natural Resources Commission, the Concord private property owners, and the Middlesex School.

Land Management

SHEEP PROJECT

From 2000 to 2004, The Carlisle Conservation Foundation hired Sheepscares, a company based in New Hampshire, to conduct a project at Towle and Spencer Brook fields to restore and maintain the pastures through intensive sheep grazing. The pastures were overgrown with unwanted woody plants, primarily buckthorn and poison ivy. Grazing was initiated to reduce the population of woody plants while promoting the growth of desirable grasses and legumes. Sheepscares reported a reduction of the woody plants and the return of clovers and healthier pasture grasses in the grazed areas and employed a rotational model of grazing for optimal results. Many people enjoyed the sheep herding demonstrations, and the grazing sheep added to the rural aspect of the town.

This program was funded by private donations and grants to the CCF and by grants to the town of Carlisle. For example, in the summer of 2003, the United States Department of Agriculture (USDA) Natural Resources Conservation Services awarded Carlisle a grant of \$7,500 under the Wildlife Habitat Incentive Program. The sheep project was terminated in 2004.

CARLISLE FORESTS GRANT

In 2004, the Gleason Public Library, working closely with the Carlisle Conservation Commission and other local organizations, received a grant in the amount of \$2,300 from the Department of Conservation and Recreation, Executive Office of Environmental Affairs, Commonwealth of Massachusetts, as part of its special Urban Forest Planning and Education Grant program for the project entitled "Carlisle Forests: Past, Present, and Future." The project is intended to be a town-wide, cross-generational, and cross-departmental effort upon which future collaborative programs between the Library and town departments could be based.

The project has four goals: to develop a core collection of important materials on forestry and land management for the Gleason Public Library, the Carlisle Public School, and the Concord-Carlisle Regional High School; to support ongoing research and information needs of Carlisle citizens with respect to forestry; to communicate opportunities for participation in project activities; and to produce a report about town forests based on a community forum. This educational grant funded a series of lectures that provided Carlisle residents and other members of the public an opportunity to learn more about the forests in and around town and to consider the future of these lands.

Land Use

PATHWAYS COMMITTEE

In 1997, the Board of Selectmen formed The Pedestrian and Bike Safety Advisory Committee to examine issues related to road safety. In August 2000, the Committee became a formal advisory committee to the Selectmen. The Committee's areas of concern are pedestrian safety, bicyclist safety, and linking Carlisle's pathways to pathways in neighboring towns.

The Committee's efforts in recent years have focused on the construction of roadside footpaths. On May 5, 2003, voters approved the warrant article asking for funds to be used over five years to construct a school-loop path in the town center and along Bedford Road. Other paths are planned from the center down parts of East Street, Concord Street, Lowell Road, and Westford Road (Map 10). The paths are to be constructed using a combination of resources from the Department of Public Works (DPW), volunteers, and independent contractors. The construction periods will occur twice annually, spring and late fall-winter, to coincide with the availability of the DPW. The Carlisle Pedestrian and Bike Safety Advisory Committee was thrilled to kick off the first phase of the plan in front of the Library on 28 April 2004. The Department of Public Works completed the pathway between the town center and Kimball's ice cream stand in August 2004.

TRAILS COMMITTEE

The Trails Committee, appointed by the Carlisle Conservation Commission, produced a new edition of *Trails in Carlisle* map booklet in 2000. The maps were updated in 2005 (Appendix C).

Since 1999, the Trails Committee has created new pathways in Great Meadows National Wildlife Refuge, Hart Land, Swanson Family Land, Banta-Davis Land, Emmons/Fidler easement to Poole Swamp, Greenough Land, Clark Farm Conservation Restriction, and Ember Lane to Morse Road on Carlisle Conservation Foundation land. Trails were relocated on Bartlett Farm and Carlisle Department of Public Works (DPW) land. The Trails Committee coordinated the construction of

major bridges over wetlands on the River Trail connecting Foss Farm with Greenough Land (on Great Meadows National Wildlife Refuge land) and on the Rockstrom Land.

The Trails Committee received funding from two sources. In 2004, the Fields Pond Foundation provided a \$4,000 grant for the construction of the River Trail North Bridge. In 2005, the Town of Carlisle provided \$15,000 from Community Preservation Act funds to cover costs for materials and permitting to build boardwalks, bridges, kiosks, and signs over a five-year period.

The Trails Committee improved signage on trails by fabricating and installing approximately 100 routed-wood directional signs on most of the protected trail network. The Committee also built or improved several trail-head kiosks. The Committee cleared the earthen dam on Greenough Land of trees and brush. Finally, the Trails Committee led approximately five public walks per year to publicize conservation land in Carlisle.

RECREATION COMMISSION

Subsequent to the Town's voting \$500,000 to enlarge the recreation area on the Banta-Davis Land, a running track, soccer field, softball field, Little League field, and baseball field were constructed and opened in 2001, completing Phase 1. Phase 2 consists of building four tennis courts, originally scheduled for 2004. It is expected that the property will eventually hold one more Little League field and one more soccer field. However, the Carlisle Public Schools may need some of this property for future school expansion. The Recreation Commission successfully hired a part-time recreation director and currently pays a second part-time recreation director, a field scheduler, and an administrative assistant from revenue generated from fees.

In 1999, volunteers completely rebuilt Diment Park into a toddler playground. In 2000, the town voted to accept the toddler playground as an asset, and the Recreation Commission accepted responsibility for maintaining it.

At a special town meeting in March 2004, the Benfield Parcel A land on South Street was purchased with Community Preservation Act (CPA) funds for multiuse purposes. Five acres of this acquisition is reserved for active recreation, primarily a soccer field. A public process is underway to determine, among other uses for the land, the location of the ball field.

BRUCE FREEMAN BIKE TRAIL

The Bruce Freeman Bike Trail is a proposed, 25-mile rail trail through property in the communities of Lowell, Chelmsford, Westford, Carlisle, Acton, Concord, Sudbury, and Framingham using the rail beds of New Haven Railroad's Framingham and Lowell line. Carlisle expects to provide signage that will direct travelers on the bike trail in Chelmsford and Carlisle to open space properties in Carlisle, such as nearby Great Brook Farm State Park with its extensive trail system, and to Carlisle's quiet roadways, already a favorite destination for many bicyclists. Phase 1 will construct a 6.8-mile stretch in Lowell, Chelmsford, and Westford. Phase 2 in Westford, Carlisle, Acton, Concord, and Sudbury (13 miles) and Phase 3 in Sudbury and Framingham (4.5 miles) are proposed extensions.

NATIONAL WILD AND SCENIC RIVERS

The 1995 Carlisle Annual Town Meeting passed a warrant article to petition the Congress of the United States of America to enact legislation designating the Concord River as part of the

National Wild and Scenic Rivers System under the jurisdiction of the National Park System. In this way, Carlisle residents joined other area towns in recognizing the great importance of the Concord River as a natural resource to their Town and to the Commonwealth of Massachusetts. The warrant article also encouraged elected officials to consider and, wherever appropriate, to adopt additional local measures that strengthen the protection of this critical resource along the town's border.

Congress subsequently passed this legislation to place 29 miles of the Sudbury, Assabet, and Concord Rivers officially into the National Wild and Scenic Rivers System. These 29 miles run from the Danforth Street Bridge in Saxonville (Framingham) to the Route 3 Bridge in Billerica and the Damon Mill Dam on the Assabet, including all of the Concord River frontage in Carlisle.

The legislation mandates that no federal projects, which include construction as well as permits and financial assistance, shall have a direct and adverse effect on the values for which the Sudbury, Assabet, and Concord Rivers were designated: scenery, recreation, ecology, history, and literature. The National Park Service (NPS), as administering agency, in cooperation with the River Stewardship Council, reviews these federal projects to ensure that they do not have an adverse effect on the rivers. As a general guideline, the NPS evaluates projects within one-quarter mile of the rivers. However there are situations in which NPS reviews projects beyond this boundary: for example, the issuance of wastewater discharge permits upstream of the designated segment, when the discharge has an effect on the waters of the designated segment.

Carlisle sends a representative to the Sudbury, Assabet, and Concord (SuAsCo) Stewardship Council. Through Carlisle's Conservation Commission, Carlisle participates in the annual celebration of Riverfest organized by the SuAsCo Stewardship Council and the National Park Service.

Legal Issues

THE COMMUNITY PRESERVATION ACT

Carlisle adopted the state's Community Preservation Act (CPA) in spring 2001. The Town elected to levy a 2% surcharge (the state would have allowed up to 3%) on real estate taxes, excluding the first \$100,000 in assessed value, for four uses: conservation, recreation, historic preservation, and community housing. A minimum of 10% of the fund must be used for each of the four CPA-designated uses. A year later, several warrant articles attempting to roll back the taxes to 0.5 through 1.5% were defeated. To date, the state has matched the surcharge dollar for dollar.

A Community Preservation Committee (CPC) was established to oversee CPA funding proposals. The Committee consists of seven members, one each from the Conservation Commission, Historical Commission, Planning Board, Recreation Commission, Housing Authority, Board of Selectmen, and one member from the community at large. The CPC can recommend expenditures, but funds can be appropriated only by approval at Town Meeting.

In March 2004, the Board of Selectmen made a formal request to the CPC for CPA funding to purchase the so-called Benfield Parcel A. At a special town meeting a few days later, the CPC presented a warrant article that specified a combination of conservation, recreation, and

affordable housing uses for the land, with a minimum of 26 acres of permanently protected open space. By a two-thirds vote, Town Meeting approved the use of CPA funds for the purchase and the formation of a master planning committee to be appointed by the Selectmen to develop a master plan for the parcel to be presented to the town in 2005.

EO418 EQUIVALENCY FOR 2000 OS&R PLAN

In early 2003, the town received \$30,000 from the state to complete a Community Development Plan (CDP). Such a plan must address the housing, economic development, open space and resource protection, and transportation needs of a community.

Carlisle's 2000 Open Space and Recreation Plan was deemed current (having been prepared within the past five years) and complete enough to qualify for "equivalent plan status." The only requirement of the state was that details of the OS&R Plan be presented on Geographic Information Systems (GIS) maps as part of the final town CDP, which will be primarily in GIS form. Therefore, the work that had gone into keeping the OS&R plan current made more funds available for other aspects of the CDP, particularly housing.

CARLISLE WETLANDS BYLAW

The Carlisle Wetlands Protection Bylaw was passed by Town Meeting on 27 April 1992 and approved by the Attorney General's office on 23 July 1992. It was revised in May 2002, and the revision was approved by the Attorney General's office that summer. The revision was designed to bring the bylaw into compliance with the revised Wetlands Protection Act (WPA) (MGL Chapter 131, Section 40) and regulations (CMR 10.00), especially with respect to the riverfront area along the Concord River.

Additionally, the Carlisle Conservation Commission (ConsCom) revised the bylaw in such a way as to allow bylaw fees for wetlands applications to the Commission that more accurately reflect actual cost to the town. These new fees may now be revised with a public hearing but do not need Town Meeting approval.

The bylaw itself closely reflects the provisions of the WPA. It provides for the collection of costs related to the hiring of consultants and to abutter notification of filings for Requests for Determination. During spring 2001, the ConsCom tried to amend the bylaw to provide additional protection for vernal pools and wetland buffer zones. This amendment failed at town meeting by three votes.

At Spring Town Meeting, 2005, the Wetlands Protection Bylaw was again revised to reflect the new Department of Environmental Management (DEM) regulations, 310CMR10.00.

B. Planning Process and Public Participation

Questionnaires distributed to the public before the early 1990s document the way Carlisle residents make use of recreation and conservation lands: residents rely heavily on nearby, neighborhood open space for passive recreation such as jogging, dog-walking, or birding. In the early 1990s, Carlisle held public, daylong planning workshops to identify goals related to preserving Carlisle's rural atmosphere. These goals were restated in *A Study Plan for the Town of Carlisle* (Planning Board, 1995), which was adopted at Town Meeting in 1995. In 1999, the

effects of development and population growth were analyzed in a report called *Growing Pains: A Report to the Carlisle Municipal Land and Finance Committees on the impact of development and population growth on tax revenues and costs of town services in Carlisle* (Ballantine, Hambleton, and Pierce, 1999), which recognized that finding monies for outright land purchases by the town would continue to be a challenge. Also in 1999, the OS&R Committee convened public Open Space Planning Workshops to validate the town's goals with respect to open space and recreation.

