

TOWN OF GILL 2021 OPEN SPACE AND RECREATION PLAN



Approved
March 31, 2021

Prepared by:

GILL OPEN SPACE AND RECREATION COMMITTEE

AND

FRANKLIN REGIONAL COUNCIL OF GOVERNMENTS
PLANNING DEPARTMENT

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**Franklin Regional
Council of Governments**

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Section 1: Plan Summary

The 2021 Gill Open Space and Recreation Plan (OSRP) articulates the open space and recreation aspirations of the community. These aspirations include: protecting prioritized open space, forests, and farmland; planning for some development to improve the town's tax base; promoting farms, farm products, and other locally made goods; and improving or adding recreational opportunities for school children and all citizens of Gill. This Open Space and Recreation Plan contains a comprehensive inventory of the town's natural, agricultural, and recreational resources and a plan for their stewardship and protection. The Plan also includes an analysis of the town's needs and a Seven-Year Action Plan designed to guide important decisions about the use, conservation, and thoughtful development of the Gill's land and resources.



The seven-year Action Plan includes open space and recreation goals for present and future generations.

The Seven-Year Action Plan is a roadmap for the implementation of this Open Space and Recreation Plan's goals and objectives. The Action Plan's successful implementation depends upon the ongoing commitment of a permanent Open Space and Recreation Advisory Committee as well as the involvement of dedicated municipal officials and enthusiastic community members.

Section 2: Introduction

The Gill Open Space and Recreation Plan Committee began work with the Franklin Regional Council of Governments in 2017 to update the 2011 Open Space and Recreation Plan (OSRP), which had expired. The Committee was composed of the Gill Administrative Assistant, Town Clerk, and representatives from the town's Conservation Commission, Cemetery Commission, and Energy Commission, as well as a member of the community. The Committee consulted other municipal officials and members of the community for expertise in the areas of agriculture, history, recreation, and property records. The Committee has produced an updated Open Space and Recreation Plan that embodies the town's commitment to protecting and enhancing its cultural, historical, scenic, archeological, and natural resources (including water resources, wildlife habitat, forests and farmlands), while promoting economic development.



One of Gill's many outstanding resources, Barton Cove, provides myriad functions including recreation and wildlife habitat.

Accomplishments

Since 2011, the Town of Gill has accomplished several Open Space and Recreation related goals including:

- Participation in the Connecticut River Streambank Erosion Committee;
- Participation in the FERC relicensing efforts for the Northfield Mountain Pumped Storage Project and Turners Falls Dam;

- Created a Conservation District Zoning Byway; and
- Conducted an ADA Self Evaluation and Transition Plan.

Statement of Purpose

The purpose of this Open Space and Recreation Plan is to provide an accurate and thorough basis for decision-making involving the current and future open space and recreation needs of Gill residents in harmony with appropriate economic development. This Plan brings together and builds upon the planning efforts and accomplishments of the past years including the 2011 Open Space and Recreation Plan, the 2004 Community Development Plan, the 2020 Multi-Hazard Mitigation Plan, and the 2018 ADA Self Evaluation and Transition Plan. It also represents consensus building on the most important community and natural resource needs of the Town and the best solutions for addressing them. The Seven-Year Action Plan, when carried out by the yet-to-be formed Gill Open Space and Recreation Committee and other town boards and commissions, will successfully implement the town's open space and recreation goals and objectives.

Planning Process and Public Participation

The process to update the 2011 Gill OSRP officially began with the kick off meeting in September 2017. Over the next several years, the Committee met eight times. Staff from the Franklin Regional Council of Governments (FRCOG) attended all of these meetings. The FRCOG staff supported the work of several people who contributed to the research and writing of this Plan, including Committees members, the Town Clerk/Assessor, and volunteers. The agendas and sign-in sheets for these meetings are included as Appendix C. An online and paper Public Survey was developed and the results were used to help develop Sections 6 – 9 of this Plan. The Survey and a summary of the Survey results are included as Appendix D.

The OSRP Plan Public Forum was held on December 21, 2020 remotely over teleconference. The forum was advertised using an announcement on Gill's website homepage and emails to town committees. Draft copies of the 2021 Gill OSRP maps were available on the website and attendees were encouraged to review the maps and write down any comments. A copy of Public Forum PowerPoint presentation was also posted on the Town website for attendees to view and for residents not able to attend the forum.

Preceding and following the Forum, copies of the draft maps and sections of the Plan were made available for public comment on line at www.gillmass.org. Comments and corrections received during the public forum and comment period – and throughout the planning process – pertaining to the different sections of the plan, maps and the action steps have been incorporated in the final version of the Gill Open Space and Recreation Plan.

SECTION 3:

COMMUNITY SETTING

The diverse rural landscape of Gill—its rolling hills, river terraces, farmlands, and upland forests—have been developed, utilized, and preserved by its human inhabitants for thousands of years. Planning for open space and recreational opportunities in Gill must take into account the multifaceted relationships between people and the open spaces and natural resources upon which they and other living beings depend. If development occurs without consideration for natural resources such as drinking water supplies or wildlife habitats, the quality of life for current and future generations of Gill residents could be diminished over time.



Verdant farmland bordered by upland forest is a familiar scene in Gill.

Context

Regional Context

Gill is located in western Massachusetts, in the northern part of the Pioneer Valley region in Franklin County, approximately five miles south of the Vermont state line. Gill is situated in close proximity to three major transportation routes: Interstate 91 is two miles to the west, Route 2 runs along the southern portion of town, and Route 10, which accesses I-91 and Route 63 in Bernardston and Northfield respectively, is just north of the Gill town line. Map 3-1: Regional Context at the end of this section shows Gill's location in Franklin County. This proximity allows access to both the north and south as well as east and west travel corridors.

Located in Franklin County, Gill is bounded on the east and south by the Connecticut River and can be accessed easily via Routes 2 and 10. Neighboring towns include Bernardston to the north, Northfield to the east, Erving and Montague to the south and Greenfield to the west. Although Gill offers relatively easy access to nearby employment centers in Greenfield, Montague and Orange, Gill has not been subject to development pressures experienced in other parts of the State.

Two primary landscape types dominate Gill—contiguous forestland and farmlands. Forest covers the majority of Gill. Prime farmland soils are located throughout the Town but concentrated along the Connecticut River. All of Gill is located within the Connecticut River watershed.

Gill is known, in part, for its water resources, particularly Barton Cove on the Connecticut River. Barton Cove draws visitors and residents alike for kayaking, birding, fishing, boating, and camping. Gill is also known for its excellent co-educational boarding and day school, Northfield Mount Hermon. And, in recent years, a revitalization of small, diversified farms has contributed to Gill being known throughout the region for its excellent farm products.

Local Context

Residents of Gill enjoy a wide range of recreational activities in their town including hiking, skiing, snowmobiling, hunting, fishing, and birding. The Gill Town Forest provides access to 162 acres of beautiful forested land which includes hills and eskers, a magnificent pond and river, and tucked away in hidden corners, remnants of historical interest. The Town Forest was established and purchased from the Franklin Land Trust in 2009 and was inventoried for bio-richness in 2013. Specifically, the funds were used for identification and marking of boundaries; development of a recreational trail system and kiosks; control of invasive plant species/ habitat res-toration; and controlling unwanted access/dumping.

Barton Cove is a popular spot for water recreation such as kayaking, canoeing, and power boating. Barton Cove Campground, owned by H₂O Power + FirstLight Power Resources, offers a picnic area, tent camping, and canoe and kayak rentals.¹

Gill's Open Space and Recreation Plan aims to support the continued enjoyment of recreational activities and continued land protection efforts.



Early morning mist shrouds distant views at Barton Cove.

Natural Resources Context

In planning for open space and natural resource protection in the Town of Gill, residents consider the role natural resources play across the region. There are three regional landscape-level natural resources important in both

¹ <http://www.h2opower.com/recreation/barton-cove-and-munns-ferry-campgrounds/>

Gill and in surrounding communities —contiguous forestland, farmlands, and watersheds. The presence and relatedness of these significant resources present both opportunities and challenges to open space and recreation planning for Gill.

Forestlands

Forests constitute one of the most important natural resources in the Town of Gill and in the region. Forestland conserves water supplies by sustaining the soil's ability to receive precipitation and recharge ground and surface waters slowly. Woodlands and their changing foliage give residents gorgeous surroundings upon which to gaze and appreciate. Forests clean the air and provide cool air currents in warm months.

Large blocks of contiguous forestland that are not traversed or fragmented by paved roads, wide rivers, development, or by open fields are important regional resources for several reasons. Wildlife species that require a certain amount of deep forest cover tend to migrate out of fragmenting landscapes. New frontage lots and subdivisions can often result in a widening of human activity into habitats, an increase in the populations of plants and animals that thrive alongside humans (i.e., raccoons and squirrels) and a reduction in the species that have larger home ranges and unique habitat needs. Larger blocks of forest are more suitable for active forest management as well.

One significant mechanism that can be used to protect forestlands – as well as farmlands and recreational lands – in Gill is Chapter 61. Chapter 61 is comprised of three programs that require cities and towns to reduce assessments of farm, forest and open space lands, provided the owners make a commitment to keep their lands in one or more of those uses. These programs were developed in part due to rising property values, which were forcing farmers and forest landowners to sell their land because of the increasing tax burden.

These programs are known as Chapter 61—the Forestland Act; Chapter 61A—the Farmland Assessment Act; and Chapter 61B—the Recreational Land Act. Many states have similar programs to retain open space but only the three Massachusetts laws give municipalities a “right of first refusal” to purchase lands that have been enrolled in these programs.²

According to Mount Grace Land Conservation Trust's *Land Use Planning under Massachusetts' Chapter 61 Laws*, “most landowners classify their lands in Chapter 61, 61A and 61B to take advantage of reduced property taxes. Many of these lands are woodlots and small farms on the outskirts of expanding urban and suburban areas. As development increases around these properties, taxes rise to cover the costs of expanded town services. Without Chapter 61, 61A and 61B, these increases in taxes would force some landowners to sell their property. Today, many parcels have remained undeveloped as a direct result of the reduced annual property tax bills following enrollment in these programs.”³

More information on Chapter 61 land classifications can be found on the Town of Gill's website at <http://www.gillmass.org/f/24/Guides-for-Land-Classifications>. A Forest Stewardship Plan was developed in 2014, and a state Community Forest Stewardship Implementation Grant in the

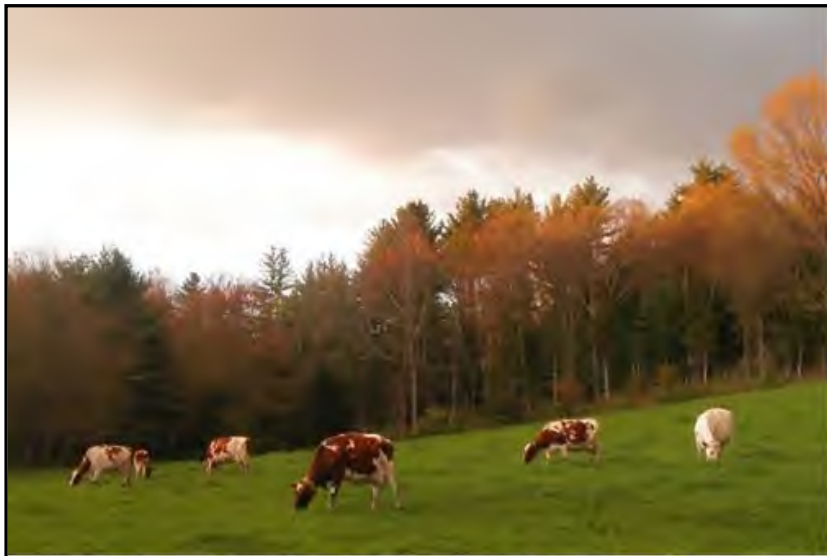
² <http://www.mass.gov/eea/docs/dcr/stewardship/forestry/service/chapter-61-programs.pdf>

³ <http://mountgrace.org/publications/all>

amount of \$7,100.00 was obtained in fiscal year 2017 from the Massachusetts Department of Conservation and Recreation (DCR) to assist in furthering several of the management recommendations and practices identified in the Plan.

Farmlands

Gill has a rich history of agriculture that has contributed to the Town as we know it today. Located in the Connecticut River Valley, much of the land is desirable for farming and contains prime farmland. In the late 18th century, grains – primarily wheat, rye, and barley – were the primary cash crops. By the mid 19th century, broom corn and tobacco had replaced grain as a commodity in Gill and by 1860 Gill had become one of the largest producers of butter and eggs in Franklin County, exporting them as far away as Boston. The more local markets of Greenfield broadened to include markets in Springfield and Athol as well as those north into Vermont and New Hampshire. This came about as railroads developed. Also, lumber products became increasingly important as the farmland was cleared. Milk became a major export after 1900, and after World War II, most dairy farms began consolidating and increasing in size. Subsistence farming, once a way of life for many Gill residents, also declined.



Cattle graze at sunset on a grassy pasture bordered by woodland.

At present, only a few dairy farms remain in Gill, although out-of-town farmers rent much of the large tracts of river land to grow vegetable crops and forage. Gill currently boasts an active Agricultural Commission, and according to the Commission, the family farm is on the rebound in Gill. In 2011, the Gill Agricultural Commission's **Gill Farms: A Guide to Buying Gill Products and Supporting Agriculture in Our Community** lists 20 farms – sometimes as little as 5 or 6 acres but crammed with

produce and know-how. Products from these farmers include eggs, herbs, vegetables, flowers, cheese, beef, pork, lamb, rabbits, berries, maple syrup, honey, alpaca fleece. Several have farm stores or farm stands.

In 2009, Gill adopted the Right to Farm Bylaw that essentially guarantees the right of farmers to conduct their agricultural activities as needed, which may include the attendant incidental noise, odors, dust, and fumes associated with normally accepted agricultural practices. Whatever impact may be caused to others through the normal practice of agriculture is more than offset by the benefits of farming to the neighborhood, community, and society in general.⁴ In recognition

⁴ http://www.gillmass.org/files/AgComm_Right_To_Farm_Bylaw.pdf

of the importance of agriculture to the Town and in support of local farmers, residents of Gill voted in November 2010 to remove the excise tax on farm animals.

Watersheds

Watersheds are the areas of land that drain to a single point along a stream or river. Sub-watersheds contain first and second order stream tributaries. The most extensive component of any watershed, they are also the most sensitive to land use, both the negative impacts of runoff and the positive effects of forest cover. Two of the most important things that result from protecting forestland are maintaining the long-term integrity of wildlife habitats and water quality within the watershed's surface and ground waters. Gill is contained within the Connecticut River Watershed.

The Connecticut River Watershed is the largest river ecosystem in New England and spans four states: Vermont, New Hampshire, Massachusetts, and Connecticut. The river itself forms Gill's eastern border. Fall River forms the town's western border. Along with other brooks and streams, it flows through the town on its way to the Connecticut River. From its beginnings on the Canadian border to its end in Long Island Sound, the Connecticut River drains a landscape that is 11,000 square miles in size, 410 miles long. The river drops 2,400 feet from its source to the sea and is one of the most developed rivers in the Northeast. Entering Massachusetts through the Town of Northfield, it flows through forty-five communities before entering the state of Connecticut. The watershed is eighty percent forested, twelve percent agricultural, three percent developed, and five percent wetlands and surface waters.

The Connecticut River Watershed was designated the "Silvio O. Conte National Fish and Wildlife Refuge" by an act of Congress in 1991, the first refuge of its kind, encompassing an entire watershed ecosystem. The Connecticut River also received special attention in 1998 when it became one of only fourteen rivers in the U.S. designated as a National Heritage River. The Massachusetts Executive Office of Environmental Affairs has outlined watershed priorities for the Connecticut River that include: promoting and/or creation of riparian buffer zones along the waterways within the watershed; reducing barriers to migratory fish passages; reducing the negative effects of non-point source pollution, primarily storm run-off; and increasing the amount of water quality data available within the watershed. See Section 4 – Environmental Inventory and Analysis – for more detail on the Connecticut River Watershed, its tributaries and other water bodies in Gill.

Community History

The Town of Gill with its natural resources has attracted and sustained human settlements for thousands of years. Native Americans frequented the area to fish the waters of the Connecticut River and its tributaries and to farm the rich floodplain soils. European Colonists also used the Connecticut River for transportation, log drives, fishing, and relaxation. It would become of fundamental importance to the industrial development in the area.

Native American presence in the Town of Gill dates as far back as 5,500 B.C. Artifacts from that time period have been unearthed in Gill. There are locations in town where the presence of archaeological remains may limit development options and for which appropriate current uses

have not been determined. The Great Falls area of Gill was a prime fishing area; tribes from as far away as Eastern New York traveled to the area to fish. This same area of the Connecticut River was the site of a brutal massacre of Native Americans by the British under Captain Turner in the King Philip's War (1675-1677). Permanent Colonial settlements were not noted in Gill prior to approximately 1776.

Areas of Settlement

Gill was originally part of Deerfield in the seventeenth century, then part of Greenfield until Gill's incorporation in 1793. Over time, three distinct settled areas developed within the Town of Gill. They include Gill Center, Riverside, and Northfield Mount Hermon as described below.



Located in Gill Center, Gill Tavern – originally the Gill General Store – is a popular area eatery.

Gill Center

Gill was a major crossroads of travel on the western side of the Connecticut River. Organized around a town common, the Gill Center had a number of stores and manufacturing, several taverns as gathering spots and stagecoach stops. A local blacksmith shop, nearby grist mills and a pail factory made the Center a busy place. While fire and changes in industry have removed these landmarks, the Town Common is encircled by a number of historic buildings, including the Gill Meeting House, erected in 1794, establishing Gill's civic center along this main transportation route. Other buildings near and around the Town Common include the Congregational Church (1803), a Federal period home in the style of Asher Benjamin, and also the Town Hall (1867), the Slate Library (1921), and Gill General Store – now The Gill Tavern. This area still remains the focus of Gill's civic and social life and the Gill Town Common continues as a place where concerts, town picnics, and socials are held.

Village of Riverside

Prior to colonial settlement the area now known as Riverside hosted a major regional gathering for Native Americans coinciding with the annual shad run over the Great Falls each spring. In May of 1676, during King Philip's War, colonial militia attacked and killed hundreds of Native Americans at the site of the Peskeompskut village settlement, following which a native counter-attack inflicted heavy casualties on retreating colonial troops. Since 2014, the Battle of Great Falls has been the subject of ongoing research funded by the National Park Service's American Battlefield Protection Program and coordinated through a consortium of local towns and Native American tribes.

The Village of Riverside developed on the Gill side of Great Falls on the Connecticut River. A ferry connected Riverside with Montague as early as the 1760s. In 1798, a stone-filled crib dam was built to accommodate locks on the Montague side, allowing river traffic to bypass the Falls. A few farms, homes, and shops were established on the road from Gill Center to the ferry. Village growth accelerated in 1867 when a sawmill was built in Riverside and in 1878 when a suspension bridge was erected between Riverside and Montague. In the mid 1880s, a kindling factory and pulp mill were constructed. The sawmill burned down in 1903, and the pulp mill exploded shortly thereafter.⁵

Riverside declined as a civic and commercial center, however today it remains a residential center - a quiet, peaceful haven of residential homes with a rural, close-knit neighborhood feel. In 2016, the Gill Historical Commission published a comprehensive history of the Riverside area, *Life Along the Connecticut in Gill, Massachusetts*. The Riverside Village Historic District was designated as a National Register District on September, 18, 2017.

Northfield Mount Hermon

The Mount Hermon School for Boys founded in 1881 and The Northfield Seminary for Girls founded in 1879 were both known for their founder Dwight L. Moody. Now called Northfield Mount Hermon (NMH), the school consolidated its two campuses on the Mount Hermon property in Gill in September 2005. NMH is currently a coeducational boarding and day school for 650 students in grades 9 through 12 and postgraduate. NMH is the largest landholder in Gill, owning approximately 640 acres of property primarily in the northeastern portion of town.

⁵ Landscape and Material Life in Franklin County



Photo courtesy of AdmissionsQuest, CreativeCommons, www.flickr.com/photos/boardingschool/4215240433/sizes/l/in/photostream/

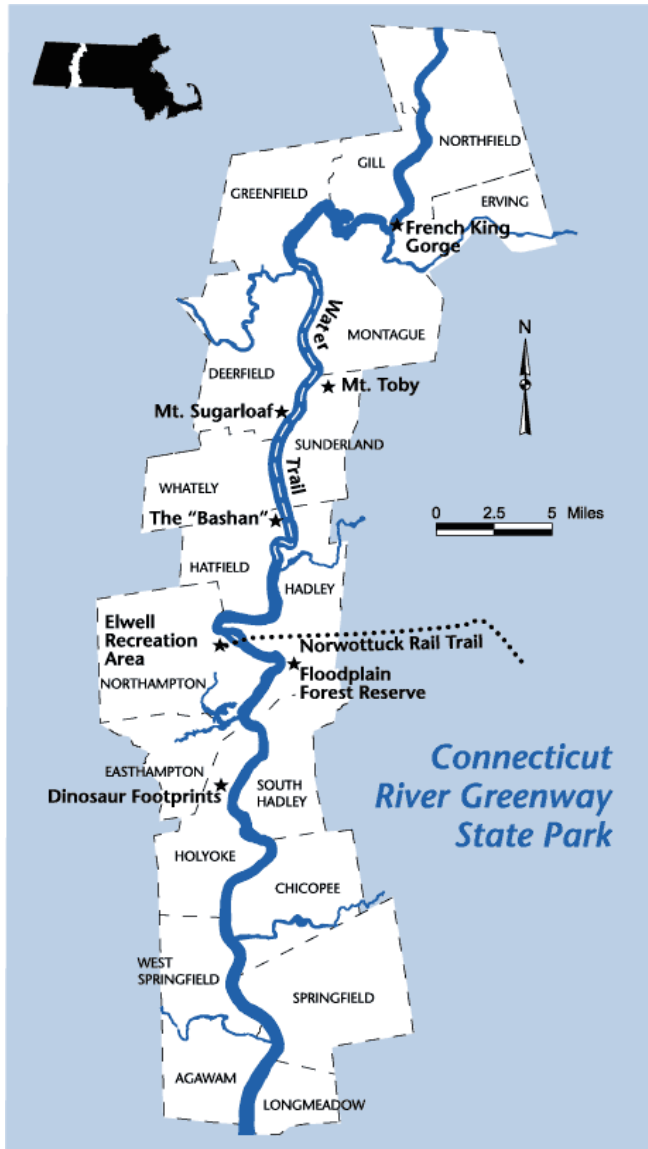
Northfield Mount Hermon's Admission Office stands on the School's 640-acre parcel located in northeast Gill.

The Role of the Connecticut River in the Community's History

The Connecticut River played a prominent role in the history of the Town of Gill. The River has provided fish for food and was the main mode of transportation for Gill residents. Since transporting goods by boat was more efficient than transporting over land, nearly all trade prior to the development of the railroad occurred on or along the Connecticut River. Timber, ice, and farm goods were just a few of the commodities transported via the river to and from the Town of Gill.

In the mid-eighteenth century, river crossings were important factors in a town's economic development and social life. Prior to the bridges, ferries were the primary means of crossing rivers. Gill had three major ferry crossings on the Connecticut River (starting from the south): Smith's, Stacy's and Munn's ferries. Smith's Ferry went out of operation with the installation of the Old Red Suspension Bridge. Munn's and Stacey's Ferries went out of operation in the 1930's due to lack of demand. The Town of Gill owns a one-acre parcel at Stacy's Ferry, which has some potential for development as a small boat launch and recreation site.

Gill has a spectacular, award-winning bridge at French King Gorge between Erving and Gill. The French King Bridge, completed in 1932, received the Annual Merit Award as "the most beautiful steel bridge" from the American Institute of Steel Construction. Recently restored, the bridge is listed on the State Register of Historic Places. In addition, the Turners Falls-Gill Bridge underwent an extensive re-construction in the mid 2000s. There are several other bridges in Gill that are of note.



Connecticut River Greenway State Park

The Connecticut River also delineates one of Massachusetts' newest state parks, the Connecticut River Greenway State Park. As shown in Figure 3-1, the Park connects open spaces, parks, scenic vistas, and archaeological and historic sites along the length of the Connecticut River as it passes through the state.⁶ There are over 12 miles of permanently protected shoreline and numerous access points to the river.

The Role of Route 2 in the Community's History

In 1913, the portion of Route 2 between Erving and the New York State Line was designated as the Mohawk Trail Scenic Auto Route, in honor of the Mohawk Indians who used the trail to travel east and west. As a result of the designation, commercial development began along the route to supply tourists with food, gas, lodging, and souvenirs. Route 2 continues to be the primary commercial and industrial corridor in Gill.

In 2017, the Riverside Historic District along Route 2 was added to the National Register of Historic Places. In 1975, 674 acres of land comprising all of Riverside and parts of Greenfield were designated as an Archaeological District in the National Register of Historic Places.

In 1953, Route 2 between Athol and Williamstown received a Scenic Byway designation. The Mohawk Trail Scenic Byway was one of the earliest Scenic Byways in New England. The corridor is rich in cultural, historic, scenic, natural, archeological, and natural resources. A number of historic villages and structures along the route provide evidence of the Byway's history. The Byway also travels through some of the most beautiful scenic areas in Massachusetts.

Significant stretches of the Mohawk Trail follow the Millers River and cross the majestic Connecticut River. The Mohawk Trail East Scenic Byway Corridor Management Plan contains greater detail on the history and resources of this Byway.⁷ A Scenic Byway designation is

⁶ <https://www.mass.gov/locations/connecticut-river-greenway-state-park>

⁷ Mohawk Trail East Scenic Byway Corridor Management Plan, FRCOG, June 22, 2009

important to Gill in part because the designation brings with it potential funding on the state and national level.



The French King Bridge, at French King Gorge, offers among the most stunning views along the Mohawk Trail Scenic Byway.

Historical Resources in Gill

Along with the historical resources mentioned earlier in this chapter, other significant historical resources located in Gill include the following:

- Riverside Archaeological District (National Register of Historic Places)
- Bascomb Hollow
- Turners Falls-Gill Bridge
- French King Bridge
- Water power mill sites
- Methodist Church
- Old Bridge Crossing
- Cemeteries:
 - Center Cemetery
 - North Cemetery
 - West Gill Cemetery
 - Riverside Cemetery (acquired by the Town in 2016)



Gill Centers includes historic structures such as the Slate Library and a federal period home

- Factory Hollow (formerly the main road to Greenfield)
- Capt. Turner Monument
- Old Red Bridge Anchor with armored mudballs
- Riverside Village Historic District (National Register of Historic Places)

Population Characteristics

Demographic Information

A snapshot of Gill's population characteristics shows a town with a slightly declining population over the last twenty years, this after significant population growth in the 1970s and 1980s. Similar to the County's population, baby boomers comprise the largest percent of the population, suggesting a potential for increasing demands for services for the elderly the coming decades. Income rates for Gill residents are similar to those for the County and about two thirds of Gill residents work outside of Gill.

Population and Population Change

Demographics are useful for forecasting the need for open space and recreational resources that may be required by residents over time. According to the 2010 U.S. Census Redistricting Data, Gill had a population of 1,500 in 2010 (Table 3-1). In 2000, data gathered by municipal officials in the Town of Gill reported the population to be 1,620. This is different from the total population figure of 1,363 that the U.S. Census reported as of April 1, 2000. Gill municipal officials believe the 2000 U.S. Census figure was inaccurate due to miscalculation of staff and faculty housing on the Northfield Mount Hermon campus as well as to a shared zip code with Turners Falls. For the purpose of this Open Space and Recreation Plan, the 2000 and 2010 Census population figures will be used. According to the U.S. Census Bureau's American Community Survey, the population in 2015 is estimated to have been 1,641.

