3. Natural and Cultural Resources

Introduction

> *This place is situate upon the Merrimack river, being a neck of land, where Concord river falleth into Merrimack river. It is about twenty miles from Boston, north northwest, and within five miles of Billerica and as much from Chelmsford; so that it hath Concord river upon the west northwest, and Merrimack river upon the north northeast. It hath about fifteen families; and consequently, as we compute, about seventy-five souls. The quantity of land belonging to it is about twenty-five hundred acres. The land is fertile, and yieldeth plenty of corn. It is excellently accommodated with a fishing place, and there is taken variety of fish in their seasons as salmon, shads, lamprey eels, sturgeon, bass, and divers others. There is a great confluence of Indians, that usually resort to this place in the fishing seasons.*[1] – Daniel Gookin, 1792

Overlooking Ames Pond in Tewksbury. Photo by Mary Coolidge, October 2002.

Daniel Gookin's 18th-century description of Tewksbury is not as different from a description of 21st-century Tewksbury as it initially may seem. The town's population no longer depends on the Concord, Merrimack and Shawsheen Rivers for daily food or on their nutrient-laden floodplains for agriculture, but these great rivers still shape Tewksbury's landscape, topography and settlement patterns. They still provide drinking water and flood their banks. Accordingly, they are natural and cultural resources that influence the planning decisions being made today.

Natural resources include land, surface water, streams and wetlands, aquifers, wildlife habitat, open space and riparian corridors, and other ecologically sensitive areas such as occurrences of rare or endangered species. Natural and cultural resource repositories often share the landscape; the Town Common is such a place. Tewksbury has many water resource areas of ecological importance. Historic and cultural resources include historic buildings and their settings, outbuildings such as barns and sheds, archaeological remnants and features, and archaeologically sensitive areas. Landscape features such as stone walls and foundations, burial grounds and cemeteries, trails and historic trees are also an important part of Tewksbury's history and they contribute to its inventory of cultural resources. These special places and areas of ecological importance are among Tewksbury's key public assets.

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[1] Daniel Gookin, "Historical Collections of the Indians of New England" in Tewksbury: A Short History, by Edward W. Pride, Cambridge: Riverside Press, 1888. Available on the World Wide Web at < http://www.tewksbury.com/pride.html>

Natural Resources

Water

Tewksbury's hydrography is complex. The town lies within three watersheds – Concord, Merrimack and Shawsheen – and within four watershed basins – Concord, Ipswich, Merrimack and Shawsheen.[2] Tewksbury's municipal and watershed boundaries are not the same. Even though municipalities usually recognize political boundaries more than ecological boundaries, these distinctions are important to consider within a master plan. Tewksbury plays a vital role in environmental permitting, and town boards and commissions make decisions that have ramifications throughout these three watersheds. Federal and state agencies that have some jurisdiction over water resources frequently use watersheds and basins as planning units. The town does not have the legal authority or tools to regulate activities for all three watersheds. Therefore, local decisions have an impact on other communities just as the town's water resources are vulnerable to decisions made in other municipalities.[3] Map 1 depicts Tewksbury's water resources.

Surface Water and Public Drinking Water

Tewksbury's total area is comprised of about 730 acres of open water, rivers and streams.[4] Since the town is located on the uplands between the Concord and Merrimack Rivers, tributaries, wetlands and bogs extend throughout the town. The regionally significant Merrimack and Shawsheen Rivers course through Tewksbury, providing drinking water, wildlife habitat, recreational opportunities and scenic views. All three of these Class B rivers are listed on the 1998 Massachusetts Section 303(d) list of impaired waters.[5]

Merrimack River

The 180-mile Merrimack River flows through central and southern New Hampshire and northeastern Massachusetts and functions as a critical resource for wildlife and people. It is the second largest surface drinking water source in New England, serving more than 300,000 people in

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[2] Watersheds are naturally delineated land areas that are the basic units of hydrologic systems. A watershed basin is a large area of land (hundreds of square miles) that drains water, sediment, dissolved materials, heat and biota to a single stream channel. For more information see The Center for Watershed Protection at, <http://www.cwp.org/whats_a_watershed.htm>

[3] For more information about watershed regulations in Massachusetts, see Pamela D. Harvey, General Counsel of the Massachusetts Department of Environmental Protection, "Opportunities and Obstacles in Watershed-Based Regulatory Programs." Available on the World Wide Web at, <http://www.epa.gov/owow/watershed/Proceed/harvey.html>

[4] MassGIS Statewide Vector Data, filenames "w3658p1.dbf, w3578p1.dbf, w3577p1.dbf, w3576p1.dbf, w3496p1.dbf, w3495p1.dbf, w3494p1.dbf, w3493p1.dbf, w3414p1.dbf, w3413p1.dbf," updated August 2002.

[5] Department of Environmental Management, "1998 Massachusetts Section 303(d) List of Waters" [online], [cited 17 December 2002]. Available on the World Wide Web at http://www.state.ma.us/dep/brp/wm/tmdls.htm. Section 303 of the Clean Water Act requires states to assess and identify impaired surface water resources and develop plans to address the causes of pollution. The process for developing a compliance plan is known as a "Total Maximum Daily Load" or TMDL analysis.

Tewksbury, Lowell, Lawrence, Methuen and Nashua, NH.[6] Tewksbury stores water from the Merrimack River in a one million gallon elevated tank and two 500,000-gallon reservoirs for drinking and fire fighting.[7] Nearly the entire town (98%) uses the public water system. The town operates a water treatment plant along the Merrimack River that has the capacity of seven million gallons per day (gpd), and a planned expansion would double the plant's pumping power.[8] The plant pumps an average of 2.6 million gpd. Abandoned groundwater supplies owned by the town could augment this surface water source.

The Merrimack River watershed covers a 5,010-mi^2 area that includes more than 200 cities and towns. The portion that flows through Tewksbury is called the "Lower Merrimack River." Federally listed threatened bald eagles over-winter here, and it is an important migratory route for waterfowl and songbirds.[9] The Environmental Protection Agency (EPA) and the Merrimack River Watershed Council monitor the river's water quality and flow. They report that water quality in the portion of the river south of Manchester, NH that flows through Tewksbury is threatened by development, an increase in impervious surfaces, toxics, non-point source pollution and combined sewer overflows (CSOs).[10] In 1992, the EPA convened and funded the Merrimack River Watershed Consortium to coordinate planning efforts and write a Watershed Management Plan for the Merrimack River.

Shawsheen River

Located within one the Merrimack River's sub-watersheds, the 25-mile Shawsheen River flows through 12 cities and towns from Hanscom Field in Bedford to its confluence with the Merrimack River in Lawrence. In Tewksbury, the river flows southeast to northeast through three floodplain meadows and drains the eastern part of the town. The Shawsheen River Watershed encompasses an urban-suburban area of about 78 mi^2 with approximately 250,000 people.[11] The river and its

[6] The Merrimack River Watershed Council [online], [cited 19 November 2002]. Available from the World Wide Web at <http://www.merrimack.org/>

[7] Tewksbury Open Space and Recreation Committee, Open Space and Recreation Plan, 1998-2003, (1998), 42.