In 1996, planning efforts in the town resulted in the formation of the Carlisle Municipal Land Committee to study the future needs for additional lands for municipal purposes and to negotiate the acquisition of such land. The committee consists of members from the Board of Selectmen, Planning Board, Conservation Commission, Recreation Commission, Board of Health, Trails Committee, and School Committee. In 2001, the Committee sponsored its first Municipal Planning Day, which solicited public input on the question, "what kind of community do we want Carlisle to be in the future, and how do we get there?"

In March 2003, the Planning Board and the local League of Women Voters jointly sponsored a survey and hosted a Community Planning Day. As in all of the earlier planning sessions, the public reiterated its interest in maintaining the town's rural character, with conservation issues receiving the highest level of interest and support of all the issues raised. As reported in the *Carlisle Mosquito*, Friday, 28 March 2003, "Most participants seemed very proud and fiercely protective of the Town's bucolic, small-town character."

In an effort to gather data necessary for this report, the 2005 Open Space and Recreation Plan Committee sent letters in the fall of 2004 with follow-up reminders to the following Carlisle entities requesting input relevant to goals, objectives, and a five-year plan for the town: Board of Health, Council on Aging, Finance Committee, Trails Committee, Recreation Commission, Conservation Commission, Planning Board, Board of Selectmen, School Committee, Bikeways and Pathways Committee, Historical Commission, and the Youth Commission. In addition, it sent letters with follow-up reminders soliciting input from the six contiguous towns: Acton, Bedford, Billerica, Chelmsford, Concord, and Westford. A sample letter is shown in Appendix F.

Section 3: Community Setting

- A. Regional Context
- B. History of the Community
- C. Population Characteristics
- D. Growth and Development Patterns



Section 3: Community Setting

Carlisle, Middlesex County, Massachusetts, is bounded on the north by Chelmsford and Billerica; on the east by Billerica and Bedford; on the south by Concord; and on the west by Acton and Westford; and had assessed in the year 1917, 9886 acres of land. The location is considered extremely healthful and comfortable, being just far enough from the salt water to be properly tempered by the ocean breezes, but near enough to escape the extremes of heat or cold that locations farther inland experience.

The contour of the landscape is typical of New England, being undulating or diversified with hill and dale, giving the section a pleasing variety of scenery that is not monotonous.

Carlisle is an agricultural town, and the land gives good returns for the efforts of the husbandman. Being located but eighteen miles from Boston, and nine miles from Lowell, good markets are within easy access by team or truck.

The mean altitude of the town is two hundred feet above sea level, that being the altitude of the center of town. There are four hills in the town that attain altitudes as follows: School House Hill has an altitude of 240 feet; Bellows Hill in the southern part has an altitude of 260 feet; Wilkins Hill in the western part is 300 feet; and Wilson Hill in the eastern part is 380 feet. There are no natural ponds or lakes in town large enough to receive a name. Tophet Swamp, a brushy and wooded marsh, occupies a central position in the area of the town, and has an altitude of one hundred and eighty feet above sea level; that really amounts to a divide, as all streams of water having their source on its northern border flow to the north, and those rising on its southern border flow to the south.

History of the Town of Carlisle Massachusetts by Sidney A. Bull, 1920

A. Regional Context

Physical Location

Carlisle is a 15.4-square-mile town located about 18 miles northwest of Boston, between circumferential Routes 128/95 and 495 and radial Routes 2 and 3. Though closer to Lowell than to Boston, it is considered part of greater Boston's metropolitan area, and Carlisle is a member of the Metropolitan Area Planning Council (MAPC). Carlisle's open space also serves the Lowell metropolitan area. In 2003, Carlisle had a population of 5,317.

Carlisle has a classic geographical shape, being almost circular, with five main roads converging at the Town Center. The Center area includes churches, schools, the public library, the fire station, the police station, Town Hall, a few commercial enterprises, and the Village Green. The Center has a defined Historic District, which protects the colonial buildings and their scenic surroundings. The paved sidewalk from Town Center to the Fire Station has recently been supplemented by the first phase of unpaved pedestrian pathways extending from Town Center along other major roads (Map 10).

Regional Aspects

Carlisle is bordered by the six towns of Acton, Bedford, Billerica, Chelmsford, Concord, and Westford. Carlisle shares various natural resources with these towns, including the Concord River, Greater Estabrook Woods, the Cranberry Bog Reservation, and other open space parcels, roads and trails, streams and watersheds.

The pedestrian pathway proposed by Carlisle's Pedestrian and Bike Safety Committee would provide pedestrian links between Carlisle and Bedford, Concord, and Westford. Once both the pathway and the proposed Bruce M. Freeman Memorial Bicycle Path running by the junction of Routes 27 and 225 are completed, the pedestrian way will also link to Acton and towns beyond. Thus far, only the portion of the pathway within Town Center and as far as Kimball's ice cream stand on Bedford Road has been approved for funding by Town Meeting.

The Open Space and Recreation Plan (OS&R) Committee contacted Conservation Commissions of neighboring towns to discuss concerns and suggestions about shared resources.

ACTON

The Marshall Farm parcel along Acton's border with Carlisle was subdivided with 12 homes and some protected open space. The 240-acre Dexter land, which abuts the west edge of Carlisle along the southern half of the Carlisle-Acton border, was offered to the Town of Acton, but the purchase, although approved by their town meeting, was voted down at the subsequent general election. This parcel, called Robbins Mill, is in the process of development for an approved Conservation Cluster development of 90 single-family homes with approximately 157 acres of permanently protected open space. This large development along Carlisle's western border with Acton and a new golf course along Carlisle's western border with Westford are close enough to have significant impacts on shared water resources and wildlife corridors. Recent expansions of the commercial development along Route 2A has increased traffic along Carlisle's southern roads and impacted abutting lands.

Members of Carlisle's OS&R Committee, Acton's Conservation Commission, and Acton's Land Stewardship Committee and Acton's Conservation Administrator discussed developing trails that would connect open space parcels between the towns. The Robbins Mill Development abuts Carlisle's West Corridor. The non-developed portions of this Conservation Cluster may provide some opportunities to create connections with open space parcels in Carlisle. Interest was expressed in continuing the dialogue about how to coordinate efforts to maximize our shared resources.

BEDFORD

The Town of Bedford and the Town of Carlisle share a length of the Concord River as common town line. This line extends both north and south of the Route 225 bridge over the river. Open space connections between the two towns are significant, with Great Meadows National Wildlife refuge owning nearly 700 acres along the river in Bedford and the Town of Bedford owning 350 acres under the jurisdiction of Bedford's Conservation Commission. Also abutting Carlisle is the 203 acres held in the Huckins Farm Conservation Restriction area. Trails abound in this area, and a proposed trail in part of the refuge would complete a Carlisle/Bedford/Billerica river-loop trail.

The map issued to Carlisle by the Natural Heritage and Endangered Species Program (NHESP) details a new Estimated Habitat polygon, Wetland Habitat (WH) 7464. This newly designated area is located on the Foss Farm Conservation land and identifies wood turtle habitat. The wood turtle is also a species listed in Estimated Habitat WH 139, primarily located across the river in Bedford south of Route 225 but extending into Carlisle and Concord at their mutual town line.

CHELMSFORD

Committee members also met with the Chelmsford Land Planning Director. Carlisle and Chelmsford share a significant length of town line, with the Great Brook Farm State Park and Cranberry Bog Conservation properties lying in both towns. Although Chelmsford is significantly more developed than Carlisle, the town has made a significant effort to establish trails and other open space parcels in the vicinity of both Great Brook Farm State Park and the Cranberry Bog. Chelmsford has trail easements leading from the state park to their 16-acre Town Forest and to the 48-acre Thanksgiving Forest. Trails leading from the Cranberry Bog Conservation Land in Carlisle into the 180 acres of the Chelmsford Cranberry Bog Reservation are actively enjoyed by many. Water from these conservation areas travels through the state park, eventually flowing into Chelmsford's Center Well district.

In 2000, the Carlisle Conservation Commission and Cranberry Bog farmer Mark Duffy successfully challenged a plan by the privately run Chelmsford Water district to pump up to 360,000 gallons of water per day from the bog and the wetlands that feed it for a proposed residential development in Chelmsford. Necessary repairs to the Chelmsford dam at the bog have been held up for several years while responsibilities for the actual repair and funding for it have been negotiated by Duffy and the two towns. Carlisle is currently working toward establishing a Conservation Land Stewardship Committee and discussed the potential of some joint stewardship of the Cranberry Bog.

CONCORD

Concord and Carlisle share a common boundary south of Carlisle center, extending from the Concord River on the east to the town of Acton on the west. Concord, with a population of approximately 15,561, has a total area of 16,540 acres with 5,011 acres, or around 30%, permanently protected as Open Space. Of this protected land, 1,185 acres are owned by the Town of Concord's Division of Natural Resources, and the rest is owned by various private, state, and federal agencies.

Concord shares several important resources with Carlisle: Greater Estabrook Woods, the Concord River, Spencer Brook Valley, and a network of country roads used heavily by bicyclists. Both Carlisle and Concord maintain an ongoing dialog with Harvard University, which owns the core acreage, Estabrook Woods, of the Greater Estabrook Woods system, most of which lies in Concord. The Estabrook Woods campaign to buffer the core acreage with additional protected parcels was successfully completed in 1996. Today, private conservation groups in Concord and Carlisle, such as the recently formed Estabrook Council comprised of representatives of all the land interests of this sensitive and historic area, are working to protect additional undeveloped land around Harvard's core holding. Greater Estabrook Woods is an extensive forest rich in wildlife and trails. According to recently received maps from the Natural Heritage and Endangered Species Program, Estabrook Woods is designated a Core Habitat Area.

To the east of the Estabrook Woods and Monument Street lies U.S. Fish and Wildlife's Great Meadows National Wildlife Refuge along the Concord River. This refuge includes the Concord River and most of its shoreline in Concord and Carlisle. Some portion of this area is also overlain by a Priority Habitat (PH) polygon established by the Natural Heritage and Endangered Species Program (PH 147/WH 139) and is additionally protected by the Wild and Scenic River status of the Concord River. Also to the east of the Estabrook Woods, a 14-acre open space parcel in Concord near Carlisle's Prospect Street buffers the Estabrook Woods in both Concord and Carlisle.

To the west, Conservation Restrictions on a portion of the Middlesex School property and other properties in this area add to a protective buffer to the land near the western side of the Estabrook Woods, including the 13-acre open space parcel associated with Bartkus Farm. The Concord Land Conservation Trust owns significant acreage of land farther west toward Acton near, but not abutting, the Carlisle town line.

The Spencer Brook watershed to the west is another resource shared by Concord and Carlisle. Work is actively underway on both sides of the town line to extend open space protection in that area and extending to the Greater Estabrook Woods with a goal to establish a trail system linking Concord and Carlisle open spaces between Spencer Brook and the Greater Estabrook Woods.

Concord has had concerns about the safety of bicyclists and roller-bladers on the winding country roads between the two towns and is creating bicycle travel lanes where possible. These travel lanes are simply a wide paved shoulder at least three feet wide, with a painted stripe separating them from the main road. Carlisle might also want to consider ways to improve the safety of its portions of these roads for non-motorized travelers.

WESTFORD

The watershed for the area of Westford that abuts Carlisle flows toward Acton and Carlisle, but it has already been developed without noticeable impact. A neighborhood that has some trail easements to the border of Carlisle may allow for some cross-border connections to trails in the Carlisle Pines (Carlisle State Forest) section of Great Brook Farm State Park and beyond.