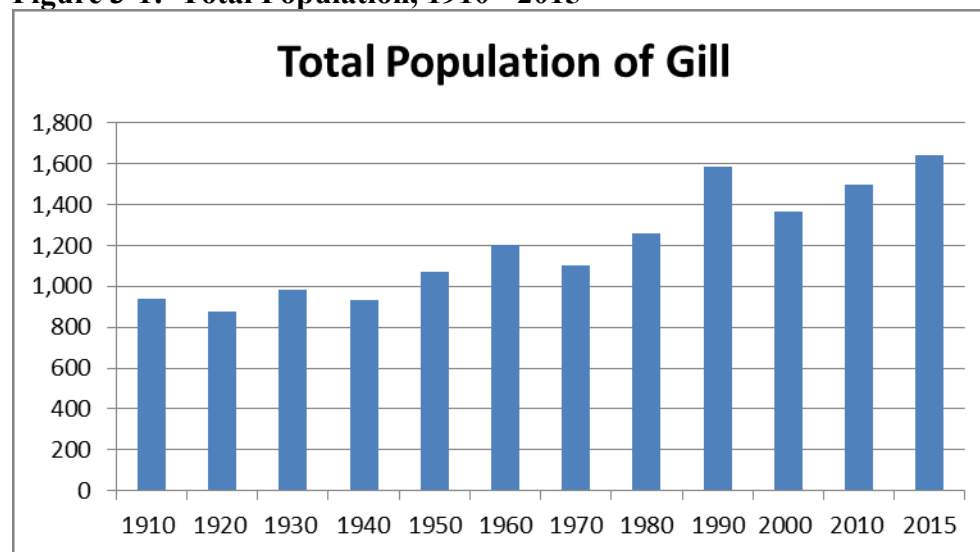
Table 3-1: Total Population, 1970 - 2015

Geography	1970	1980	1990	2000	2010	2015 Estimate**
Gill	1,100	1,259	1,583	1,363*	1,500	1,641
Franklin County	59,223	64,317	70,092	71,535	71,372	71,144
Massachusetts	5,689,377	5,737,037	6,016,425	6,349,097	6,547,629	6,705,586

Source: U.S. Census Bureau – 1970 Census, 1980 Census, 1990 Census STF3A, 2000 Census SF3, and 2010 Census Redistricting Data.

***Source:** Town of Gill Census 2000 figure was 1,620.

****Source:** US Census Bureau, American Community Survey, Five-year Estimates, 2011-2015. In 2015, the Gill Town Census reported a population of 1,401.

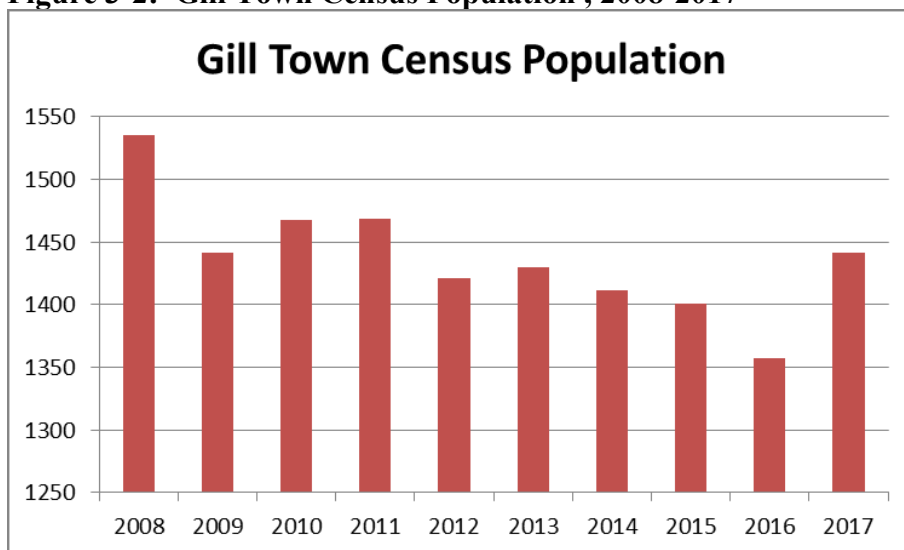
Figure 3-1: Total Population, 1910 - 2015

Source: U.S. Census Bureau

As shown above in Figure 3-1, Gill's population in recent decades has varied, with significant growth in the 1970s and 1980s, and with growth slowing in the last two decades, according to the U.S. Census. From 1970 to 1980, the population in the Town of Gill grew over 14 percent and then grew significantly from 1980 to 1990 by another 26 percent (Figure 3-2). This is dramatically higher than both the County and the State during the same decades. For Franklin County, the rate of population growth was fairly consistent from 1970 to 1980 and 1980 to 1990 with approximately a 9 percent growth rate for each of those time periods. In the 1990s, the Town's population declined by nearly 14 percent, while the County grew by approximately 2 percent, and the State grew by 5.5 percent. Between 2000 and 2010, the Town saw a 10 percent increase in population, while the County's population declined slightly by 0.2 percent and the State population grew modestly by 3.1 percent. Between 2010 and 2015, Gill experienced an estimated 9.4 percent increase in population, compared to a 0.32 percent decline in Franklin County and an increase of 2.4 percent in the State population.

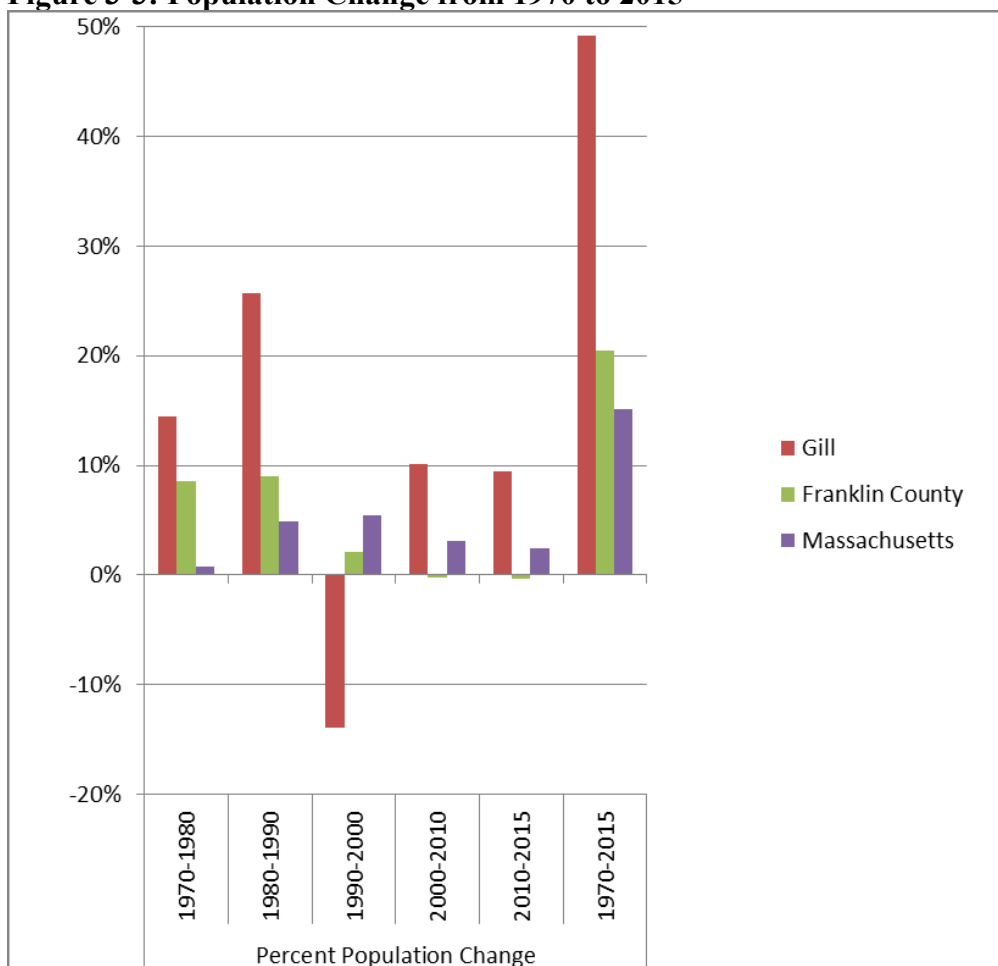
Town officials question the accuracy of the U.S. Bureau of Census population data. Figure 3-2 below shows the Town Census data for the population of the Town of Gill.

Figure 3-2: Gill Town Census Population , 2008-2017



Source: Gill Town Clerk, December 2017.

Figure 3-3: Population Change from 1970 to 2015



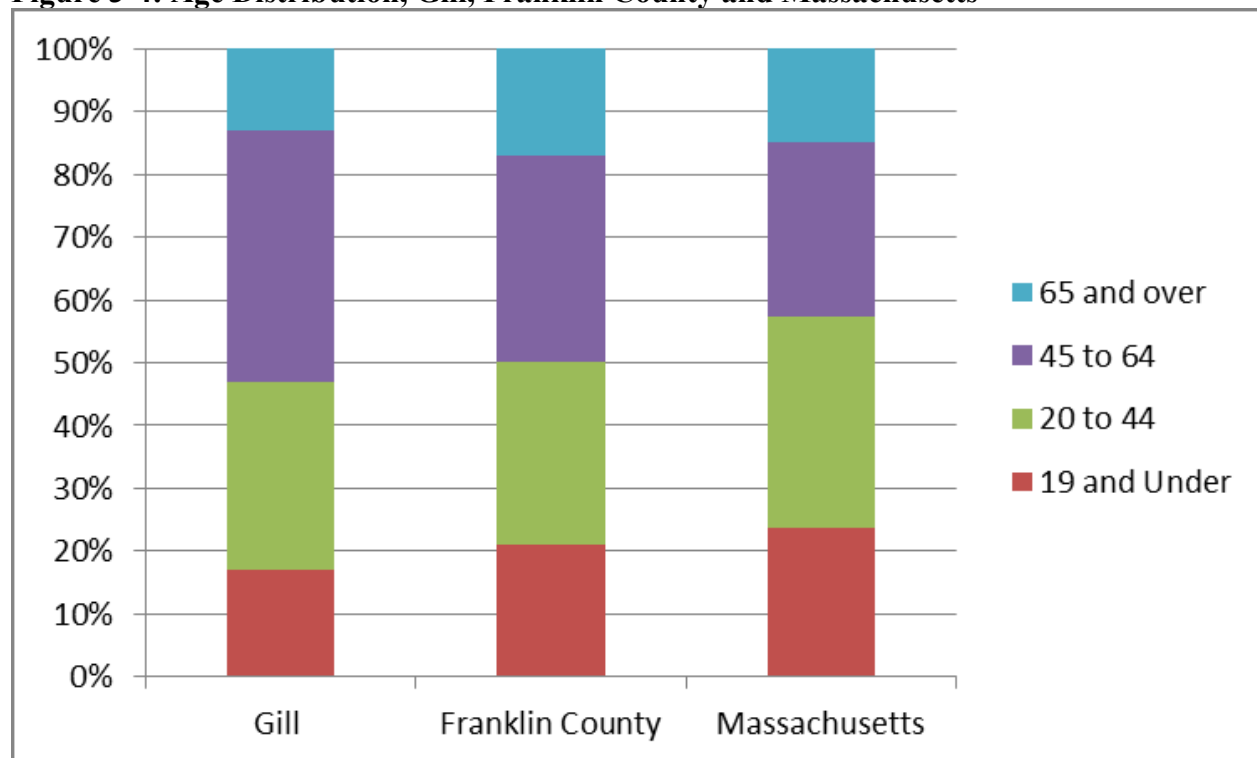
Source: U.S. Census Bureau – 1970 Census, 1980 Census, 1990 Census STF3A, 2000 Census SF3, and 2010 Census Redistricting Data; US Census Bureau, American Community Survey, Five-year Estimates, 2011-2015.

The overall 45-year trend for Gill shows a 49 percent increase in population, larger than both the County and State. This is largely attributable, however, to the large increase in the 1970s and 1980s, culminating in a record high population in 1990. This was followed by a nearly 14% decline by 2000. The trends of the last two decades show Gill's population steadily increasing since 2000. It is important for the Town to determine how these trends translate into demand for open space and recreational resources.

In 2010, Gill's population density was 101 persons per square mile, compared to the neighboring towns of Erving (125 persons per square mile), Northfield (88 persons per square mile), Bernardston (91 persons per square mile), Greenfield (796 persons per square mile), and Montague (269 persons per square mile).⁸

The age make-up of the population is also an important factor when considering open space and recreational needs in Town. As shown in Figure 3-4, in 2015 residents between the ages of 45-64 made up the largest percentage of the Town's population at 40 percent, compared to 33 percent in Franklin County and 28 percent in the State as a whole, according to the U.S. Census 2011-2015 ACS. Also notable is the smaller percentage of children 19 and under in Gill (17 percent) compared to Franklin County (21 percent) and the State of Massachusetts (24 percent).

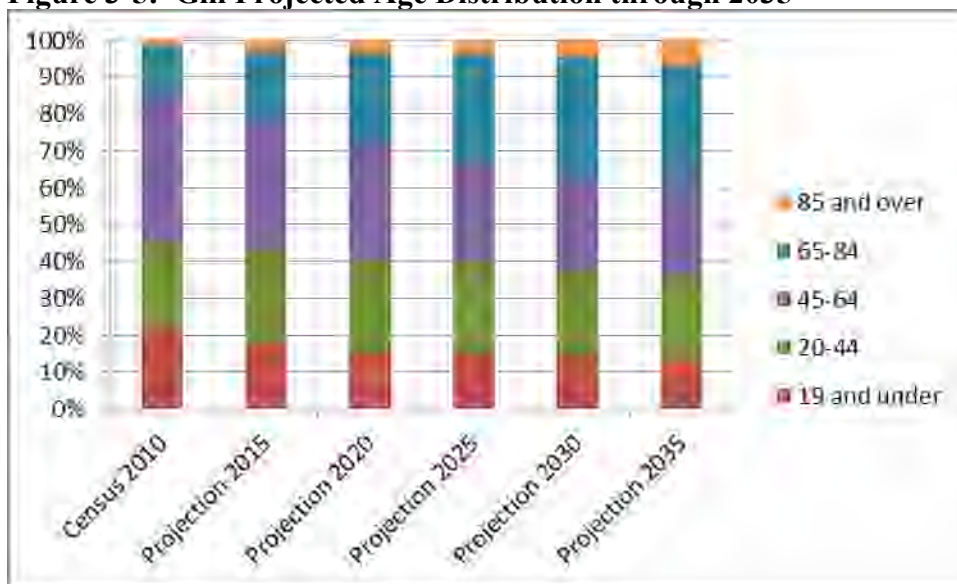
Figure 3-4: Age Distribution, Gill, Franklin County and Massachusetts



Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates.

⁸ Calculated using 2010 U.S. Census Redistricting Data population counts, and 2005 MassGIS Land Use data

Figure 3-5: Gill Projected Age Distribution through 2035



Source: UMass Donahue Institute Vintage 2015 Population Projections. March 2015.

According to projections developed by the UMass Donahue Institute and shown in Figure 3-5, it is projected that the numbers of children aged 19 and younger in Gill will decrease by 24 percent between 2010 and 2035. During this same period, the 45 to 64 age cohort is estimated to decline by nearly 16 percent. At the same time, it is anticipated that the numbers of residents in the 65-84 age cohort will more than triple by 2035. The oldest cohort of residents (85 years of age and over) is projected to increase by nearly five times over this same period, to represent 6 percent of the overall town population in 2035.

Overall the population of Gill is aging, a trend consistent with the County and the State. The aging population may require different recreational facilities and services including accessible walking paths, arts, and leisure programs. It appears the Town of Gill needs to be concerned about providing for an aging population in its open space and recreation programming, while continuing to provide opportunities for all residents. As Baby Boomers age, they may also require different housing options than are currently available in Town. This demand for new housing could impact the available open space in Gill. The Town should proactively identify the types of housing this population group will need and determine the best locations for development, taking into consideration the needs of an older population while also working to protect open space and natural resources. Planning for growth before it happens will help to protect open space and recreation resources into the future.

Any development of new open space and recreation resources should take into consideration where the current population resides, where any potential new development will occur, and which parts of the local citizenry require specific needs. As shown in the fourth part of Section 3, Growth and Development Patterns, the location of future growth depends in large part on zoning, slopes, soil and groundwater related constraints, and on which lands are protected from development. Proactively identifying key parcels in town that might be future parks and walking trails close to current neighborhoods, and in areas that could be later developed for residential uses, will help ensure these resources are available in the future. Town officials should continue

to look for opportunities to conserve land in Gill that protects valuable scenic and natural resources and provides public access to trail networks and open spaces.

Economic Wealth of Residents and Community

Measures of the income levels of Gill's residents as compared to the county and state are helpful in assessing the ability of the citizenry to pay for recreational resources and programs and access to open space.

Table 3-2: Income and Poverty

Geography	Per Capita Income Estimate	Median Household Income Estimate	Percent of Individuals Below Poverty Level*
Gill	\$32,193	\$73,750	10.3%
Franklin County	\$30,584	\$55,221	11.7%
Massachusetts	\$36,895	\$68,563	11.6%

* For whom poverty status was determined.

Source: American Community Survey 2011-2015 Five Year Estimates. Five-year estimate of income for the past 12 months and reported in 2015 dollars.

Table 3-2 describes the earning power of residents in Gill as compared to the county and the state. The Gill per capita income estimated for 2015 was \$32,193, which was somewhat higher than the county figure of \$30,584, and lower than the state figure of \$36,895. The median household income for Gill was \$73,750 in 2015, which was higher than both the county (\$55,221) and the state (\$68,563). Another way to describe a community's income and economy is the poverty rate. In Gill, 10.3 percent of residents were living below the poverty level in 2015. Gill's poverty rate was less than in the county (11.7percent) and state (11.6percent).

Although Gill's resources include both its people and its natural landscapes, the status of its finances could be affected by an interdependent relationship that exists between the two. The costs of the community services provided to residents are paid for with the tax revenues generated by different kinds of property, both developed and undeveloped. Some developed uses such as housing often require more services including education and road maintenance. The costs associated with one household are rarely paid for by the revenues generated by that same property.

One reason that towns encourage economic development is to have other types of property in town, other than residential, to share the tax burden. Protected open space on the other hand can cost towns very little in community services, provide a modest amount of tax revenues, and reduce the amount of housing that can ultimately occur in town. This relationship is explored in more detail in subsection D. Growth and Development Patterns.

Employment Statistics

Employment statistics like labor force, unemployment rates, numbers of employees, and place of employment are used to describe the local economy. Labor force figures can reflect the ability of a community to provide workers that could be employed by incoming or existing businesses. Unemployment rates can show how well residents are fairing in the larger economy while employment figures describe the number of employees in different types of businesses.



Employment can be used as a measure of productivity. The number of people employed in each business can be used to determine the types of industries that should be encouraged in town. The town may decide to encourage business development to create more jobs and as a way of increasing taxable property values, which can help pay for municipal services and facilities, including recreational parks and programming as well as protected open space.

Wagon Wheel Restaurant on Route 2 is a popular small business – and breakfast spot - in Gill.

Labor Force: Gill Residents Able to Work

The labor force is defined as the pool of individuals 16 years of age and older who are employed or who are actively seeking employment. Enrolled students, retirees, stay-at-home parents and other persons not actively seeking employment are excluded from the labor force. Labor force and unemployment data are available on a monthly and annual basis from the Massachusetts Executive Office of Labor and Workforce Development.

Figure 3-6: Labor Force and Employed Persons in Gill, 2007 through 2016

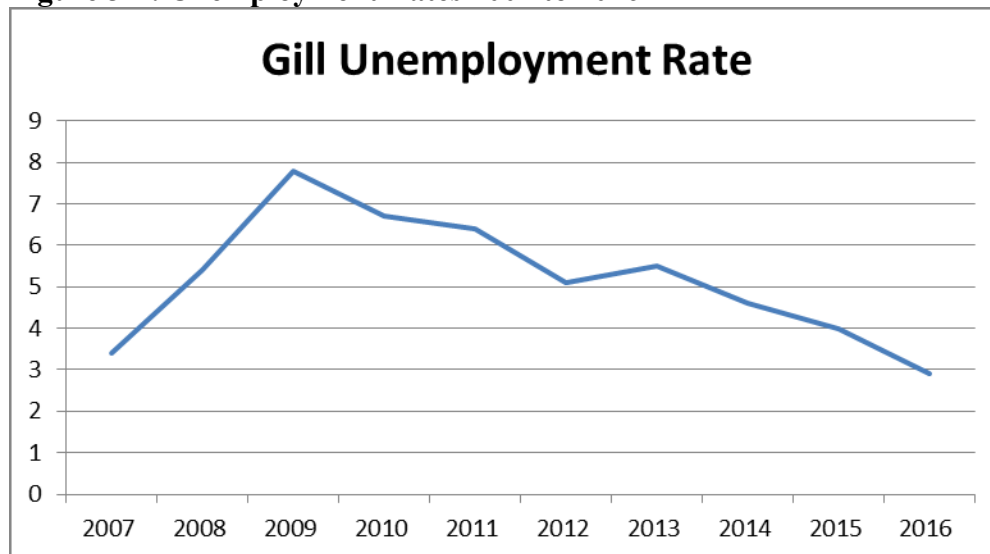


Source: Massachusetts Executive Office of Labor and Workforce Development, LAUS Data.

In 2016, the Town of Gill had a labor force of 928 with a total of 901 employed persons. These figures have increased consistently over the years since 2007, with a notable reduction in employed persons in 2009 at the height of the Great Recession, as demonstrated in Figure 3-5 above.

Figure 3-7 displays Gill's unemployment rate from 2007 through 2016. In 2016, Gill's unemployment rate was 2.9 percent. This compares favorably with the unemployment rate in Franklin County of 3.3 percent and is slightly lower than the unemployment rate of 3.7 percent in the state of Massachusetts in 2016. The unemployment rate in 2007 of 3.4 percent was similar to the rate in 2016, but as shown in Figure 3-7, the rates have fluctuated over the years with a notable spike in 2009.

Figure 3-7: Unemployment Rates 2007 to 2016



Source: Massachusetts Executive Office of Labor and Workforce Development, LAUS Data.

Employment in Gill: Residents and Non-Residents

The largest employer located within the Town of Gill is the Northfield Mount Hermon School, employing between 250 and 499 employees (Massachusetts Executive Office of Labor and Workforce Development). The next largest employers are Kuzmeskus Realty LLC (bus company) and Travel Kuz, employing between 100 and 249 people. The Gill Elementary School, Gill Fire Department, and Renaissance Builders all employ between 20 to 49 people. It is not uncommon in rural communities for the town government and school to be major employers.

Table 3-3: Worker* Commute Patterns

Geography	Worked in Town of Residence	Worked out of Town but in County of Residence	Worked out of County but in State of Residence	Worked out of State of Residence
Gill	26%	55%	17%	3%
Franklin Co.	29%	71%	34%	5%
Massachusetts	31%	69%	31%	4%
United States	8%	17%	24%	4%

* Employed workers 16 years and over.

Source: U.S. Census Bureau - 2011-2015 American Community Survey (ACS) Five-Year Estimates

According to the 2011-2015 American Community Survey, the percentage of Gill residents in the labor force who worked in town in 2015 was 26%, slightly lower than in Franklin County and the state of Massachusetts, but significantly higher than the United States as a whole. More than half of Gill residents worked outside of Town, but still in Franklin County.

Context and Demographics of Environmental Justice Populations

No environmental justice populations have been mapped in the Town of Gill.

Growth and Development Patterns

Patterns and Trends

Like many towns in Franklin County, Gill's historic land use development patterns can still be seen today. Gill's land use patterns include:

- The more heavily settled Riverside, an area that once supported log drives, sawmills, and the wealthy mill owners of Turners Falls.
- Gill Center, where civic life has always been focused and where the Town Hall and the Slate Memorial Library can be found.
- Working farms and farmland including active dairy farms – and Upinngil Farm and Farm Store, Cold Spring Farm and Rolling Edge Sugarhouse, to name a few. Note: The Gill Agricultural Commission has produced ***Gill Farms: A Guide to Buying Gill Products and Supporting Agriculture in Our Community.***
- Forest land blankets much of the town and includes active sugarbushes and other forest industries.

Within this land of farms, forests and houses are two major linear elements: the Connecticut River and Route 2. The Connecticut River floodplain contains arable prime farmland soils and is actively farmed by small, diverse farms. Commercial properties are located primarily along Route 2 and on Main Road close to where it intersects Route 2. This trend began in the early part of the 20th Century following the designation of Route 2 as the Mohawk Trail Scenic Auto Route.

Over the past two hundred years, Gill residents developed their community using the productivity of the area's prime farmland soils as well as its proximity to the Connecticut River and the Mohawk Trail. Gill's population went through a series of expansions and contractions between 1800 and 2010. Gill's population in 2000 represented a 97 percent increase of its population in 1800. 2015 Census data puts Gill's estimated population at 1,641. The most rapid growth took place between 1980 and 1990 with a more than 25 percent increase in population. Overall, the 45-year trend for Gill shows a 49 percent increase in population.

Despite the population increase, in the late 1980s Gill experienced a reduction in the number of dairy farms due to several factors including low product prices, high production costs, aging farmers and smaller families, and a federal buy-out program of dairy herds to control pricing. Over the last century, Gill saw a reduction in the number of dairy farms and an increase in the development of residential uses outside of the historic village centers.



Clearly, the conversion of forest and agricultural land to building sites for single-family homes is the dominant land use change in Gill and in Western Massachusetts. Future development patterns in Gill may depend on national and regional employment and population trends but also on local conditions that impact development and land use, such as growing demand for locally grown farm and forest products.

Homes stand adjacent to a rye field in Gill that is permanently protected.

Table 3-4: Land Use Change in Gill, 1971 - 1999

Land Use	1971 Acres	1999 Acres	1971-1999 Change
Forest	5,887	5,558	-329
Water and Wetlands	710	756	46
Agriculture (cropland and pasture)	1,941	1,789	-152
Small Lot Residential (< .5 acre)	67	66	-1
Large Lot Residential (> .5 acre)	449	767	318
Commercial	7	20	13
Industrial	0	0	0
Recreation	102	105	3
Urban Open Land	156	158	2
Open Land	129	156	27
Woody Perennial	19	86	67
Other (transportation, waste disposal, mining)	12	17	5

Source: 1971 and 1999 MassGIS Land Use data. Totals may not match exactly due to rounding.

Due to changes and improvements in the methods for data collection and analysis, the MassGIS land use datasets for the earlier years of 1971 and 1999 are not directly comparable to the 2005 data. Table 3-5 below provides a summary of land uses in Gill in 2005. In 2005, approximately 60% of the total area in town was forested, 17% was in agricultural use, and just over 3% was in residential use, the majority on lots greater than a ½ acre, but also including 30 acres of multi-family residential use. Uses at 1% included high density residential, powerline/utility, open land, and recreation use. Commercial uses represented less than 1% of the total acreage in town and there was no recorded, industrial or mining uses.