[8] Northern Middlesex Council of Governments [online], [cited 20 November 2002]. Available on the World Wide Web at, <http://www.nmcog.org/tewksbury.htm>. Water treatment plant capacity reported by Town Manager David Cressman, January 2003.

[9] The New Hampshire Department of Environmental Services [online], [cited 19 November 2002]. Available from the World Wide Web at < http://www.des.state.nh.us/rivers/merrim1.htm>

[10] Ibid. See also the Environmental Protection Agency on the World Wide Web at < http:// www.epa.gov/ecoplaces/part2/region1/site10.html>

[11] The Shawsheen River Watershed Organization [online], [cited 19 November 2002]. Available on the World Wide Web at < http://www.shawsheen.org/recmap/> See also the Shawsheen River Watershed Homepage. Available on the World Wide Web at <http://www.state.ma.us/envir/mwi/shawsheen.htm>

watershed support a variety of wildlife, including great blue herons, red-tailed hawks, mallard and wood ducks, wild turkey, beaver, snapping turtles and anadromous fish.[12]

The Massachusetts Department of Environmental Protection (DEP) has listed the Shawsheen River as being impaired by pathogens due to high concentrations of fecal coliform bacteria from poorly treated sewage and run-off.[13] The National Wildlife Federation is using the Total Maximum Daily Load (TMDL) provision of the US Clean Water Act § 303d to develop a pollution control plan for the river.[14] TMDLs calculate an enforceable maximum quantity of a particular pollutant that a waterbody can receive and still meet water quality standards, and they also identify pollutant reduction goals and strategies. In addition to the TMDL Plan, the Merrimack River Watershed Council wrote a Shawsheen River Watershed Management Plan in 1998 that was recently updated. The Shawsheen River 5-Year Watershed Action Plan: 2003-2008 includes low flow, flooding and pollution control and reduction strategies for portions of the river that flow through Tewksbury and improved public access.[15]

Brooks and Ponds

Several brooks flow into the Shawsheen River including: Content Brook, Heath Brook, Meadow Brook/Strong Water Brook, Marshall Brook and Darby Brook. Trull Brook flows from the Great Swamp and it is the largest tributary of the Merrimack River in the town. Tewksbury has four ponds: Round, Long, Ames and Mud. The town owns Long and Round Ponds, which qualify as Great Ponds,[16] and Ames Pond is privately owned.[17] Long Pond is the only one with limited public access. The town also has an unusually high number of vernal pools – a unique, periodically dry wetland habitat for species that rely on fish-resistant breeding areas for their survival. Although the Natural Heritage and Endangered Species Program has not certified any vernal pools in Tewksbury, the agency's inventory includes 98 potential vernal pools.[18] Today, portions of the town's rivers and brooks are not used for drinking, swimming fishing and boating. These rivers were once so abundant that every year between 1743-1830, annual town meeting selected fish wardens or "fish cares."[19] The fish cares charge was "to see that the fish have free passage up and down those streams where they usually pass to spawn." According to Tewksbury historian Edward W. Pride,

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[12] National Wildlife Federation "Shawsheen River Case Study" [online], [cited 19 November 2002]. Available on the World Wide Web at < http://www.nwf.org/watersheds/shawsheen/>

[13] Ibid.

[14] Ibid.

[15] EOEA, Shawsheen River 5-Year Watershed Action Plan: 2003-2008 (July 2003). Also, William J. Dunn, DEM's Merrimack and Shawsheen River Watershed Team Leader, to Andrea M. Underwood, Community Opportunities Group, 17 December 2002.

[16] Department of Environmental Management "Great Ponds" [online], [cited 17 December 2002]. Available on the World Wide Web at <http://www.state.ma.us/dep/brp/waterway/files/greatponds.doc>

[17] Open Space and Recreation Plan, (1998), 42.

[18] MassGIS Statewide Vector Data, filename "pvp.dbf," December 2000.

[19] Pride, Tewksbury: A Short History, 1888.

the fish cares were no longer elected after Lowell was founded because subsequent manufacturing practices in that community polluted the rivers and led to fish kills.

Wetlands

Wetlands are an important component of the hydrologic system. They play a critical role in water storage and flood control and many species of wildlife depend on wetland habitat. They also protect water quality and function as groundwater recharge and discharge areas. Available GIS data suggest that more than 20% of Tewksbury's total land area is wetlands. Deciduous wooded swamp (1,589 acres) is the most prevalent wetland type and it includes red maple, ash-leaved maple, cottonwood, American elm, spice bush and skunk cabbage.[20] The largest wetland complex is Great Swamp in the northwest part of Tewksbury between Interstate 495 and Route 38 (Fig. 1). The riparian borders along the Shawsheen River and Strong Water Brook include large areas of deep marsh and swamp wetlands, particularly in the area north of Mud Pond and east of the Shawsheen River. Riparian areas are critical ecosystems along rivers and water bodies. Development close to wetlands and the floodplain in south and east Tewksbury has led to significant flooding, septic system failures and nutrient loading in this part of town.[21] The town adopted a local Wetlands Bylaw several years ago to augment M.G.L. c.131, § 40, the Massachusetts Wetlands Protection Act.

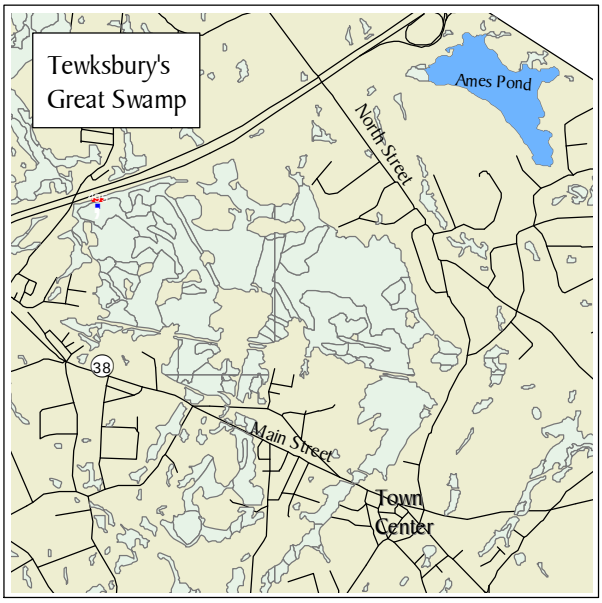

Fig. 1- Great Swamp, bounded by I-495, North Street and Route 38 in Tewksbury. (Source: MassGIS.)