Regional Coordination

Carlisle is an active member of the Minuteman Advisory Group on Interlocal Coordination (MAGIC) sub-region of the Metropolitan Area Planning Council (MAPC). MAGIC is a group of representatives from ten communities that meets monthly to discuss issues of common concern. Open space protection has been a major focus of the sub-region. The first phase of the proposed 22-mile Bruce N. Freeman Memorial Bicycle Path, which is planned to follow an abandoned railroad bed, has been put out to bid by the Massachusetts Highway Department. If all goes according to plan, this first 6.8-mile stretch, running from the Lowell line in Chelmsford through Westford to the intersection of Routes 27 and 225, near the Carlisle border, will be completed some time in 2007. The path would provide access to underutilized open space parcels in Chelmsford. Phase two of this path would include a quarter-mile stretch in Carlisle before continuing south through Acton and Concord into Sudbury. Though the second phase appears to be years away, neighboring towns are making significant progress on acquiring rights of way and preparing cost estimates. As of January 2005, Chelmsford's section of the Bruce Freeman trail is

well along, and the project has gone out to bid. The Carlisle Trails Committee continues to monitor this project and has advised the Selectmen that it is time for the Town to develop a plan regarding this regional transportation project.

Socio-economic Context

Carlisle is a residential community of mostly single-family homes in a rural setting. With a zoning requirement outside the town center of two-acre full-frontage lots and four-acre reduced-frontage lots, homes outside of the town center are situated on mostly wooded tracts of two to four acres, with many larger lots as well. New houses tend to be larger than the older houses. Between 1990 and 2000, 13 subdivisions were built with a total of 141 units on 454 acres. No subdivisions have been approved since 2000. Some recently built houses utilize common driveways and many are on scattered, "isolated" available lots. Land prices of over \$500,000 per 2-acre building lot have resulted in an increase in "tear-downs" where older, more modest homes are replaced with homes selling for in excess of \$1,000,000. The median value of a home in Carlisle rose from \$367,000 in 1990 to \$456,000 in 2000 and \$490,453 in 2001. In calendar year 2003, for the 62 single-family houses that sold, the average list price in Carlisle was \$904,308, and the average sale price was \$867,379. Of those 62 sales, only one was listed at under \$400,000.

The increase in housing costs is matched by an increase in income level for Carlisle residents. Carlisle's median household income rose from \$83,985 in 1999 to \$129,811 in 2000. The 2000 median income for the Boston Metropolitan Statistical Area was \$80,800; the statewide median was \$50,502. Carlisle generally has much lower unemployment than the state as a whole. The 2000 unemployment rate in Carlisle was 1.1%, compared with 2.6% statewide. These figures rose with the economic downturn, with Carlisle at 4% for 2003 compared to the state's 5.8%. A growing segment of the economic base in Carlisle is home-based businesses.

Carlisle is situated between Boston and Lowell, near the technology industries along Routes 95/128 and 495. Carlisle has no public transportation but has access to commuter trains in neighboring towns. Its rural setting is unusual considering its proximity to Boston, and its school system is excellent. Carlisle is a popular site for new home-buyers. Residential development pressures on remaining available land mean that Carlisle must take action if it is to preserve and protect its rural character. Lack of industry in Carlisle helps protect its quiet, rural ambiance, but the lack of a commercial tax base puts the tax burden on town residents.

B. History of the Community

First settled by colonists in 1650, what would eventually become the Town of Carlisle has been predominantly a farming community for much of its existence. Beginning in Colonial times, Carlisle's many streams supported mills of various types including fulling (for textiles), grist, hoop, and saw, a few operating through the nineteenth century. Another early industry was burning limestone to get lime powder for plaster and other uses. The remains of a limestone quarry and several lime kilns are still visible in Carlisle. Several Colonial-era inns and taverns were situated on Carlisle's well-traveled roads; a few still stand and are private residences. Carlisle was first incorporated as a district in 1754 with land formerly part of Concord, but it was reintegrated with Concord some two years later. The second district of Carlisle was formed in

1780 from parts of the surrounding towns of Acton, Chelmsford, Billerica, and Concord. In 1805 the District of Carlisle was incorporated as a town.

A copper mine was operated successfully for about a decade in the 1840s; it was put out of business by new and much more productive mines in Michigan. Farming was an export business through the nineteenth century, with farmers transporting farm produce and lumber to Boston markets. In 1900 Carlisle was still a small farming community. There were 126 houses, and the town reports show that 629 cows and other cattle were assessed that year. Electricity came to Carlisle Center in 1911, but it was not until 1928 that Town Meeting voted to provide electricity along all the roads in town.

In 1934 the first zoning bylaw instituted one-acre zoning. Two-acre zoning was established in 1956, with a one-acre District A zone defined within a 1500-foot radius of the memorial statue in the Center rotary (Map 1). Two-acre zoning is important to the town of Carlisle to protect water quality, since each home has its own well and septic/leaching system. In 1969 Carlisle established an Historic District to preserve the architectural aesthetics and historical vista in the Town Center. An appointed five-member Historic Commission is charged with the protection of the District.

Carlisle still has an Open Town Meeting as its form of government. The town is governed by a five-member Board of Selectmen, aided by a Town Administrator.

C. Population Characteristics

Carlisle's population increased over 32% between 1980 and 1990. Growth slowed in the 1990s as the population increased less than 13% between 1990 and 2000. An 8% jump in just the past three years suggests the rate of growth may be on the upswing again.

Carlisle Population*		
YEAR	POPULATION	DENSITY (people/sq mi)
1900	480	31
1950	876	57
1960	1,488	96
1970	2,871	185
1980	3,306	213
1990	4,379	283
2000	4,923	318
2003	5,317	343

*Source, *Annual Reports of the Town of Carlisle*

From 1970 to 1990 the percentage of the town's households with children under the age of 18 increased from less than 25% to over 40%. By the 2000 census, this percentage was 46.2%. Between the 1990 and 2000 censuses, the population under the age of 18 years increased from 27.2 to 30.1%, and the population aged over 65 years increased from 6.4% to 8.4% with the median age increasing from 38.4 in 1990 to 41.9 in 2000. The following table shows 1990 and 2000 age distributions with percent increase or decrease.

Age distribution in Carlisle 1990 and 2000*			
AGE (YEARS)	POPULATION 1990	POPULATION 2000	% CHANGE
Under 5	353	340	- 3.7
5 to 9	343	439	28.0
10-14	300	461	53.7
15-19	269	280	4.1
20-24	199	85	- 57.3
25-34	401	213	- 46.9
35-44	990	884	- 10.7
45-54	771	1033	34.0
55-59	268	339	26.5
60-64	161	248	54.0
65-74	160	277	73.1
75-84	87	81	- 6.9
85 and over	31	37	19.4

**Source, Metropolitan Area Profiles, Metropolitan Area Planning Council*

Though factors such as changing percentages of children attending private school impact the public school numbers, after a decade of steady increases, the school population for students in the Carlisle Public Schools (grades K-8) and for students in Concord-Carlisle Regional High School (CCHS) may be leveling off.

Number of Students in Carlisle Public Schools*			
YEAR	K-8	CCHS	TOTAL
1975	616	241	857
1980	504	249	763
1985	490	252	742
1990	550	180	730
1995	664	195	859
2000	819	264.5	1083.5
2001	857	304	1161
2002	847	316.5	1163.5
2003	830	314.5	1144.5

**Source, Annual Reports of the Town of Carlisle*

Employment Trends

Until the 1950s and 60s, Carlisle was primarily agricultural, with both small farms and a few medium-size dairy farms. There were also two psychiatric nursing homes, a small convenience store in Carlisle center, two or three realty offices, and a bank. Carlisle center is still home to the realty offices and the small convenience store and also has a mortgage company, a dentist, a veterinarian, and a handyman business. Scattered throughout town are a daycare center and an extended day program for young schoolchildren, two nursery schools, a recording studio, a research facility in the larger of the two former nursing homes, a car repair shop, an auto body shop, and several landscaping businesses. There are still a few small farming operations with less

than a dozen head of cattle in town, a small goat herd and goat-cheese business, at least three small horticultural nurseries, a cranberry operation under lease to the Town of Carlisle, and two ice cream stands—all of which hark back to Carlisle's agricultural past.

Most residents are employed outside of the community, in neighboring towns, employment centers along I-495 or I-95, or Boston. According the 2000 US Census, the top five work destinations for Carlisle residents were Boston, Cambridge, Carlisle, Concord, and Burlington. A high rate of employment and high level of education characterize Carlisle's labor force.

A growing segment of Carlisle's economic base is home-based businesses, including plumbers, carpenters, and mechanics, as well as architects, artists, craftsmen, consultants, information technologists, accountants, and telecommuters. According to records of the Town Clerk, 228 DBA home businesses were registered as of October 2005.

D. Growth and Development Patterns

Patterns and Trends

Historically Carlisle was an agricultural community. During the last 35 years, the economic viability of most farms became marginal. Some have been protected as open space; others have been subdivided into single-family residential housing. Now Carlisle is predominantly residential, with a small service-oriented business district in the town center.

In 2000 there were 1,618 households and a population of 4,923, or an average of about three people per household. In 2001, the Town participated in and received the results of a build-out analysis prepared by the state's Executive Office of Environmental Affairs. The town consists of approximately 9,900 acres. According to the report, about 2,900 acres are undeveloped (and currently unprotected) land. (See Table 7 for a prioritized list of open parcels of 10 or more acres.) The current development pattern is division of land into lots averaging 2.5 acres in size. The report showed that, under present zoning and other land use restrictions, Carlisle could add 1,169 additional residential units to its current stock of 1,660 units, an increase of more than two thirds. This increase would result in over 3,200 additional residents, 600 of them schoolchildren, 1,679 additional tons of solid waste per year, and an increase in daily water demand of over 245,000 gallons.

The build-out analysis does not provide an estimated time frame for achieving build-out. However, these estimates do not include possible comprehensive permit developments. The population may be significantly higher if comprehensive permits are used to bypass local zoning regulation. Under MGL Chapter 40B, a comprehensive permit may be issued by the state to a developer if the town does not have 10% of its housing classified as affordable. This permit allows a developer to bypass local zoning bylaws if at least 25% of the units in a development are affordable. (It does not allow a developer to bypass state wetland regulations or health regulations.) Carlisle currently has slightly more than 1% affordable housing. This percentage may change in the next few years if planned housing is developed on the Benfield land recently purchased by the Town with CPA funds, but Carlisle will still be well short of the 10% threshold. Lower annual thresholds (currently 3/4% to 1.5%) of actual affordable housing permitted may allow one- to two-year periods during which the town can deny comprehensive permit requests.

Phasing affordable housing development thus can provide breathing space for the town to deal with parcels coming to market even if the full 10% threshold is not reached.

Continued population growth will necessitate commensurate growth of the infrastructure, including schools, recreation fields, police and fire departments, and town government, as well as protection of additional open space to serve the needs of the population.

Near-term population forecasts are difficult to make, because of the uncertainty of economic conditions and development patterns. The Metropolitan Area Planning Council has projected a population of 5,352 for Carlisle by the year 2015 (MAPC Community Population Forecasts).

The number of building permits issued for new dwellings for selected years since 1985 are listed below.

New Building Permits in Carlisle*	
YEAR	# OF PERMITS
1985	54
1990	13
1995	20
2000	24
2001	25
2002	16
2003	9

**Source, Annual Reports of the Town of Carlisle*

From 2003 to 2005, the number of new residential units in Carlisle has decreased considerably from the 1991-2001 average of about 25 new homes per year, most likely due to a general slowdown in the economy. It parallels the drop-off in the late 1980s following the rapid development period of 1978-85, when an average of 43 new homes were built in Carlisle each year. A countervailing trend is the dramatic increase in the number of new building lots created through Approval Not Required (ANR) plans filed more recently. In 2003, 18 such lots were created, three times the number created during the previous two years combined.

Carlisle also saw its first 40B comprehensive permit approval in 2003. The permit allows the developer to go well beyond what would be allowed under Carlisle's 2-acre zoning and frontage requirements. The development consists of eight units on a 4-acre parcel, with two of the units to be sold as affordable housing.

Infrastructure

Carlisle's major roads radiate from its center. Although none are major highways, they are inter-community roads. The main east-west road, Route 225, is a popular commuting road. This and Carlisle's other through roads have become overloaded during commuting hours.