According to the Franklin County Cooperative Inspection Program (FCCIP), from 1993 to 2016, 94 residential properties were built in Gill; 13 in 2003 alone (see Figure 3-8 below). Between 1993 and 2002, an average of 4 homes was built each year. In the years from 2004 to 2016, an

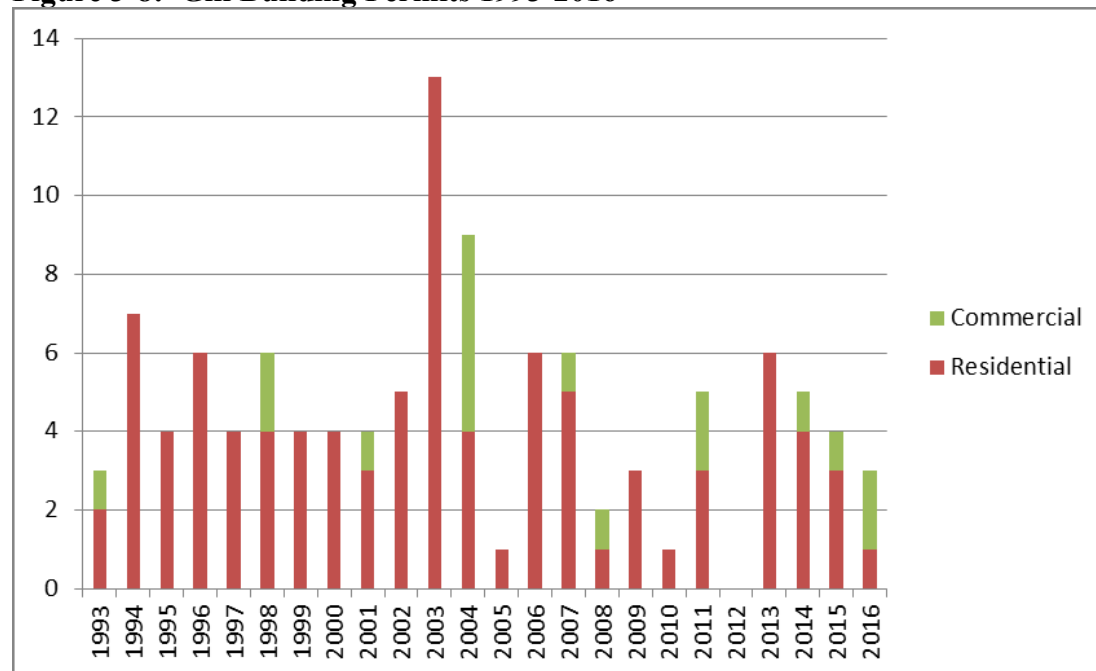
average of 3 homes was built each year. Building permit data provided by the Town for the period from 2002 through 2007 confirms a spike in residential permits in 2009, with an average of 4.8 per year. The high number of commercial permits issued in 2004 includes 2 new dormitories and 2 new modular classrooms at Northfield Mount Hermon.

Table 3-5: Summary of Gill Land Use, 2005

Land Use Category	Acres	Percentage of Total Acreage in Town
Forest	5,730	60%
Agriculture	1,599	17%
Water	676	7%
Wetlands	422	4%
Residential (> .5 acre lots)	397	4%
Open Land	159	1.7%
Urban Public/Institutional	148	1.6%
Recreation	120	1.3%
Powerline/Utility	96	1.0%
Residential (< .5 acre lots)	45	0.5%
Commercial	39	0.4%
Multi-family	30	0.3%
Other (transportation, waste disposal, mining)	17	0.2%
Industrial	0	--
Total	9,478	100%

Source: 2005 Massachusetts GIS Land Use data.

Figure 3-8: Gill Building Permits 1993-2016



Source: Franklin County Cooperative Inspection Program, November 2017.

Infrastructure

Transportation Systems

Roads and Bridges

The major transportation routes in and around Gill are:

- Interstate 91, approximately 2 miles west of the town line;
- Route 2, which runs through the southern portion of town; and
- Route 10, which connects Route 63 and I-91.

Route 2 (also known as the Mohawk Trail Scenic Byway) is one of the earliest scenic byways in New England, receiving its designation in 1953. Route 2 safety improvements in the Gill/Greenfield section are currently being completed as part of the rehabilitation of the Turners Falls-Gill Bridge and additional improvements for this area are in the preliminary planning stage.⁹

The Town has a total of 40.6 miles of road, of which approximately 11.4 are gravel.



Trucks on Route 2 in Gill.

As noted above, the construction of bridges spanning the rivers that form the Town's boundaries played a large role in the historic development of the Town of Gill. There are currently four key bridges that connect Gill to surrounding communities, including: the award-winning French King Bridge, completed in 1932; the Turners Falls-Gill Bridge, which underwent an extensive re-construction in the early 2000s; and two other notable bridges which are currently rated as "structurally deficient."¹⁰

Transit

There is currently no transit service to or from this area of the county nor are there connections to other transit routes. Previous service was sporadic and based on the Northfield Mount Hermon School schedule, making it difficult for residents to use the route since the days and times of runs were inconsistent. Service was discontinued completely at the end of FY2009.

⁹ 2016 Regional Transportation Plan, FRCOG.

¹⁰ Bridges are considered structurally deficient if they fall below specific thresholds. These bridges may span a range of conditions, from requiring a minor, but vital, repair to a more complete rehabilitation.

The Franklin Regional Transportation Authority (FRTA) provides demand-response transportation services for the elderly and people with disabilities in Gill and the Franklin Transit Management (FTM—the operating company for the FRTA) provides ADA paratransit service.¹¹

One of the largest private bus services in Franklin County—Kuzmeskus—is based in the Town of Gill.

Rail

There are no freight or passenger rail services available in the Town of Gill. The Connecticut River Main Line runs roughly north-south through the abutting towns of Bernardston and Greenfield, transporting both freight and passengers. The Central Vermont Line - New England Central Railroad (NECR) also runs north-south through the Town of Northfield close to the town boundary with Gill. This rail line transports exclusively freight.

Air

The closest airport to Gill in Franklin County is the Turners Falls Municipal Airport, a general aviation facility located in Montague. Other municipal airports are located in the region in the towns of Northampton and Orange. Commercial flights can be obtained at Bradley International Airport, an approximately forty-five minute ride south via I-91 to Windsor Locks, Connecticut.

Pedestrian and Bicycle

Since 1991 and the passage of the federal Intermodal Surface Transportation Efficiency Act (ISTEA), bicycling and walking have been recognized as viable and efficient modes of transportation. Consequently, bicycle and pedestrian facilities are included as a regular part of transportation planning activities on the federal, state, regional, and local levels. Not only are bicycling and walking integral components of the transportation system in Gill and Franklin County, but they are also crucial components that help make the region a livable place. The U.S. Department of Transportation and the Federal Highway Administration have recently focused their attention on the important role these modes of transportation play and the many benefits they provide a community, including: reduction of greenhouse gases and other air pollution, lowered energy costs, less use of land and pavement, increased health benefits for people, economic savings, increased social interactions, and community revitalization.

Recently the FRCOG partnered with the YMCA in Greenfield, Baystate Franklin Medical Center, Greenfield Community College, and the Franklin County Chamber of Commerce to develop and launch *Walk Franklin County – for the Health of It!* This cooperative program works to promote walking for transportation, reduction of air pollution, and physical fitness and health. The *Walk Franklin County – for the Health of It!* project is a free program that allows participants to measure and record their walking progress and receive rewards for reaching their walking goals. The FRCOG has completed sets of walking maps for each town in Franklin County, including one in Gill: a flat 2.6 mile round trip walk through Gill Center. A map of the walk is available online at <http://www.walkfranklincounty.org/maps.php>.

¹¹ 2016 Regional Transportation Plan, FRCOG.

The Franklin County Bikeway is a project under implementation by the FRCOG with the aim to provide a biking network, with both on-road and off-road facilities, throughout Franklin County, linking employment, recreational, and educational destinations. Routes within Gill include:

- The Greenfield-Montague Loop Route - Intermediate/Novice (16.4 Miles) This loop connects the Canalside Trail Bike Path in Montague and Deerfield to the Riverside Greenway Bike Path in Greenfield. The route travels on the outskirts of downtown Greenfield and into Gill to connect these two off-road bike paths.
- Franklin County / Vermont Loop - Advanced (16 miles). This loop begins at the Franklin County Bikeway's Greenfield- Montague Route at the intersection of West Gill Road and Hoeshop Road. This route travels into Vermont and loops back south on Pond Road/Scott Road/West Road to Mount Hermon Station Road. This loop is strenuous because of the very hilly terrain.

Franklin County Bikeway maps are available on-line on the FRCOG website at:
<http://frcog.org/program-services/transportation-planning/>

Town officials have seasonal concerns about the pedestrian access between Gill and Montague. This access is not maintained by the MassDOT in winter on the Turners Falls-Gill Bridge.

Water Supply Systems

Except for those living on the Northfield Mount Hermon (NMH) School campus, or in the Riverside area, Gill residents rely on private wells for their water supply. NMH operates its own water supply system. The Riverside Water District manages its own water system and purchases its water from the Town of Greenfield. There is also a public well at Gill Elementary School. Prior to 1976, the Riverside area got its water from a neighborhood spring that is now privately owned and abandoned. Any future potential use of this site would not meet current MassDEP standards for reactivation.

Wastewater Treatment

NMH and Riverside have their own wastewater treatment systems. After discovering that its 1962 sewage lagoon facilities were inadequate during storm events, NMH recently updated its system at a cost of \$2 million. Following a typhoid outbreak in 1957, the Riverside community began to pursue a municipal wastewater treatment facility. After years of debate and discussions over how to pay for it, the project was finally launched in 1976 and was operational by October of 1980. The Town contracts with the Montague Wastewater Treatment Facility to treat sewage from Riverside homes and businesses, utilizing a pipe that runs under the river.

Solid Waste Management

Gill is a member of the Franklin County Solid Waste Management District. Therefore, all residents of Gill can dispose of household hazardous wastes in the fall through their program. Gill residents use the Greenfield transfer station, located at Cumberland Road (off Wisdom Way) in Greenfield. The Town provides curbside pick-up for the Pay-As-You-Throw (PAYT) program, at a cost of \$3 per bag. In calendar 2016, Gill shipped 208 tons of trash and 125 tons of recycling to the Springfield Materials Recycling Facility.

Cable and High Speed Internet

In 2016, the Town of Gill negotiated a new cable license with Comcast that will serve 95-96% of the households in Town.

Turners Falls Hydroelectric Project¹²

Key features of the Turners Falls Hydroelectric Project are the Turners Falls Dam and associated impoundment, a gatehouse, a power canal, two generating stations (Station No. 1 and Cabot Station), and a bypassed reach, all owned by FirstLight Power Resources. The Turners Falls Dam consists of two individual concrete gravity dams, referred to as the Gill Dam and Montague Dam, which are connected by a natural rock island known as Great Island. The 630-foot-long Montague Dam is founded on bedrock and connects Great Island to the west bank of the Connecticut River. It includes four bascule type gates and a fixed crest section which is normally not overflowed. When fully upright, the top of the bascule gates are at elevation 185.5 feet mean sea level (msl). The 493-foot-long Gill Dam connects Great Island to the east bank of the Connecticut River, and includes three tainter spillway gates. When closed, the elevation atop the tainter gates is at elevation 185.5 feet msl.

The Turners Falls Impoundment extends upstream approximately 20 miles to the base of TransCanada's Vernon Dam in Vernon, VT. To provide storage capacity for the Northfield Mountain Pumped Storage Project, the Turners Falls Impoundment elevation may vary, per the current FERC license, from a minimum elevation of 176.0 feet msl to a maximum elevation of 185.0 feet msl; a 9 foot fluctuation as measured at the dam. The Turners Falls Impoundment is not a level pool; rather, it is sloped between Turners Falls Dam and Vernon Dam. The slope of the water surface profile steepens as the magnitude of flow increases.

The gatehouse is located on the west of the Connecticut River. It forms the abutment for connecting the Montague spillway with the shoreline and is equipped with headgates controlling flow from the Turners Falls Impoundment to the power canal. The gatehouse houses 14 gates controlling flow to the power canal. The power canal is approximately 2.1 miles long and ranges in width from approximately 920 feet in the Cabot forebay (downstream end of canal) to 120 feet in the canal proper. The power canal has a design capacity of approximately 18,000 cubic feet per second (cfs).

FirstLight has two hydroelectric facilities located on the power canal, including Station No. 1 and Cabot Station. The canal bypasses approximately 2.7 miles of the Connecticut River. Fall River, located near the head of the bypass channel, discharges into the bypass reach. Station No. 1 discharges into the bypass reach approximately 0.9 miles downstream of the Turners Falls Dam. The Turner Falls Project is equipped with three upstream fish passage facilities, including (in order from downstream to upstream): the Cabot fishway, the Spillway fishway, and the Gatehouse fishway. Each of these facilities is associated with the Turners Falls Hydroelectric Project and utilize the power canal to facilitate fish passage.

¹² The description of the Turners Falls Hydroelectric Project was taken from the following FirstLight Power Resources website: <http://www.northfieldrelicensing.com/Pages/Turners.aspx>

Long-Term Development Patterns

Land Use Controls

Gill's Zoning Bylaws were last updated in May 2015 and their Rules and Regulations Governing the Subdivision of Land were updated in August 2009. According to the Zoning Bylaws, the Town of Gill is divided into the following types of districts:

- Village Residential (VR)
- Residential (R)
- Residential-Agricultural (R-A)
- Village Commercial (VC)

The Town of Gill Official Zoning Map, located at the end of this section, shows the location(s) of the four districts. The vast majority of land in Gill is zoned Residential-Agricultural, with a minimum developable lot size of 2 acres. The area known as Riverside is the only part of town with Village Residential, Residential and Village Commercial Zoning. Table 3-6 shows the minimum lot size, minimum lot frontage and maximum lot coverage for each district.

Table 3-6: Zoning Bylaws – Excerpt from Dimensional Schedule

District	Minimum Lot Area in Acres	Minimum Lot Frontage in Feet	Maximum Lot Coverage*
Village Residential	0.25	100	50%
Residential	2.00	200	50%
Residential-Agricultural	2.00	200	30%
Village Commercial	1.00	150	70%

Along with the Dimensional Schedule, other elements of the Zoning Bylaws¹³ relevant to Open Space and Recreation Planning include:

- Section 6: Conservation Development. The purpose of Conservation Development is, in part, to encourage the preservation of common land for conservation, agriculture, open space, forestry and passive recreational use; to promote more sensitive siting of buildings and better overall site planning; to promote better utilization of land in harmony with its natural features; and to allow more efficient provision of municipal services.
- Section 23: Solar Electric Installations. , Approved by Town Meeting in 2011. The purpose of this bylaw is to facilitate the creation of new Large-Scale Ground-Mounted Solar Electric Installations (greater than 15 kW) by providing standards for the placement, design, construction, operation, monitoring, modification and removal of such installations that address public safety, minimize impacts on environmental, scenic, natural and historic resources and to provide adequate financial assurance for the eventual decommissioning of such installations.
- Section 15: Flood Plain Regulations. The Flood Plain District is established as an overlay to all other districts and limits development to a list of permitted uses in Article V, not including new residential structures. Any use must also be in compliance with Chapter 131, Section 40 of the Massachusetts General Laws, with the current state building code addressing floodplain areas, MassDEP's Wetlands Protection Regulations (310 CMR

¹³ Town of Gill Zoning Bylaws, http://www.gillmass.org/files/2015-1019_Gill_Zoning_Bylaws.pdf

10.00), and MassDEP's related requirements for Inland Wetlands (302 CMR 6.00) and Subsurface Disposal of Sanitary Sewage (310 CMR 15, Title 5).

Conservation developments are characterized by common open space and clustered compact lots. The purpose of a conservation subdivision is to protect farmland and/or natural resources while allowing for the maximum number of residences under current community zoning and subdivision regulations. In some cases a greater density (density bonus) may be offered in the local ordinance to encourage this approach to residential development planning. The minimum area of land required for a Conservation Development is ten (10) acres for a subdivision or eight (8) acres for lots on an existing public way which do not require subdivision approval. At least thirty-five percent (35%) of the total parcel of land must be set aside as common land. The minimum required common land may not include wetlands, water bodies, floodplains, land with slopes greater than twenty-five (25%), roadways, and land prohibited from development by legally enforceable restrictions, easements or covenants.

The Zoning Bylaws do not prevent the town's prime agricultural land that is not currently under a conservation or agricultural preservation restriction from being developed for future residential use. Under the current bylaws, much of Gill's land is vulnerable to residential development. To protect the resource that is so vital to Gill's sense of community character - its farm and forestland - the Zoning Bylaws would merit a thorough review with a particular emphasis on protecting farm and forestland.

As part of the Subdivision Regulations the Planning Board, where appropriate, may require reservation of open space for up to three (3) years upon completion of the subdivision to provide an opportunity for the Town to purchase it for open space or recreation purposes. The Planning Board shall not require reservation of more than ten percent (10%) of the gross area of the subdivision for such purposes, and shall not require reservation of areas smaller than four (4) acres, except in extraordinary circumstances.¹⁴

Much of the development that has occurred in Town in recent decades has been along the town's roadways, under the Approval Not Required (ANR) provisions in the state's Subdivision Control Law (M.G.L. Ch., 41, §81P). In reviewing the Rules and Regulations Governing the Subdivision of Land, the community could consider incentives or other methods to more strongly encourage conservation development on appropriate properties that might otherwise be endorsed as ANRs. This recommendation is included as an Action Item in this plan.

Another regulation in place in Gill is the Right to Farm Bylaw, adopted in 2009, discussed earlier in this Section.

Cost of Community Services

The challenge for Gill and other communities is to find a model for growth that protects vital natural resource systems and maintains a stable property tax rate. In designing the model, it is important to understand the fiscal impact of different land uses, which can be calculated based on the relationship of property tax revenues generated to municipal services used. Although protected open space typically has a low assessed value and thus generates low gross tax

¹⁴ <http://www.gillmass.org/files/Planning-Board-SubdivisionRulesRegs.pdf>

revenues, municipal expenditures required to support this use are typically much lower than the tax revenue generated.

The American Farmland Trust (AFT) and other organizations have conducted Cost of Community Services (COCS) analyses for many towns and counties across the country. A COCS analysis is a process by which the relationship of tax revenues to municipal costs is explored for a particular point in time. These studies show that open spaces, while not generating the same tax revenues as other land uses, require less public services and result in a net tax gain for a community. Residential uses require more in services than they provide in tax revenues compared to open space, commercial, and industrial land uses. Communities, at the time of the study, were balancing their budgets with the tax revenues generated by other land uses like open space and commercial and industrial property.

Figure 3-9 demonstrates the summary findings of 151 COCS studies from around the country. For every dollar of property tax revenues received from open space, the amount of money expended by the town to support farm/forestland was under fifty cents while residential land use cost over a dollar. Taxes paid by owners of undeveloped farm and forestland help to pay for the services required by residential land uses. When a town has few land uses other than residential, homeowners and renters pay the full cost of the services required to run a municipality, maintain public ways, and educate young people. In this way, local property real estate taxes tend to rise much faster in communities that have little protected land and higher rates of residential development.

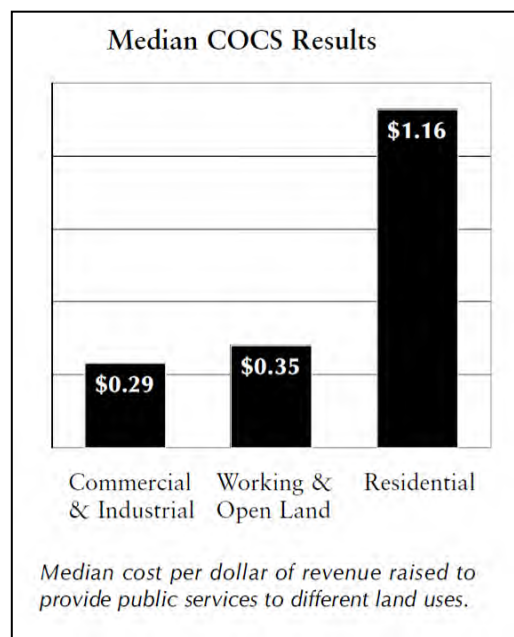
In 2009, a COCS study was completed for the Town of Deerfield, and may provide a useful local example for Gill. In Deerfield the study found that:

- 79% of fiscal revenue in fiscal year 2008 was generated by residential land, 9% was generated by commercial land, 9% by industrial land, and 3% by farm and open land.
- 90% of expenditures were used to provide services for residential land compared with 5% for commercial land, 4% for industrial land, and 1% for farm and open land.

In other words, in fiscal year 2008:

- For each \$1 of revenue received from residential properties, Deerfield spent \$1.14 providing services to those lands.
- For each \$1 from commercial land the town spent 55 cents,
- For each \$1 from industrial land, the town spent 47 cents providing services; and
- For each \$1 received from farm and open land, the town spent 33 cents.

Figure 3-9: Summary of Cost of Community Services (COCS) Studies



Source: American Farmland Trust; 2016. http://www.farmlandinfo.org/sites/default/files/COCS_08-2010_1.pdf

Residential land uses created a deficit of \$1.7 million, while the other three categories generated surpluses: \$573,397 from commercial, \$608,422 from industrial, and \$318,842 from farm and open land. While residential land use contributes the largest amount of revenue, its net fiscal impact is negative.

These findings support open space and farmland preservation, and commercial and industrial development, as a way to help towns balance their budgets. The studies are not meant to encourage towns and cities to implement exclusionary zoning that seeks to make it difficult to develop housing, particularly for families with school age children, who require more in services.

The long-term impacts of these strategies need to be considered. Patterns of commercial and industrial uses vary considerably between towns but all communities need to consider the impact of commercial and industrial development on the overall quality of life for residents. Increased industrial development could generate jobs as well as an increased demand for housing in town. Permanently protecting a large portion of the town's open space and farmland from development could provide locally grown food and jobs, but may also jeopardize the ability for future generations to determine the best use for the land. It also can increase the cost of the remaining available land, making affordable housing development more difficult.

Additionally, the current capacity of different services in town is a key factor when considering what types of development to encourage. If a community is near or at capacity for services such as police, fire, water, roads, or schools, any additional population growth could be quite costly as these services would need to be expanded. However if a community has an excess in service capacity in these areas, new residential growth would not necessarily be a strain on the town's budget.¹⁵ In a climate of declining school enrollment, while acknowledging that home owners with children cost the town more than they pay in taxes, a community might determine that they want to attract families with children in order to maintain a valued community school.

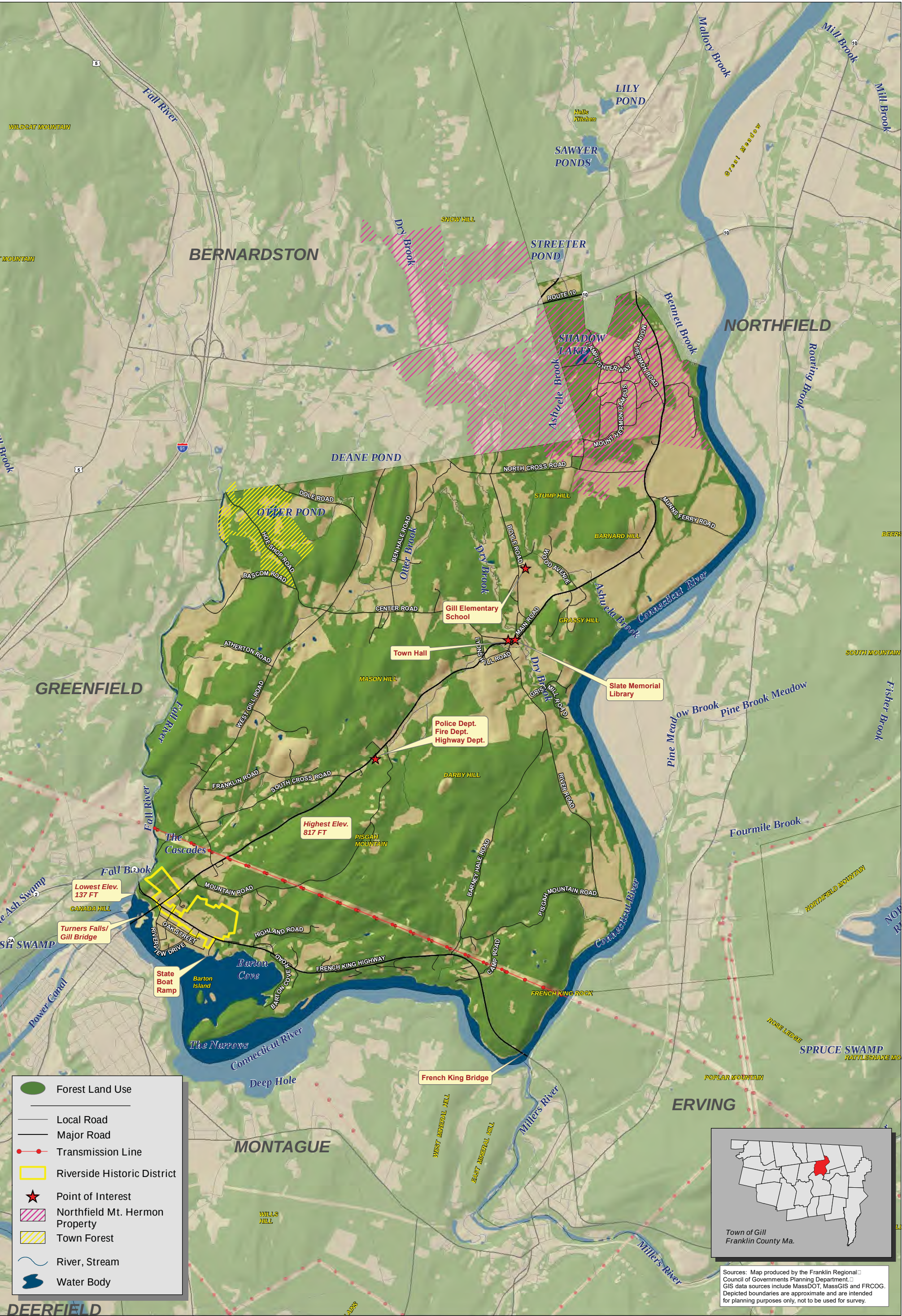
The best types of commercial and industrial development to encourage in Gill might have some of the following characteristics: locally owned and operated; in the manufacturing sector; being a "green industry" that does not use or generate hazardous materials; businesses that add value to the region's agricultural and forest products; and businesses that employ local residents. It is also important to consider that successful commercial and industrial development often generates increased demand for housing, traffic congestion and some types of pollution. Therefore, the type, size, and location of industrial and commercial development require thorough research and planning.

The 2004 Gill Community Development Plan mapped development constraints, including prime farmland and permanently protected open space. One noticeable pattern relevant to development patterns is a significant area of prime farmland that is located in the northeast area of Town, as well as along the Connecticut River on the eastern border of Town. Another pattern is a large area of permanently protected open space in the southeast area of Town. The Plan's goals and objectives encouraged commercial development in selected areas of the Route 2 corridor that are

¹⁵ *Cost of Community Services Studies: Making the Case for Conservation*. Julia Freedgood, 2002.

compatible with residential and recreational uses and the examination of other locations to determine if there are areas suitable for commercial and/or light industrial development.