Groundwater

Significant portions of the town overlay medium yield (100-300 GPM) aquifers.[22] They are bedrock and glacial till aquifers, located below the area east of Shawsheen Street, with small pockets of high yield (300+ gallons per minute, or GPM) aquifers. This eastern aquifer has two branches that are bisected by Main Street. One follows along Strong Water Brook and the other parallels Heath Brook and Whipple Road. In the northwestern part of Tewksbury, a smaller aquifer lies under Trull Brook near the Trull Brook and Longmeadow Golf Courses. Another small, high-yield aquifer lies south of Ames Pond near the Great Swamp. Tewksbury once used groundwater from these aquifers for public drinking water, and the town's well fields could be used as a back-up source of water. The

[20] MassGIS Statewide Vector Data, filenames "w3658p1.dbf, w3578p1.dbf, w3577p1.dbf, w3576p1.dbf, w3496p1.dbf, w3495p1.dbf, w3494p1.dbf, w3493p1.dbf, w3414p1.dbf, w3413p1.dbf," updated August 2002.

[21] Nash-Vigier, Inc., for Tewksbury Planning Board, Comprehensive Plan of Tewksbury, MA, 1973, 28.

[22] MassGIS Statewide Vector Data, filenames "aqp1.dbf, aq3.dbf," March 1997.

source for these wells is the large aquifer beneath the Shawsheen River. DEP has delineated a Zone II Wellhead Protection Area for a large area between Interstate 495 and the Shawsheen River,[23] primarily north of Main Street. The town's Groundwater Protection Zoning District is an overlay district encompassing the Zone II wellhead Protection Area.

The town is currently implementing a sewer plan that will tie in nearly every house and commercial structure in Tewksbury to the town's sewer system during the next several years. This sewer project will protect the town's groundwater resources from nutrient loading caused by malfunctioning septic systems. However, sewers will affect the rates of water infiltration and groundwater recharge, and sewage treatment discharge may harm surface water quality.

Other Resources

Geology and Landscape Features

Located in the Merrimack Valley, Tewksbury's lowland terrain varies from 85-200 feet above sea level. The glacier that covered much of New England originally formed the town's topography, and the landscape continues to be shaped by its rivers. There are drumlins and glacial till in the northwest section, and the southeastern part is flat glacial outwash. Ames Hill is the tallest drumlin in the Shawsheen River Watershed. The town's ponds are kettleholes in the glacial moraine. Bedrock divides the town into two drainage basins: Shawsheen and Concord/Merrimack.

There are several soil associations in Tewksbury: Freetown in the wetland areas, Windsor-Hinckley-Deerfield around half the town, Paxton-Woodbridge around till uplands near Ames Pond, and Canton-Hollis-Chatfield at two sites with hilly, ledge outcrops.[24] Only the Windsor-Hinckley-Deerfield soils are particularly suitable for development. Their sandy composition and rapid permeability mean that groundwater can become contaminated from septic systems and other pollutants.

Vegetation and Biodiversity

Tewksbury's forest cover is typical for eastern Massachusetts. Forests are predominantly hardwoods – oak, beech, maple, birch and aspen – with a few softwoods like white pine and hemlock. Tewksbury lost many of its softwoods in the last 35 years.[25] Red and silver maple, white and pin oaks, hemlock and highbush blueberry are common in swampy, wet areas. The invasive purple loosestrife is also found in some wetlands. Invasive species are frequently ornamental and non-native, i.e., they have been introduced to an area. Since they have no natural predators in areas where they are introduced, they can invade, degrade or destroy the habitat of local species. Freshwater meadows around the Shawsheen River have reeds, woodgrass, wild millet, spike rush and sedge, which are all important to wildlife that use freshwater and field habitat. The Massachusetts Natural Heritage Program documented occurrences of the state rare Fewfruited Sedge, New England Blazing Star, Pod Grass and Panic Grass, but they have not been seen in many years.[26]

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[23] MassGIS Statewide Vector Data, filename "zoneii.dbf," updated November 2002.

[24] Open Space and Recreation Plan, (1998), 38.

[25] Ibid., 45.

[26] Massachusetts Natural Heritage Program [online], [cited 17 December 2002] Available on the World Wide Web at, <http://www.state.ma.us/dfwele/dfw/nhesp/townT.htm>

The town's abundant streams and ponds, and its meadows, wetlands and forests, provide habitat for more than 60 breeding bird species, small mammals and aquatic creatures. Table 1 provides a summary of species found in Tewksbury. Many of the breeding birds and amphibians are particularly vulnerable to habitat fragmentation, but Tewksbury has no open space corridors to support fragile wildlife populations. Septic system failures, non-point source pollution from run-off, and wetland encroachment all degrade critical water resources. Green herons, red-tailed hawks, ruffed grouse, screech owl, eastern wood peewee, cedar waxwing and purple finch were once common in Tewksbury and have not been sighted in many years. The Massachusetts Natural Heritage Program includes the Bridle Shiner and Spotted, Wood and Blanding's Turtles on its list of state rare species occurring in Tewksbury. Map 2 depicts significant wildlife habitat areas in Tewksbury.

Pollution, Public Health and Natural Resource Degradation

Sources of point source and non point source pollution in Tewksbury threaten public health, habitat and natural resources. There are 21 Tier Classified 21-E sites in Tewksbury.[27] These sites are hazardous material and brownfield sites as defined by M.G.L. c. 21, the Massachusetts Superfund Law, which are comparable to federal CERCLA (Comprehensive Environmental Response, Compensation and Liability Act) sites. The Department of Environmental Protection's Bureau of Waste Prevention also monitors four "Major Facilities" in Tewksbury that it considers to have a high likelihood of causing environmental harm should there be a malfunction or spill.[28] These facilities are two ECRM sites, Ashland Chemicals and Tewksbury Industries. Map 3 depicts the location of polluted sites, sites that are monitored and the location of significant natural resources.

The Sutton Brook Disposal Area Site (Rocco's Dump) is listed on the Environmental Protection Agency's (EPA) National Priorities List and is a well-known and well-documented hazard. There are 23 wells supplying drinking water to 60,166 people in four communities within four miles of the Sutton Brook Disposal Area.[29] There are four more federal Superfund sites in Tewksbury that are not on the National Priorities List – Ashland Distribution Company, Tewksbury Hospital, Tewksbury Industries and Wilmington Disposal Area.[30] In addition to these Superfund sites, the EPA has documented additional sources of pollution: 21 facilities that release air pollutants from 78 points; 3 facilities with toxic chemical releases; and 78 facilities with hazardous waste activities including 8 that have permits to discharge into rivers.[31] Like other communities, Tewksbury also has had a serious problem with petroleum leaking from underground storage tanks, particularly at gas stations.[32]

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[27] MassGIS Statewide Vector Data, filename "BWSC_DEP.dbf," updated November 2002.

[28] MassGIS Statewide Vector Data, filename "BWP_MAJ.dbf," updated August 2002.

[29] Environmental Protection Agency [online], [cited 20 November 2002]. Available on the World Wide Web at,<http://www.epa.gov/region1/pr/2001/oct/011023.html>

[30] Environmental Protection Agency Enviromapper [online], [cited 20 November 2002]. Available on the World Wide Web at <http://oaspub.epa.gov/enviro/ef_home3.html>

[31] Ibid.