Aside from very limited, special purpose systems (e.g., Council on Aging van), no public transportation is available in Carlisle. The nearest connections to train service to Boston are in Concord (about five miles from the Concord-Carlisle border), in Acton, and in Billerica.

No public water system exists in Carlisle. All water is derived from individually owned wells, most of which are deep wells tapping bedrock fractures at typical yields of 3 to 5 gallons per minute. Given the very rocky terrain, the construction of a water distribution system would be very expensive. Nevertheless, to plan for the needs of potentially denser development or an event of groundwater pollution that might damage supply aquifers, Carlisle reserved in 2002 a water rights area on a portion of the O'Rourke land that was sold to the federal government and incorporated into Great Meadows National Wildlife Refuge. A series of consultants and qualified townspeople have developed a water-supply plan for the parcel after preliminary hydrogeologic studies indicated that a public water supply yielding approximately half a million gallons per day could be developed (Preliminary Hydrogeologic Study).

No sewer service exists in Carlisle. Each building site has its own septic system.

Long-term Development Patterns

Current development outside of the town center predominantly conforms to the town's two- and four-acre zoning. Lots must either be two acres with 250 feet of frontage or four acres with 40 feet of frontage. The reduced frontage lots, coupled with the opportunity to create common driveways by special permit (wherein several homes are served by a single drive off a roadway), have reduced the visual impact of developments on town ways. A Distinctive Structures Preservation Bylaw, allowing barns and other outbuildings no longer in agricultural use to be renovated for other purposes such as office use, was adopted in 1998 to preserve some of the rural atmosphere.

The current special permit exceptions to standard two- and four-acre zoning are the Senior Residential Open Space Community (SROSC) and Conservation Clusters. These exceptions offer the opportunity to build clusters for senior citizens and clusters to preserve conservation values. There have been no more senior housing developments in Carlisle since Malcolm Meadows, built in 1995 as an SROSC, with 33 acres preserved as open space and 4 acres used for 12 units reserved for seniors. Two of the last three subdivisions approved in Carlisle (in 2000) were at least partially developed as Conservation Clusters.

The high cost of building lots suggests that Carlisle should expect more 40B comprehensive permits for denser development than what would be allowed under standard zoning. It is unknown how increased development and its inevitable increase in water withdrawal and on-site sewage disposal will affect groundwater resources. However, signs of stress to the water supply of some abutters of the senior housing complex at Malcolm Meadows are now evident. As more dense developments are proposed for Carlisle, increasing attention will need to be paid to protection of our groundwater, not only from onsite sewage disposal, but also from increased pesticide use on lawns, runoff from roofscapes and paved areas, road salt for ice management, and the overall increased demand for water.

Increased development also brings with it a reduction in tree cover that alters the water cycle and surface-water temperatures and interrupts long-established wildlife corridors and habitat. With no public transportation servicing such a small town, increased development will continue to increase local traffic on an expanding network of roads and dramatically increase through traffic from surrounding towns experiencing similar growth. This increased traffic will further disrupt

wildlife corridors, both terrestrial and wetland, and increase collisions between animals and automobiles.

For practical purposes, current zoning permits no new commercial development beyond the few businesses already in existence. However, it does permit, and as noted there is an increasing presence of, home-based businesses in town. This phenomenon, prevalent as cottage industry during the town's agricultural period, tends to enhance the town's sense of community as well as to limit increases in internally generated commuter traffic.

Section 4: Environmental Inventory and Analysis

- A. Geology, Soils, and Topography
- B. Landscape Character
- C. Water Resources
- D. Vegetation
- E. Fisheries and Wildlife
- F. Scenic Resources and Unique Environments
- G. Environmental Challenges



Section 4: Environmental Inventory and Analysis

A. Geology, Soils, and Topography

Carlisle's present topography is largely due to the most recent glacial period ending 10,000 years ago. The great weight of the moving glacier reshaped the terrain, and subsequent erosion, deposition, and the sorting action of its melt waters formed today's landscape and soils. The resulting countryside attracted Carlisle's earliest European settlers to this area, to what is considered to be the first New England inland settlement (then part of Concord). The settlers found streams for fishing and for powering grist and lumber mills, grassy meadows for grazing cattle, and upland forests for harvesting firewood and building materials. Indeed, before the Europeans arrived, the Native Americans had long enjoyed the largesse of this bountiful area.

However, the gentle-looking landscape with its rolling hills and wet valleys beguiled the early settlers as it challenges today's farmers with sodden fields at spring plowing, hazardous fieldstones that surface with each spring thaw, hidden rocky ledge that can hang up a harrow, and sandy stretches that leach nutrients and water as fast as they are applied. Today's farmers, homeowners, and developers must still contend with Carlisle's stony topsoil and hardpan base, rock ledges, and persistent wetlands when farming, landscaping, or building. Nevertheless, the soils are generally rich, well drained, and moist throughout the growing season.

Carlisle's topography provides a textbook tour of glaciation effects. Moving ice smoothed the hills into their present, gently rounded shapes. The ice deposited coarse gravel and sand in sub-glacial tunnels, which show themselves today as raised, steep-sided, sinuous natural highways called eskers. Some eskers are visible running parallel to town roads, as seen along Curve Street; others are hidden in wetlands or woods, as those in Great Brook Farm State Park. A trail along the top of an esker can dramatically lift the walker into the forest canopy and provide a bird's eye view of the surrounding woods. The glacier also carved valleys that now carry Carlisle's three major drainages: Spencer Brook, Page's Brook, and River Meadow (Great) Brook. The valleys were wide enough to invite damming by early European settlers to provide waterpower for lumber and grist mills. Remnants of millworks are still visible along River Meadow (Great) Brook near Lowell Road and along the Concord River on Greenough Conservation Land. The millpond that once powered Robbins Mill is now an expansive, wet meadow that extends from Old Morse Road to Westford Street.

The melting glacial ice left outwash gravel and sand deposits that have been excavated over the years to provide fill for road construction and for sanding the cranberry bogs. Numerous glacial erratics, enormous boulders that were carried along by the ice sheet, still sit on top of the ground where they were set down by the retreating ice. A fine example of a glacial erratic is Wolf Rock near the Wolf Rock Road cul-de-sac.

The glacier also left smaller, angular rocks of gneiss, schist, granite, basalt, and quartzite, which the early European farmers wrested from the glacial soil as they cleared fields. They stacked these rocks to form stone walls or stone fences that delineated pastureland throughout Carlisle. These stone walls run every which way over the landscape today, a reminder that, in its agrarian past, Carlisle was once almost entirely cleared of trees. Now, many of the remaining stonewalls are tumbled down, overgrown with vegetation, and at odds with present-day property lines.

Carlisle has some geological deposits that once supported quarrying and mining on a small scale. Early settlers found deposits of dolomite limestone, which they quarried and burned in lime kilns to make plaster that can still be found in the walls of some of the older Carlisle homes. Lime kiln ruins were once located off South Street and off Curve Street, and an abandoned lime kiln and quarry can still be seen on Estabrook Road. Carlisle also had small granite quarries. Rough-hewn granite scraps still lie where they were discarded near those now defunct quarries, as on private property along Westford Road near the town line. Quarried granite was used for foundations and for well crafted stonewalls, as visible along Curve Street near Robbins Field. The most ambitious mining operation was the Carlisle Copper Mine, located along Concord Road near South Street. The mine provided fairly high-grade copper ore for a Boston foundry in the mid 1800s. Today, entrances to the mine's 220-foot-deep shaft are plugged with fill and hidden by leaf litter.

Carlisle's soils are shown on Map 2. The soils indicate a terrain that was once glaciated. The glacier's grinding action pulverized rock into sand and mud and smeared it over the landscape as the glacier advanced. Melt waters sorted the particles and stones. In some areas, such as Foss Farm, extensive outwash plains resulted in the sandy deposits in evidence today. In other areas, the mixing of fine particles and stones produced the well-drained, mineral rich, and moisture-retaining soils that supported Carlisle's early agriculture and nourish its woods, fields, and croplands today.

The soil basement is a thick layer of hardpan, or lodgment till. This hard and stony sub-layer, although difficult to break up with tools, keeps the topsoil moist and rich in minerals. It is responsible for the success of early farming, as well as today's verdant New England landscape. Above the hardpan is a thinner, looser subsoil layer of stones and sand, known as ablation till. On top of the ablation till, loose, fluffy topsoil accumulated from dead and rotting organic matter. Cultivation of cleared land mixed the topsoil with the subsoil. Over time, sub-surface stones are heaved upwards by frost action, removed, and used to build stonewalls or discarded in stone dumps.

Some parts of Carlisle have layers of soil that are stained reddish brown from an accumulation of iron oxides and organic acids, which may show up as unacceptable rust deposits in private well water. In Carlisle's wetlands, hydric soils are saturated with water, creating anaerobic conditions that slow the decomposition of organic matter and result in the deep, wet muck characteristic of its wetlands.

B. Landscape Character

On the east side of town, the Concord River forms the boundary line with Bedford. Broad, wet meadows define the flood plain for the slow flowing, meandering river. From the Concord River flood plain on the east and from the Spencer Brook flood plain on the west, the landscape rises to a mean elevation of 200 feet in the center of town. Four hills in town are 300 feet or higher: Cranberry Hill (300 feet), Heald Road Hill (330 feet), Monroe Hill (330 feet), and Hemlock (Wilson) Hill (355 feet). Other, lesser hills include Schoolhouse Hill (240 feet) and Bellows Hill (260 feet). These hills have enjoyed different names over the years. In all, about half the land slopes in town are less than 3%, and the rest of the slopes are 3% to 8%. Dry land lends itself to development, and, given the economics of development, all dry land in town is considered acceptable for building in compliance with zoning restrictions and the Wetlands Protection Act.

With development limited by two-acre zoning, Carlisle's landscape remains semi-rural in character. A few large working farms and some of the protected open spaces still provide field vistas, whereas neighborhood properties are generally wooded with houses widely spaced. The town center with its limited commercial development and small rotary is the geographical hub of the wheel-shaped town. Five major roads radiate from the town center, and, although occasionally congested with commuters, none of the roads is considered a highway. Carlisle has no traffic signals. Because it is surrounded by towns that are considerably more congested, Carlisle is an oasis of quiet byways appropriate for biking and automobile cruising, protected open space for walking, and vistas for sightseeing. The town draws visitors who are looking for some relief from busier places, while its pleasant landscape also satisfies the passive recreational needs of its own inhabitants.

C. Water Resources

Watersheds

Map 4 outlines the hundred-year flood hazard and wetland areas. Carlisle lies mainly in the Sudbury-Concord-Assabet (SuAsCo) River Basin. Within the town, it is drained by three streams: Pages Brook runs east into the Concord River, River Meadow (Great) Brook runs north through Chelmsford to the Concord River, and Spencer Brook leads south to the Assabet River in Concord. The Concord River provides the ultimate drainage for Carlisle's water on its way to the Merrimac River and, ultimately, to the Atlantic Ocean in Newburyport, MA.

Surface Water

Carlisle has three brooks: Pages Brook, Great Brook, and Spencer Brook. All three brooks originate in Carlisle, with the exception of one tributary of Pages Brook that starts in Billerica. Carlisle has no large natural bodies of water, but it does have several small ponds formed by dammed streams. Greenough Pond, the reservoirs at the Cranberry Bog Conservation Land, and the ponds at Great Brook Farm State Park are examples on public land.

Aquifer Recharge Areas

Carlisle does not have a public water supply. Most private wells in town are recharged from fractures in the bedrock, a process that provides enough water for residential wells but not for a municipal supply. There are at least two aquifer sites in town believed to be suitable for public wells for a possible future town water supply. (See Aquifer Map 4 for sites indicated as over 100 gallons per minute (gpm).) One high-ranking site is on the former O'Rourke Farm, now owned by U. S. Fish and Wildlife Service. Following extensive investigation, a "Water Rights Area" was identified, and the town has secured its right to this area for a potential public water supply.

Flood hazard areas

Map 4 shows the hundred-year-flood hazard zone.