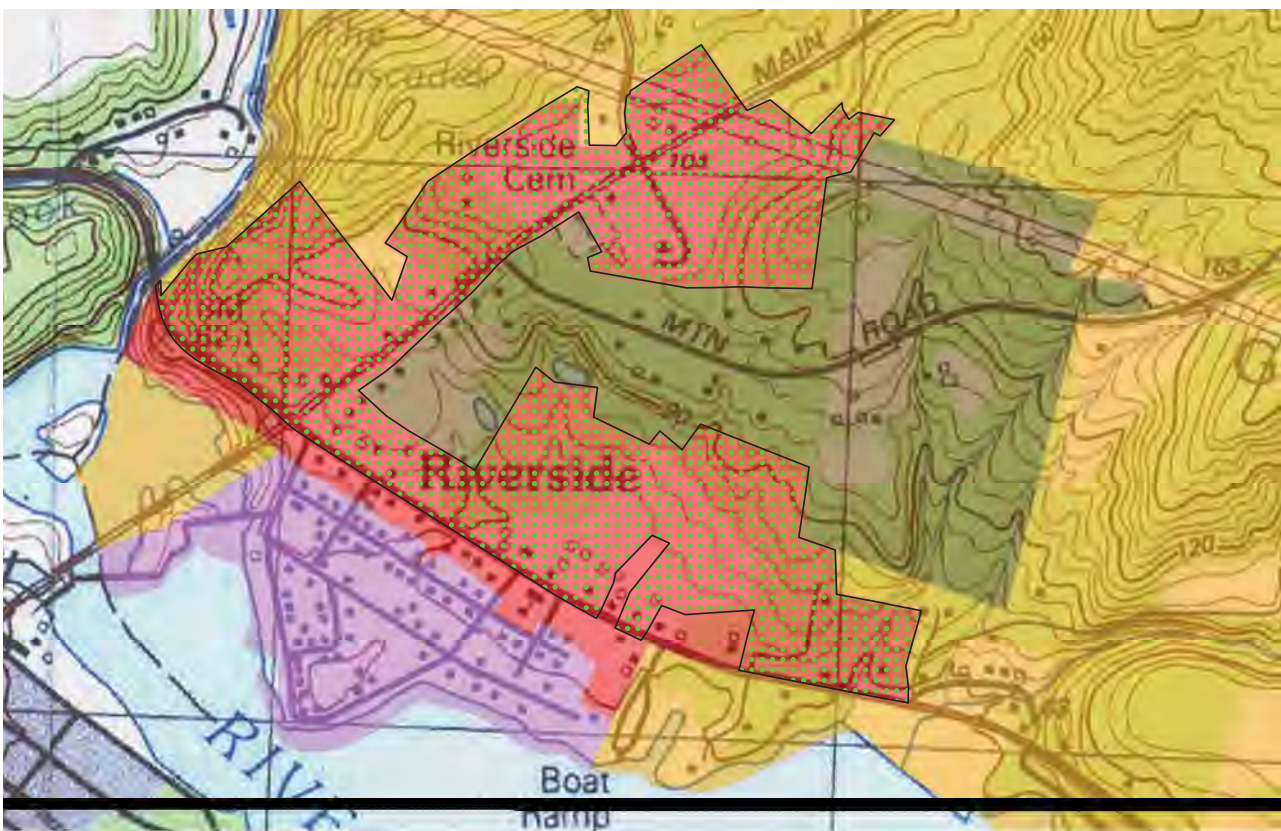
For Gill, an approach that encompasses both appropriate business development and conservation of natural resources will best satisfy the desires of residents to maintain their community character while offsetting the tax burden. Thinking about patterns on a more regional basis could help the Town in a goal of conserving large blocks of contiguous forestland, as well as permanently protected open space, prime farmland and other vital resources. By continuing to pursue growth management strategies that include active land conservation and zoning measures that balance development with the protection of natural resources, Gill will be able to sustain and enhance the community's rural village character and help to maintain a high quality of life for residents.



Town of Gill Open Space & Recreation Plan 2020

Regional Context

Zoning Map Town of Gill



Inset

Zoning District

Residential

Residential Agricultural

Village Commercial

Village Residential

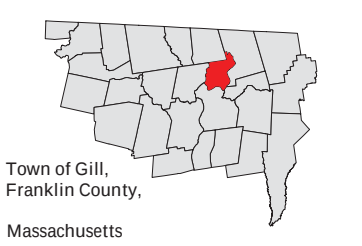
Solar Overlay District

See Inset



May 2015

Sources: Map produced by the Franklin Regional Council of Governments Planning Department.
GIS data sources include MassDOT, MassGIS and FRCOG.
Depicted boundaries are approximate and are intended for planning purposes only, not to be used for survey.



Town of Gill,
Franklin County,
Massachusetts



SECTION 4: ENVIRONMENTAL INVENTORY AND ANALYSIS

This section explores the biological and physical components of some of the town's ecosystems. These components include soils, surface and ground water, vegetation, fisheries and wildlife. *Geology, Soils, and Topography* provides a general understanding of the ways different soil characteristics can impact land use values. *Landscape Character* provides an overall scenic context. *Water Resources* describes all of the water bodies in town, above and below ground, including their recreational value, public access, and any current or potential quality or quantity issues. In the subsection *Vegetation*, Gill's forest, farmland, and wetlands are documented and in *Fisheries and Wildlife*, wildlife, habitat, special corridors, and rare, threatened, and endangered species are discussed. Gill's *Scenic Resources and Unique Environments* are identified. Finally, *Environmental Problems* addresses current and potential problems that may influence open space or recreation planning.

The natural resources and scenic landscapes of the Town of Gill have been cherished by residents for generations. This Open Space and Recreation Plan is intended to help residents protect the town's scenic value and natural resources in the face of potential increasing development and changes in land use, while recognizing that people need places to live, learn, work and play. These needs – when sited in areas previously unsettled rather than as infill in existing developed areas – can require infrastructure such as homes, roads, power, water, and wastewater systems. These collective needs, in turn, depend upon and impact critical natural systems. One way to understand the impact of development on natural resources is to understand the ecosystem of the town and the region.

A. ECOSYSTEMS AND MAPPING

An ecosystem is a geographically specified system of organisms, including humans, their environment, and the processes that control their dynamics. Ecosystems involve complex connections between organisms and their environment, and the processes that drive the system and can occur at different scales.¹ A large forest and a decayed tree trunk are both examples of ecosystems. The health and function of ecosystems depend on the relationship between living beings and their environment.

Ecosystems provide a variety of “services” that are very important to human communities. Wetlands, for example, filter rainwater, store floodwaters, recharge water to groundwater aquifers, and provide habitat for many aquatic plant and animal species. All ecosystems are vulnerable to any changes to the environment, whether naturally occurring or human made. Understanding the complexity of the systems in which we live can help Gill residents to consider the impact of actions and land uses on the environment and on their quality of life.

¹ http://ecosystems.noaa.gov/what_eco.htm

A.1 Documenting and Mapping Ecosystems: BioMap2

Just as the Town of Gill contains multiple and varied ecosystems, the state of Massachusetts, while relatively small, has many diverse ecosystems and habitats. Documentation and mapping of such ecosystems and habitats – and their associated flora and fauna – can be a first step toward protecting and preserving these resources.

To that end, in 2010 The Massachusetts Department of Fish and Game and The Nature Conservancy launched *BioMap2: Conserving the Biodiversity of Massachusetts in a Changing World*.² This project, produced by the Natural Heritage and Endangered Species Program (NHESP), is a comprehensive biodiversity conservation plan for Massachusetts, and endeavors to protect the state's biodiversity in the context of projected effects of climate change.

BioMap2 combines NHESP's 30 years of rare species and natural community documentation with the Division of Fish and Wildlife's³ 2014 State Wildlife Action Plan (SWAP). It also integrates The Nature Conservancy's assessment of ecosystem and habitat connections across the State and incorporates ecosystem resilience in the face of anticipated impacts from climate change. Note: *BioMap2* data replaced former BioMap and Living Waters data.

Figures 4-1 and 4-2 and Table 4-1 show the core findings summed up in *BioMap2*'s Executive Summary.

Figure 4-1: Core Habitat Statewide Summary

Core Habitat: Core Habitats consists of 1,242,000 acres that are critical for the long-term persistence of rare species and other Species of Conservation Concern, as well as a wide diversity of natural communities and intact ecosystems across the Commonwealth. Core Habitat includes:

- Habitats for rare, vulnerable, or uncommon mammal, bird, reptile, amphibian, fish, invertebrate, and plant species;
- Priority Natural Communities;
- High-quality wetland, vernal pool, aquatic, and coastal habitats; and
- Intact forest ecosystems.

Figure 4-2: Critical Natural Landscape Statewide Summary

Critical Natural Landscape: Critical Natural Landscapes (CNLs) consists of 1,783,000 acres complementing the Core Habitats, including large natural Landscape Blocks that provide habitat for wide-ranging native species, support intact ecological processes, maintain connectivity among habitats, and enhance ecological resilience. The areas include buffering uplands around coastal, wetland and aquatic Core Habitats to help ensure their long-term integrity. CNLs, which may overlap with Core Habitats, include:

- The largest Landscape Blocks in each of 8 ecoregions; and
- Adjacent uplands that buffer wetland, aquatic, and coastal habitats.

² http://www.mass.gov/dfwele/dfw/nhesp/land_protection/biomap/biomap_home.htm

³ <http://www.mass.gov/dfwele/dfw/>

Table 4-1: BioMap2 Statewide Summary Total Acres and Acres Protected

	<i>Total Acres</i>	<i>Percent of State</i>	<i>BioMap2 Acres Protected</i>
Core Habitat	1,242,000	24%	559,000
Critical Natural Landscape	1,783,000	34%	778,000
<i>BioMap2 Total (with overlap)</i>	<i>2,092,000</i>	<i>40%</i>	<i>861,000</i>

A.2 Documenting and Mapping Ecosystems: NHESP Priority Habitats

Priority and Estimated Habitats is a program administered by NHESP. Identification and mapping of Priority and Estimated Habitats is based on the known geographical extent of habitat for all state-listed rare species, both plants and animals, and is codified under Massachusetts Endangered Species Act (MESA). Habitat alteration within Priority Habitats is subject to regulatory review by the Natural Heritage & Endangered Species Program. Priority Habitat maps are used for determining whether or not a proposed project must be reviewed by the NHESP for MESA compliance.⁴

A.2.1 Benefits of BioMap2 and NHESP Priority Habitats

On the statewide level, mapping Core Habitat and Critical Natural Landscapes helps to guide strategic conservation to protect those areas that are most critical to the long-term survival and persistence of rare and other native species and their related habitats and ecosystems. On the local level, Gill can use this information to better understand where the Town's ecosystems and habitats fit into the bigger picture. For example, a seemingly insignificant parcel of land could be a key link to two larger, intact ecosystems. BioMap2 can help the Town of Gill look beyond its municipal boundary to plan for open space and recreation needs.

On an individual landowner level, BioMap2 – as well as NHESP Priority and Supporting Habitats – is an important tool that can be used to apply for grants to help improve, manage and monitor certain lands. An example is the Mass Wildlife Landowner Incentive Program, which helps fund efforts to maintain grasslands and create areas of young tree and shrub growth (early woodlands) to enhance wildlife habitat, with preference given to land that is classified as or nearby NHESP areas.

Information and mapping from BioMap2 and NHESP Priority Habitats will be referenced throughout this section on Environmental Inventory and Analysis. BioMap2 Core Habitat and Supporting Natural Landscapes, and NHESP Priority Habitats, are shown on the Soils and Environmental Constraints Map at the end of this section.

⁴ http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/priority_habitat/priority_habitat_home.htm

B. CLIMATE CHANGE

In 2011, the Massachusetts Executive Office of Energy and Environmental Affairs issued the *Massachusetts Climate Change Adaptation Report*.⁵ Climate change will result in potentially profound effects on the economy, public health, water resources, infrastructure, coastal resources, energy demand, natural features, and recreation throughout the state. The issue of climate change, and in particular climate change adaptation, is complex. The impacts of climate change will vary not only geographically but also temporally—some of the impacts may not be felt for another 30 years or further in the future, while others are already upon us. When considering land conservation strategies and suitable sites for recreation facilities, climate change adaptation and resiliency should enter into the decision-making process of the town.

The Nature Conservancy (TNC) released a report in 2013 entitled “Resilient Sites for Terrestrial Conservation in the Northeast and Mid-Atlantic Region.”⁶ According to the Introduction of the TNC report, climate change is expected to alter species distributions. As species move to adjust to changing conditions, federal, state and local agencies and entities involved in land conservation need a way to prioritize strategic land conservation that will conserve the maximum amount of biological diversity despite shifting species distribution patterns. Current conservation approaches based on species locations or on predicted species’ responses to climate, are necessary, but hampered by uncertainty. TNC states that it offers a complementary approach, one that aims to identify key areas for conservation based on land characteristics that increase diversity and resilience. The central idea of this project is that by mapping key geophysical settings and evaluating them for landscape characteristics that buffer against climate effects, conservationists can identify the most resilient places in the landscape.

The Nature Conservancy’s resilience analysis aims to identify the most resilient examples of key geophysical settings (landscapes) to provide conservationists with locations where conservation is most likely to succeed over centuries. The Massachusetts Division of Conservation Services’ Landscape Partnership Grant Program, which seeks to preserve large, unfragmented, high-value conservation landscapes, including working forests and farms of at least 500 acres in size, specifically references the TNC report and mapping.⁷

Annual precipitation averaged around 46" between 1971 and 2000 in the Connecticut Basin, which encompasses the entire Town of Gill.⁸ Precipitation in the winter season is expected to experience the greatest change between now and the end of the century, with an increase of 1-25% by mid-century (up 6 inches more by the 2050s), and of 7-37% by end of century (potentially increasing more than 8 inches by the 2090s). Annual and seasonal projections for consecutive dry days, or for a given period, the largest number of consecutive days with precipitation less than 1 mm (~0.04 inches), are variable throughout the 21st century.

⁵ <http://www.mass.gov/eea/air-water-climate-change/climate-change/climate-change-adaptation-report.html>

⁶ <https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/edc/reportsdata/terrestrial/resilience/Pages/default.aspx>

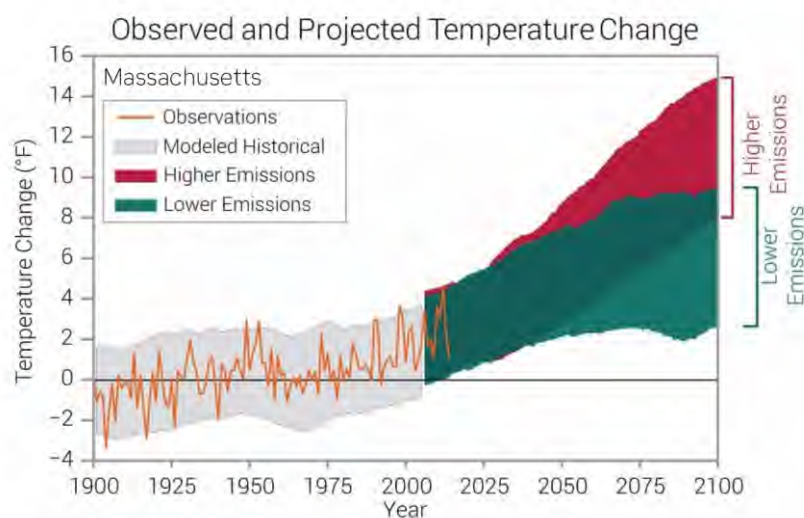
⁷ <http://www.mass.gov/eea/grants-and-tech-assistance/grants-and-loans/dcs/grant-programs/landscape-partnershipprogram.html>

⁸ Massachusetts Climate Change Projections 2017, Northeast Climate Science Center, UMass Downscaled Projections for Major Basins in MA. www.resilientma.org.

Seasonally, the fall and summer seasons are expected to continue to experience the highest number of consecutive dry days. The fall season is expected to experience an increase of 0-3 days in consecutive dry days by the end of the century.

Climate projections for Massachusetts indicate that in future decades, winter precipitation could increase, but by the end of the century most of this precipitation is likely to fall as rain instead of snow due to warmer winters. There are many human and environmental impacts that could result from this change including reduced snow cover for winter recreation and tourism, less spring snow melt to replenish aquifers, higher levels of winter runoff, and lower spring river flows for aquatic ecosystems.⁹

Between 1971 and 2000, the average annual temperature was 47 degrees Fahrenheit. Average temperatures ranged from 25 degrees Fahrenheit in winter to about 68 degrees in summer. The Connecticut basin is expected to experience increased average temperatures throughout the 21st century. Maximum and minimum temperatures are also expected to increase throughout the end of the century. These increased temperature trends are expected for annual and seasonal projections. Seasonally, maximum summer and fall temperatures are expected to see the highest projected increase throughout the 21st century, but minimum winter and fall temperatures are also expected to increase throughout the 21st century.¹⁰

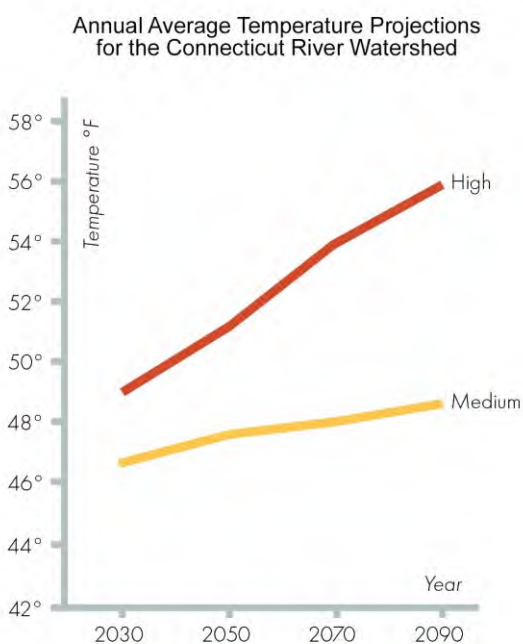


The above graph demonstrates temperature changes in the State of Massachusetts between the years 1900 and 2100. Temperature projections for the rest of the 21st century are based on models used by the International Panel on Climate Change (IPCC) and two scenarios of future greenhouse gas emissions: 'medium' and 'high.' A 'medium' scenario (shown in the graph as "Lower Emissions") assumes a peak in global greenhouse gas emissions around 2050, which then declines rapidly over the second half of the century due to carbon reduction efforts. A 'high' scenario assumes a "business as usual" continuation of the current emissions course. These scenarios represent different pathways that society may or may not follow, to reduce emissions

⁹ Ibid.

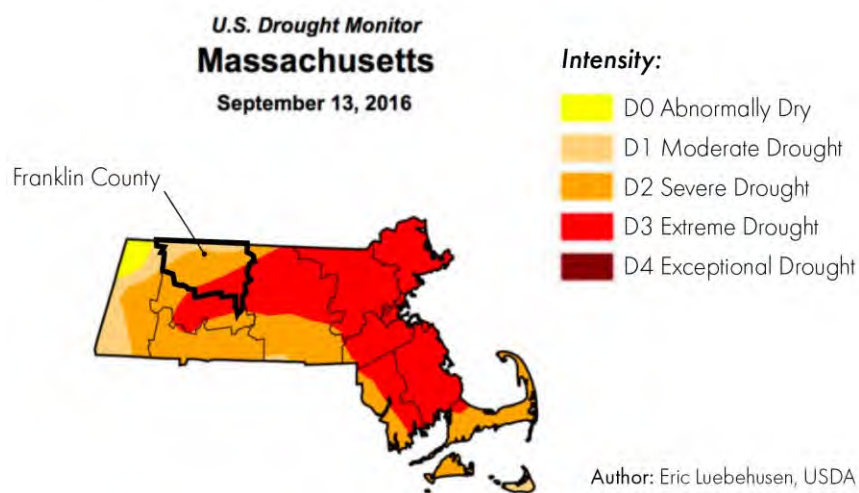
¹⁰ Ibid.

through climate change mitigation measures. For more information, see <http://resilientma.org/resources/resource::2152>



The temperature projections shown in this graph have been localized to accuracy at the watershed scale, by researchers from the Northeast Climate Science Center at the University of Massachusetts, Amherst. These highly valuable projections demonstrate how the climate is likely to transform in the Connecticut River Watershed over the course of the 21st century, based on climate models used by the IPCC and ‘Medium’ and ‘High’ emissions scenarios, as defined above. See <http://resilientma.org/resources/resource::2152> for more information.

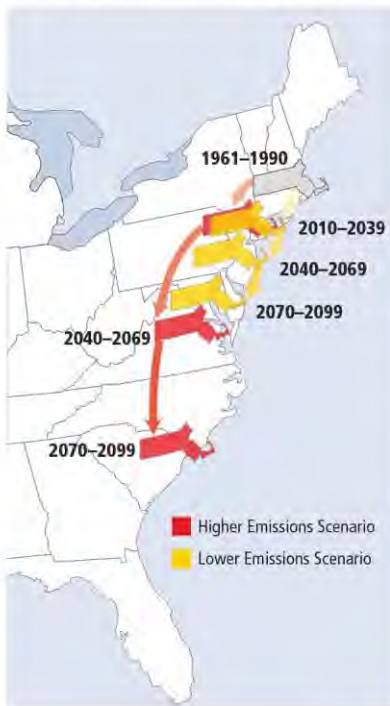
In the summer of 2016, Massachusetts was gripped with the worst drought conditions in recent memory. The prolonged period of warm, dry weather served as a stark reminder of how residents, communities, and industries depend upon the Commonwealth’s fresh water resources. On September 21 of that year, the U.S. Department of Agriculture designated Franklin County, along with most other parts of the state, as primary natural disaster areas due to the ongoing drought and its effect on agriculture. During the summer of 2020, the state once again experienced a drought and reached Severe Drought Conditions. A small projected decrease in average summer precipitation could combine with higher temperatures to increase the frequency of episodic droughts in the future.



Droughts will create challenges for local water supplies by reducing surface water storage and the recharge of groundwater supplies, including private wells. Droughts can weaken tree root systems, making them more susceptible to topping during high wind events. More frequent droughts can also exacerbate the impacts of

flood events by damaging vegetation that could otherwise help mitigate flooding effects. (<http://resilientma.org/resources/resource::2152>)

Projected Summer Temperatures
in Massachusetts by 2099



Changes in average summer heat index will strongly alter how summer feels to residents in the Northeast. Red arrows in the above map track what summers in Massachusetts could feel like over the course of this century if we follow a higher emissions pathway. Yellow arrows track what Massachusetts could feel like on a lower emissions pathway. Source: Union of Concerned Scientists (2006).

The growing season (last frost in spring to first frost in fall) has roughly extended from May 8 to October 1, but varied greatly with topography. The long-term average historically is 146 days.

Changing weather patterns have already begun to affect the frequency, intensity, duration and geographic extent of extreme weather event. As the weather continues to change over the coming decades, we can expect to see the following effects:

- ❖ Higher temperatures
- ❖ Shorter winters
- ❖ More frequent & intense storms
- ❖ Droughts

The number of days with temperatures over 90° are predicted to increase. Annually, the Connecticut basin is expected to see days with daily maximum temperatures over 90 °F increase by 10 to 35 more days by mid-century, and 15 to 76 more days by the end of the century. Seasonally, summer is expected to see an increase of 8 to 30 more days with daily maximums over 90 °F by mid-century. By end of century, the Connecticut basin is expected to have 12 to 60 more days over 90 °F.¹¹ Increased demand could strain energy infrastructure and increase the potential for widespread brownouts or blackouts to disrupt service. Higher temperatures will likely require more frequent maintenance to address deterioration of asphalt roads, buckling of railroad tracks, and thermal expansion of bridges.

Between 1971 and 2000, our region experienced an average of 7 days with precipitation over 1". By the end of the century, it is predicted that Western Massachusetts could have 5 additional days of rainstorms that dump over 1 inch of rain over the course of the year. On October 29 and 30, 2017, Franklin County experienced 2+ inches of rain and 40 to 50 mph winds due to moisture associated with the remnants of Tropical Storm Philippe, causing localized flooding and downed power lines.

In terms of observed increase in very heavy precipitation: between 1958 to 2012, New England experienced a striking increase of 71% over this period, nearly twice the next highest increase of 37% in the Midwest.

¹¹ Ibid.

Previous climate studies have been based on the premise that the extreme rainfall series do not change through time. Therefore it is assumed that older analyses reflect current conditions. Recent analyses show that this is not the case, particularly in New York and New England where the frequency of 2 inch rainfall events has increased since the 1950s and storms once considered a 1 in 100 year event have become more frequent. Such storms are now likely to occur almost twice as often.¹² Environmental effects that are anticipated to result from increased precipitation include:

- ❖ Flooding
- ❖ Erosion
- ❖ Impacts to water quality and quantity
- ❖ Loss of species diversity
- ❖ Invasive pests and plants
- ❖ Wetland soils becoming less absorptive
- ❖ More stormwater runoff, and less groundwater recharge

The drought of 2016 and 2020 were reminders of the widespread impacts droughts can have on our region. In addition to impacting the water quality and quantity of rivers, streams and other water bodies, drought can fuel wildfires. In Gill, there were 5 brush fires reported in 2016, the highest number for any one year since 2010.

The health of the town's natural resources directly affects the climate change resiliency of the municipal infrastructure, public safety and economic and physical welfare of watershed residents. Societal risks associated with changing weather include:

- ❖ Heat-related illness and death
- ❖ Danger from storms & flooding
- ❖ Insect-borne diseases
- ❖ Allergies & Pollen
- ❖ Waterborne disease & algal blooms
- ❖ Vulnerable populations

Maintaining healthy and intact wetlands, floodplains, riparian corridors, forests and other vegetated open spaces will help to mitigate the impacts from severe storm events and flooding. To assist with this, Gill has applied for a Municipal Vulnerability Preparedness (MVP) Planning Grant and if awarded will be able to address climate change impacts and improved the town's resiliency. In addition, the town has updated its Multi- Hazard Mitigation Plan in 2020, which evaluates the town's risks from various hazards such as flooding and hurricanes and recommends ways to minimize the damages to Gill's infrastructure, as well as its natural, cultural, and historic resources.

¹² Northeast Regional Climate Center (NRCC) and Natural Resources Conservation Service (NRCS), Cornell extreme precipitation tool: <http://precip.eas.cornell.edu/>

C. Geology, Soils, and Topography

C.1 Geology¹³

The Town of Gill as we know it today is the result of millions of years of geologic history such as great upheavals of the earth's crust and the sculpting power of moving water, ice and wind. This distinctive physical base has determined the distribution of the town's water bodies, its soils and vegetation and its settlement patterns, both prior to and since colonial times. Gill's current landscape can be better understood through its geologic history.

500,000,000 years ago, the area now known as Gill, Massachusetts, was located on the margin of an enormous land mass centered on the equator. Much of North America, including New England, was covered by the Iapetus Ocean, the precursor to the Atlantic Ocean. There were no cell phones and no people, but there were jawless fishes, the first vertebrates with true bones. Over the course of time, this ancient "paleo" North American continent, known as *Laurentia*, would travel far and be transformed numerous times by cataclysmic geological processes.

The Connecticut River Valley of 2018 is the result of these literally earth-shaking events, which have been thoroughly studied by geologists and other scientists. The geology of Gill, while sharing much in common with the surrounding region, has several notable features that make it an exciting place to explore. Many of these are to be found in the Riverside section of town, bounded by the Connecticut River. The River's varied course over time directly reflects the area's geological history.

Multiple Orogenies—500 to 250 million years ago (mya)

The process of mountain formation, particularly by the folding of the earth's crust, is called an *orogeny*. It is driven by the slow but steady movement of tectonic plates on which continental landmasses float as the plates collide and separate. Several distinct orogenies occurred during a vast stretch of time, which roughly coincides with the Paleozoic Era. Each left its mark on the northeast region.

Taconic Orogeny: During the Ordovician Period, the Bronson Hill Plate, which began as an island chain of volcanoes ("tropical terranes"), collided with the eastern margin of Laurentia (North America). The result, by the end of the Ordovician, was the Taconic Mountains of western Massachusetts. Several researchers cite evidence that another plate, the Shelburne Falls Arc, may have collided earlier with Laurentia. One or both of these plates became the main ancestral bedrock beneath the Connecticut River Valley.