[32] Open Space and Recreation Plan, (1998), 55. There are 28 commercial and industrial underground storage tanks in Tewksbury and probably many others in undocumented locations, used for home heating oil.

Table 1. Animal Species in Tewksbury

Birds			
American Bittern	Brown-headed Cowbird	Great Blue Heron	Ring-necked Pheasant
American Goldfinch	Canadian Goose	Great Crested Flycatcher	Rock Dove
American Kestral	Cardinal	Grey Catbird	Rose-breasted Grosbeak
American Robin	Chimney Swift	House Sparrow	Rough-winged Swallow
American Woodcock	Chipping Sparrow	House Wren	Rufous-sided Towhee
Barn Swallow	Common Crow	Indigo Bunting	Scarlet Tanager
Barn Swallow	Common Flicker	Killdeer	Starling
Belted Kingfisher	Common Grackle	Mallard Duck	Swamp Sparrow
Black Duck	Common Yellowthroat	Mockingbird	Tree Swallow
Black-capped Chickadee	Downy Woodpecker	Mourning Dove	Tufted Titmouse
Blue Jay	Eastern Kingbird	Northern Oriole	Warbling Vireo
Bobolink	Eastern Meadowlark	Red-breasted Nuthatch	Wood Duck
Broad-winged Hawk	Eastern Phoebe	Red-eyed Vireo	Yellow Warbler
Brown Thrasher	Field Sparrow	Redwinged Blackbird	
Mammals			
Beaver	Fieldmouse	Muskrat	Skunk
Chipmunk	Fisher	Otter	Squirrel
Coyote	Fox	Rabbit	Vole
Deer	Human	Raccoon	Weasel
Deermouse	Mink	Rat	Woodchuck
Domestic Cats and Dogs	Mole	Shrew	
Fish			
American Eel	Brown Bullhead	Fallfish	Tesselated Darter
Black Crappie	Chain Pickerel	Golden Shiner	White Perch
Bluegill	Common Carp	Largemouth Bass	White Sucker
Bridled Shiner	Common Shiner	Redbreast Sunfish	Yellow Bullhead
Brook Trout	Creek Chubsucker	Redfin Pickerel	Yellow Perch
Amphibians			
Blue-spotted Salamander	Green Frog	Northern Spring Peeper	Red-spotted Newt
Bullfrog	Grey Tree Frog	N. Two-lined Salamander	Spotted Salamander
Eastern American Toad	N. Dusky Salamander	Pickerel Frog	Wood Frog
Fowler's Toad	Northern Leopard Frog	Red-backed Salamander	
Reptiles			
Eastern Garter Snake	E. Smooth Green Snake	Northern Ringneck Snake	Stinkpot
Eastern Hognose Snake	Northern Black Racer	Northern Water Snake	
Eastern Milk Snake	Northern Brown Snake	Painted Turtle	
Eastern Ribbon Snake	N. Red-bellied Snake	Snapping Turtle	
Species that Once Occurred in Tewksbury and Have Not Been Sighted in Many Years			
Four-toed Sloth	Red-tailed Hawk	Wood Turtle	
Green Heron	Ruffed Grouse		
Marbled Salamander	Screech Owl		
Purple Finch	Spotted Turtle		

Sources: Massachusetts Natural Heritage Program [online], [cited 17 December 2002] Available on the World Wide Web at, <http://www.state.ma.us/dfwele/dfw/nhesp/townT.htm> and Tewksbury Open Space and Recreation Committee, Open Space and Recreation Plan, 1998-2003.

Cultural Resources

Cultural resources are the places and institutions that contribute to a community's unique identity. The Wamesit tribe that lived in the Shawsheen River Valley and the European settlers who came to the area in the early 18th century shaped Tewksbury's identity. Colonists established the Town of Tewksbury in the area formerly known as Wamesit in 1734. The Massachusetts Historical Commission has identified approximately two dozen sites of possible archaeological significance that date back to these early inhabitants.[33]

Architectural Traditions

Tewksbury's economy was comprised of agriculture, grazing, lumbering and cottage industry until the early 20th century, when commercial businesses and market gardening of hothouse carnations became the dominant industries. Today, the Town Common, Town Hall and Victorian-era homes preserve the architectural character of the town's heritage. Nearly 50 historic buildings and landmarks were identified in the 1998 Open Space and Recreation Plan. However, only Tewksbury State Hospital and the Cyrus Battles House on North Street are listed on the State Register of Historic Places.[34] The buildings and grounds of Tewksbury State Hospital are also listed on the National Register of Historic Places.[35] There are more than 900 houses in Tewksbury that were built before 1939, or 9% of the town's total housing stock.[36] Map 4 depicts the location of town's historic resources. The Town Center, Andover Street and Shawsheen Street all include collections of historic buildings. Table 2 provides a list of locally recognized historic buildings and landmarks. In the mid-nineteenth century, a railroad corridor was constructed connecting Tewksbury to Lowell and Boston. Tewksbury's proximity to these two regional cities hastened its transition from a rural town to a suburban community after World War II.

Other Resources

Tewksbury State Hospital and Public Health Museum

Tewksbury State Hospital was built in 1854 as a state almshouse.[37] Over time, its mission changed and it became the Tewksbury State Hospital in 1900, the Massachusetts State Infirmary in 1909, and Tewksbury State Hospital and Infirmary in 1938. Anne Sullivan, Helen Keller's teacher, was a 19th century client before transferring to a school for the blind. Facilities were added so that Tewksbury State Hospital could treat chronic and contagious diseases, which it did throughout the 20th century. It served the neediest patients requiring shelter and treatment, particularly during the years following the Panic of 1857 and the Great Depression. Today, the Massachusetts Public Health Museum is housed on the property in the Old Administration Building, which dates to 1894. Designed by Boston architect John A. Fox, this Queen Anne building on East Street is a three and a

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[33] Open Space and Recreation Plan, (1998), 19.

[34] Massachusetts Historical Commission, State Register of Historic Places, (2001), 319.

[35] *Ibid*.

[36] Bureau of the Census, Census 2000, Summary File 3,Table DP-4.

[37] Unless otherwise noted, information cited about Tewksbury State Hospital was obtained from the following source: The Public Health Museum in Massachusetts [online], [cited 14 November 2002]. Available from the World Wide Web at < http://www.publichealthmuseum.org/old-admin-buiding.html>

half story, red brick structure with a slate roof with bridge-end chimneys, roof dormers, and a copper-clad clock tower. It was built during the late 19th century when there was an effort to replace wood frame buildings on the campus with masonry structures. The original building was enlarged with lateral wings around 1920, and a one-story rear addition around 1930. This building and the Tewksbury Hospital campus were listed on the National Register of Historic Places in 1994.