Wetlands

Approximately 15% of Carlisle's land is classified as wetland (Map 4). Most of the wetlands in town are wet woodlands (red maple swamp) or wet meadows. The town has no large ponds or lakes. However, the Concord River with its extensive wetland flood plain forms its southeast boundary.

D. Vegetation

General Inventory

Carlisle's natural vegetation consists of forest and vegetated wetlands. Some meadows and fields survive from early clearing activities, but most open areas progressed to woodland after farming activities ceased. Large areas of fresh water marsh and wet meadows exist along the river and brooks. Vernal pools are common, and the Natural Heritage and Endangered Species Program (NHESP) has to date certified 16 of the pools (Map 9).

Forest Land

Most of the town's former farmland is now second- and third-growth forest. Mature upland forests are dominated by white pine and oak species. Carlisle lies between the largely deciduous forests to the south and the coniferous expanses to the north. Depending on the exposure of the land, north-facing slopes succeed to hemlock and northern hardwood climax communities, whereas south-facing slopes succeed to oak and hickory climax communities. Much of the disturbed and sandy soil areas are covered with stands of mature white pine. Some old fields show succession to the pasture juniper stage. Forested wetlands are dominated by red maple, and wetlands along the Concord River are dominated by silver maple.

Agricultural Land

In the recent past, Carlisle featured commercial poultry, dairy, and pig farms. Remaining is one commercial dairy operation (at Great Brook Farm State Park) and several non-commercial, small-scale, residential, mini-farms raising chickens, horses, beef cattle, or goats. Several large fields in town are still being mowed for hay, alfalfa, and corn silage, and Carlisle contains the most northerly active cranberry bog in Massachusetts. Other agricultural businesses today include nurseries growing perennial garden plants and a cut flower business. Currently, twenty-three parcels of land, totaling about 385 acres, are in Chapter 61A.

Wetlands

Wetlands (wet meadows, bogs, forested wetlands, and freshwater marsh) are a common feature in Carlisle. Defined by saturated soils, they support a unique biodiversity and environmental role that is presently recognized by the Massachusetts Wetland Protection Act (WPA) that legislates (together with federal and local laws) the conditions under which and the manner in which wetlands can be disturbed. As more suitable land becomes built out, developers exert more pressure to encroach on wetlands. Any activity by a developer or homeowner that will remove, fill, dredge, or alter wetlands or may affect the 100-foot buffer zone along a wetland boundary requires the developer or homeowner to file a Notice of Intent with the Carlisle Conservation Commission and is subject to regulation under the WPA and Carlisle's wetland bylaw. If activity in a wetland or buffer zone affects private water supply, ground water supply, flood control, storm-damage prevention, prevention of pollution, protection of fisheries, protection of wildlife habitat, or any combination thereof, the Conservation Commission may deny and not give an Order of Conditions or may issue an Order of Conditions specifying required changes to the project to minimize or eliminate any adverse affects. Ultimately, the goal of the wetland regulations is to protect the wetlands that filter water runoff, protect wildlife habitat and fisheries, prevent flood damage, and protect public and private groundwater supplies, an important concern in Carlisle where homes have private wells.

Rare Species

Carlisle features a number of rare plant and animal species that receive limited protection under the Massachusetts Wetlands Protection and Endangered Species Acts. NHESP Fact Sheets for Carlisle's rare or endangered species are presented in Appendix D.

Carlisle's best-known rare plant is *Viola Brittoniana*, commonly called Britton's Violet or the Coast Violet. It is a globally rare plant that grows on river flood plains. Britton's Violet was once abundant along the east coast from Maine to North Carolina, but today it is known at only seven locations—six of these are in Massachusetts along a stretch of the Concord River. Mark Halloran rediscovered an historic Carlisle population in the late 1980s.

Since that rediscovery, Dr. Sally Zielinski of Carlisle has been studying Britton's Violet under grants from the Nature Conservancy and the Massachusetts Natural Heritage and Endangered Species Program. Her studies have included the biology and ecology of the plant, monitoring population levels, searching for and locating additional populations, and developing management plans for the sites where the plant is declining or threatened with development.

E. Fisheries and Wildlife

Inventory

Carlisle has sponsored several Biodiversity Days when experts in various fields of natural history have identified and listed as many species as possible in their area of interest on the given day on a parcel of town-owned land. Records of these biodiversity inventories are on file in The Carlisle Conservation Commission's office. (See Appendix E for a partial listing of Carlisle's wildlife.)

Each winter, a group of Carlisle birdwatchers inventories all the bird species, with their numbers, on the day of the annual Concord Christmas Bird Count in a sector of the Concord census circle that includes a portion of southern Carlisle. Detailed records from 1973 to the present provide data for identifying trends in winter bird populations.

Carlisle's wildlife includes an increasing population of deer, as well as numerous small mammals such as fox, raccoon, woodchuck, opossum, porcupine, skunk, fisher, weasel, mink, beaver, muskrat, otter, and coyote. Black bear were sighted frequently in the summer of 1998 but less often at the end of 1999 when the bear apparently moved out of town. Moose are occasionally sighted.

Carlisle's bird life is quite varied, due to a variety of habitats including fields, wetlands, and forests. Pileated Woodpeckers, which require extensive woodlands, are still relatively common.

Northern goshawk, red-shouldered hawk, and turkey vulture are uncommon birds that have bred in Carlisle in recent years. Spotted sandpiper and killdeer have bred at the Carlisle Cranberry Bog for the past several years, and yellow-throated vireo have nested at Great Brook Farm State Park.

Eastern bluebird is now relatively common, due to nest boxes at Towle Field and Foss Farm initiated by naturalists Don & Lillian Stokes and volunteers in the 1980s. Many of these nest boxes are still in use by bluebirds and are also used by tree swallows and house wrens. The bobolink population on Towle Field has declined for the past few years, perhaps due to the

incursion of European buckthorn and other woody plants. An experiment with sheep grazing, along with regular mowing outside the nesting season, has helped restore the grasses at Towle Field, so hopefully the bobolink population will rebound.

Carolina wren and red-bellied woodpecker have expanded their ranges northward and are now quite common in Carlisle; range expansion is encouraged by the increasing popularity of bird feeding. Wild turkeys are also on the increase and sometimes strut boldly through back yards and across access roads.

Nesting boxes for wood duck are maintained at the Greenough Conservation Land.

Vernal Pools

Carlisle contains many vernal pools, and 16 are certified and protected through the Natural Heritage Endangered Species Program (Map 9). An effort is ongoing to identify and certify more of the vernal pools in town, especially those in areas vulnerable to new development. Each year, the Conservation Commission and Trails Committee host a walk for families to a vernal pool where a specialist in vernal pools informs the participants about the unique role vernal pools serve in wildlife biology.

Corridors for Wildlife Migration

Carlisle has successfully protected several large parcels of land in town that support significant wildlife populations and provide large open spaces for passive recreation. Carlisle is encouraging conservation of wildlife habitat by promoting linkages between protected lands, to serve not only as wildlife corridors, but also as trail connections for people. An example of an ideal wildlife corridor with potential trail linkages is the contiguous protected properties of the Town Forest, Heidke Conservation Land, Greenough Conservation Land, Great Meadows Wildlife Refuge, and Foss Farm, resulting in almost 2 miles of corridor across undeveloped land totaling well over one square mile in area. On the western edge of town, the protection of a West Corridor (including discussions with neighboring Acton) is well underway, including both private and public access Conservation Restrictions (CRs), publicly owned protected open space, and Trail Easements in an effort to stitch together wildlife corridors.

Rare Species

Carlisle's rare or endangered species of plants and animals are listed in Appendix D. The Natural Heritage Endangered Species Program has identified five Estimated Habitats of Rare Wildlife in town, including two areas along Curve Street, two areas along the Concord River north and south of Bedford Road, and an area along East Street. A Priority Habitat of Rare Species appears on a small section of the Gas pipeline off Acton Street, and another exists near the Concord River (Map 9).

F. Scenic Resources and Unique Environments

Scenic Landscapes

Carlisle's open space provides many scenic resources (Map 3). People driving through town along one of the main roads see rural vistas of field and forest and a town center that is a classic example of a small New England town.

People who visit Great Brook Farm State Park can view the operating dairy farm, picnic by the fire pond, canoe in Meadow Pond, or walk, run, bike, horseback ride, dog walk, or cross-country ski along trails winding through the farm and woodland.

At the nearby Carlisle Pines section of Great Brook Farm State Park (at the end of Forest Park Drive), people can walk among several towering pines and hemlock trees with heights over 100 feet. These trees remain from a patch of forest that was saved from logging in 1901.

Anyone passing Carlisle by boat or canoe on the Concord River can see the natural vistas along the Great Meadows National Wildlife Refuge land and the town's Greenough conservation land.

People who walk the town's conservation lands can explore ponds, wetlands, geological outcroppings, woodland trails, and gently rolling fields.

Major, Characteristic, or Unusual Geologic Features

The topography of Carlisle includes features formed by the last glacier (Map 3). People exploring the public lands of the town can notice excellent examples of glacial eskers and boulder erratics (Great Brook Farm State Park), impressive ledge outcroppings (Conant Land), and undisturbed riverine environment (Foss Farm, Great Meadows National Wildlife Refuge, and Greenough Land).

Cultural, Archeological, and Historic Sites

Scattered through the woods are miles of old stone walls and the occasional stone foundations of colonial-era homes or mill sites, reminders of the town's earlier inhabitants. An old Indian grinding stone located in Great Brook Farm State Park is only one of several sites around town that have been investigated as potentially having pre-Colonial historical importance. An historic lime kiln and lime quarry have been protected in the Western Corridor. The December 2004 Town Meeting approved a warrant article appropriating funds for the purpose of preparing a Historic and Archeological Preliminary Survey Plan for the town that will eventually inventory sites in compliance with Massachusetts Historical Commission standards. An area of the town center is designated as the Historic District (Map 3). The Carlisle Historical Commission must first approve any changes to properties in this district.

Unique Environments

Although Carlisle's topography is more typical than atypical for the region, the town is home to several species of rare plants and animals and features a small, protected stand of virgin white pines (Map 3). Perhaps one reason Carlisle contains habitats for rare species is that the land in Carlisle has not been developed as much as it has been in surrounding towns.

The Cranberry Bog is an unusual feature in Carlisle (Map 3). It is the northernmost cranberry bog operating in Massachusetts and the only one remaining in Middlesex County. During the fall harvest, people can view a nearly 40-acre mat of floating of red berries during the harvest and enjoy the surrounding ponds and forest.

Carlisle has a good trail network, with more than 45 miles of protected and maintained hiking trails on public and private lands. Much work remains to be done to preserve important sections of the trail network that lie on unprotected land. The Trails Committee publishes a *Carlisle Trails* guidebook that features maps of trail networks throughout town (Appendix C).

G. Environmental Challenges

Hazardous Waste and Brownfield Sites

All occurrences of known hazardous spills have been addressed. One known site of ground contamination is located at the site of the Carlisle Police Station, and the town is in the final phases of certification that all contaminants have been removed. MTBE (methyl tertiary-butyl ether) contamination in the groundwater in the town center from the former gas station has been addressed. The gas station stopped operation, and contaminated soil was partially removed in 2001. It is assumed that further clean up will be necessary, but at this time no action has been taken. A small leak of petroleum products occurred at the DPW site on Lowell Road, and a clean up is in progress.

Landfills

Carlisle has no active landfills. Household waste is collected at the Carlisle Transfer Station on the site of the former landfill and then trucked to the Massachusetts Refusetech incinerator in North Andover through a contract with North East Solid Waste Committee (NESWC).

Erosion

Carlisle has no recognized erosion hazards.

Chronic Flooding

Carlisle has no recognized chronic flooding hazards. However, areas of Carlisle are within the 100-year Flood District (Flood Hazard Zone) as delineated by the Federal Emergency Management Agency (FEMA) (Map 4). Within the last several years, an incursion of beavers into local wetlands has resulted in novel flooding problems affecting some homeowners and farmers. The Commonwealth is involved in defining strategies for beaver damage control, but at this time, the effects of flooding by beaver damming is a significant frustration and sometimes expense to those property owners affected.