Appalachian Orogeny: This great mountain building event consisted of several distinct waves, with the Acadian Orogeny to the north being followed by the Alleghenian Orogeny further south. As enormous crustal plates continued to converge and drive a string of great landmasses towards Laurentia, the first, named *Baltica*, crashed into its eastern margin. Several smaller microcontinents, named Merrimack, Nashoba, and Avalon, followed suit. Their collective uplifting

¹³ The material in this section was reprinted with permission from the Gill Historical Commission from its 2016 publication entitled *Riverside: Life Along the Connecticut in Gill*. Ivan Ussach, former GHC Chair, authored the section. Footnotes have been removed; resources cited are included in Section 11: Bibliography.

formed the Acadian Mountains and created, as Professor Richard Little notes in his book *Dinosaurs, Dunes, and Drifting Continents*, “the folding, faulting, metamorphism and melting that results in New England’s notoriously complicated geology.”

These collisions were followed 100 million years later by Meguma and Gondwana, the latter composed of Africa, South America, Antarctica, India, and Australia. Little views this succession of events “like having an economy car pile-up that was then rammed by a tractor-trailer.” Subsequent erosion over eons washed away much of these Northern Appalachians as sediment and flattened the landscape.

Gondwana, the great southern supercontinent, continued to push, creating the Central and Southern Appalachians. These events also affected New England. Little quotes J. W. Skehan, author of *Roadside Geology of Massachusetts* (2001): “It appears that the Alleghenian mountain building event may have been one of the more widespread and complex events in southern New England, involving renewed compression and overthrusting.” By the end of the Paleozoic, great mountains had formed, the Iapetus Ocean had closed, and the world’s great landmasses had fused into the supercontinent of Pangaea. Gill was located somewhere near the middle of Pangaea.

The Valley: Creation and Disappearance—250 mya to 66 mya

Several million years of tremendous pressure and energy generated by the consolidation of the Pangaea supercontinent heated and expanded the roughly 2,000-mile thick mantle layer below the earth’s surface. This caused the overlying continental crusts to uplift, split, and start sliding *away* from each other. Africa and Europe now began to drift away from the North American mainland. These massive stresses created rift valleys bounded by steep-sloped hills. The original, ancient Connecticut Valley, one of many rift valleys along the eastern seaboard from the Grand Banks to Florida, was created in this way by the Eastern Border Fault, a series of parallel breaks running north through all of Connecticut and Massachusetts and terminating near Keene, New Hampshire.

The location of the Border Fault is most dramatically seen from Riverside by walking to the center of the French King Bridge, which crosses the Connecticut River on Route 2, and facing north. To the west side of the River are 250 million-year-old sedimentary rocks, while those to the east are metamorphic rocks dating to 450 mya—the latter once belonging to Europe and Africa but now “stuck” onto North America. The fault has been inactive for the last 140 million years, but for many millions of years before that it was hammered by earthquakes—perhaps a big one every century.

As Pangaea separated during the Jurassic Period 194 mya, volcanic activity brought magma up from the earth’s mantle to the surface in parts of the rift valley created by the Eastern Border Fault. One of the resulting lava flows hardened into the Deerfield Basalt. The northern tip of this igneous rock formation is clearly visible on Route 2, just east of the Fall River and the Gill-Greenfield Line. The Fall River, Gill’s western boundary, flows along a smaller fault line associated with the Border Fault. A pull-off for cars on the south side of Route 2 provides excellent viewing of the Deerfield Basalt and Fall River from across the road.

The Deerfield Basalt formation is sandwiched between sedimentary rock on both sides, and the boundary is clearly visible at the eastern edge of the portion visible from Route 2, where sedimentary sandstone rests atop the igneous basalt. The basalt ridge extends south to South Deerfield, and includes Greenfield's Poets Seat Tower. Four forms of bedrock can be found in the Town of Gill: Deerfield Basalt, Mount Toby Conglomerate, Turners Falls Sandstone, and Sugarloaf Arkose.



Conglomerate, a sedimentary rock made from gravel eroded by ancient streams and deposited in the original Connecticut Valley—Route 2, 1 mile west of French King Bridge. Photo by Ivan Ussach.

Ongoing earthquakes had the effect of lowering the original Connecticut Valley on the west side of the fault and raising the hills on the east side of the fault. The constant erosion of these hills and mountains deposited sand, gravel, and mud that hardened into nearly 16,000 feet (three miles) of sedimentary rock in today's valley, stretching from North-field, MA, to New Haven, CT. In between, the eastern edge of the valley is well-marked: the Border Fault follows the boundary between the more highly erodible sedimentary rocks of the valley lowlands to the west and the resistant metamorphic rocks of the Eastern Highlands.



View northwest of the French King Bridge from confluence of Millers River (foreground) and Connecticut River (distance), with southeast corner of Riverside in background formed from 250 million-year-old sedimentary rock. Photo by Ivan Ussach.

The sedimentary deposits were excellent repositories for preserving footprints of dinosaurs and other creatures during the Mesozoic Era, and present an exception to the complex mosaic of igneous and metamorphic bedrock underlying most of southern New England. Continued faulting tilted sedimentary layers downward to the Eastern Border Fault, with this characteristic dip visible along Route 2 in Riverside and elsewhere in the valley. In fact, the Riverside area along Route 2 is tilted to the east and south, resembling a bowl. The sediment that collected in this bowl was covered, not eroded, which accounts for the preservation of dinosaur tracks at Barton Cove.



On Route 2—Turners Falls sandstone, a sedimentary rock made of sandy particles, tilted down to the east like much of Riverside's bedrock. Barton Cove is in the distance. Photo By Ivan Ussach.

By the Cretaceous Period, which followed the Jurassic Period, the ancestral Connecticut Valley became completely filled with sediment, and was gone. The Eastern Border Fault became inactive as plate tectonics now separated the giant landmass containing Europe and Africa from North America, and the Atlantic Ocean formed in the widening gap. The Valley had reached the ultimate erosional stage, becoming a *peneplain*, a flat and gentle landscape with little vertical relief rolling ever-so-slightly down towards the warm, shallow sea. A few places that were harder to erode, like Mount Monadnock in southwest New Hampshire and Mount Wachusett in central Massachusetts, remained above the peneplain. This habitat was excellent for dinosaurs.

The Valley Returns—65 mya to 10 mya

Around 65 mya, as the Rocky Mountains rose in the West, the long-quiet eastern peneplain began to shift and warp upward. Its major uplifting occurred about 10 mya, in the late Miocene Period of the current Cenozoic Era, driven by the expansion of the Earth's mantle. This epeirogenic uplift, involving no faulting or folding, ranged from several hundred to several thousand feet and was greatest to the north. The uplift turned lazy rivers and streams into steep, quick-flowing channels that carved out V-shaped canyons in the rising peneplain. The water's erosional power was greatest on soft rocks like the sedimentary rocks that had filled the former Connecticut Valley.

While some streams continued to flow east, new “pirate” streams began to flow south, parallel to the weak layers of sedimentary rock that eroded faster. As these south-flowing streams cut deeper, they captured the flow of other, east-flowing streams and rivers to unite them. In this way, the Connecticut River was born.

Now, fast forward to only 20,000 years ago—a blink in geological time: Glacial ice covers New England. . . .

Ice Age and Lake Hitchcock—20,000 years ago to 10,000 years ago

Of the more than 20 glacial advances during the last 2 million years or so, most did not reach the Connecticut Valley. Only two glacial “till” deposits, consisting of unlayered material left behind by retreating glaciers and ranging in size from clay particles to boulders, have been located in New England. The older till has been eroded or covered by the deposits from the more recent advance of the Laurentide Ice Sheet, two miles thick and over 70,000 years old. About 20,000 years ago, the continental glacier began to retreat from its southernmost position—Long Island, itself a terminal moraine made of bouldery till left at the glacier’s front when it melted. Glacial meltwater created lakes where large holes had been scoured out of the earth, and by 18,000 years ago Lake Middletown had formed on the Connecticut River in southern Connecticut. A large delta was created by the meltwater’s sediment. When the lake drained, the delta served to dam the River, aided by a spillway located to the west that kept the pressure off the delta dam. As the glacier continued to recede northward over the next 4,000 years, its meltwater created Lake Hitchcock, a linked series of lakes extending into northern Vermont.

Lake Hitchcock is named for Amherst College’s Edward Hitchcock, whose many scientific accomplishments included the early study of footprints of creatures later determined to be dinosaurs. Lake Hitchcock and its aftermath have been a subject of geological interest and study among modern researchers.

The eventual draining of Lake Hitchcock returned the Connecticut River to its valley course, but the River continued to battle against obstructions. Sediment deposits from glaciers or lakes sometimes made it impossible for the Connecticut and its tributaries to find their pre-glacial channels. The Connecticut’s pre-glacial course ran a half-mile to the east of the French King Bridge and then south through Millers Falls.

According to Professor Richard Jahns, that segment of the Connecticut River “was effectively blocked by the large delta outwash plain of the glacial Millers River,

Armored Mud Balls

Armored mud balls are commonly produced in some streams and have been found at many locations throughout the world. The ones preserved in ancient bedrock are much rarer; they have been found in less than a dozen sites. Those discovered by Little in the 1980s, the majority embedded in Mesozoic sandstone, are the only ones in the world situated by a river, making them both fluvial and fossil.

Armored mud ball recipe: Start with a block of hard, dry mud that falls into a stream. Allow to tumble in the current until it becomes round and soft enough to stick to pebbles in the stream bed. Note: For fossil mud balls, be prepared to wait a very long time.

Little found a total of fifty-five armored mud balls. He first noticed them in the suspension cable foundations on the Turners Falls side of the Red Bridge that spanned the Connecticut River from Gill to Turners Falls from 1878-1942. Those cable foundations contained thirty-two armored mud balls; thirteen were found in an exposed sedimentary layer below the Turners Falls and Gill dams; ten were part of boulders along the Connecticut River’s banks.

The “armor” on each mud ball is typically only one grain or pebble thick. Some mud balls are only an inch across with the largest reaching a foot in its widest dimension. The sandstone was probably quarried close by. The mud balls themselves likely traveled very short distances.

Given their abundance in some modern-day streams, Little called it “puzzling” that more armored mud balls have not been found in early Mesozoic rocks of the Connecticut Valley and in other locations with similar conditions.



Connecticut River armored mud ball.
Courtesy of Gill Historical Commission.

extending westward and southwestward from Millers Falls.” Archaeologist Peter Thomas has stated that the delta extended from the vicinity of the French King Bridge to the top of the hill at Main and West Gill Roads on its northern shoreline and formed the Montague Plains to the south. As a result, “the river tried to cut various channels through these delta sands,” forming one or more “braided” rivers. Dr. Thomas notes that the Connecticut “initially tried to cut a channel south through Montague Plains.”

Another early channel ran west along the northern margin of the outwash plain through the area that is now Riverside. Its course went around the west side of Canada Hill and south through Greenfield. Within a relatively short time, as the River dropped further through the sandy delta, the channel encountered the hard basalt of Canada Hill and cut a new course to the south, along the east side of Canada Hill.

The Connecticut was eventually captured within the mile-wide valley that then existed above the current site of the Gill-Turners Falls dams. This valley became narrower as the River eroded another 50 feet of sand and clay from the old lake bottom. The River eventually encountered a hard outcrop of resistant shale known as the Lily Pond Barrier, today the Barton Cove peninsula.

From 9,000–14,000 years ago, two waterfalls existed side by side atop the Barrier. Little has used the term “mini-Niagara” to describe them. He writes: “The power of falling water scoured two plunge pools into the bedrock before the River found a channel through the obstruction.”

According to Thomas, the River stabilized after going over the top of the Lily Pond barrier. This led to the formation of floodplains, as natural fluctuations in the River’s course over time, known as “lateral channel migration” (shifts from side to side), deposited sediment adjacent to its banks. Riverside is essentially a high flood terrace. Dropping river levels created a series of alluvial terraces consisting of silt and sand with the highest located along Walnut Street. Due to the area’s modern transformation, these terraced floodplains are not easily visible today. A broad, low floodplain, upstream of the Great Falls and now submerged below Barton Cove, is evident in 19th-century maps and aerial photographs compiled by Thomas.

The River continued to erode the Lily Pond Barrier until the shale ridge was finally breached at the site of what Thomas has described as a third plunge pool beneath the current river channel. Upstream, once the Lily Pond Barrier was breached, the River worked its way even deeper into the underlying metamorphic bedrock to create the 400-foot deep French King Gorge. Downstream, on the east side of Canada Hill, the River exposed the sandstone and shale bedrock that forms the base of the river channel as we know it.

In the 19th century the Lily Pond was a real lily pond, located above the large plunge pool closest to the northern shoreline and beneath a scenic cliff. It was also the site of the busy quarry where the same shale was mined for local use—including the Greenfield sidewalk that in 1835 was found to contain curious “turkey tracks.” This quarry became the source of thousands of track specimens, many sold by Gill residents Roswell Field and T. M. Stoughton to collectors and researchers from around the world. The second plunge pool was known as Poag’s Hole. Although rising water levels from dam construction spelled the end of the lily pond, Barton Cove and the peninsula remain an attractive destination for boaters and fishers.



Barton Cove with the Lily Pond Barrier extending into the Connecticut River and showing the Lily Pond (left) and Poag's Hole (right)—two plunge pools formed by waterfalls after the end of Ice Age. Aerial photo by Christopher D. Condit, Assoc. Professor of Geosciences, UMass, Amherst.

The Great Falls themselves, no longer visible after construction of several dams and rising water levels, appear to be a series of stepped rapids. Evidence compiled by Thomas indicates that these rapids extend approximately 400 yards upstream from the current Gill and Turners Falls dams to near the site of the Red Bridge, built in 1878 and taken down in 1942. Along with historical maps and photographs, Thomas cites an 1892 *Greenfield Gazette* article by Gill Poet Josiah Canning, in which he wrote: “In olden times, instead of a perpendicular fall of water, as now, the falls were a mad rush of waters down a rocky declivity with irresistible force.”



The view up through the forest understory reveals jutting cliffs near Barton Cove's plunge pools.

C.2 Soils

Soil is the layer of minerals and organic material that covers the rock of the earth's crust. All soils have characteristics that make them more or less appropriate for different land uses. Scientists classify soils by these characteristics, including topography; physical properties including soil structure, particle size, stoniness and depth of bedrock; drainage or permeability to water, depth to the water table and susceptibility to flooding; behavior or engineering properties, and biological characteristics such as presence of organic matter and fertility. Soils are classified and grouped into associations that are commonly found together.

The majority of Gill's soils fall into two major soil groups: Hollis-Charlton (about 45 percent) and Hinckley-Windsor-Merrimac (about 40 percent). The Hollis-Charlton group is typically well drained, varies in soil depth and can be characterized by both rolling and steep wooded hills. Ledges and rock outcroppings are also common to this group. The Hinckley-Windsor-Merrimac group also has prime farmland capabilities. It is characterized by deep well-drained soils consisting of glaciofluvial deposits of sand, gravel and cobbles.

Within these soil types, soils can be classified as "hydric," or having certain qualities from occurring in or near a wetland. Hydric soils are good indicators for wetland delineation. The identification of hydric soils can aid in the preservation and remediation of freshwater wetlands as mandated by the Wetlands Protection Act.

The Soils and Environmental Constraints Map at the end of this section illustrates the principal soil associations according to their level of drainage and the related constraints on development. The driving factor is soil suitability for septic systems, but typically the same factors affect the ability to build new roads, driveways and structures.

C.2.1 Prime Farmland and Development

Many of the soil types in Gill have prime farmland capabilities. Agricultural soils, especially Prime Farmland and Farmland of Statewide Importance, have characteristics that make them suitable for, and therefore vulnerable to, development. (In the remainder of this section, these two types of soils are referred to together as "prime.") This is in conflict with the fact that farmland is a critical resource in providing locally grown food and contributing to the rural character of the landscape of Gill. Areas of Prime Farmland are also shown on the Soils and Environmental Constraints Map.

It is not possible for the Town of Gill to protect all of its farmland, but these areas with a prime farm land classification are good candidates for land conservation and use restrictions. Farming will be most profitable on the best soils. Farms that remain in operation help to maintain the historical land use patterns that people so commonly relate to rural landscapes. The presence of fresh, locally grown produce in roadside farm stands is often taken for granted by residents, until they are gone.

Prime Farmland soils can be reclaimed from forestland. Houses, on the other hand, are not a land use from which farming can recover. Once farmland is converted through development to residential uses, its agricultural value is negated and it will likely never be farmland again. Gill fortunately has the opportunity to work with willing landowners to preserve as much of the remaining farmland as possible. An effective way of conserving farmland would be to prioritize the parcels of those landowners that want their land protected. The Agricultural Preservation Restriction (APR) Program is a voluntary program that provides a non-development alternative to farmers and other owners of "prime" and "state important" agricultural land. The program offers to pay farmland owners the difference between the "fair market value" and the "agricultural value" of their farmland in exchange for a permanent deed restriction, which restricts any use of the property that will have a negative impact on its agricultural viability.¹⁴

In order for land to qualify for an Agricultural Preservation Restriction, it must meet several criteria including soil type. Included in any application for an APR must be a United States Department of Agriculture (USDA) Natural Resources Conservation Services (NRCS) Soils Map showing a breakdown of the Project's various soil types and acreage possessing soil capability Class I through VIII as well as prime farmland, soils of state or local significance, and unique soils.¹⁵

The APR program requires a local match for the program that can come from any combination of three sources: the municipality, a non-governmental organization such as a land trust, and from a bargain sale conducted by the landowner. The local match requirement is 20 percent, however this percent is reduced if the town has implemented certain policies, including establishing an Agricultural Commission and adopting a Right-to-Farm bylaw.

What is Prime Farmland?

According to Natural Resources Conservation Service (NRCS), Prime Farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses. It has the combination of soil properties, growing season, and moisture supply needed to produce sustained high yields of crops in an economic manner if managed with acceptable farming methods.

In general, prime farmland has an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, an acceptable level of acidity or alkalinity, an acceptable content of salt or sodium, and few or no rocks. Its soils are permeable to water and air. Prime farmland is not excessively eroded or saturated with water for long periods of time, and it either does not flood frequently during the growing season or is protected from flooding.

¹⁴ Massachusetts Agricultural Preservation Restriction Program: <http://www.mass.gov/eca/agencies/agr/land-use/agricultural-preservation-restriction-program-apr.html>.

¹⁵ http://www.mass.gov/agr/legal/regs/330_CM_22.00.pdf

Gill has both an Agricultural Commission and a Right-to-Farm bylaw in place. Agricultural Commissions advocate for farmers, farm businesses, and farm interests in town, and can help work with other boards and committees on farm related issues or concerns. A Right-to-Farm bylaw encourages the pursuit of agriculture, promotes agriculture-based economic opportunities,



Examples of “Right-to-Farm” signage in Massachusetts’ towns. Source: MA Executive Office of Energy and Environmental Affairs.

and protects farmlands within a town by allowing agricultural uses and related activities to function with minimal conflict with abutters and town agencies.¹⁶ Many towns with Right-to-Farm bylaws publicly display their support for farming through signage indicating they are a “Right-to-Farm” community.

With the issues of global warming and the need for energy conservation, farmland protection becomes more vital. Locally grown and harvested products allow communities to be more self-sufficient and to help contribute to the reduction of pollution and use of fossil fuels. Protecting farmland for agricultural use has larger implications beyond the town level for the region’s food supply. Protecting farmland and local food supplies was identified as the top natural resource goal through the public participation process for the 2013 *Sustainable*

Franklin County: Franklin County’s Regional Plan for Sustainable Development (RPSD). To examine whether Franklin County has the land resources needed to support an increasing demand for local food—and to achieve some level of food self-reliance—the Conway School of Landscape Design (CSLD) was hired to undertake an analysis of Franklin County’s farmland for the RPSD.

The study found that currently over half of all pasture land in Franklin County is in West County, as is nearly all of the orchard land. The study finds that in order for the County to achieve food self-reliance, an additional 3,880 acres of pasture and 13 acres of orchard would need to be put into production (see Table 4-2 below). Currently the County has adequate cropland for self-reliance; however, it is important to note that many farms produce crops for local markets as well as markets outside of the County. The study also notes that while population growth in the County overall is expected to be low in the future, many of East County’s farm parcels are along roadways, making them more vulnerable to development.

¹⁶ Massachusetts Executive Office of Energy and Environmental Affairs: <http://www.mass.gov/eea/agencies/agr/land-use/right-to-farm-by-law.html>.

Table 4-2: Franklin County Farmland Needed for Self Reliance

Farmland Type Needed	Existing Farmland Acreage	Farmland Acreage Needed	Balance
Cropland	23,750	16,547	+7,203
Pasture	12,320	16,200	-3,880
Orchard	1,180	1,193	-13
TOTAL	37,250	33,940	+3,310

Source: *Franklin County Farmland and Foodshed Study*, Conway School of Landscape Design, 2012. As presented in the *2013 Sustainable Franklin County: Franklin County's Regional Plan for Sustainable Development's* Natural Resources Chapter.

Agricultural trends in Franklin County between 2002 and 2012 show a steady increase in the number of farms and the amount of land in farms in the County, which is contrary to national trends. At the same time the size of farms is decreasing. Additionally, the number of farms where farming is the primary occupation of the principal operator has increased in Franklin County since 2002.¹⁷ All of these trends seem to suggest that farming is a growing economic sector in the County, where small farms operated as the owner's primary business are surviving and thriving. Ensuring that good farmland remains available and affordable for farming will help continue to support the growth of this important part of the region's rural economy.



Photo courtesy of CreativeCommons: <http://www.flickr.com/photos/bunkosquad/306062259/sizes/z/in/photostream/>

An inactive fault line runs along the French King Gorge, separating the towns of Gill and Erving.

¹⁷ U.S. Census of Agriculture, 2002, 2007, and 2012. <http://www.agcensus.usda.gov/>

C.3 Topography

The Town of Gill's topography is a result of glacial deposition and river erosion. Gill's terrain varies greatly in slope from level floodplains to steep river valley terraces. Elevations in Gill range from 150 feet at the junction of the Fall and Connecticut Rivers to 816 feet at the top of Pisgah Mountain. Unsorted glacial deposits of soil and rocks, or drumlins, are present throughout Gill's landscape. A fault line, inactive for more than 140 million years, is located along the French King Gorge at the border of Gill and Erving. Other significant geologic features include the plunge pools at Barton Cove, the falls at the Turners Falls Dam, and glacial eskers at the Town Forest.

D. LANDSCAPE CHARACTER

As discussed in Section 3, Gill's landscape character is one of rolling hills, river terraces, farmlands, and upland forests. Distinguishing Gill from other towns in the area are its woodland brooks and streams, the Connecticut and Fall Rivers that form its eastern, southern, and western borders, and Barton Cove in the southwestern corner of town. In addition, the majority of Gill is still either forest or rolling pasture, and it boasts a number of distinctive archaeological and geologic sites of interest.

Gill also has a number of wooded wetland areas, which contribute greatly to the overall scenic quality of the town and to wildlife habitat. Gill's rural character stems from its long history as both a farming community and a mill town.

D.1 Potential Changes in Development

The overall scenic character of Gill could be affected by a number of potential changes. Potential impacts of climate change could begin to push populations further west in the State and more of Gill's land could be used for residential development. Diminishing supplies of fossil fuels – and their potential rising costs – continue to cause people to turn to alternate sources of locally produced energy sources, such as wood, which could impact Gill's woodlands. Related to the rising costs of fossil fuels, costs of shipping foods long distances could cause an even greater demand for locally grown and processed food, potentially causing more land to be farmed in Gill. Land that is currently forested and that contains prime farmlands could be converted to farmland. With thoughtful planning, though, Gill's landscape character, and the Town overall, could remain largely intact and could even return to a more lively and productive farming community.

E. WATER RESOURCES

The water resources discussed in this section are shown on Map 4-5 at the end of this section.

E.1 Surface Water

The following inventory describes Gill's watersheds, rivers, streams, brooks, and ponds and focuses on water quality issues and the public access and recreational value of these waters.

E.1.1 Watersheds

The Town of Gill contains one major watershed, the Connecticut River Watershed. Fall River Watershed is a sub-watershed of the Connecticut. The Connecticut River is nationally significant in that in 1991, Congress established the Silvio O. Conte National Fish and Wildlife Refuge, the only refuge in the country to encompass an entire watershed – the Connecticut River watershed in New Hampshire, Vermont, Massachusetts and Connecticut. Seven years later, in 1998, the Connecticut River became one of only fourteen rivers in the country to earn Presidential designation as an American Heritage River.

Watershed Protection

Local watershed associations include the Connecticut River Conservancy¹⁸ (CRC) which advocates for the entire, four-state Connecticut River watershed. The CRWC works to protect water—the river, its tributaries, lakes, fish; and the land, plants, and creatures connected to that water.

The CRWC has been conducting the following activities that include Gill:

- Bacteria Monitoring at Barton Cove: The CRWC has been conducting weekly monitoring of the state boat ramp at Barton Cove in the summer of 2011. In the last couple of years prior to 2011, they have done additional bacteria monitoring around the Cove, on the Gill and Montague sides, in order to better understand sources of occasional high readings at the state ramp. See <http://www.umass.edu/tei/mwwp/ctrivermonitoring.html>.
- CRWC continues to participate in advocacy related to the operation of Northfield Mountain pumped storage facility and the Turners Falls dam, with issues related to erosion, fish passage, and recreation. The CRWC are a member of the Connecticut River Streambank Erosion Committee. From 2009-2013, there are five ongoing streambank restoration projects along the riverfront in Gill.
- CRWC owns one piece of conservation land in Gill and has a conservation restriction on a riverfront property in Gill.
- In 2011, the CRWC facilitated a rain barrel workshop with the Gill Energy Committee as part of an effort to mitigate the impact of stormwater runoff on water resources.
- In 2008 and 2009, the CRWC received grants from several town cultural commissions (including Gill) to do a river song writing contest.

At the local level in Gill, the main mechanism in place to protect watersheds and surface waters are private and non-profit land trusts. The Conservation Commission also has the ability to impact watershed protection.

¹⁸ <https://www.ctriver.org/>

Source Water Assessment Program (SWAP)¹⁹

Massachusetts has over 1,700 public water systems that provide drinking water to homes, schools, businesses, and industries. Over 90 percent of the state's population depends on public water supply sources, which are often vulnerable to contamination. More than 70 communities have shut down at least one source because it was contaminated. The Massachusetts Department of Environmental Protection (MassDEP) has had a strong water supply protection program since 1980. As a result, local water suppliers and municipal officials received more hydrogeological and planning assistance from MassDEP for improved protection of local drinking water sources.

MassDEP's SWAP process included the following:

- Delineated protection areas for all public ground and surface water sources;
- Inventoried land uses in these areas that may present potential threats to water quality;
- Determined the susceptibility of water supplies to contamination from these sources; and
- Publicized the results.

Source Water Assessment reports help local and state officials target inspections and focus technical assistance where they are needed the most, encourage cooperative emergency response, and contribute to comprehensive protection of all public water sources.

The results of the Assessment show the top five potential threats to public water sources are:

1. Residential lawn care/gardening;
2. Residential septic systems and cesspools;
3. Residential fuel oil storage;
4. Stormwater discharge; and
5. State-regulated underground storage tanks.

MassDEP is using this information to target technical assistance and outreach work. What does the Assessment tell the residents of Gill? The Assessment will tell the following:

- Whether your drinking water is from a surface or a groundwater source;
- The locations of the wells or the intakes;
- The water supply protection area;
- Potential Sources of Contamination (PSC) within the protection areas; and
- What recommended steps you should take to maintain or improve protection.