The neighborhoods of South Tewksbury are also a scenic and unique environment. A 19th century summer colony for residents seeking a vacation home near Silver Lake in Wilmington, this area reportedly has a greenhouse that was used to cultivate carnations when the town was known as the "Carnation Capital of World." Tewksbury residents developed greenhouses and hothouses for carnations and other commercial flowers between 1890-1915, notably on North Street, Marshall Street, Pleasant Street and Main Street, and for many years this was a prominent industry.[38] Finally, Tewksbury has an unusual collection of public art by internationally renowned sculptor Mico Kaufman. The "Touching Souls" sculpture of Anne Sullivan and Helen Keller occupies a highly visible location in the Town Center and is very important to Tewksbury residents. Other significant Kaufman sculptures in Tewksbury include "Muster," "Water," and "Wamesit Indian."

Scenic Resources

During a series of public meetings for the 1998-2003 Open Space Plan, residents identified several places as important scenic resources. The Shawsheen River was identified as being a special place with the least use and the least protection. Development along its banks prevents access for viewing or recreation. The landscape overlooking the Shawsheen was highlighted as being particularly important. Other scenic landscapes include Ames Hill, from which the Boston skyline is visible, Catamount Road and Trull Brook. None of these resources are included on the Massachusetts Scenic Resources Inventory. The Community Vision Forums for the 2003 Master Plan identified several other important scenic resources including the Krochmal Farm on South Street, Trull Brook, East Street, the Livingston Street recreation facility, mature trees along older roads and public art like Mico Kaufman's sculptures.

Preservation Efforts

Tewksbury State Hospital is listed on the National Register of Historic Places, but Tewksbury has not adopted additional federal historic districts or local historic districts under M.G.L. c. 40C. There are voluntary private efforts to protect individual historic homes and churches. Throughout the town, there are well-preserved structures and ongoing restoration projects. Listing on the National Register does not protect buildings from inappropriate alteration or demolition. However, it is a potential way for investors to finance historic preservation through tax credits. The most protective regulatory tool in Massachusetts is a local historic district, typically administered by an appointed historic district commission. A local historic district consists of one or more properties, which means that communities may place an isolated, historically significant building under the same protective umbrella that usually applies to districts of several properties.

Another very important preservation tool is the demolition delay bylaw the town adopted in 1995. The bylaw gives residents time to review any proposed demolitions of historic structures and to review alternatives to destruction of the resource.

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[38] Greater Lowell Chamber of Commerce [online], [cited 31 December 2002]. Available from the World Wide Web at < http://www.greaterlowellchamber.org/tewksbury.asp>

Table 2. Historic Buildings and Landmarks in Tewksbury

Name	Location	Date
Abram Mace House	12 Clark Road	1780
Ames Castle	Catamount Road	c. 1800s
Benjamin Burtt Homestead	1304 South Street	1800
Brown Homestead	1202 Main Street	1800
Captain Trull Monument	Corner of River and Trull Roads	
Centre Burial Ground	East Street	c. 1850
Chandler House	1269 Main Street	1777
Clark House	912 Shawsheen Street	1780
Colonel Russell Mears House	592 Main Street	1780
Cyrus Battles House	1002 North Street	
Davis Carter House	1574 Main Street	1780
Dunn House	687 Shawsheen Street	
Flemings Homestead	922 North Street	1800
Foster School	Main Street	1894
George Trull House	1515 Andover Street	1878
Gerald Carrigg House	574 Chandler Street	
J. Carter House	142 Carter Street	
Jefferson Soap Factory Site	Main Street	
Jonas Clark Homestead	20 Fiske Street	1820
Kendall Homestead	Kendall Road	
Livingston Homestead	518 Kendall Road	
Maillet Farmhouse	728 Whipple Road	1800
Melvin Rogers Home	272 Whipple Road	
O.R. Clark Homestead	1400 Andover Street	1800
Oblate Novitiate	Chandler Street	1883
Old Railroad Bridge Ruins	Shawsheen River south of Shawsheen Street	
Olive Roberts Farmhouse	360 North Billerica Road	
Original Parsonage	1448 Andover Street	1846
Osterman's Dairy	98 North Billerica Road	1872
P. Livingston House	166 French Street	
Patten's Greenhouse	North Street	1887
Paul O'Laughlin House	721 Shawsheen Street	
Powder Mill Explosion Site		1900
Preston Homestead	107 Pleasant Street	1775
Rev. Jacob Coggin Homestead/Sycamore Hall	1039 Main Street	1806
Rev. Spaulding Homestead	60 East Street	1736
Robert Rauseo House	682 Chandler Street	
Saw Mill Site	Shawsheen Street	
Shawsheen Cemetery	Corner of Main and Shawsheen Streets	c. 1714
Tewksbury State Hospital	East Street	1854
The Battles House	1002 North Street	1742
The Brown Tavern	993 Main Street	c. 1740
The Colonel Russell Means House	592 Main Street	1780
The Crosby Canning Factory	922 Whipple Road	

Table 2. Historic Buildings and Landmarks in Tewksbury

Name	Location	Date
The Ella Fleming School	Andover Street	1744
The Enoch Foster House	43 Dewey Street	
The First Baptist Church	1500 Andover Street	1843
The G. French Homestead	27 Carter Street	c. 1800
The George Lee House	53 Lee Street	1805
The Hardy Homestead	496 Main Street	1740
The Jonathan Clark Homestead	Andover Street	1800
The Life Farmer Homestead	1472 Andover Street	1744
The Marshall Homestead	379 Pleasant Street	1728
The Second George Lee House	Corner First and Lee Streets	c. 1850
The Stone House	55 East Street	c. 1850
Town Common	Main Street	1891
Widow Bailey House	219 River Road	1800
World Wars Monument	Main Street	

Source: Tewksbury Open Space and Recreation Committee, Open Space and Recreation Plan, 1998-2003; Beverly Bennett, Tewksbury Historical Commission, 2003.

Master Plan Goals

Residents participating in the Master Plan Committee's Community Vision Forums (October-November 2002) supported a vision of Tewksbury with stands of mature trees, attractive older homes, public art, opportunities for outdoor recreation and open space. Tewksbury State Hospital, water resources like Ames, Round and Mud Ponds, the public common at Town Hall, Krochmal Farm and Trull Brook were all identified as important, character-defining places. The visioning process culminated in 15 goals, several of which require natural and cultural resource preservation strategies.

Goals with obvious natural and cultural resource implications include:

- Subordinate the rate and total amount of development to the capacity of Tewksbury's environmental resources.
- Recognize and protect Tewksbury's character defining roads, natural and built assets and unique local landmarks.
- Establish and follow sustainable economic development policies to provide local employment and tax revenue, encourage and diverse economic base and direct business and industrial growth to appropriate locations.
- Give preference to reuse and redevelopment of existing structures and infill development over new growth, assuring that reuse activities respect the architectural integrity of historic buildings.
- Manage development so that it respects the topography and character of the land, existing vegetation and scenic road features.
- Eliminate existing and potential environmental hazards.

Analysis of Needs & Planning Considerations

During the master plan visioning process, residents often cited conflicts between new industrial or commercial development and the town's established residential neighborhoods. They also expressed concern about the impact of new development on Tewksbury's important natural resources. Clear regulations, consistently enforced, will benefit residents, developers, wildlife and resource areas. Three complex challenges need to be addressed both in the near future and on a longer-term basis in order to realize the Master Plan's goals: wetlands and water resource protection, preservation of ecologically and culturally significant places, and preventing and mitigating pollution and environmental harms.