Sedimentation

Carlisle has no sedimentation issues.

Effect of Development

Although Carlisle is subject to the same development pressures that exist in other communities, some mitigating features are unique to this community. Two-acre zoning continues to limit the density of new developments but does tend to encourage the new construction of very large residential structures. The high price of building lots tempts people to tear down older, smaller homes, reducing the inventory of smaller residences in favor of larger ones. Although Carlisle is aggressive about protecting wetlands and their buffer zones, the expensive options of alternative technology and raised septic designs have become feasible in the current housing market, so parcels once thought to be unbuildable are now being developed. In addition, a change in the accepted percolation time from 30 minutes to 60 minutes may contribute to unanticipated building opportunities (with larger septic systems).

Chapter 40B developments are of significant concern. Town planners worry about the possible construction of high-density 40B housing with little regulatory input, the limited opportunity to plan adequately for the effect of unpredictable rapid growth, and the very real risk to private wells

and the aquifer both to 40B project residents and abutters in a town without a public water supply. Strategies to predict and influence 40B development are a high priority for many townspeople.

Because Carlisle lacks a business center and has little land zoned for industrial or commercial use, businesses in town tend to be cottage industries and limited in size. Opportunity for commercial development in town is limited.

Ground and Surface-water Pollution

The town continues to use road salt to improve road safety during the winter. Due to a problem many years ago in storing the salt, some wells in the town center have high salt levels. The town now applies a non-sodium-based salt to the roads in the center of town, and road salt is stored in a covered shed.

Impaired Water Bodies

Carlisle has no impaired bodies of water.

Other

Carlisle has no other issues that need to be described here.

Section 5: Inventory of Lands of Conservation and Recreation Interest

- A. Inventory of Protected Lands
- B. Inventory of Unprotected Lands



Section 5: Inventory of Lands of Conservation and Recreation Interest

In this section, the open space and recreation lands of the town are inventoried and classified as protected or unprotected, according to the guidelines of the Massachusetts Department of Conservation Services. Protected open spaces are lands that are permanently committed for conservation or recreation purposes or both. They include holdings of the Carlisle Conservation Commission (Table 1 and Table 2), the Commonwealth and federal governments (Table 3), and the private Carlisle Conservation Foundation (CCF) (Table 4). Protected open space also includes private properties with permanent conservation restrictions (Table 5) and open space created by Cluster Developments (Table 8). Unprotected open space consists of public and private properties that are not designated for conservation or recreation, and includes land in Chapter 61, 61A, or 61B (Table 6). Of particular interest to the town are sizeable unprotected parcels that would be desirable additions to its protected open space inventory based on established criteria used to evaluate and rank them. The large parcels (10 acres or more) of unprotected open space remaining in Carlisle are inventoried and ranked in Table 7.

A. Inventory of Protected Lands

Recreation Inventory

Town-owned Playing Fields are on town property, both school and non-school, and are located in residential zones. All Town-owned recreational areas are listed here. For locations, ownership, management, facilities, and features, see Table 10.

BANTA-DAVIS LAND

Construction is complete with three dedicated fields: one soccer, one Little League, one softball. The running track is complete as well as the relocation of the Rory Bentley Exercise course from near Spalding Field. The fields were opened in spring 2001.

COREY GYM

This large gym with an exercise room was built during the school expansion project of late 1980s. The gym and exercise room are wheelchair accessible. The Recreation Commission uses the Corey Gym for many after-school activities for all ages.

DIMENT PARK

In 1999 volunteers completely rebuilt Diment Park into a toddler playground. In 2000 the town voted to accept the toddler playground as an asset, and the Recreation Commission accepted responsibility for its maintenance.

RECESS AND PLAY AREAS

A large, paved plaza between buildings of the school campus is used for informal games during recess. Ample parking is adjacent, and ramps provide wheelchair access to the plaza. Once a year a volunteer clean-up day helps maintain the playground area, which is in good condition.

RORY BENTLEY FITNESS COURSE

As part of the development of the Banta-Davis recreation area, the Rory Bentley Fitness Course was moved in 2000 from its location near Spalding Field and Diment Park to its current location adjacent to the running track on Banta-Davis Land.

SPALDING FIELD

Five acres support baseball or softball diamonds in three corners, overlaid by two soccer fields in the center. An underground sprinkler system has been added, and the field is in good condition. The adjacent parking area contains a curb cut for field access and one handicapped parking space.

TENNIS COURTS

At the Annual town meeting in 2003, the Town voted to appropriate \$75,000 for the construction of four new tennis courts on the Banta-Davis field. The Recreation Commission is currently reviewing this project due to higher-than-expected construction bids. If the tennis courts are completed, the Commission plans to convert the existing two tennis courts, built in 1987 and located on school property, to outside basketball courts.

THE CARLISLE CASTLE

The Carlisle Castle playground, which includes a variety of play equipment, was constructed in 1988 by volunteers. Army Engineers and Navy Seabees joined town residents on the five-day construction project. The non-profit Carlisle Recreation Trust provided some of the funding. The Carlisle Castle playground was condemned by the Playground Safety Commission in 2002 and has since been restored to current playground standards. The playground is used during school hours by K-8 children and at other times by children of all ages.

TOWN HALL

The recreation Commission has an office in the Town Hall and offers exercise and fine art classes for all ages in the building.

Changes since 2000 include rebuilding Diment Park, reconstructing the Carlisle Castle playground, relocating the Rory Bentley Fitness Course, installing a seasonal outdoor skating rink at the parking lot at Kimball's ice cream stand, approving construction of four additional tennis courts, installing a running track and improving playing fields with fencing, landscape management, and paved access. In spring 2004, additional land for a single playing field was acquired for active recreation at the Benfield Parcel A site using Community Preservation Act (CPA) funds.

Accessibility

All lands used for recreation that are not under school management, in addition to Conservation lands, were inventoried for accessibility (Table 11 and Appendix G).

Conservation Inventory

Carlisle has approximately 3,208 acres of protected natural space as of May 2005, an increase of 465 acres since the 2000 Open Space and Recreation Plan. Protected open space comprises approximately 32% of Carlisle's total acreage of 9,913 acres and includes conservation lands owned by the Town (1,079 acres) protected under Article 97 of the Massachusetts constitution, land owned by the Commonwealth (998 acres), federal land (321 acres), land privately owned by the Carlisle Conservation Foundation (217 acres), land owned by Harvard University and protected by a recorded "Statement Of Public Charitable Obligation" (95 acres), additional land protected by permanent Conservation Restrictions (CRs) (498 acres), and land restricted by a landowners association (2 acres). Lands like the Davis Corridor (126 acres) and the Estabrook Woods Buffer Lands (68 acres), which are town-owned conservation lands that are also protected by permanent CRs, are counted only once in the final total acreage of protected land. Similarly,

lands such as Poole Swamp (15.2 acres) that are CCF-owned conservation lands that are also protected by CRs are counted only once. Harvard University's holdings in Estabrook Woods in Carlisle (95 acres) are permanently protected through a recorded "Statement Of Public Charitable Obligation" rather than through a Conservation Restriction. (Any slight discrepancy between the acreages in this paragraph and those in the tables is due to rounding off.)

The following Tables list protected land in Carlisle and land in Chapter 61, 61A, or 61B.

Table 1: Town Conservation Lands as of 1 May 2005

Table 2: Town Acquisitions for Conservation – Listed by Date

Table 3: Commonwealth and Federal Lands in Carlisle

Table 4: Carlisle Conservation Foundation (CCF) Lands as of 1 May 2005

Table 5: Properties with Conservations Restrictions (CRs)

Table 6: Lands in Chapter 61, 61A, or 61B

The Carlisle Conservation Commission has established rules and regulations for town-owned conservation lands (Appendix B).

The Carlisle Trails Committee publishes a guidebook, *Trails in Carlisle*, with maps of trails, descriptions of public open space lands in town, and descriptions of historical markers (Appendix C).

Town-owned Conservation Land

Town-owned Conservations Lands are described below. Suggested activities, the facilities, the accessibility, and special regulations are included for the more frequented properties.

BENFIELD LAND

This 25.68-acre parcel was acquired for conservation in 2004 as part of a larger 45-acre purchase that is available for limited affordable housing, one ball field, and additional protected open space. The 26 acres of natural space consists of open fields, a certified vernal pool, and wetlands associated with Spencer Brook. The wetlands connect this parcel with the Bisbee Land and Carlisle Conservation Foundation's Spencer Brook Reservation.

Activities: The fields are available for hiking, birding, kite flying, and other passive recreation activities.

Facilities: Currently there are no facilities. Eventually, there will be public access and parking available from South Street.

Accessibility: Currently accessibility is limited and not suitable for wheelchairs.

Special Regulations: There are no special regulations.

BISBEE LAND

This 34-acre parcel was purchased in 1987 for purposes of conservation and outdoor recreation. It includes an open field, which is currently hayed by a local farmer, and trails in wooded portions.

Activities: Currently the area is used for walking, horseback riding, and cross-country skiing.

Facilities: Parking is located along Concord Street on a pull out.

Accessibility: The trails are not handicapped accessible. The field, however, can be navigated by wheelchair.

Special Regulations: According to the original Warrant Article, the Carlisle Conservation Commission is responsible for managing the outdoor recreation on this parcel.

BUTTRICK WOODS OPEN-SPACE PARCEL

This 13.97-acre parcel bounds three sides of the Buttrick Woods development, on Concord Street. It is subject to Conservation Restriction #52 and is part of the Estabrook Woods Buffer Lands. It was deeded to the town through the Conservation Commission in 2000 as part of a conservation cluster development to provide a wildlife corridor from the Bisbee Conservation Land to the nearby Estabrook Woods.

Activities: Currently there are no activities on the land. No trails have been established yet.

Facilities: There are no facilities.

Accessibility: There are no trails on this property.

Special Regulations: There are no special regulations.

CARR LAND

This 6.08-acre, land-locked parcel of upland forest abuts the Rockstrom Open-Space Parcel, is part of the Estabrook Woods Buffer Lands, and is subject to Conservation Restriction #52. Trails leading from both Bellows Hill Road and the Rockstrom Land to the Estabrook Woods pass through this property.

CRANBERRY BOG CONSERVATION LAND

This 310-acre Cranberry Bog conservation area straddles the Carlisle-Chelmsford line. Access to the town's 151 acres is via Curve Street. Carlisle's portion contains about 40 acres of cranberry bog in addition to the ponds and an adjoining wooded area of both uplands and wetlands. A local farmer currently grows cranberries under a long-term agreement with the town and provides public demonstrations during the cranberry harvest.

Activities: Self-guided trails with interpretive signs circle the cranberry bogs and connect to trails that wind through the wooded uplands. The ponds provide fishing, canoeing, and ice skating. The land is used for cross-country skiing and horseback riding. The varied habitats invite birding and other natural history studies.

Facilities: Parking is along the street.

Accessibility: The interpretive signs and parts of the dike trails are wheelchair accessible.

Special Regulations: Dogs and people must stay off the cranberry plants. In response to repeated public complaints, dispensers for dog-waste bags have been placed near the parking areas.

Connections: Carlisle's Cranberry bog trails connect with trails in the Chelmsford-owned Cranberry Bog Reservation and with the gas-line easement.

DAVIS CORRIDOR

This 126.4-acre wooded parcel is accessed from Bedford Road and continues southward off Stearns Street, into Harvard's Estabrook Woods to the Concord town line. Between 1974 and 1979, the Town of Carlisle, with the assistance provided by the State Self-Help Program, purchased the properties that compose this north-south corridor, which has trails connecting through Estabrook Woods to miles of trail in Concord. The Davis Corridor is subject to Conservation Restriction #36, with The Trustees of Reservations (TTOR) named as grantee. There is also a small, wild cranberry bog.

Activities: The land is used for hiking, cross-country skiing, horseback riding, and birding.