Four drinking water well or intake locations were identified in Gill including:

1. Northfield Mount Hermon
2. Gill Elementary School

¹⁹ The 2014 Massachusetts Integrated List of Waters prepared by the Department of Environmental Protection (DEP) is used as a source document for the Connecticut River and all listed surface waters within the Town of Gill. The State is required by the United States Environmental Protection Agency to identify water bodies that are not expected to meet surface water quality standards after the implementation of technology-based controls. In each case, the most severe pollutant is identified. Although the affected water bodies may contain other pollutants, the Integrated List of Waters only includes the results of evaluations upon which DEP has performed some measure of quality control.

3. Gill Tavern
4. Oak Ridge Golf Club

Each location has an overall ranking of susceptibility to contamination for the wells as “high.” The Assessments are available to the public and can be accessed via the Massachusetts Department of Environmental Protection’s website.²⁰

E.1.2 Connecticut River

The Connecticut River has a “Class B” water quality designation from the New Hampshire-Vermont border to Holyoke and is classified as a warm water fishery. Class B waters should provide suitable habitat for fish and other wildlife, and should support primary recreational activities such as fishing and swimming. Class B water should also be suitable for irrigation and other agricultural uses. According to the 2014 Massachusetts Department of Environmental Protection’s (DEP) Integrated List of Waters, the Connecticut River in Gill is impaired by polychlorinated biphenyls (PCBs) found in fish tissue, Total Suspended Solids (TSS), and impacts to fish and aquatic wildlife from fluctuations in water levels, and other flow regime alterations.²¹ Land along the Connecticut River – and the River itself – contains NHESP/TNC BioMap2 and NHESP Priority Habitats of Rare Species.

Connecticut River Water Quality Assessment

The “Connecticut River Basin 2003 Water Quality Assessment Report” published in 2008²² by the Massachusetts Department of Environmental Protection presents a summary of water quality data/information in the Connecticut River Watershed by segment. The segment relevant to Gill runs from the Route 10 bridge in Northfield to the Turners Falls Dam in Gill.

Report Summary Status

This segment of the Connecticut River is assessed “Support” – or supporting of – all designated uses with the exception of fish consumption, which was assessed as “Impaired”. See Table 4-3 below.

Aquatic Life Status

Although aquatic life status is “support”, based upon the good survival of test organisms in toxicity tests and good water quality conditions. There is an alert status however, due to the regulated flow regime, severe bank erosion issues, the presence of non-native plant species and the risk that fish tissue contaminants pose to fish-eating wildlife.

²⁰ <https://www.mass.gov/lists/source-water-assessment-and-protection-swap-program-documents>

²¹ 2014 Integrated List of Waters Interactive Map: <http://maps.massgis.state.ma.us/images/dep/omv/il2014viewer.htm>. Massachusetts Department of Environmental Protection. Accessed December 27, 2016.

²² Note: The Connecticut River Basin 2003 Water Quality Assessment Report is the most current data report.

Table 4-3: Connecticut River Use Summary Table

Connecticut River (Segment MA34-02) Use Summary Table

Designated Uses	Status
Aquatic Life	 SUPPORT*
Fish Consumption	 IMPAIRED Cause: PCB in fish tissue Source: Unknown
Primary Contact	 Recreation Primary Contact
Secondary Contact	 Recreation Secondary Contact
Aesthetics	 SUPPORT*

* Alert Status: see details in use assessment

Source: Connecticut River Basin 2003 Water Quality Assessment Report (2008)

Fish Consumption Status

Because of the site-specific fish consumption advisory for the Connecticut River due to PCB contamination, fish consumption status is assessed as “impaired”. Note: As this report is a number of years old, the impaired fish consumption was reviewed to determine whether the status was still valid. In August 2018, the Massachusetts Health and Human Services Department had in place a Public Health Fish Consumption Advisory²³ as follows in Table 4-4.

Table 4-4: Public Health Fish Consumption Advisory

Water Body	Hazard	Advisory	Fish Type
Connecticut River	PCBs (polychlorinated biphenyls)	P1 Children younger than 12 years of age, pregnant women, women of childbearing age who may become pregnant, and nursing mothers should not eat any fish from this water body.	All fish
		P2 The general public should not consume Channel Catfish, White Catfish, American Eel or Yellow Perch from this water body.	American Eel Channel Catfish White Catfish Yellow

Source: Massachusetts Public Health Fish Consumption Advisory, accessed August 15, 2018.

Primary and Secondary Contact Recreation and Aesthetics Status

These uses are assessed as “support” based upon the low bacteria counts and the lack of objectionable deposits, odors or oils. However, these uses did receive an “alert” status given the turbid conditions, regulated flow regime and severe erosion issues identified upstream.

Report Recommendations

Report recommendations include the following:

1. Due to the presence of an invasive algae found in the river, boaters should follow a check-clean-dry protocol when exiting waters
2. Continue river-bank stabilization projects
3. Continue water quality testing
4. Continue monitoring for the presence of invasive non-native aquatic vegetation.

²³ https://eohhs.ehs.state.ma.us/DPH_FishAdvisory/SearchTown.aspx

According to the Connecticut River Five Year Action Plan 2002-2007 developed by the Massachusetts Executive Office of Environmental Affairs, the Town of Gill lies in the most rural portion (the Northern Reach) of the Connecticut River Watershed in Massachusetts. Important characteristics of this part of the watershed include agricultural lands, large tracts of forestland, and the presence of two hydroelectric facilities. The Plan lists the following objectives for the Northern Reach:

- Increase awareness of the importance of riparian buffers along the mainstem of the Connecticut River and its tributaries;
- Reduce human-influenced erosion along the mainstem and its tributaries;
- Restore vegetative riparian buffers where appropriate;
- Protect water quality through the implementation of growth management strategies;
- Obtain additional water quality data;
- Reduce non-point source pollution with a particular focus on the mainstem and four priority tributaries;
- Assist communities with the protection of drinking water resources;
- Improve fish passage;
- Encourage the protection of important wildlife habitat;
- Complete an updated inventory of existing boat access points;
- Implement an education program for boaters; and
- Assist with the development of a public access point on the Fall River in Bernardston.

Barton Cove Boat Access and Campground

Located on a rocky peninsula jutting into the Connecticut River, Barton Cove is a recreational area owned and managed by FirstLight Power Resources. A part of the Connecticut River Greenway State Park, the Barton Cove Access Ramp is located on Route 2, 1.5 miles east of the Gill-Montague Bridge. The boat ramp can accommodate recreational motorboats, canoes, and fishing boats. The Barton Cove state boat ramp is one of three state-managed public access points on the Connecticut River in Franklin County. The two others are Pauchaug Access in Northfield and the Sunderland Access.

Barton Cove and buffering lands contain areas of NHESP/TNC BioMap2 and NHESP Priority Habitats of Rare Species. Of special significance is the Bald Eagle, which uses the shoreline as nesting, feeding and perching habitat.

People can use the site for day trips and picnicking or for a week-long camping trip. The Barton Cove Campground has bathroom and tent camping facilities and minimal automobile access. The area boasts a nature trail along a scenic rocky ridge overlooking the river, an abandoned dinosaur footprint quarry, unusual rock formations, a multitude of ferns and wildflowers, plunge pools of ancient waterfalls, and views of sunsets and bald eagles over the Connecticut River. Canoes and kayaks can be rented on an hourly or daily basis in season. Rock formations hanging out over small coves are best viewed in a canoe or kayak.

E.1.3 Fall River

Fall River is located along the town's western border with Greenfield. This river empties into the Connecticut just below the Turners Falls dam and is a scenic and historic asset to the town. There are former mill sites along the Fall River, and its course meanders between cascades, small waterfalls and pools. The mills once used it for hydropower, but it is now primarily a place for



Remnant of one of several grist mills in Gill tumbles into a stream.

fishing, swimming and is an important habitat corridor for wildlife. The middle third of section of Fall River that borders Gill is within the BioMap2 Critical Natural Landscape. The southern-most quarter mile of the river is within the NHESP Priority Habitat of Rare Species.

D.1.4 Other Streams and Brooks

Otter Run

Otter Run flows into the Connecticut River approximately opposite the midpoint of Kidd Island's western shore.

Dry Brook

Dry Brook originates in the Town of Bernardston and flows into the Connecticut River near Grist Mill Road. At one time, Dry Brook was used to power five mills along its banks. Two of the mills were known as Janes' Grist Mill and were located approximately 1,500 feet from the brook's confluence with the Connecticut River.

Dry Brook supports a dense population of Eastern Pearlshell, a species of freshwater mussel known from only twenty-two water bodies in Massachusetts. This species inhabits streams and rivers that are cool and clean enough to support trout, its fish host.

Otter Brook

Otter Brook is located in the northern portion of Gill, is a tributary of Dry Brook and is fed by Otter Pond. There is also a sixty-acre marsh on Otter Brook off Ben Hale Road.

Beaver Brook

Beaver Brook is a tributary of Dry Brook. It originates in a wetland off Mountain Road and flows through Gill Center. It contains habitats for rare and endangered species.

Ashuela Brook

Ashuela Brook originates at Shadow Lake and flows into the Connecticut River approximately opposite the downstream end of Kidd Island. Parts of Ashuela Brook are within the NHESP/TNC BioMap2 and are also designated as NHESP Priority Habitat of Rare Species.

Cascade Brook

Cascade Brook, located in western Gill, flows into the Fall River near South Cross Road. The brook has a set of falls known as the Cascades located off South Cross Road. A wheelwright shop was once located at the falls.

D.1.6 Lakes, Ponds, and Other Surface Water Bodies

Lily Pond

Lily Pond is located off Barton Cove and is a plunge pool created by a glacial dam. It is considered part of the same NHESP area as Barton Cove.

Shadow Lake

Shadow Lake is a five and one-half acre lake located on the Mount Hermon Campus in the northeastern portion of Gill.

Otter Pond

Otter Pond is a shallow six-acre pond located in the northwestern corner of Gill between Hoe Shop Road and Dole Road.

There are a number of other un-named streams, ponds and wetlands in Gill that are located in the Connecticut River Watershed.

E.2 Cold Water Fish Resources (CFRs)

According to the Massachusetts Division of Fisheries and Wildlife (MassWildlife), cold water fish resources are particularly sensitive habitats. Changes in land and water use can reduce the ability of these waters to support trout and other kinds of cold water fish. Identification of CFRs are based on fish samples collected annually by staff biologists and technicians. MassWildlife updates the list of CFRs in the state on an annual basis and maintains an interactive map online. Conservation commissions, planning boards, land trusts, regional planning agencies, and town open space committees can refer to the list and map of CFRs to better inform conservation planning.²⁴

In Gill, Fall River is categorized as a CFR, as is the Dry Brook and an unnamed tributary to it. There is also an unnamed tributary flowing into Barton Cove that is classified as a CFR.

²⁴ Massachusetts Division of Fisheries and Wildlife website: <http://www.mass.gov/eea/agencies/dfg/dfw/wildlife-habitat-conservation/coldwater-fish-resources-map.html>. Accessed December 30, 2016.

E.3 Flood Hazard Areas

Flooding along rivers is a natural occurrence. Floods happen when the flow in the river exceeds the carrying capacity of the channel. Some areas along rivers flood every year during the spring, while other areas flood during years when spring runoff is especially high, or following severe storm events. The term “floodplain” refers to the land affected by flooding from a storm predicted to occur at a particular interval. For example, the “one hundred-year floodplain,” is the area predicted to flood as the result of a very severe storm that has a one percent chance of occurring in any given year. Similarly, the 500-year floodplain is the area predicted to flood in a catastrophic storm with a 1 in 500 chance of occurring in any year.

According to the Town of Gill Multi-Hazard Mitigation Plan, there are approximately 583 acres within the 100 year floodplain in Gill. The plan identifies the Riverside section of Gill as a flood prone area in Town. Other areas within floodplain include the area along the Connecticut River in the farmland area northeast of Stacey Mountain, and in the area of Barton Cove, along the Fall River, Dry Brook and Otter Brook.

E.4 Wetlands

Wetlands are transitional areas where land-based and water-based ecosystems overlap. Inland wet-lands are commonly referred to as swamps, marshes and bogs. Technically, wetlands are places where the water table is at or near the surface or the land is covered by shallow water. Sometimes, the term wetland is used to refer to surface water as well.



This woodland wetland provides important habitat for wildlife in Gill.

Historically, wetlands have been viewed as unproductive wastelands, to be drained, filled and “improved” for more productive uses. Over the past several decades, scientists have recognized that wetlands perform a variety of extremely important ecological functions. They absorb runoff and prevent flooding. Wetland vegetation stabilizes stream banks, preventing erosion, and trap sediments that are transported by runoff. Wetland plants absorb nutrients, such as nitrogen and phosphorus, which would be harmful if they entered lakes, ponds, rivers and streams. They also absorb heavy metals and other pollution. Finally, wetlands are extremely productive, providing food and habitat for fish and wildlife. Many plants, invertebrates, amphibians, reptiles and fish depend on wetlands to survive. Wetlands have economic significance related to their ecological functions: it is far more cost-effective to maintain wetlands than build treatment facilities to

manage stormwater and purify drinking water, and wetlands are essential to supporting lucrative outdoor recreation industries including hunting, fishing and bird-watching.

In recognition of the ecological and economic importance of wetlands, the Massachusetts Wetlands Protection Act is designed to protect eight “interests” related to their function: public and private water supply, ground water supply, flood control, storm damage prevention, prevention of pollution, land containing shellfish, fisheries, and wildlife habitat. To this end, the law defines and protects “wetland resource areas,” including banks of rivers, lakes, ponds and streams, wetlands bordering the banks, land under rivers, lakes and ponds, land subject to flooding, and “riverfront areas” within two hundred feet of any stream that runs all year. Local Conservation Commissions are responsible for administering the Wetlands Protection Act; some towns also have their own, local wetlands regulations.

Many of Gill’s wetlands can be found in its uplands in isolated forested areas. Some of these wetlands are mapped by the National Wetlands Inventory (NWI).²⁵ Nearly all the wetlands mapped by NWI in Gill are classified as “freshwater forested/shrub”, defined as a forested swamp or wetland shrub bog or wetland.²⁶ Most upland wetlands are associated with the headwaters of the major stream systems in town.

E.5 Aquifers

Aquifers are composed of water-bearing soil and minerals, which may be either unconsolidated (soil-like) deposits or consolidated rock. Consolidated rock, also known as bedrock, consists of rock and mineral particles that have been welded together by heat and pressure or chemical reaction. Water flows through fractures, pores and other openings. Unconsolidated deposits consist of material from the disintegrated consolidated rock like gravel and sand. Water flows through openings between particles.

As water travels through the cracks and openings in rock and soil, it passes through a region called the “unsaturated zone,” which is characterized by the presence of both air and water in the spaces between soil particles. Water in this zone cannot be pumped. Below this layer, water fills all spaces in the “saturated zone”. The water in this layer is referred to as “groundwater”. The upper surface of the groundwater is called the “water table” (Masters, Gilbert. *Introduction to Environmental Engineering and Science, Second Edition*, 1998).

The route groundwater takes and the rate at which it moves through an aquifer is determined by the properties of the aquifer materials and the aquifer’s width and depth. This information helps determine how best to extract the water for use, as well as determining how contaminants, which originate on the surface, will flow in the aquifer.

Aquifers are generally classified as either unconfined or confined (EPA and Purdue U.; 1998). The top of an unconfined aquifer is identified by the water table. Above the water table, in the unsaturated zone, interconnected pore spaces are open to the atmosphere. Precipitation recharges the groundwater by soaking into the ground and percolating down to the water table. Confined

²⁵ <http://www.fws.gov/wetlands/Data/Mapper.html>

²⁶ <http://www.mass.gov/mgis/nwi.htm>

aquifers are sandwiched between two impermeable layers (Masters; 1998). Almost all the public wells in Massachusetts, including those in Gill, and many private wells tap unconfined aquifers (Mass. Audubon Society; 1985). Wells that rely on confined aquifers are referred to as “artesian wells.”

Gill’s surficial geology has characteristics that would support medium yield aquifers. A medium-yield aquifer provides a yield of between 25 and 1000 gallons per minute. According to MassGIS²⁷ and the United States Geological Survey (USGS), the following areas support medium-yield aquifers:

- An area approximately three-fourths of a mile to the north of Munn’s Ferry Road and approximately one mile to the south of Munn’s Ferry Road, along the Connecticut River;
- An area approximately one half mile to the north of Pisgah Mountain Road and approximately one half mile to the south of Pisgah Mountain Road, along the Connecticut River; and
- An area bordered by the town’s border with Bernardston, Boyle Road, the intersection of Main Road and Cross Road and Dry Brook.



A mixed hardwood forest rises up alongside Barton Cove.

F. VEGETATION

The vegetated landscape of Gill includes mixed hardwood forests, farmlands and riparian lands. Farmland is made up of crop fields and rolling fields for grazing. Land that borders the Connecticut River is not the broad, flat plains characteristic of much of the Connecticut River Valley but instead is often quite steep wooded embankments. Examples of this can be seen at Barton Cove and at the French King Gorge.

F.1 Forests

Forests constitute one of the most important natural resources in the Town of Gill and in the region. While much of the town’s lands are forested, privately owned forest is much more common than publicly owned. The extent of forest cover in Gill is shown in the Regional

²⁷ MassGIS 2007 Aquifer Data Layer information: <http://www.mass.gov/mgis/aq.htm>

Context Map at the end of Section 3. The values of large blocks of contiguous forestland are many. Some primary values include:²⁸

- Ecosystem Services. Woodlands have significant ecosystems values, including water supply, nutrient retention, carbon sequestration, and climate stabilization. Large blocks of contiguous forests support groundwater recharge and provide ample clean water for humans. Another significant woodland service is mitigation of climate change through carbon dioxide uptake and storage.
- Habitat Connectivity. Large blocks of contiguous forest help support biodiversity and the successful migration of plant and animal species impacted by fragmentation such as that caused by new development. Forestland provides habitat for wildlife species that require a certain amount of deep forest cover and separation for humans.
- Recreation and Tourism. Forestland also provides a natural infrastructure for tourism and recreation economy. Fall foliage season is a vital part of the Western Massachusetts economy, drawing visitors to the area for leaf peeping, contributing to the hospitality industry and other sectors of the economy. Forestland also provides places for hiking, skiing, bird watching, hunting, paddling, and other outdoor activities.

Fragmentation of large blocks of contiguous forestland can be caused by a variety of impacts including:²⁹

- Deforestation and development including subdivisions, commercial complexes, roads and infrastructure.
- Perforation of contiguous forestland including individual houses – and their associated driveways, lawns and human activities – on large parcels of land.
- Climate change – including wide fluctuations in temperature, precipitation, and length of growing season – causing impacts such as outbreaks of certain diseases and pests and changes in the range of certain plants and animals. These changes could have real impacts to the local economy such as a decline in maple sugaring.
- Adverse forest practices such as clear cutting with erosion that often follows.
- Parcelization including increased number of owners – often absentee – and decreased parcel size.
- Invasive organisms including insects, plant species and pathogens.

The woodlands in Gill are used for hiking and nature study and are important habitat for wildlife. They also add to the scenic and rural character of the town. Gill's forests include species associations common to the Hemlock-Northern Hardwoods Forest to the north and the Appalachian-Oak Forest to the south.

Forested lands in Gill are at varied stages of growth due to the changes in landscape, elevation and exposure to elements. Table 4-5 gives a general inventory of the typical species in Gill.

²⁸ Wildlands and Woodlands: A Vision for the New England Landscape, Harvard Forest, Harvard University, 2010.

²⁹ Ibid.

Table 4-5: General Inventory of Forest Types in the Town of Gill

Forest Type	Common Trees, Shrubs and Herbaceous Vegetation
Hemlock-Northern Hardwoods Forest	Eastern hemlock, sugar maple, red maple, American beech, yellow birch, paper birch, white ash, white pine, willow, speckled alder, sedges
Appalachian-Oak Forest	
Higher elevations	White oak, red oak, shagbark hickory, bitternut hickory, black cherry, white ash, American basswood, Eastern cottonwood
Lower elevations	American sycamore, silver maple, box elder, staghorn sumac, smooth sumac

Source: USDA; 1992

F.2 Public Shade Trees

Public shade trees are located in Gill Town Center, most notably, a majestic sycamore adjacent to the Town Hall. Public shade trees are also located in Town right of ways, at the Slate Library and in Town cemeteries. In a Town as heavily forested as Gill, preserving public shade trees may seem unnecessary; however, loss of trees in public spaces can significantly change the character of that place. Some methods towns use to protect shade trees include adopting a scenic roads bylaw, limiting the amount of salt used on roads, and requiring replacement of any trees that are lost.

The benefits of street trees include the following:³⁰

- Air quality improvement
- Water quality improvement (incl. improved stormwater management)
- Cooler air temperatures
- Greenhouse gas reduction
- Building energy conservation
- Noise reduction
- Wildlife habitat
- Social/psychological benefits
- Human health benefits
- Aesthetics

The USDA Forest Service has created a a state-of-the-art, peer-reviewed software suite that provides urban and rural forestry analysis and benefits assessment tools, called **i-Tree**.³¹ The i-Tree tools can help strengthen forest management and advocacy efforts by quantifying forest structure and the environmental benefits that trees provide. Since the initial release of the i-Tree Tools in August 2006, thousands of communities, non-profit organizations, consultants, volunteers and students around the world have used i-Tree to report on individual trees, parcels, neighborhoods, cities, and even entire states. By understanding the local, tangible ecosystem

³⁰ Rick W. Harper, Ext. Assist. Professor-Urban and Community Forestry, UMass, “Realizing the Benefits of our Urban Trees,” *3rd Annual Massachusetts Clean Energy Conference: Helping Communities with Renewables and Efficiency*; 2016.

³¹ <http://www.itreetools.org/>

services that trees provide, i-Tree users can link forest management activities with environmental quality and community livability. Analysis tools and utility programs include:

- [i-Tree Eco](#), which provides a broad picture of the entire urban or rural forest;
- [i-Tree Hydro](#), an application designed to simulate the effects of changes in tree and other land cover characteristics within a watershed on stream flow and water quality;
- **i-Tree Species**, a web application designed to help urban foresters select the most appropriate tree species based on environmental function and geographic area;
- [i-Tree Streets](#), focusing on the benefits provided by a municipality's street trees;
- [i-Tree Pest Detection Module](#), a portable, accessible and standardized protocol for observing a tree for possible insect or disease problems; and
- **i-Tree Storm**, a method for a community to assess widespread storm damage in a simple, credible, and efficient manner immediately after a severe storm.

The Franklin Regional Council of Governments has also compiled a list of Climate Resilient Trees for Streetside Tree Belt Planting, including both shade and ornamental trees. The list provides information on the characteristics of 28 species of trees, including height and spread of the mature tree, whether it is native to North America, the USDA grow zone, light and watering requirements. In addition, the list indicates whether each species is tolerant to drought, salt, air pollution and clay soils; whether it has showy fall foliage or flowers; and whether it is appropriate to plant under utility lines.

F.3 Agricultural Land

In 2005, according to MassGIS data, of the total 9,478 acres of land in Gill, there were approximately 1,600 acres or 17% of agricultural land (includes cropland and pastureland). This number is down slightly from the estimated 20% in 1999. However, during this time, methodology for classifying land has changed. This change may account for the decline from 1999 to 2005.

In 2011, the Gill Agricultural Commission's *Gill Farms: A Guide to Buying Gill Products and Supporting Agriculture in Our Community* indicated the number of small family farms are on the rise.³² Active farmland with prime farmland soils (shown in Map 4-3) in Gill is primarily located along the Connecticut River, the upper Fall River, Cascade Brook, Otter Brook, Dry Brook, Ashuela Brook, and along Main Road. Other active farmland can be found along West Gill Road, River Road, North Cross Road, Mount Hermon Road, Boyle Road, Route 2 and Franklin Road.

Vegetation in agricultural lands can include crops and fields for grazing. Along with grasses, farm fields contain many perennial herbaceous plant as well as some invasive plants, such as multiflora rose, buckthorn, and bittersweet. Farm field edges are often in an early successional forest stage, containing shrubs and small trees. These edges serve as important areas for forage, cover and escape for wildlife.

³² Steve Damon, Chairperson, 2011 Gill Agricultural Commission

F.4 Wetland Vegetation

As discussed on previously in the Wetlands subsection, wetlands provide important ecological functions and offer important wildlife habitat. Typical wetlands in Gill are forested deciduous swamps. Vegetation found in these wetlands can vary, depending upon shade and other conditions. Some typical plants found in and near Gill wetlands are red maple (*Acer rubrum*), eastern hemlock (*Tsuga Canadensis*), winterberry (*Ilex verticillata*), sedges (*Carex spp.*), ferns, and skunk cabbage (*Symphlocarpus*).

F.5 Rare, Threatened, and Endangered Plant Species

Statewide, NHESP has identified 256 native plant species as rare, threatened or endangered. Plants (and animals) listed as *endangered* are at risk of extinction (total disappearance) or extirpation (disappearance of a distinct interbreeding population in a particular area). *Threatened* species are likely to become endangered in the foreseeable future. Species of *Special Concern* have been documented to have suffered a decline that could result in its becoming threatened, or occur in very small numbers and/or have very specialized habitat, the loss of which could result in their becoming threatened.

Nineteen rare plant species have been documented in the Town of Gill (see Table 4-6). These plants occur in some of the Priority Habitats identified above.

Table 4-6: NHESP Rare Plant Species in the Town of Gill

Scientific Name	Common Name	MESA Status*	Most Recent Observation
<i>Celastrus scandens</i>	American Bittersweet	T	2016
<i>Elatine americana</i>	American Waterwort	E	2012
<i>Trichomanes intricatum</i>	Appalachian Bristle-fern	E	2011
<i>Carex grayi</i>	Gray's Sedge	T	2016
<i>Boechera missouriensis</i>	Green Rock-cress	T	2008
<i>Desmodium cuspidatum</i>	Large-bracted Tick-trefoil	T	2013
<i>Ludwigia polycarpa</i>	Many-fruited False-loosestrife	E	2010
<i>Minuartia michauxii</i>	Michaux's Sandwort	T	2013
<i>Cerastium nutans</i>	Nodding Chickweed	E	2014
<i>Clematis occidentalis</i>	Purple Clematis	SC	2012
<i>Aplectrum hyemale</i>	Putty-root	E	2007
<i>Crassula aquatica</i>	Pygmyweed	T	2012
<i>Morus rubra</i>	Red Mulberry	E	1987
<i>Viola adunca</i>	Sand Violet	SC	2005
<i>Prunus pumila var. depressa</i>	Sandbar Cherry	T	2014
<i>Symphotrichum tradescantii</i>	Tradescant's Aster	T	2014
<i>Deschampsia cespitosa ssp. glauca</i>	Tufted Hairgrass	E	2016
<i>Oligoneuron album</i>	Upland White Aster	E	2014
<i>Malaxis monophyllos var. brachypoda</i>	White Adder's-mouth	E	2014

*SC – Special Concern; T - Threatened; E – Endangered.

Source: Massachusetts Natural Heritage and Endangered Species Program, Town Species Viewer:

<http://www.mass.gov/eca/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/town-species-viewer.html>

As part of annual Biodiversity Days, efforts have been started to map vegetation in the Town Forest. A goal for future mapping projects are included in the Seven-Year Action Plan.



NHESP identifies *Morus rubra* (Red Mullberry) as endangered. Photos from NHESP *Morus Rubra* fact sheet and by Charles S. Eiseman

G. FISHERIES AND WILDLIFE

Gill's forests, rivers, wetlands and open farmland provide habitat for a variety of common and rare wildlife species. This section discusses wildlife species and their habitats from the perspective of natural communities, individual species, and patterns of wildlife distribution and movement across the landscape.