1. Tewksbury needs stronger tools to protect wetlands and water resources.

Development near wetlands and floodplains has led to significant flooding, septic system failures and nutrient loading in portions of the town. Two 75-year rainstorm events in 1999 and 2000 and a 25-inch snowstorm in 2001 all caused considerable flooding in Tewksbury. The damage caused by these events underscores the need for enhanced water management and wetland protection.

Tewksbury has taken some steps to protect wetland resource areas, notably by establishing a Flood Plain District in the Zoning Bylaw and by adopting a local (non-zoning) wetlands bylaw administered by the Conservation Commission in 1986. The local wetlands bylaw augments M.G.L. c. 131 § 40, the Massachusetts Wetlands Protection Act. It establishes a minimum continuous 25-foot wide buffer strip of undisturbed, natural vegetation around wetland resources and requires that any proposed structure be at least 50 feet from the resource. In effect, the bylaw intends to create a 25-foot "no disturbance zone" and a 50-foot "no build zone" around wetland resources.

The Conservation Commission has latitude to allow building in the no-build zone if the applicant proves it cannot be avoided. For lots zoned General Residential (RG), the Commission may reduce or waive the requirements of the no-disturbance setback. Since 69% of the town's land area is zoned RG, there is the potential that the Commission can waive or reduce the requirements of the no-disturbance zone for a significant amount of wetland resources. The no-disturbance and no-build zones are not required for the maintenance, repair, or replacement of existing lawful development. More than 60% of the town is already developed and the no-disturbance and no-build zones are not required for maintenance, repair or replacement of existing buildings.

Comprehensive wetlands protection requires both zoning and non-zoning bylaws, high-quality resource area maps and consistent public education. Many communities in Massachusetts adopt more than one regulatory tool to protect their wetlands and watershed areas. In addition, communities that adopt wetlands protection overlay districts typically assure that the underlying zoning in or adjacent to wetland resource areas provides for low impact land uses and adequate environmental performance standards. Tewksbury has opportunities to preserve its beauty and natural resources, to protect its residents from flooding and to increase its safeguards against groundwater contamination.

2. Making logical connections between open space and natural and cultural resources will help Tewksbury achieve multiple goals of the Master Plan.

Tewksbury needs to prioritize significant open space parcels, structures and other resources in order to arrive at a suitable protection plan in each case. Appropriate preservation strategies must account

for the town's technical, management and financial capacity. A combination of acquisition, regulations and incentives could work in Tewksbury, but given funding constraints, the town will most likely need to rely on regulatory approaches to protect its natural and cultural resources. Criteria to rate and rank each type of resource would help Tewksbury identify areas that address overlapping concerns, i.e., a natural resource area that also has strong open space value. For example, an open space parcel would be a high-priority candidate for permanent protection if it meets passive and active recreation needs and simultaneously provides access to water, flood control, water quality preservation and wildlife habitat.

3. Preventing and mitigating flooding, pollution and environmental harms are critical needs in Tewksbury.

As Tewksbury implements the Master Plan and seeks future industrial and commercial growth, town officials needs to consider existing and cumulative environmental burdens that may lead to increased flooding, pollution and degradation of public health, habitat, and water and air quality. In October 2002, the Executive Office of Environmental Affairs (EOEA) identified a neighborhood near the Town Center, between North Main Street and the Boston and Maine Railroad, as an area that is particularly vulnerable to environmental harms such as air pollutants.[39] The town should strive to decrease existing risks and prevent other hazards in this neighborhood and throughout the town.

Sustainable development strategies balance development and redevelopment with protecting neighborhoods and natural resources. However, these strategies can be complex and the town may need additional capacity, resources and funding to augment the expertise of its staff and volunteers. Tewksbury could meet some of these needs by working in partnership with one or more regional groups and statewide organizations.

[39] The EOEA identifies such neighborhoods as "Environmental Justice Populations." An Environmental Justice Population is "a neighborhood whose annual median household income is equal to or less than 65 percent of the statewide median or whose population is made up 25 percent Minority, Foreign Born, or Lacking English Language Proficiency." In its October 2002 Environmental Justice Policy, EOEA defined Environmental Justice this way: "Environmental justice is based on the principle that all people have a right to be protected from environmental pollution and to live in and enjoy a clean and healthful environment. Environmental justice is the equal protection and meaningful involvement of all people with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies and the equitable distribution of environmental benefits." Executive Office of Environmental Affairs, Environmental Justice Policy, October 2002. Available on the World Wide Web at, <http://www.state.ma.us/envir/docenvironmentaljusticepolicy.pdf>

NATURAL & CULTURAL RESOURCES ELEMENT

Natural and cultural resources are irreplaceable public assets and they should be treated accordingly. Tewksbury's natural and cultural resources form an essential part of the Master Plan. They are protected to some extent by existing regulations and policies, but Tewksbury does not have adequate measures in place to shelter wetlands, wildlife habitat, water resources and historic properties from the adverse impacts of development. As the town continues to grow and change, additional actions need to be taken to safeguard critical resource areas. Some of the town's needs should be addressed by stronger regulations and enforcement while others require vigilance on the part of local residents. The Tewksbury Public Schools may be able to make an important contribution to increasing the town's awareness, knowledge and capacity to protect these resources.

Natural Resource Policies

Wetlands & wildlife habitat. Wetlands perform several important functions that contribute to a community's ecological health. G.L. 131 Section 40, the Wetlands Protection Act, provides significant protection for wetlands in Massachusetts, but many cities and towns supplement it with local wetland regulations in order to exercise greater local control over the review of projects proposed in or near wetland resource areas. Although Tewksbury has a local wetlands bylaw, some of its provisions are weak or ambiguous and there needs to be consistent enforcement.

Functioning habitats and ecosystems depend on large, contiguous areas of undeveloped land. In fragmented landscapes, many indigenous species are no longer able to find adequate habitat and ecosystem functions (such as groundwater and surface water flow) become impaired. An effective natural resource protection plan should preserve undeveloped areas that represent the full range of natural habitats occurring within a town, and these areas should be connected with natural corridors. The Master Plan promotes such objectives by designating areas that are most important for plant and wildlife habitat. Development may continue to occur in or adjacent to some of these areas, but Tewksbury's zoning and other policies should work to minimize impacts on natural communities. For example, open space in cluster developments should be designed to preserve parcels with the best habitat value and forge connections with adjacent open space. Cluster open space that consists of leftover scraps of land, unusable for humans or wildlife, should be discouraged.

In addition to regulatory measures, habitat protection can be accomplished through the work of local volunteers. The Massachusetts Natural Heritage and Endangered Species Program (NHESP) has established procedures through which local volunteers, such as biologists and amateur naturalists, can identify and certify vernal pools. Volunteers also assist with documenting evidence of rare and endangered species, thereby helping to identify Rare Habitat and Priority Sites as designated by NHESP. In Tewksbury, local volunteers should be encouraged to identify and certify vernal pools and other important habitat areas.