Facilities: Access on Bedford Road is marked with a sign. Although there is currently no parking by the Bedford Road entrance, there is a space where a small two- or three-car parking lot could be built. The other end of the Davis Corridor abuts the Malcolm Land, and its 9-car parking lot,

plowed during winter, provides ample parking for those entering the Davis Corridor and Estabrook Woods via the Two Rod Road trail.

Accessibility: The trail is not recommended for wheelchairs, due to rough terrain and wet conditions most of the year.

Special Regulations: There are no special regulations.

DEACON LAND

This 7.51-acre parcel of wetland and some upland forest abuts the Sachs Greenway and the Rockstrom Land but lacks a dry trail connecting the two. It is part of the Estabrook Woods Buffer Lands and is subject to Conservation Restriction #52.

FISKE MEADOW

This 11.6-acre parcel off Lowell Road across from the Transfer Station is approximately two-thirds wetlands and one-third open agricultural field. It has no trails but serves as a wildlife corridor from Old Morse Road (path) and Conant Land through the Department of Public Works (DPW) area to Great Brook Farm State Park. It functions as part of the historic district's backdrop and as plant and wildlife habitat. It adjoins a 3-acre open field along Lowell Road that is protected by a local Conservation Restriction.

FOSS FARM

This 55.7-acre parcel off Bedford Road was purchased in 1971 for conservation and recreational use with monies from the town's Conservation Fund, the state's Self-Help Fund, and the Federal Land and Water Conservation Fund. The property is bordered by Great Meadows National Wildlife Refuge and the Concord River to the south and east. A popular trail leads from Foss Farm across the Refuge and connects to the Greenough Conservation Land.

Activities: Approximately 20 acres of field are currently dedicated as agricultural land and are cultivated by a local farmer under an agreement with the Conservation Commission. Woods and trails provide for walking and horseback riding. About 90 community garden plots are available on a first come, first served basis. The horse and pony riding rings have recently been substantially upgraded and accommodate both dressage and jumping. Woodland roads and the farmer's road around the agricultural fields provide for dog training and dog-sled racing. Other activities include jogging, hiking, limited trail biking, model airplane flying, model rocket launching, cross-country skiing, snow shoeing, and birding. Woodcocks are in residence, and several bluebird houses have been erected. The Recreation Commission has expressed interest in installing active recreation fields at Foss Farm. Group activities are allowed by permit.

Facilities: Garden plots are chiseled and disked in the spring by a volunteer (the farmer), and hand pumps provide the water supply. The only parking lot is large enough for about 50 cars.

Accessibility: Handicapped parking is provided. The land is flat. The dirt road to the community gardens and some of the other trails are marginally wheelchair accessible. Access could be improved by surfacing some of the paths with crushed stone dust.

Special Regulations: Permits are required for certain activities, such as using a community garden plot. The 2003 map from the Natural Heritage and Endangered Species Program (NHESP) shows an Estimated Habitat of Rare Wildlife polygon for wood turtle on Foss Farm. During 2004, a blue-spotted salamander was found and reported to NHESP (Appendix E).

FOX HILL

This 11.22-acre area of open fields, field edge, and forest on the corner of Bedford Road and Stearns Street provides a rural vista to travelers on Bedford Road.

Activities: A local farmer maintains 8 acres of hay fields. The open areas are available for walking dogs, birding, and horseback riding.

Facilities: Parking is along the street.

Accessibility: The field is accessible from Stearns Street and can be traversed by wheelchair or stroller when the hay is not too high. However, erosion is a problem at the entrance. The addition of a small amount of crushed stone dust at the entranceway would improve accessibility.

Special Regulations: There are no special regulations. The Board of Health maintains a water monitoring well on this property near Bedford Road.

GAGE WOODLAND

This landlocked, 14-acre property with an access easement over private land is located off Ember Lane and abuts the Great Brook Farm State Park. It was a gift by will to the Town of Carlisle. The 1994 Annual Town Meeting voted that the property be managed by the Carlisle Conservation Commission. The property is an upland hardwood forest without mapped trails.

GREAT BROOK ESTATES OPEN SPACE AREA 1

This 3.67-acre parcel is associated with a conservation cluster development and was acquired by the town in 2000. A trail on the property provides access from Rutland Street to Great Brook Farm State Park.

GREENOUGH LAND

This 255-acre parcel was purchased in 1973 with state and federal assistance. It includes 8 adjoining acres located in Billerica owned by the Carlisle Conservation Foundation. The land features large rock outcroppings, planted red pine groves, a 20-acre pond, streams, wet meadows, and 1,800 feet of frontage along the Concord River. A trail across Great Meadows National Wildlife Refuge connects to Foss Farm. The southeastern portion adjacent to Billerica is developed land that includes a cottage, large slate-roofed barn, and an earthen dam across Pages Brook to create Greenough Pond before feeding into the Concord River.

Activities: A trail system was established, with a link to Great Meadows National Wildlife Refuge and Foss Farm. The pond is used for skating, fishing, and canoeing. The varied habitats are exceptional for bird and dragonfly watching. Massachusetts Department of Fish and Wildlife maintains wood duck boxes at the pond and in the associated wetland on Maple Street. In winter, the trails are used for cross-country skiing, and the pond is available for skating and ice fishing.

Facilities: There are two off-street parking lots for 18 cars on Maple Street.

Accessibility: Numerous tree roots in the paths make wheelchair travel difficult beyond the parking lot on Maple Street. The driveway to the Greenough cottage and barn is available only to emergency vehicles. There is limited parking available near the barn at the end of River Edge Road in Billerica.

Special Regulations: There are no special regulations. The dam is in decline and is subject to an engineering study for possible repair.

HART FARM PROPERTY

This 13.5-acre parcel off Curve Street was deeded to the town as part of a Conservation Cluster development. This parcel is contiguous with the Cranberry Bog and with an additional 65 acres of municipal land to be reserved as a potential future water source. The land is level, wooded, quite low, and bordering an extensive wetland.

Activities: The Trails Committee established a connecting trail from the end of Hart Farm Road to Old Morse Road (path). Trails then link to Great Brook Farm State Park, the Cranberry Bog Conservation Land, and Conant Land.

Facilities: There is off-road parking for two cars at a small lot off the Hart Farm Road cul de sac.

Accessibility: The trail is rough and not suitable for wheelchairs.

Special Regulations: There are no special regulations.

HEIDKE LAND

This 8.19-acre parcel off Brook Street is almost entirely wetland. A trail across this parcel is proposed, which could link the Town Forest to the Greenough Land in winter months.

HUTCHINS AND ROBBINS FIELDS

These two parcels contain 34.45 acres of fields and woodland purchased by the town in 1999 with assistance from the Massachusetts Agriculture Preservation Program.

Activities: The fields are in active agriculture and are managed by local farmers. People enjoy walking their dogs and birding along the perimeter of the fields during the growing season.

Facilities: There are no facilities.

Accessibility: There are no trails on the properties. However, the flat terrain is perhaps accessible to wheelchairs. During the growing season, only the field edges are open.

Special Regulations: Agricultural activities during the growing season allow public access to the field edges only.

MACAFEE LAND

This 15-acre parcel was given to the town in 1992. It contains large areas of wetlands. The land lies along Carlisle's border with Westford, and trails lead toward Westford and nearby Chelmsford. The parcel also serves as a conservation buffer for the nearby historic, state-owned Carlisle Pines section of Great Brook Farm State Park. A trail links the two natural spaces.

MACONE PROPERTY

This 3-acre parcel was given to the town in 1992. The property is land-locked and is located off Bedford Road and Brook Streets. It is almost entirely wet year round. There is an easement leading from Bedford Road, but it is otherwise inaccessible.

MALCOLM LAND

This 23.1-acre parcel off Stearns Street was purchased in 1996 and received Commonwealth Self-Help reimbursement. It abuts both the town-owned Davis Corridor and the Carlisle Conservation Foundation (CCF) and The Trustees of Reservations (TTOR) jointly owned 10.6-acre Malcolm Preserve. This upland property includes woods and fields. The Malcolm Land is part of the Estabrook Woods Buffer Lands and is subject to Conservation Restriction #52.

Activities: A trail (historic Two Rod Road) runs from Stearns Street to the Estabrook Woods. The property invites hiking, birding, and cross-country skiing.

Facilities: There is an off-street parking lot with nine spaces. In 1999, bluebirds fledged from birdhouses along the edge of the parking lot. On the adjacent Malcolm Preserve, a butterfly garden was planted in 1999 as an Eagle Scout project. The Malcolm Preserve also contains a specially built, stone-dust loop-trail, which is handicapped-accessible except in winter. On another trail, there is a bench where people can rest in the shade while looking over the field.

Accessibility: The handicapped-accessible stone-dust trail on the adjacent Malcolm Preserve invites wheelchair users to enjoy the woods and fields. There is handicap-accessible parking immediately next to the trail.

Special Regulations: There are no special regulations.

MANNIS LAND

This 28-acre parcel is an aggregation of wet and wooded lots off Aldershot Lane, Rutland Road, and North Road. It serves as wildlife habitat and a buffer between developments. It has no planned use. During the spring of 2005, a potential vernal pool was evaluated and observations of wood frog submitted to NHESP.

ROCKSTROM OPEN-SPACE PARCEL

This 7.55-acre parcel was deeded to the town in 1998 as part of a conservation cluster development. The wooded parcel contains an important trail that runs from School Street to trails on the Carr Land, the Woodridge Road neighborhood through CCF's Poole Swamp land, and the Estabrook Woods. The Trails Committee received in 2005 a Wetlands Protection Act (WPA) permit to bridge an upper reach of Spencer Brook in order to provide a more consistent trail connection between the Poole Swamp Land and the Rockstrom Parcel. The Rockstrom Open-space Parcel is part of CR #52, the Estabrook Woods Buffer Lands.

Activities: The trails are used year-round. The natural space offers trail biking, horseback riding, hiking, cross-country skiing, and birding.

Facilities: There are no facilities.

Accessibility: The trails are not handicapped accessible due to terrain, tree roots, and rocks.

Special Regulations: There are no special regulations.

SACHS GREENWAY

This 9.34-acre tract, which was purchased in 1997, is a narrow parcel abutting Harvard's Estabrook Woods and features a trail connecting the south end of Baldwin Road to the Two Rod Road trail. The eastern section of the land contains the western half of the Two Rod Road trail that connects to the Malcolm Land. The trail connection between this land and the western side of the Estabrook Woods, however, is on private property. Sachs Greenway is part of the Estabrook Woods Buffer Lands and is subject to Conservation Restriction #52.

Activities: The hiking trails are used year-round.

Facilities: There are no facilities.

Accessibility: The trails are not handicapped accessible.

Special Regulations: Trail bikes and horses are not allowed.

SWANSON LAND

This 20-acre parcel abuts the Hutchins and Robbins Fields. The accessible portion is a mature, white pine forest, surrounded by an extensive wetland.

Activities: The open pine forest is available for hiking and picnicking.

Facilities: There are no facilities.

Accessibility: Limited off-road parking is available at the Robbins Field turn-in along Curve Street. A marked trail leads from the field's south edge. The trail is not suitable for wheelchairs.

Special Regulations: There are no special regulations.

SWANSON FAMILY LAND

This 3-acre lot with frontage on Barnes Place within the Tall Pines subdivision abuts Carlisle Pines and was given to the town for conservation in 1998. The Trails Committee established a trail through this lot to link with the trail network in the Carlisle Pines section of Great Brook Farm State Park. (A portion of this lot serves as a retention basin.)

Accessibility: Limited parking is available on a turn out on Barnes Place. The marked trail is not suitable for wheelchairs.

TOWLE LAND

This 121-acre parcel, the greater part of which was purchased in 1968 with state and federal assistance, features rolling fields along Westford Street, and the surrounding woods contain hills with rock outcrops, small streams, and wetlands. There is a small pond held in place by an earthen dam near the parking area.

Activities: Wooded trails and open fields invite hiking and birding. The trails and fields are available for cross-country skiing in winter. Bluebird boxes are placed all around the field, and from 2001 to 2004 the field was intensively grazed by sheep as part of a study on the effectiveness of sheep for control of invasive vegetation.

Facilities: Towle Field is mowed regularly on a schedule respecting the bobolink nesting season. A parking lot off Westford Road accommodates 12 cars.