G.1 General Description and Inventory of Wildlife and Wildlife Habitats

Natural Heritage Endangered Species Program and the Natural Conservancy BioMap2 show Core Habitats critical for the long-term persistence of rare species and Critical Natural Landscape, including buffers along Core Habitats. (BioMap2 is discussed in more detail at the beginning of Section 4.) (*These areas mapped in Gill are shown on the Soil and Environmental Constraints Map at the end of this section.*) Nine areas comprising 2,492 acres within Gill are BioMap2 Core Habitat; including 1 Forest Core, 2 Aquatic Cores, 2 Wetland Cores, 1 Priority Natural Community Core, and areas for 33 Species of Conservation Concern. Some of these areas overlap. Adjacent to and overlapping some of these Core Habitats in Gill is one area of BioMap2 Critical Natural Landscape comprising 6,208 acres, including 1 Aquatic Buffer, 2 Wetland Buffers, and 1 Landscape Block.

The most notable pattern of Core Habitat is the significant area that buffers the entire length of the Connecticut River in Gill. These areas provide habitat for rare species in Gill. Other Core Habitat areas include:

- An area in the northeastern corner of Gill along Mount Hermon Road and the intersection of Mount Hermon Road and Main Road;
- An area along the eastern end of North Cross Road;
- Along Ashuela Brook from its confluence with the Connecticut River to approximately three-fourths of a mile upstream;
- An area along Main Road in the central portion of Gill, just northeast of Wyart Road;
- Along Pisgah Mountain Road; and
- An area to the west of Barney Hale Road (see Water Resources and Wildlife Habitat Maps).

There are five examples of Priority Natural Communities documented by NHESP in Gill:

- Calcareous Rock Cliff Community
- High-terrace Floodplain Forest
- Sugar Maple-Oak-Hickory Forest

There is one other type of more common natural community documented from Gill, as well, the Freshwater Mud Flat Community.

The Natural Heritage Endangered Species Program maintains a list of all Massachusetts Endangered Species Act (MESA)-listed species observed and documented in each Massachusetts town. These lists are updated once a year or when there are approved MESA list changes and are shown in the following pages.

G.2 Vernal Pools³³

Vernal pools are unique wildlife habitats best known for the amphibians and invertebrate animals that use them to breed. Vernal pools, also known as ephemeral pools, autumnal pools, and temporary woodland ponds, typically fill with water in the autumn or winter due to rising ground water and rainfall and remain ponded through the spring and into summer. Vernal pools may be very shallow, holding only 5 or 6 inches of water, or they may be quite deep. They range in size from fewer than 100 square feet to several acres. Vernal pools are found across the landscape, anywhere that small woodland depressions, swales or kettle holes collect spring runoff or intercept seasonal high groundwater, and along rivers in the floodplain. Many species of amphibians and vertebrates are completely dependent on vernal pools to reproduce. Loss of vernal pools can endanger entire populations of these species.

NHESP has a program to certify the existence of vernal pools when evidence is submitted to document their location and the presence of breeding amphibians that depend on vernal pools to

³³ http://www.mass.gov/dfwele/dfw/nhesp/vernal_pools/vernal_pools.htm

survive. Certified vernal pools are protected by the Massachusetts Wetlands Protection Act and by additional state and federal regulations. Landowners are not required to report the existence of vernal pools on their property and landowner permission must be obtained prior to any person attempting to certify a vernal pool on private property. According to MassGIS data, there are 46 potential vernal pools in Gill and 3 certified vernal pools.³⁴

G.3 Wildlife Corridors

Wildlife and fisheries populations move along corridors such as rivers, riparian areas, ridgelines, farm fields, and forested slopes. Wildlife seek natural cover for shelter and food and forage where human uses, such as horticultural and ornamental plantings, provide browse or food. Remote large blocks of forestland, riparian areas, farm fields, and the parcels of land connecting them together, are important areas to preserve and protect in Gill.

G.4 Rare and Endangered Wildlife Species

G.4.2 Amphibians and Reptiles

Diverse amphibian and reptile species inhabit Gill. Large tracts of forested uplands and forested riparian corridors provide excellent habitat that supports amphibians and reptiles. Vernal pools and wetlands are essential habitat for two-thirds of the Commonwealth's amphibious species. Table 4-7 shows the rare amphibian and reptile species identified in Gill. The Jefferson salamander is a species of concern that inhabits upland forest areas near ponds or vernal pools. Also found in Gill are the marbled salamander, a threatened species and the wood turtle, a species of special concern. Identifying and protecting the habitats are the best means to ensure that these species remain a part of the New England biota.

Table 4-7: NHESP Rare Amphibian and Reptile Species in the Town of Gill

Taxonomic Group	Scientific Name	Common Name	MESA Status	Most Recent Observation
Amphibian	<i>Ambystoma jeffersonianum</i>	Jefferson Salamander	Special Concern	1997
Amphibian	<i>Ambystoma opacum</i>	Marbled Salamander	Threatened	1997
Reptile	<i>Glyptemys insculpta</i>	Wood Turtle	Special Concern	2003

Source: Massachusetts Natural Heritage and Endangered Species Program, Town Species Viewer: <http://www.mass.gov/eca/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/town-species-viewer.html>

The forests, wetlands and other surface waters in Gill are also home to nine snake species, five turtle species, nine frog and toad species and seven species of salamanders, such as the spotted salamander and the eastern newt.

³⁴ According to January 2010 MassGIS Data, <http://www.mass.gov/mgis/ftpstate.htm>, there are 3 certified vernal pools in Gill. The NHESP website data, also from 2010, there are 4.

G.4.3 Fish and Mussels

Migratory fish species such as shad and salmon once inhabited the Connecticut River in great numbers. When the Turners Falls dam was built in 1798 and subsequent dams were built further downstream, the salmon stopped running in the Connecticut River. FirstLight Power Resources is maintaining a fish ladder at Turners Falls in order to aid the comeback of this once abundant species.

As shown in Table 4-8, three fish species and one mussel species make NHESP's list of rare species. The shortnose sturgeon is listed as endangered on both the state and federal level. Shortnose sturgeon spawn in fast flowing rocky areas and Longnose suckers are found primarily in cool upper sections of streams and rivers.

Table 4-8: NHESP Rare Fish and Mussel Species in the Town of Gill

Taxonomic Group	Scientific Name	Common Name	MESA Status	Federal Status	Most Recent Observation
Fish	<i>Acipenser brevirostrum</i>	Shortnose Sturgeon	Endangered	Endangered	1993
Fish	<i>Catostomus catostomus</i>	Longnose Sucker	Special Concern		2005
Fish	<i>Lota lota</i>	Burbot	Special Concern		2000
Mussel	<i>Alasmidonta varicosa</i>	Brook Floater (Swollen Wedgemussel)	Endangered		Historic

Source: Massachusetts Natural Heritage and Endangered Species Program, Town Species Viewer:

<http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/town-species-viewer.html>

Other migratory species found in Gill are shad, blueback herring and alewife. Non-migratory species present in the Connecticut River are walleyed pike, carp and bass. Shadow Lake has a native population of blue-gill, crappie, perch and pickerel. Fall River is stocked with trout for recreational fishing and native brook trout are found throughout the town's waterways.

G.4.4 Birds

The Connecticut River Valley is a part of a major migratory flyway from North to South and vice versa. Game birds include ruffed grouse, woodcock, black duck, and mallard. Many shorebirds visit the Connecticut riverbanks in the summer months. Some examples of Gill shorebirds are killdeer, yellow legs, green heron, great blue heron, and spotted sandpiper.

Other bird species in Gill include the common loon, osprey, snow geese, wild turkey, Canada goose, hawks, falcons, nighthawks and swallows. In addition, the river valley is important habitat for songbirds and other migratory birds. A nesting pair of American Bald Eagles has resided on Barton Island for about a decade. After having disappeared completely around the turn of the 20th century, the number of bald eagles nesting in Massachusetts appears to be steadily growing amid three decades of efforts by MassWildlife and Mass Audubon to re-

establish a natural population of the nation’s animal here. In 2018, state wildlife officials identified 76 territorial pairs of bald, up from 68 pairs in 2017 and the 59 pairs counted in 2016.

As shown in Table 4-9, the American bald eagle and the sedge wren are the two bird species in Gill currently identified as endangered by NHESP.



Cistothorus platensis – or Sedge Wren – is one of two bird species listed as endangered in Gill.

Table 4-9: NHESP Rare Bird Species in the Town of Gill

Taxonomic Group	Scientific Name	Common Name	MESA Status	Most Recent Observation
Bird	<i>Cistothorus platensis</i>	Sedge Wren	Endangered	1996
Bird	<i>Haliaeetus leucocephalus</i>	Bald Eagle	Endangered	2018*

*Recent local siting reported

Source: Massachusetts Natural Heritage and Endangered Species Program, Town Species Viewer:

<http://www.mass.gov/cea/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/town-species-viewer.html>

G.4.5 Dragonflies and Damselflies

As shown in Table 4-10, there are nine species in the dragonfly/damselfly taxonomic group on NHESP’s list of rare species for Gill.

Table 4-10: NHESP Rare Dragonfly/Damselfly Species in the Town of Gill

Taxonomic Group	Scientific Name	Common Name	MESA Status	Most Recent Observation
Dragonfly/Damselfly	<i>Enallagma carunculatum</i>	Tule Bluet	Special Concern	1997
Dragonfly/Damselfly	<i>Gomphus abbreviatus</i>	Spine-crowned Clubtail	Endangered	2008
Dragonfly/Damselfly	<i>Gomphus fraternus</i>	Midland Clubtail	Endangered	2002
Dragonfly/Damselfly	<i>Gomphus vastus</i>	Cobra Clubtail	Special Concern	2008
Dragonfly/Damselfly	<i>Gomphus ventricosus</i>	Skillet Clubtail	Special Concern	2008
Dragonfly/Damselfly	<i>Neurocordulia yamaskanensis</i>	Stygian Shadowdragon	Special Concern	2008
Dragonfly/Damselfly	<i>Ophiogomphus aspersus</i>	Brook Snaketail	Special Concern	2007
Dragonfly/Damselfly	<i>Stylurus amnicola</i>	Riverine Clubtail	Endangered	2008
Dragonfly/Damselfly	<i>Stylurus spiniceps</i>	Arrow Clubtail	Threatened	2008

Source: NHESP MESA Massachusetts List of Endangered, Threatened and Special Concern Species, updated 2008

G.4.6 Mammals

Though many larger mammals were driven out or killed off by colonists in the nineteenth century, some are slowly returning to the area as forests have grown back across the landscape. Mammal species common to Gill and surrounding towns are: Black bear, white-tailed deer, beaver, Eastern coyote, opossum, gray fox, red fox, eastern cottontail, New England cottontail, flying squirrel, gray squirrel, red squirrel, varying hare, mink, otter, porcupine, skunk, raccoon, fisher cat, bobcat and weasel.

The NHESP list of rare species cites no mammals for Gill.

G.5 Conserving Gill's Biodiversity

Island Biogeography and landscape ecology are concepts which can be used to help explain Gill's options for pursuing the conservation of the town's biodiversity. The theory of island biogeography is based on observations that biodiversity is greater on large islands than on small ones, and greater on islands that are close to the mainland. The concept of islands surrounded by water has been applied to the idea of "islands" of protected open land surrounded by developed areas. Based on this theory, ecologists predict that increasing the size of a protected land area increases its biodiversity (MacArthur and Wilson; 1967). Therefore, connecting two protected areas via a protected corridor to create one large area should also increase natural biodiversity (Wilson and Willis; 1975).

Another model for wildlife habitat protection aggregates similar land uses while allowing other uses in discrete areas (Forman; 1997). This model is reflected in Gill in areas where agriculture is concentrated along river or stream corridors. This model allows large blocks of forest to remain intact. Individual animals move within a landscape and seek cover for shelter and food. Some species willingly forage where human uses, such as farm fields, gardens and trash cans provide browse or food. As the land within Gill continues to be fragmented by development, it

is reasonable to expect that remaining large blocks of undeveloped forest and the parcels of land connecting them will become more important to area wildlife.

Many species of wildlife in Gill have home ranges greater than fifty acres in size. Even those species with smaller home ranges move across the landscape between sources of shelter, water, food and mating areas. Some animals, including white-tailed deer and black bear, seek both interior forest habitat and wetland edges where food sources may be more abundant. Permanently protected wildlife corridors are particularly critical in a landscape which is experiencing development pressures, to ensure that animals have the ability to travel across vegetated areas between large blocks of habitat.

Connections between bodies of water and sub-watersheds are also important for wildlife and fisheries species. Some of the more common animals that use river and stream corridors are beaver, muskrat, raccoon, green heron, kingfish, snapping turtle, and many species of ducks, amphibians, and fish. Since many species rely on a variety of habitats during different periods of their life cycle, species diversity is greatest in areas where several habitat types occur in proximity to each other. With this in mind, the protection of all habitat types is vital for maintaining and enhancing biodiversity in Gill.

How will the Town of Gill determine the most appropriate conservation strategies for wildlife habitat? There are some general paths to follow in conserving the health of wildlife populations. One is to protect the habitat of specific species that are rare, threatened, or endangered. It is thought that other species will also benefit from this strategy. A second path is to conserve landscape-level resources such as contiguous forest or riparian areas. This helps to protect the habitats of a large number of species, but it might not meet the needs of all rare and endangered species. The third method is a combination of the first two. Maintaining the biodiversity of Gill over the long term will likely require the protection of both unique habitats for specific species and networks of habitat across the landscape.

Conservation strategies for the town to consider include monitoring of species locations, numbers, and movements; the protection of core habitat areas as identified by the NHESP BioMap2; the continued protection and linkage of large blocks of contiguous forestland; the retention of early successional habitats like fields and grasslands; and the protection of vernal pools, wetlands, and riparian corridors that sustain the greatest diversity of life in Gill.

H. SCENIC RESOURCES AND UNIQUE ENVIRONMENTS

This section – along with the natural and historic resources discussed in Section 3 – identifies the scenic resources and unique environments that most town residents would agree represent the essence of Gill’s character. In many ways the history of Gill – how people came to settle the land, use its resources, and enjoy its forests, streams, and bodies of water – can be seen in the landscapes that have retained a sense of the past. The unique environments in Gill play a very important role in providing residents with a sense of place. Dinosaur footprint quarries, a record of Gill’s history, are located in several areas. Other unique natural resources include the French King Gorge and Barton Cove. Brooks, mountains, wetlands, and village centers provide markers on the landscape within which we navigate our lives.

Scenic landscapes often derive their importance from their location relative to other landscape features. The purpose of inventorying scenic resources and unique natural environments in Gill is to provide a basis for setting resource protection. The locations of the resources shown in Table 4-4 are shown in the Scenic Resources and Unique Environments Map at the end of this Chapter.

Table 4-11: Significant Gill Resources and Scenic Landscapes/Environments

HISTORICAL SITES	
Map #	Location of Landscape
H2	Riverside Historic District
H3	Bascom Hollow
H4	French King Bridge
H5	Water power mill sites (three)
H6	Old bridge crossing
H7	Cemeteries (four)
H8	Factory Hollow
H9	Capt. Turner Monument
H10	Old Red Bridge Anchor/ Riverview Dr.
H11	Sunset Rock
H12	Munn's Ferry
H13	Stacy's Ferry
H14	Miller's Ferry

SCENIC RESOURCES	
Map #	Location of Landscape
S2	Bascom Hollow/Bascom Road
S3	West Gill Road
S4	Historic & Scenic Farm Area (Main Road north)
S5	Munn's Ferry Road
S6	Pisgah Mountain
S7	Historic & Scenic Farm Area (Main Road south)
S8	Grist Mill Road
S9	Pisgah Mountain Road
S10	Stacey Mountain & Scenic Vista
S11	River Road
S12	Riverview Drive
S13	Great Falls Overlook
S14	Mohawk Trail
S15	French King Bridge & Scenic Vista

NATURAL RESOURCES	
Map #	Location of Landscape
N2	Otter Pond
N3	Otter Brook
N4	Dry Brook (formerly known as Unadilla Brook)
N5	Ashuela Brook
N6	Otter Run
N7	Fall River
N8	Fall River Tributary "Cascades"
N9	Beaver Brook
N10	Dry Brook "Cascades"
N11	Connecticut River
N12	Great Falls & Great Island
N13	Route 2 Geologic Corridor
N14	Submerged dinosaur footprint quarry
N15	Armored mudballs
N16	Dinosaur footprint quarry
N17	Dinosaur footprint quarry
N18	Barton Island
N19	Dinosaur footprint quarry
N20	French King Gorge
N21	French King Rock
N22	Lily Pond
N23	Horse Race
N24	King Phillip's Abyss

RECREATION RESOURCES	
Map #	Location of Landscape
R2	Riverside School Recreation Area
R3	Barton Cove Recreation Area (FirstLight Power Resources)
R4	State Boat Ramp
R5	Gill Elementary School
R6	Blake Town Forest
R7	Franklin County Bikeway
R8	Conn. River Greenway State Park
R9	Geocaches

Source: 2018 Open Space and Recreation Plan Committee

I. ENVIRONMENTAL CHALLENGES

There are three main environmental challenges in Gill:

- Fragmentation of farm and forestland;
- Connecticut River bank erosion; and
- Invasive plants and species.

Other environmental challenges in the Town of Gill discussed below include: new development, recreational boating waves, chronic flooding areas, landfills and hazardous waste disposal sites, ground and surface water pollution, potential sources of public and private drinking water supply contamination, and environmental equity.

I.1 Farm and Forestland Fragmentation

Although there may not be agreement as to its severity or solution, the demand for single-family detached housing in Gill and in the region appears to be growing at a faster rate than in the state overall. Gill is far from immune to these regional trends.

Many of the largest undeveloped parcels in town are also the most suitable for development and include farm and forestland with slopes under 25 percent, which are also not protected from development. These open and forested lands contribute most to the town's rural character and are owned by a handful of families. Their agricultural businesses maintain the landscapes as they are: pastoral, historic, and overall, simply breathtaking. Were these farm businesses to fail, the future of the farms and their families, the farm and forestlands, as well as the rural character of the town itself, would be in jeopardy.

I.2. Erosion and Sedimentation on the Connecticut River

The Turners Falls dam, located near the bridge into Turners Falls between Montague and Gill, and the Vernon Dam in Vernon, Vermont form a 22 mile long impoundment in the Connecticut River that is referred to as the Turners Falls Impoundment (TFI) or the Turners Falls Pool. This impounded reach of the river includes the Franklin County towns of Montague, Gill, Northfield and Erving. Since the Northfield Mountain Pumped Storage Project came on-line in 1972, landowners in Northfield and Gill have watched their prime farmland soils and mature riparian trees slump and topple into the Connecticut River. Less dramatic but no less distressing is the erosion of shoreline around Barton Cove in the towns of Montague and Gill. In Erving, the Connecticut River flows through the French King Gorge, which is bedrock, and thus less prone to erosion. The Millers River empties into the Connecticut in Erving.

The intake structure (tailrace) of the Northfield Mountain Pumped Storage facility is located in Northfield near Four Mile Brook. The hydropower project sucks up enormous volumes of water from the river up to the Northfield Mountain Reservoir. Torrents of water are released back to the river through turbines to generate electricity. This cycle of pump and release results in river level fluctuations that erode and destabilize the river banks. Combined with the highly-erodible, prime farmland soils and bank sediments along this reach of the Connecticut River, the dramatic daily fluctuations in water surface elevations have led to severe bank erosion in which riparian

buffers and adjacent farmland have been steadily undermined and continually collapsing into the river. Land owners have been losing land along the river for decades, and bank stabilization efforts have had limited success in stopping the loss of this land.³⁵

Citizens along the Connecticut River have been voicing concern about the erosion issue since the early 1970's and successfully lobbied congressional representatives to get the Army Corps of Engineers to assess the causes of streambank erosion. The 1979 Army Corps study determined that significant changes in river water surface elevations (impoundment fluctuations due to hydropower operations) were the second most important cause of the streambank erosion.³⁶ Efforts during the 1990's by the Connecticut River Streambank Erosion Committee, which was convened by the Franklin Regional Council of Governments, garnered enough public pressure to require the previous and current owners of the Northfield Mountain project to follow a FERC-approved Erosion Control Plan and pay the costs of repairing eroded streambanks.

FirstLight Power Resources (FirstLight) owns the Turners Falls dam, Cabot Station and Station No.1 (collectively this hydropower project is referred to as the Turners Falls Project) and the Northfield Mountain Pumped Storage project. These facilities are not the only hydropower projects that affect the river as it flows through Franklin County. FirstLight's projects are part of a broader system that includes three other hydropower projects in Vermont and New Hampshire, which together affect the flow and bank stability of nearly half of the 410-mile Connecticut River. The Federal Energy Regulatory Commission (FERC) licenses for all five of these projects are up for renewal. The FERC relicensing process for these five projects started in 2012 and is just coming to the end stages in late 2020 – early 2022. To date, the FERC relicensing process for these five projects has included 72 studies and thousands of pages of data.³⁷ The image below, courtesy of the Connecticut River Conservancy (CRC), shows the locations of the five projects.



³⁵ <https://www.youtube.com/watch?v=ezzT4FDGvZw>

³⁶ <https://www.youtube.com/watch?v=ezzT4FDGvZw>

³⁷ <https://www.recorder.com/my-turn-fisk-FirstLight-TurnersFallsDam-33905989>

FirstLight submitted the Amended Final License Applications (AFLAs) for their two hydropower projects to FERC in early December 2020. These documents and all related documents going back to the beginning of the relicensing process (2012) are available at FirstLight's relicensing website.³⁸ While the AFLA for the Turners Falls project includes strategies to address water surface elevations, improve fish passage and habitat resources for endangered species in the project area south of the Turners Falls Dam, Cabot Station and Station No.1, the AFLA for Northfield Mountain does not include any strategies for addressing streambank erosion in the TFI. FirstLight did an erosion causation study as part of relicensing but stakeholders, including landowners, FRCOG, CRC and the towns expressed their strong skepticism of the analysis and FirstLight's use of the Bank Stability and Toe Erosion Model (BSTEM) to parse out responsibility for erosion. According to FirstLight, the BSTEM analysis found that the major cause of erosion in the TFI was attributed to either naturally high flows or boat waves and that project operations are not a major cause of erosion anywhere in the TFI except for at only two sites. FirstLight claims that the first of these sites has already been remediated under the existing license, and that its operating regime contributes only 8% of the erosion processes at the second site. FirstLight considers 8% to be a negligible amount of erosion attributable to their proposed operations and is not proposing any additional erosion remediation measures. Stakeholder groups, landowners and local officials are not pleased with FirstLight's refusal to take responsibility for erosion in the TFI and refusal to properly steward a treasured public resource, the Connecticut River, which generates hundreds of millions of dollars in revenue each year. In fact, FirstLight is proposing to pump additional water from the river up to the upper reservoir to use the full capacity of the upper reservoir while proposing no changes to the 9-ft water level fluctuation (pump & release cycle impacts to the river) allowed in their current license.

Environmental impacts from project operations are not stakeholders' only concern. The Connecticut River is an important recreational resource and a key economic driver in Franklin County's natural resource and recreation based tourism economy. In their AFLA, FirstLight proposes to maintain their existing recreational facilities in Northfield, Montague and Gill (which were installed in the late 1970's) and fund only ongoing maintenance needs. The Americans with Disabilities Act (ADA), which became law in 1990, was not in effect at the time these facilities were built. The relicensing process is an opportunity to evaluate the ADA needs of the existing recreation facilities and propose upgrades but FirstLight did not do this. Instead, FirstLight is proposing to maintain their existing facilities in Gill, which include the Barton Cove Nature Area and Campground and the Barton Cove Canoe and Kayak Rental Facility. FirstLight proposes no upgrades to these existing facilities and is not proposing any new recreation facilities in Gill. FirstLight proposes no remediation of the invasive aquatic plants or sediment that are choking Barton Cove, degrading water quality and habitat and interfering with paddling, swimming and boating in Barton Cove. The list of existing FirstLight facilities is shown in the excerpt from Table 3.0-1 from the AFLA Recreation Management Plan, below.

³⁸ <http://www.northfieldrelicensing.com/Pages/default.aspx>

Northfield Mountain Pumped Storage Project (No. 2465)
RECREATION MANAGEMENT PLAN

Table 3.0-1: Northfield Mountain Project: Existing FERC-Approved Recreation Sites and Facilities Summary

Barton Cove Nature Area and Campground	• nature area parking area (approximately 26 single vehicle spaces) • campground parking (approximately 28 single vehicle spaces) • showers • restroom facilities (2 facilities, ADA compliant) • picnic area (approximately 15 tables) • overlook • interpretive sign • walk-in campground (approximately 2 group sites, 28 campsites, and 1 ADA campsite) • nature trail • dock
Barton Cove Canoe and Kayak Rental Area/Turners Falls Canoe Portage	• parking area (approximately 28 single vehicle spaces) • picnic area (approximately 6 tables) • seasonal restroom • paddlecraft rental service • canoe put-in and take-out (serves as portage take-out) • on-call vehicular canoe & kayak transport service

FirstLight should be proposing significant investments in recreation resources that reflect the Town's needs and support the local and regional economies and recreation needs for the life of the FERC license, which will be in effect through 2070. This is truly a "once in a lifetime" opportunity for the Town's voice to be heard in the FERC relicensing process. As part of the FERC process, the MassDEP will issue a 401 Water Quality Certificate (401WQC) permit for each of the two FirstLight projects (it could be one permit for both but this depends on how FirstLight structures their 401WQC permit application). There are multiple opportunities in the coming 12-18 months for stakeholders in the Town of Gill to continue advocating for the river, for the protection of valuable prime farmland and riparian and aquatic habitat and recreation resources. The Town should continue working closely with the FRCOG and other local and regional stakeholders during the FERC and 401WQC permitting processes to ensure that the Town's voices are heard.

I.3 Invasive Plants and Species

The Northern Hardwoods-Hemlock-White Pine Forest (NHHWPF), which is one of the predominant forest types in Gill, is particularly susceptible to non-native exotic species and pests. Gill's woodlands have begun to suffer from invasive non-native plants—those which can outcompete the native vegetation and interrupt natural succession if they escape into natural areas to reproduce. The species presently seen in the woods and wetlands are barberry, multiflora rose, burning bush euonymus, Norway maple, Japanese (and other) honeysuckle, Asiatic bittersweet, Japanese knotweed, buckthorn, phragmites and purple loosestrife.

Other invasive plant species that potentially threaten the Gill ecosystem are garlic mustard and giant hogweed. The invasions of autumn olive and Russian olive frequently seen in the highway right-of-way in the Pioneer Valley are not yet such a problem in Gill. Most of the above-named plants, as pure stands, do not have the same wildlife habitat or timber value as the indigenous plant species, nor is their fall color the same. Other potential threats to Gill's forests include the beech fungus which has rendered a once economically important species almost useless; the Asian Longhorned Beetle, an invasive wood-boring insect that attacks hardwood trees, including maple, birch and elm; and the Emerald Ash Borer, a non-native invasive insect that attacks ash trees. These pests have been confirmed in Massachusetts and are being monitored to avoid further spreading.



Garlic Mustard plant

Hemlock pests may have significant consequences for Gill's forests, especially in the wooded ravines and wetlands. The hemlock wooly adelgid is killing virtually all hemlocks in PA, NY, NJ, and CT. According to experts at Smith College, the wooly adelgid came up from Connecticut into the Springfield area in the early 1990s. Since then it has extended its range north to Amherst and Northampton, and the limit of its cold hardiness is likely to be farther north than Gill, where it is now found. Another threat to the hemlocks has been the hemlock looper, which has killed over 1,000 acres of hemlock in Franklin County.