Tewksbury needs to take a stronger, multi-faceted approach to protecting wetland resources and wildlife habitat. The Master Plan recommends three regulatory measures that seem particularly important:

- Adopt a Wetlands and Riparian Corridor Overlay Zoning District, the proposed boundaries of which are illustrated on Map 5.

- In the Wetlands and Riparian Corridor District, the Conservation Commission should use its power under the Wetland Bylaw to require conservation restrictions when issuing an Order of Conditions for work in or near a wetland resource area.
- Remove the Great Swamp from the Heavy Industrial District and reclassify it as land in the proposed Open Space and Public Use District. For additional protection, industrial land abutting the Great Swamp should be subject to more stringent open space and landscape buffer requirements than would normally be applied to industrial development elsewhere in town.

Without companion actions, protecting land from development is not an adequate strategy to assure that the land will continue to function as habitat for native plants and wildlife. Owing to pollution, soil and hydrological disturbances, the species composition in many wetlands throughout the state has been altered by invasive species. Tewksbury could promote ecologically sound land management by taking several steps, such as:

- Develop and implement management plans for municipal property and conservation areas in order to maximize their value for native plant and wildlife species.
- Work with local volunteers to monitor invasive species on Tewksbury's open space and develop eradication plans where appropriate. The DPW and volunteers should remove invasive species along pond shores and plant native vegetation.
- Promote wildlife movement by minimizing fencing in conservation areas, particularly where adjacent open space parcels abut one another, and by providing for the preservation of uninterrupted wildlife habitat.

Water resources and open space. Natural buffers around surface water bodies are effective barriers against pollutants that might otherwise enter the water from surface runoff or groundwater discharge. Vegetated buffers absorb nitrogen and phosphorous pollution, neutralize organic and hydrocarbon chemicals, and detain sediment and the heavy metals that often adhere to it. The Massachusetts Rivers Protection Act is a powerful environmental law that restricts development within 200 feet of any perennial river or stream. If properly enforced by the Conservation Commission, the Rivers Protection Act will ensure adequate buffering around Tewksbury's perennial streams.

For ponds and intermittent streams that are not protected by the Rivers Protection Act, Tewksbury needs to focus on establishing and enhancing natural land buffers. This is particularly important for seasonal drainage channels that fill with water during major storms when sediment and pollutant loads are large. The protection of land around intermittent streams should be explicitly identified as a performance standard for residential and non-residential development.

Nonpoint source pollution (or polluted runoff) comes from many sources, mainly human activity and sometimes from natural landscapes. Common human activities like clearing and fertilizing land, controlling pests, salting and sanding roads, disposing of household and automotive cleaners, and failing septic systems cause persistent pollutants to accumulate in the environment. Tewksbury's planned extension of sewer service throughout the town may help to improve water quality in its streams, rivers and ponds. However, surface water resources and wetlands will remain vulnerable to runoff from roadways, a condition that argues for an assessment of local highway maintenance policies. Since nonpoint source pollution is diffuse, an effective control program usually requires several coordinated strategies that involve a cross-section of the community, including homeowners. Choosing the right strategies needs careful thought, for approaches that

work well in one community may be inappropriate elsewhere. Moreover, the cost or burden of a strategy has to be weighed against its likely environmental benefit. Tewksbury should consider the following actions to address nonpoint source pollution:

- Site design. The town's subdivision regulations and cluster bylaw should promote layouts that minimize impervious surfaces such as roadways and driveways, and retention of natural vegetation. Lawns generate a significantly higher runoff rate and pollutant load than do perennial plantings, natural vegetative cover and undisturbed forests.
- Environmental management practices. Roadway maintenance and management have a significant effect on water quality. The Town's DPW, Conservation Commission and MassHighway should collectively assess their current programs for road de-icing, street sweeping and maintenance of roadway drainage facilities, and identify opportunities to reduce the impact of road management on water quality.
- Public education. Since nonpoint source pollution results primarily from many small, individual actions, public education is essential to the success of any water resource protection strategy. Tewksbury should work to increase the knowledge base of residents and local businesses, pointing out ways that individuals can help to protect and improve the quality of their town's water resources. For example, informational brochures on topics such as the proper use and maintenance of septic systems, low-impact lawn and garden care, and information for homeowners about how to protect wetlands on their property might be distributed with water bills or made available on the town's web site.

  In addition, the school department could compete for EPA curriculum development grants to develop an environmental science program on nonpoint source pollution. Many suburban school districts in Massachusetts have used EPA environmental education grants to amplify their middle- and high-school science curricula, sponsor local "Earth Day" and science fair events, and build resident capacity to protect land and water resources. Given Tewksbury's hydrology, its location within three watersheds and the presence of several 21-E sites, the town may be in a very competitive position to obtain EPA environmental education funds.
- Special protection areas. Tewksbury needs to rezone environmentally sensitive areas in order to assure that they are not developed in a way that will exacerbate pollution loads. The town has already has important erosion control regulations in place, but in some locations the zoning is inappropriate from the standpoint of wetlands and water resource protection, notably the Great Swamp (see above).

Tewksbury has several ponds that will benefit from greater attention to surrounding open space, improved public access and increased community awareness. Ames, Long, Round and Mud Ponds are important public amenities and significant natural resources. The Master Plan promotes several actions, including:

- Assign responsibility to the Conservation Officer and/or the Recreation Department for annual pond inspections, organizing shoreline clean-ups and sign posting.
- Encourage high schools students, scout troops, neighborhood associations and other groups to adopt a pond as part of a community service project.
- Take tax title properties along pond shores and rivers to create public access points, picnic areas and non-motorized boat access.

- Develop management plans for town-owned open space, providing for a range of allowed public uses, including seasonal restrictions and fees, maintenance of trees and vegetation, and maintenance of trails, trash removal and sign posting.

Groundwater resources. Tewksbury should consider replacing its Groundwater Protection Overlay District with an Aquifer Protection Overlay District (APOD) that includes all medium and high yield aquifer resources in the town.[40] The proposed district is shown on Map 6. In any APOD area, the town should pursue low-intensity land uses, maintain existing open space holdings and acquire new open space wherever possible. Where non-residential uses already exist within a designated APOD area, Tewksbury should adopt and apply protective guidelines to any redevelopment or significant expansion of uses on a site.

Sutton Brook Disposal Area. Tewksbury should continue to work with EPA Region 1, DEP and town counsel to determine the town's liability at Sutton Brook Disposal Area. After the town's liability status is resolved, the Community Development Office should investigate submitting an joint application with the Town of Wilmington to the EPA for a Superfund Redevelopment Project pilot grant to develop a reuse plan that is coordinated with site clean-up.