Accessibility: The terrain is hilly and not readily traversed by wheelchair.

Special Regulations: There are no special regulations.

TOWN FOREST

Since 1994, the Conservation Commission has managed the 71-acre Town Forest on East Street. Since its establishment by the Town in 1925, the Town Forest has been treated by the Town, and specifically managed by the Conservation Commission since 1994, as a single, undivided, open space parcel. The parcel features hilly hardwood forestlands, mature red and white pine stands, wetlands, a vernal pool, and overgrown fields.

Activities: A trail network within the forest invites hiking, cross-country skiing, bird watching, and nature study.

Facilities: There is no parking lot at the Town Forest. Visitors must park along East Street.

Accessibility: Although some of the trails are old woods roads, the terrain is hilly, rough, and not suitable for wheelchairs.

Special Regulations: There are no special regulations.

Commonwealth-owned Conservation Land

GREAT BROOK FARM STATE PARK (GBFSP)

This 998-acre area features a Visitor Center, working dairy farm, ice cream stand, an extensive trail system through fields and woods, small ponds, streams, a cross-country skiing venue, and trail linkages to many of Carlisle's other open spaces. There is a \$2.00 parking fee for visitors to the Park. Carlisle State Forest, or **Carlisle Pines**, is a 22-acre isolated parcel of GBFSP that protects a small stand of virgin white pine trees exceptional for their size and grandeur. The parcel is completely wooded with deciduous and coniferous trees, with some planted red pines. Old cart paths provide access through the woods. Parking and access is available at the ends of Barnes Place and Forest Park Drive.

Federally-owned Conservation Land

GREAT MEADOWS NATIONAL WILDLIFE REFUGE

This 321-acre area bordering the Concord River protects much of Carlisle's riverfront on this Wild and Scenic River. The refuge can be traversed by trails that link Greenough Land and Foss Farm conservation lands. Hiking on trails and some types of hunting by special license are allowed.

Privately-owned Conservation Land

BATES FARM LOT

This 6-acre Carlisle Conservation Foundation (CCF) property is located off Maple Street. The meadow contributes to the open vista along Bedford Road and is maintained as pasturage by an abutter. A town pathway along its perimeter on Bedford Road provides public access.

BENFIELD LOTS PARCELS C, D, E

These three properties recently acquired by CCF total 60.5 acres and are located off West Street and Pope Road. The wooded parcels, protected by Conservation Restrictions, are publicly accessible but do not yet feature trails.

CLARK WOODLOT

This 8-acre CCF parcel is off Morse Road and is contiguous with the Ember Lane Cluster.

COTE-FOSTER PROPERTY

This 5.47-acre CCF parcel is off Acton Street at the Acton town line and is part of a 26-acre assemblage of contiguous lands along West Street. The parcel is wet and contains no trails. Long-term plans are to include this property, along with the Taylor gift, Fleming Lot, and Pannell Property, for a trail system linking West Street to Acton Street and to Acton Conservation Lands.

EMBER LANE CLUSTER

This 20.8-acre CCF parcel is off Ember Lane. The parcel provides a trail easement along Old Morse Road through a housing development.

ERICKSON PROPERTY

This 3.8-acre CCF parcel is off 237 Fiske Street.

ESTABROOK WOODS

This 94.63-acre parcel is owned by Harvard University and is protected by a recorded "Statement of Public Charitable Obligation." Estabrook Woods is the core of approximately 1750 acres of woodland known as Greater Estabrook Woods consisting of Harvard's property and conservation restricted private and public lands in both Carlisle and Concord.

FLEMING OPEN SPACE PARCEL

This 5.52-acre CCF parcel, the Open Space for the High Woods Conservation Cluster, is off 662 West Street and is part of the 26-acre assemblage of continuous CCF lands along West Street.

GREENOUGH PROPERTY

This 8.22-acre parcel is off Pauline Road and Riveredge Road in Billerica and abuts the Greenough Conservation Land. The property is accessible by trail and features a "wood road" that provides the only unrestricted road access to the town-owned Greenough Land with its barn structure. It provides the land ownership for the footbridge that allows for the loop trail around

town-owned Greenough Pond. The property also abuts Town of Billerica Conservation Land along the Concord River.

HOLMES-AVERY PROPERTY

This 5.37-acre CCF parcel is off Kimball Road. The property is mixed forest and contains a trail that connects to the Town-owned MacAfee Land.

MALCOLM PRESERVE

This 10.6-acre parcel off Stearns Street is jointly owned by CCF and The Trustees of Reservations. Contiguous with a senior housing development, the property provides a small handicapped-only parking area along Stearns Street with access to a handicapped-accessible trail that winds through the open field and mixed forest.

PAGES BROOK RESERVATION

This 6-acre CCF parcel is off Maple Street. The reservation is mostly wetland with no trail access.

PINES WOODLOT

This 10.4-acre CCF parcel is off Curve Street. Though bisected by the Tennessee gas pipeline, there are no trails on this property that link the town-owned MacAfee Land and the Commonwealth-owned Carlisle State Forest section of Great Brook Farm State Park.

PANNELL PROPERTY

This 11.61-acre CCF property is off West Street and is part of the 26-acre assemblage of contiguous CCF lands along West Street.

POOLE'S SWAMP

This 15.2-acre CCF parcel, protected by a CR, is off School Street. Though mostly wetland, the Poole's Trail on its eastern border provides a link between School Street and the Rockstrom Trail. There is also a connecting easement that provides trail access from Woodridge Road.

RYAN PROPERTY

This 9-acre CCF parcel is off Acton Street. The parcel is primarily wetland and is surrounded by private property.

SPENCER BROOK RESERVATION

This 31.5-acre CCF parcel is off West Street. Featuring open fields, stone walls, and vistas of the Spencer Brook wetland meadow, the property is easily accessible from South and West Streets.

SUFFOLK LANE LOT

This 0.24-acre CCF parcel is off Suffolk Lane.

SWANSON LOT

This 2.8-acre CCF parcel is off Curve Street. There are no trails on this wooded property.

TAYLOR PROPERTY

This 3.42-acre CCF parcel is off West Street and is part of the 26-acre assemblage of contiguous CCF lands along West Street.

B. Inventory of Unprotected Lands

Publicly Owned Unprotected Land

Not all public open space is protected for conservation. In Carlisle, publicly owned, unprotected open space includes the **Conant Land** (54 acres), the **Banta-Davis Land** (39 acres), the **Hart Farm Land** (65 acres), and **Department of Public Works (DPW)** land (18.3 acres). These lands were acquired for various town usages and cannot be considered as protected open space. Banta-Davis Land now provides most of the town's playing fields. The Conant Land contains the Fire House and the Town Hall, but the undeveloped core serves as a natural space, wildlife habitat, and wildlife corridor in the center of town. It was originally purchased for water resource protection for the town center. A trail network provides access to its jagged terrain, rugged deciduous and pine forests, wet depressions, rock outcrops, streams, swamps, and links to contiguous neighborhoods. Parking for the Conant Land is available next to the Town Hall.

Privately Owned Unprotected Land

Although Carlisle encourages landowners to place land under Chapter 61, 61A, and 61B (Table 6), these lands can be easily removed from these classifications and therefore cannot be considered as protected open space. Chapter 61 indicates lands that are declared as managed forest land. Chapter 61A is land that is in agricultural or horticultural use, and 61B is land that is in recreational use or is considered as of significant value to the preservation of wildlife or other natural resources. Property owners who use these classifications qualify for reduced property taxes. The designated use must be maintained for specified periods of time or back taxes will be assessed against the property. When a property owner wishes to remove land from these classifications in order to sell the land, the town must decide within 120 days whether to purchase the property at fair-market value.

Privately Owned, Unprotected Land Inventory

Ranking of unprotected open space parcels

Much of Carlisle's character is determined by the large parcels of open space that are not yet protected in any way. Privately owned parcels of 10 acres or more were inventoried and ranked for each of the two previous OS&R reports and again for the 2005 report. The goal to maintain the town's rural character can be accomplished by protecting selected vulnerable open spaces. To set protection priorities, public Land Management Workshops were held in the spring of 2004. The resulting land protection values for ranking unprotected lands of 10 acres or more are described below.

Land Protection Values (Appendix A)

The following values, or criteria, were used by the Land Management Workshop participants to prioritize or rank unprotected parcels for their desirability for protection, if and when they become available. A parcel is desirable if it adds to the rural character of the town, preserves wildlife habitat for flora or fauna, or provides ready access to active or passive recreation for people.

Size

Large parcels of land are more valuable than small parcels both for wildlife habitat and for open and passive recreation. Parcels greater than or equal to 75 acres were scored 4; parcels greater than or equal to 30 acres but less than 75 acres were scored 3; parcels greater than or equal to

20 acres but less than 30 acres were scored 2; parcels greater than or equal to 10 acres but less than 20 acres were scored 1.

Linking Location

The land abuts a parcel of land that is already protected (existing link) or a significant parcel of undeveloped land that is not yet protected but is desirable (potential link). Both existing and potential links increase the usefulness of the entire tract (consisting of the linking parcel and the abutted parcel) both for wildlife habitat and for open and passive recreation.

Balancing Location

The land is located in a section of town that does not have other open space nearby and, therefore, acquisition would help balance the distribution of open space around town. People tend to use most heavily those open spaces near their homes.

Woodlands

The land contains an exceptional forest, a historically managed forest, or a forest that is outstanding in some other way.

Trails

The land contains cart paths, trails, or potential links to existing trails, which are or may be useful for passive recreation.

Water Feature

The land contains surface water, wetlands, streams, ponds, or a possible site for a town well.

Special Feature

The land contains an uncommon feature, such as a special habitat, a scenic spot, or a site with archaeological, geological, or historical interest.

Rural Vista

The land provides a view of open fields or woodlands visible from roads of any size, although visibility from a major road is more important than visibility from a neighborhood road.

Core Habitat

The land provides habitat for an endangered, rare, or protected species.

Ecological Diversity

The land contains a variety of terrains and so provides a variety of habitats, which in turn may support a variety of wildlife, either flora or fauna.

Land Use

The land possesses fertile or arable soil suitable for agriculture, whether or not it is currently farmed.

Active Recreation

The land provides space for existing or potential playing fields or garden plots.

Ranking the Unprotected Parcels

The criteria above were used in prioritizing or ranking the list of undeveloped parcels of 10 or more acres. Each parcel (or contiguous group of parcels under common ownership) was given a score of 0 to 4 for each of the criteria. The categories of Size, Linking Location, Rural Vista, and Core Habitat were considered most important and were weighted twice as heavily as the rest in

keeping with the 2000 Open Space and Recreation Plan. The twelve scores for each parcel were then totaled, and the parcels were assigned a rank (1=highest, 4=lowest) based on the weighted scores.

The meaning of the four ranks is as follows.

Rank 1: Critical to the town's open space plan

Rank 2: Important parcel but less critical than Rank 1

Rank 3: Desirable parcel to round out the town's conservation holdings

Rank 4: Desirable parcel if protection can be secured at below-market cost

The participants at the workshops recognized that land prioritization is an ongoing process that needs to be modified through time. For example, some of the scoring criteria, though similar in sentiment to those of previous reports, have been redefined, clarified, and reordered in the 2005 Open Space and Recreation Plan. The "Town Center" criterion was eliminated entirely, "Links" and "Potential Links" combined into a single "Linking Location," "Woodlands" was added, and "Endangered, Rare, or Protected Species" was renamed "Core Habitat" to expand its meaning in keeping with Natural Heritage and Endangered Species Program (NHESP) assessments.

All parcels of unprotected open space land, even those under 10 acres, have some value in preserving Carlisle's character and should be reviewed individually as their status changes. This report provides essential data that identifies and evaluates larger parcels of unprotected open space and can serve as a guide as Carlisle exercises its options in planning for the future. The results of the ranking workshops are listed in Table 7, which lists property protection priorities for Carlisle's Five-Year Action Plan.

Section 6: Community Vision

- A. Description of Process
- B. Statement of Open Space and Recreation Goals