Environmental cleanup. Tewksbury would benefit from working closely with agencies such as the Executive Office of Environmental Affairs in order to receive technical assistance and to compete for grants that support the assessment and cleanup of 21E sites within the town's designated Environmental Justice area.[41]

Cultural Resource Policies

Tewksbury is fortunate that its historical commission and many residents are so interested in the town's cultural resources. During the Master Plan visioning meetings, citizens expressed concern for their town's historic buildings and its unusual complement of public art, the character of the town center, and the retained rural features of old roadways. They said they would like more attention paid to making the town center a pedestrian-oriented area that encourages residents to

[40] Since the town currently does not rely on groundwater for public drinking water, DEP could decommission the town's Zone II areas and the Groundwater Protection Overlay District's legal purpose will be diminished. Establishing an Aquifer Protection Overlay District that covers all of the town's medium and high yield aquifers would change the statement of purpose in the zoning bylaw from controlling activities in a Zone II area to controlling activities that affect any significant groundwater resource.

[41] EOEA will provide technical assistance, audits and 21E site investigations. EOEA will also contribute funds and assistance for economic development projects that incorporate cleaner production practices in neighborhoods where Environmental Justice populations reside. The agency also plans to target open space resources to create, restore, and maintain open spaces located in these neighborhoods.

shop, congregate and socialize, and they spoke fondly of such places as the Ella Fleming School and Tewksbury Hospital – places that distinguish Tewksbury from all other communities.

Preservation of historic buildings, sites, landmarks and roadways. Despite the knowledge that exists locally, Tewksbury does not have many policies in place to protect its cultural assets. Significantly, Tewksbury Hospital is the only site listed on the National Register of Historic Places, yet Table 2 shows that Tewksbury clearly has many eligible sites and collections of sites. The town has taken an important step by adopting a demolition delay bylaw, but on its own, demolition delay has limited value as a strategy to protect important buildings. The Master Plan recommends several coordinated actions to increase Tewksbury's capacity to preserve historic resources:

- Apply for and match Survey and Planning Grants from the Massachusetts Historical Commission (MHC) to complete historic property inventories in the town center, and prepare nominations for eligible properties to the National Register of Historic Places.
- Survey additional areas along Andover, Chandler and Shawsheen Streets where there are collections of historic buildings, and in South Tewksbury.
- Consider establishing a local historic district in the town center, and neighborhood conservation districts in other areas of town where there are noteworthy historic property collections.
- Establish a program to negotiate preservation restrictions with property owners who want to protect their historic homes or commercial buildings.
- Use the Scenic Roads Act to designate several of the town's character-defining streets as scenic roads.

Resource inventories. Tewksbury has a considerable amount of resource information, but not in a form suitable for nominating buildings, sites or landmarks for listing on the National or State Registers. Periodically, the Massachusetts Historical Commission offers Survey and Planning Grants so that cities and towns can undertake the basic tasks of historic preservation: preparing National Register nominations, creating local historic districts, planning special preservation projects, and conducting public education. Since the state's grants require a local match, Tewksbury will need to provide some financial support for preservation activities.

It is important to point out that listing on the National Register does not protect buildings from inappropriate alteration or demolition. However, it is a threshold for eligibility to use special tax incentives (investment tax credits) to finance the cost of historic preservation. It also triggers a heightened review process for properties affected by a federally or state-assisted project. In addition, listing on the National Register automatically qualifies properties for listing on the State Register of Historic Places. Listing on the State Register enables owners of historically significant properties to qualify for phased increases in the assessed value of their homes when they invest in a significant restoration project, assuming the town adopts the enabling legislation for this purpose (Chapter 191, Acts of 1996). Coupled with demolition delay and zoning incentives to preserve buildings that are ineligible for investment tax credits, National Register status is a crucial preservation tool. It will also be crucial if the town wants to compete for a Preservation Projects Fund grant to preserve town hall.

Preservation areas. A local historic district created under G.L. c.40C is the most powerful historic preservation tool in Massachusetts. Communities often resist creating local historic districts because residents think the controls are excessive and unduly burdensome on private property owners. In fact, the most commonly cited concern – regulating the color of exterior paint – is exempt under local district guidelines in many cities and towns. By law, a local historic district consists of one or more

properties. As a result, communities may place an isolated, historically significant property under the protective umbrella of a local historic district. Since Tewksbury has significant buildings scattered throughout the town, a single-property district may be a very important preservation tool. An accurate, complete inventory is essential to the study process and to the endorsement required from MHC for a local historic district to be adopted by town meeting.

A more likely tool for Tewksbury is the neighborhood conservation district, a preservation area not unlike a local historic district but with regulations that are less onerous for homeowners than the literal requirements of G.L. c.40C. For example, major alterations to a contributing building in a neighborhood conservation district would be subject to historical commission review, but other activities normally regulated in a local historic district might be exempt: the installation of a fence or replacement of windows. Typically, the design controls in a neighborhood conservation district are developed in conjunction with residents, and for purposes of project review, district residents participate with the historical commission, often as associate members. Whether located in a local historic district or a neighborhood conservation district, a building may not be demolished without prior approval of the historical commission. In this regard, the local district/neighborhood conservation district provides a better check against demolition than a demolition delay bylaw.

Scenic resources. Tewksbury has a frame of older roadways that define the visual character of the town. Under the Massachusetts Scenic Roads Act, G.L. c.40 Section15C, Tewksbury can designate these streets as scenic roads and gain additional review power for the Planning Board over activity that affects significant trees and stone walls. The town should consider placing Andover Street, Trull Road, Whipple Road, Pleasant Street, Chandler Street, North Street, Kendall Road, Fiske Street, Pinnacle Street, East Street, Shawsheen Street, South Street and Foster Road under the protective umbrella of the Scenic Roads Act.

Preservation restrictions. Much like a conservation restriction to protect open space from being developed, the owner of a historically significant building may agree to a restriction that protects its historic architectural features from inappropriate alteration. This type of strategy is classified as voluntary preservation. The building owner conveys a preservation easement to a non-profit organization, such as a local historical society, which in turn gains the right to review and approve changes to the building, enforce the terms of the easement, and compel the owner to address violations (if any). The owner may use the value of the preservation easement, or the decrease in the building's market value as a result of the design restrictions (as determined by a qualified appraiser), as a charitable deduction against federally taxable income. The Tewksbury historical commission should consider developing a voluntary preservation program, particularly if the town finds it impossible to establish regulatory controls.

Tewksbury Hospital. Tewksbury should continue to work with state government to assure that the town's interests are considered in the event of a disposition process at Tewksbury Hospital. The town needs to emphasize not only the property's own space value, but also its historic architectural significance. Redevelopment and reuse of historic buildings on the site should give due regard to the cultural importance of these structures.

Local capacity. Through the Department of Community Development, Tewksbury should provide or arrange for resource protection training workshops for members of town boards and commissions. It is very difficult for local officials to carry out their review and permitting responsibilities without a structure to coordinate their efforts. Clear, updated resource maps, periodic forums to review proposed zoning changes, and training in policies and regulations proposed in the Master Plan would help volunteers successfully implement their charge.