Invasive aquatic plants are also a potential threat to the ecosystem in Gill. Slightly more than half of the nonindigenous organisms reported in Massachusetts are species that arrived from outside of North America and are commonly referred to as "aliens" or "exotics." Examples of nonindigenous species from other continents include Eurasian Water-milfoil (a plant native to Eurasia; *Myriophyllum spicatum*), Brazilian waterweed (a plant native to South America; *Egeria densa*), and Water Chestnut (a plant native to Eurasia; *Trapa natans*).³⁹

I.4 New Development

Unplanned residential development across town would also increase non-point source pollution like road runoff and reduce the value of remaining wildlife habitat. Increases in runoff would diminish the biodiversity in the stream network all over town. One solution to the problem could be a combination of zoning techniques applied to encourage development in suitable areas and land conservation to minimize development in those areas with the cultural, historic, scenic, natural, archeological, and natural resources values, which are also most threatened from development.

³⁹ Massachusetts Department of Conservation and Recreation, Division of Water Supply Protection, Office of Watershed Management; *Aquatic Invasive Species Assessment and Management Plan*; October 2010.

Planning for development – where and how to develop – is perhaps just as important as planning for conservation. Conserving any and all land without considering its value as a potential residential, commercial or industrial site might ultimately force further fragmentation. As such, an action item to continue to assess areas of potential development is included in the Action Plan.

I.5 Recreational Boating Waves

Boat waves continue to be a significant problem on the Connecticut River in Gill. As is mentioned in the ACOE's 1979 study, stream bank erosion and other problems are caused by boat waves. The Commonwealth of Massachusetts General Laws include a prohibition of open water speeds in excess of 45 mph. However, there are no restrictions on motor craft speed near the banks of a river or on the number of craft that can be in operation at any one time. Other problems that are associated with the amount and speed of motor craft on the Connecticut River in Gill include water pollution from silt and mud churned-up by motorboats, noise pollution, and the impacts of large numbers of big motor craft on other forms of recreational boating (e.g. canoeing and kayaking).

I.6 Chronic Flooding Areas

The Town of Gill Multi-Hazard Mitigation Plan identifies the Riverside section of Gill as a flood-prone area in Town. No other areas subject to significant chronic flooding have been identified.

I.7 Landfills and Hazardous Waste Disposal Sites

According to 2005 MassGIS data, there are no hazardous waste sites in Gill. According to MassDEP data⁴⁰, there is one inactive private landfill owned by Northfield Mount Hermon School and located at 1 Lamplighter Way. The 3-acre site operated from 1982 to 2001 and is now capped but unlined. Illegal dumping is a chronic problem in several areas in Town, including in the Town Forest and along Barney Hale Road.

I.8 Ground and Surface Water Pollution

The Town of Gill has no known major problems with nonpoint source pollution. However, as described in the **Erosion and Sedimentation on the Connecticut River** section earlier in this chapter, the Connecticut River is subject to erosive forces which have destabilized many sections of 20-foot-high river banks near the Northfield Mountain Pumped Storage Project. The resulting slumping and mass wasting of large sections of bank and the loss of trees and other riparian vegetation on the top of the banks could contribute to issues with water quality. Erosion could cut channels from the upland areas into the River, encouraging potential runoff from farm fields. Ongoing riverbank stabilization projects will continue to address these issues.

⁴⁰ https://www.mass.gov/lists/massachusetts-landfills-transfer-stations-compost-sites-recycling-facilities?_ga=2.24869245.659102792.1534355038-1441907277.1465834554

Other potential ground and surface water pollution causes include run off from roads, including salt and chemicals, agricultural fertilizers and pesticides, and issues with failing septic systems. Public outreach and education can assist in making people aware of ways to mitigate such potential issues.

I.9 Potential Sources of Public and Private Drinking Water Supply Contamination

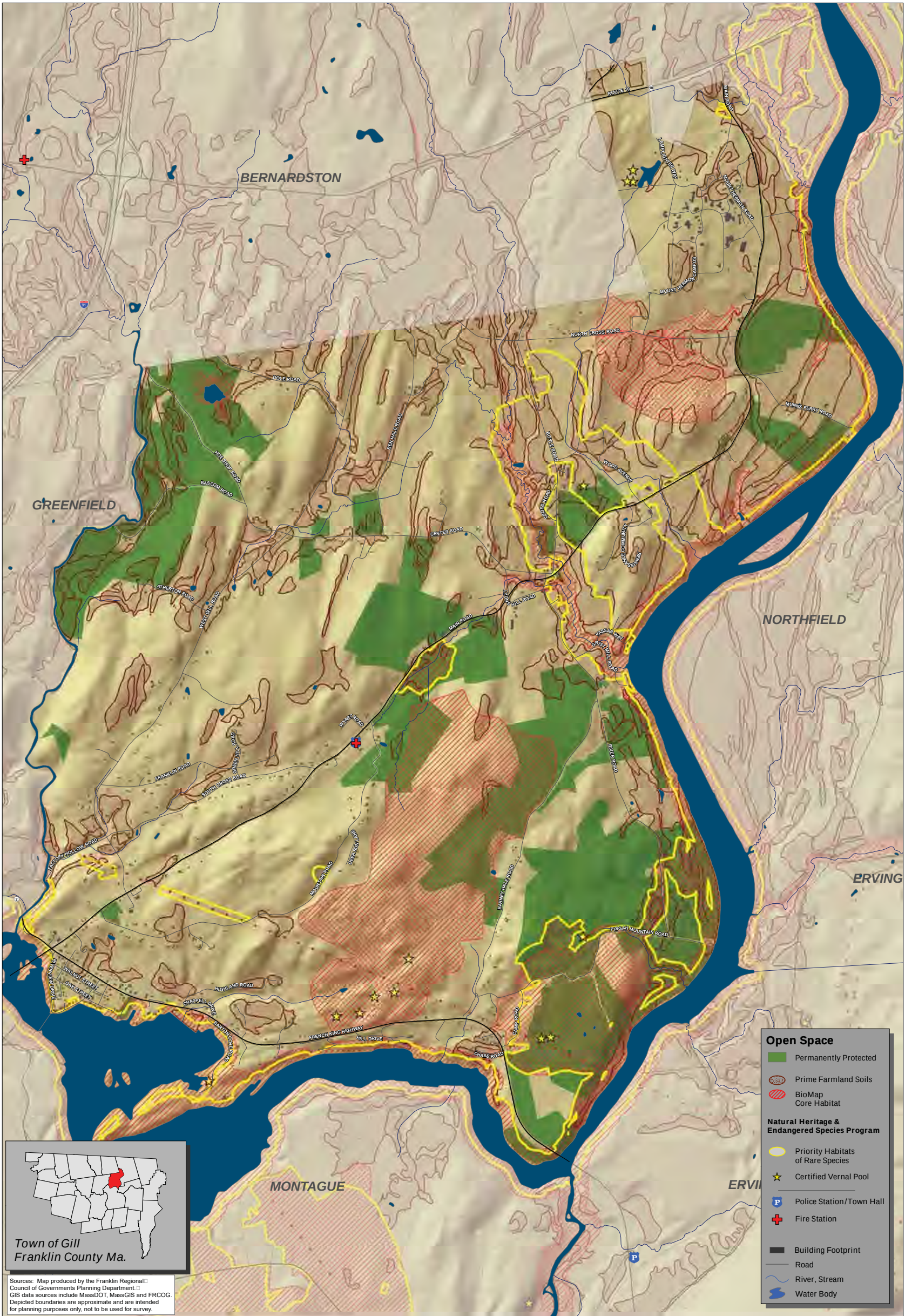
Potential sources of contamination of public and private wells include septic systems, sub-surface fuel tanks, manure piles, improper use, storage and disposal of hazardous materials, herbicide runoff from farmland, utility rights-of-way, and state highway vegetation control, and road runoff.

In addition, many private wells in Gill are drying up, especially on Boyle Road, North Cross Road, and near the school.

More information on drinking water supply contamination and mitigation can be found at <http://www.mass.gov/dep/water/drinking/sourcewa.htm>.

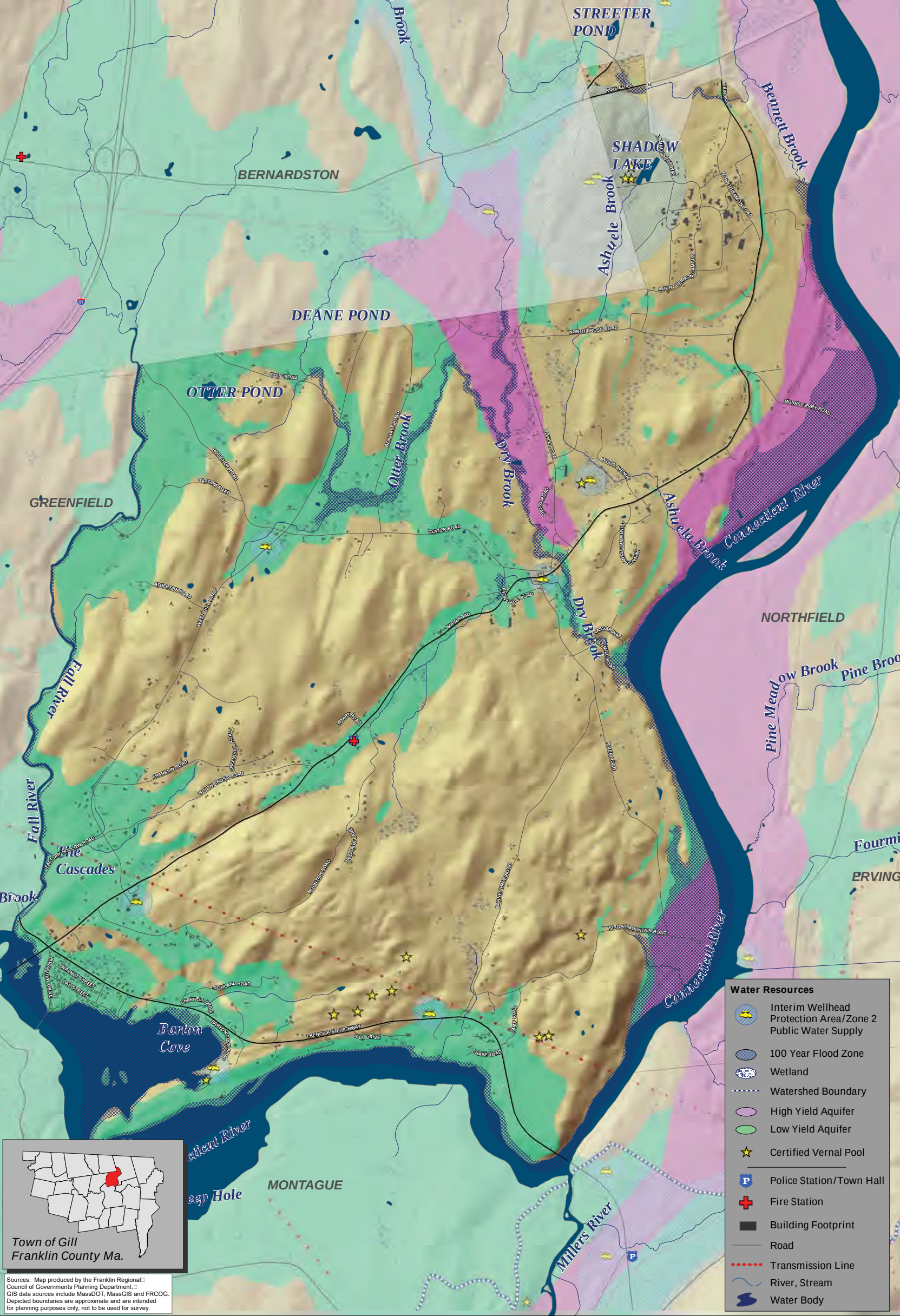
I.10 Environmental Equity

One potential issue in regard to environmental equity is the rapidly rising sewer rates in the Riverside Area. In the last year, residents in this area have experienced a 40% increase in the sewer rates. Such a large increase may cause financial difficulties for families with more limited resources.



Town of Gill Open Space & Recreation Plan 2020

Soils & Environmental Constraints



Town of Gill
Franklin County Ma.

Sources: Map produced by the Franklin Regional Council of Governments Planning Department.
GIS data sources include MassDOT, MassGIS and FRCOG.
Depicted boundaries are approximate and are intended for planning purposes only, not to be used for survey.

Town of Gill

Open Space &

Recreation Plan 2020

Water Resources

00.250.51 Miles

Oct. 11, 2018

Franklin Regional Council of Governments



Town of Gill Open Space & Recreation Plan 2020

Scenic Resources & Unique Environments

SECTION 5:

INVENTORY OF LANDS OF CONSERVATION AND RECREATION INTEREST

The previous sections of this plan have identified areas within the Town of Gill that are significant for their cultural, historical, scenic, archeological or ecological values. This information is helpful for understanding the character of Gill and for outlining issues that may be of particular interest in open space and recreation planning decisions.

What is open space?

The term “open space” is often used to refer to land types such as conservation land, forested land, recreation land, agricultural land, corridor parks, green buffers and any open area owned by an agency or organization dedicated to conservation, according to the Mass Division of Conservation Services. Open space may also be defined as any parcel of land or water that remains either in its natural state or in agricultural use, and is otherwise free from intensive development. It can also include water bodies such as lakes and wetlands. The definition of open space can depend in part on the context of its location. In an urban area a vacant lot or a small wetland may be open space. In a town such as Gill, agricultural fields, the river’s edges and the Town Forest are counted among its open spaces. For the purposes of this plan open space is further defined by having some level of protection from development.

Protecting open space serves not only to preserve land but also to:

- Preserve areas of cultural, historical, scenic, archeological or ecological values
- Provide space for food production and forest products
- Offer opportunities for outdoor recreation
- Protect ecological functions areas such as flood plains and estuaries (green infrastructure)
- Conserve habitat vital for endangered plant and animal species
- Allow public access and ecotourism potential
- Mitigate the impacts of natural hazard events such as flooding

This section of the Gill Open Space and Recreation Plan provides a comprehensive inventory of all of the lands that provide open space, wildlife habitat, agricultural and forest products, watershed protection, scenic beauty, and recreation opportunities for the benefit of Gill residents. The inventory includes public, private, and non-profit conservation foundation lands and shows the location, types, and distribution of open spaces in relation to the population and other values that depend on the protection that open spaces provide. Information provided includes current land use, the degree of protection, as well as existing land management practices, where available. The inventory identifies the natural resource areas still in need of protection and suggests the types and ideal locations of additional recreational facilities. This information, especially when mapped, can help show patterns of protected land. For example, protecting land in Gill’s flood plains is important in order to preserve its vital ecological functions and to protect

their adjacent water bodies. Mapping protected land in flood plains may reveal a key unprotected parcel which could serve as an important link between other tracts of already protected areas and which could be prioritized for protection when the opportunity becomes available. Open space protection is important because, as natural areas are fragmented and lost to development, the benefits these spaces provide to people, plants, and animals are diminished over time.

A. OPEN SPACE AND LEVELS OF PROTECTION FROM DEVELOPMENT

In the Gill Open Space and Recreation Plan, the focus is on undeveloped land that is valued by residents because of what it provides: actively managed farm and forestland; wildlife habitat; protection and recharge of groundwater; public access to recreational lands and trail systems; important plant communities; structures and landscapes that represent the community's heritage; flood control; and scenery. The term 'natural resource' describes the biological and physical components of an ecosystem that people depend on for their existence and, for some, their livelihood. These components are air, surface and ground water, sustainable wood products, soil nutrients, vegetation, fisheries, and wildlife. Recreational facilities can include open space, parks, and developed areas like tennis courts and swimming pools. Recreational facilities also include those that provide access to open space and natural resources, such as boat ramps and trails, or provide a means for active transportation, such as bike paths and sidewalks.

Gill is graced with abundant open space; indeed, 56% of the town's lands are under permanent or temporary protection. The majority of these lands, and in particular those under the temporary protection of Chapter 61 provisions, are owned and maintained by Gill residents, who farm the soils, manage the woodlots, or provide passive recreational access to the natural beauties of the land through a growing network of well-used trails. The town is indebted to these stewards.

Properties under permanent protection constitute 21 percent of the total lands in Gill. Of those, the majority are privately owned: 495 acres are held under Conservation Restrictions, another 868 with Agricultural Preservation Restrictions, and the balance owned by private non-profit conservation organizations and other private entities. Nearly 274 acres are owned by the Commonwealth of Massachusetts. The town itself owns a small number of parcels under permanent protection, including cemeteries (7 acres) and the Town Forest (176 acres).

Private properties with temporary protection add another 3,261 acres of open space, nearly 35 percent of Gill lands. These are owned by residents who have enrolled land under the Chapter 61 tax programs. Farmlands (Chapter 61A) comprise 1,172 acres, forest lands (Chapter 61) make up 1,530 acres, and another 234 acres are in Chapter 61B, the open space/recreation designation. FirstLight owns an additional 325 acres of land that is temporarily protected. As long as the economy can support these land stewards, Gill will continue to enjoy the benefits these open lands provide the town.

Town-owned properties with limited protection cover 60 acres, including the Town Hall, Municipal Building (Highway, Fire & Police), Slate Library, Elementary School, Riverside Municipal Building, the Riverside Sewer Pumping Station, and the Mariamante parcel.

Patterns of open space tell us a lot about the land base itself. Gill's terrain varies greatly in slope from level floodplains to steep river valley terraces. Elevations in Gill range from 150 feet at the junction of the Fall and Connecticut Rivers to 816 feet at the top of Pisgah Mountain. Unsorted glacial deposits of soil and rocks, or drumlins, are present throughout Gill's landscape.

A.1 Permanent Protection

Open space can be protected from development in several ways that differ in the level of legal protection they provide, the method by which they are protected, and by the type of landowner. When land is considered to be "permanently protected," it is intended to remain undeveloped in perpetuity. This level of protection is ensured in one of two ways: (1) ownership by a state conservation agency, a not-for-profit conservation land trust, or the local Conservation Commission; or (2) attachment of a conservation restriction or similar legal mechanism to the deed.

Land is considered to be permanently protected from development when it is owned by the Commonwealth of Massachusetts and managed by a state conservation agency, including the Department of Fish and Game (DFG) or the Department of Conservation and Recreation (DCR). Land is also considered permanently protected when it is owned by the town and is under the authority of the Conservation Commission, or when it is owned by a land trust for conservation purposes. Land acquired by a public agency for the purpose of water supply protection is also considered to be permanently protected.

Private landowners can also protect their properties through the attachment of a conservation restriction (CR). A CR is a legally binding agreement between a landowner (grantor) and a holder (grantee)—usually a public agency or a private land trust—whereby the grantor agrees to limit the use of his/her property by forfeiting interests in the land (development being one type of interest) for the purpose of protecting certain conservation values. The conservation restriction may run for a period of years or in perpetuity and is recorded at the Registry of Deeds. Certain income, estate or real estate tax benefits may be available to the grantor of a conservation restriction.

There are several types of conservation restrictions. Some protect specific resources, such as wildlife habitat, or farmland. Actively farmed land with prime soils or soils of statewide importance may be eligible for enrollment in the state's Agricultural Preservation Restriction (APR) Program. Adopted by the State Legislature in 1977, the APR Program ensures the permanent protection of large blocks of farmland. Administered by the Massachusetts Department of Agricultural Resources (MDAR), this program offers farmers the difference between the "fair market value" and the "agricultural value" of their land. In exchange, a permanent deed restriction is placed on the property, which precludes uses that may harm the agricultural viability of the land. The farmer continues to own the land and can sell it, but only for agricultural uses, making it economically feasible for farmers to keep farming.

Removing permanent protection from any parcel of land that is in the APR Program, protected with a conservation restriction, owned by a state conservation agency, a land trust or a town for conservation purposes, or acquired by a fire or water district for the purpose of water supply

protection requires a vote by two thirds of the State Legislature as outlined in Article 97 of the Amendments to the Massachusetts State Constitution. For the purposes of this Open Space and Recreation Plan, cemeteries are also considered to be permanently protected from development.

The “permanent protection” conveyed by Article 97 does have its limits. The State Legislature has, on dozens of occasions, voted to release this protection at the request of local communities, so that conservation land can be used for schools, roads, economic development, or other public projects not related to resource protection. Reforms have been proposed to make this process more difficult. Recent court cases have also addressed Article 97 protection, such as when Berkshire Superior Court Judge John A. Agostini ruled in May 2016 that eminent domain through the federal Natural Gas Act of 1938 trumped the Article 97 provisions in the state Constitution, allowing the Tennessee Gas Pipeline Co. to proceed with plans to extend a natural gas pipeline through a section of the Otis State Park in Sandisfield. It is important for local advocates of conservation to be vigilant of attempts to remove the protection status from open space in the Town of Gill.

A.2. Temporary Protection

The Farmland Assessment Act was enacted by the State Legislature in 1973 and amended in 2006. Parcels enrolled in Massachusetts Chapter 61 (forestry), 61A (agriculture) and 61B (open space/recreation) tax programs created by this Act are considered to be “temporarily protected” from development. This program offers landowners reduced local property taxes in return for maintaining land in productive forestry, agricultural or recreational use, or in a wild condition, for a period of time. These “chapter lands” provide many public benefits from maintaining wildlife habitat and recreational open space to sustaining rural character and local forest and farm-based economic activity.

Another benefit of the Chapter 61 programs is that they offer towns the opportunity to protect land. When a parcel that has been enrolled in one of the Chapter programs is proposed for conversion to a use that would make it ineligible for the program, the town is guaranteed a 120-day waiting period during which it can exercise its right of first refusal to purchase the property. After a Purchase and Sale Agreement has been signed, the municipality has ninety days to complete the purchase if it elects to buy the property (or assign the right). The right of first refusal can be sold to, or given to, a land trust that can often respond much more quickly than the Town can. It is important for the Town of Gill not to consider land under Chapters 61 (forest), 61A (farm) or 61B (open space/recreation) as permanently protected. At the same time, the value the program offers to the Town should not be disregarded.

A.3. Limited Protection

If a Town-owned parcel of land is under the legal authority of the Select Board, rather than the Conservation Commission, it is considered to have limited protection from development. The parcel could be called a wildlife sanctuary or a town forest, but may not have the long-term protection afforded by Conservation Commission lands. In this case, converting a town forest to a soccer field or a school parking lot could be decided by the Select Board or Town Meeting.

A parcel of land used for the purposes of water supply protection is considered in much the same way. Unless there is a legal restriction attached to the deed or if the deed reads that the land was acquired expressly for water supply protection, the level of protection afforded these types of parcels varies depending on the policies of each community. In most cases, the water district would be required to show the Massachusetts Department of Environmental Protection just cause for converting the use of the land. However, this is not an insurmountable hurdle. The Town of Athol took their surface drinking water supplies off-line after developing a productive well field. A change in land use around the reservoir from water supply protection to active recreational use may occur.

B. INVENTORY OF PROTECTED OPEN SPACE

The ways in which lands are protected from development produce different values. For example, lands that are permanently protected through the use of a conservation restriction (CR) or agricultural preservation restriction (APR) can stay in private ownership. This results in having the decisions regarding the property's management in the hands of individuals, instead of a non-profit or a state or federal agency. In this case the land also remains on the local property tax rolls, and contributes to the local economy if actively managed for forestry or agriculture. Although public access is sometimes required in conservation restrictions purchased by state conservation agencies and land trusts, it is not guaranteed. Lands that are purchased in fee by state agencies and large land trusts are likely to provide access to the general public and sometimes offer payments in lieu of taxes to the Town.

Table 5-1 offers a summary of all types of open space in Gill, categorized by private and public ownership as well as those with permanent protection and temporary protection. In all, there are 5,431 acres of land under some level of protection in Gill. With a total land area of 9,478 acres, about 56 percent of all land in Gill is under some level of protection. Of this protected land, 90 percent is privately owned. Privately owned permanently protected land comprises 29 percent of the total open space in Gill. Privately owned temporarily protected land makes up nearly 62 percent of the open space, representing 34 percent of the Town's total land area.

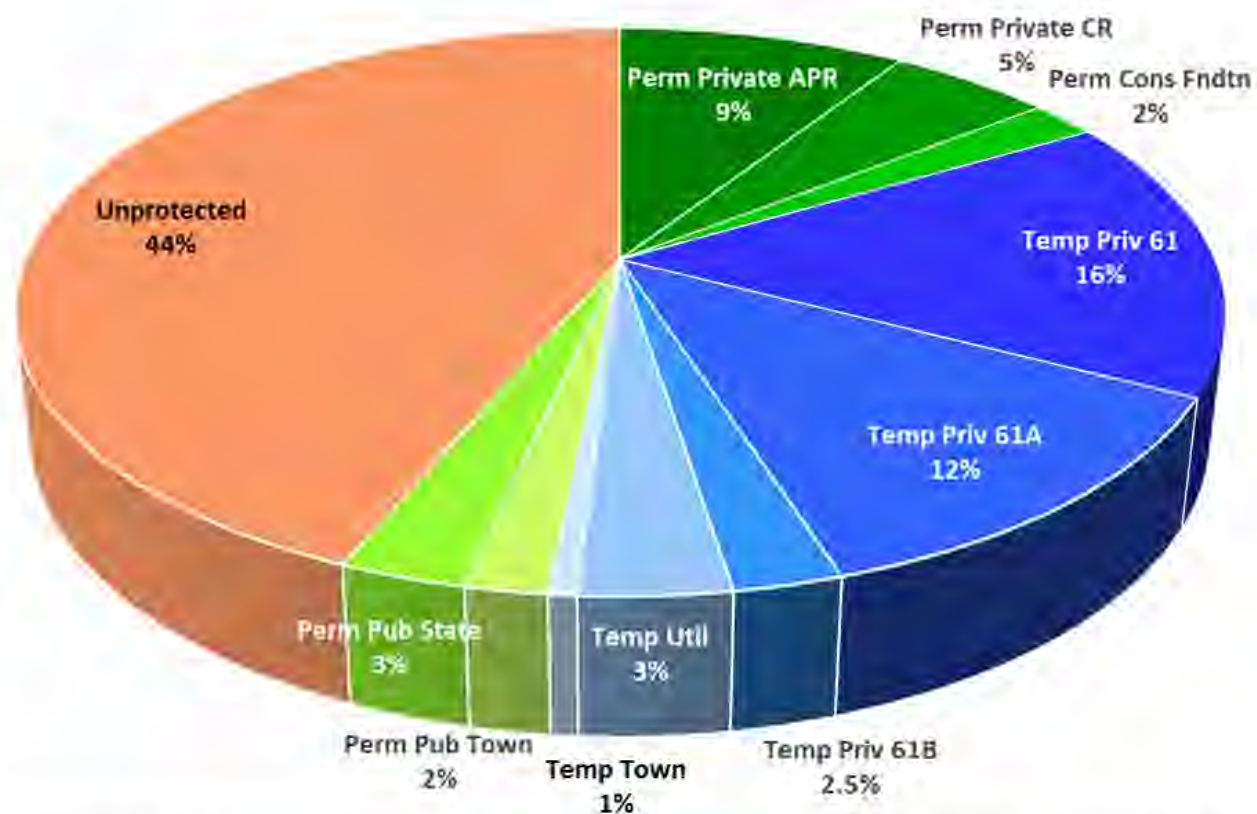
These totals are estimates based on the information available. For land protected with a conservation restriction (CR) or agricultural preservation restriction (APR), the entire acreage of a parcel is counted as permanently protected, although it is likely that some of these restrictions only apply to major portions of a parcel. APR and CR parcels that are also enrolled in the Chapter 61 program are counted only once as permanently protected land, and are not included in the Chapter 61 acreage totals. The Open Space and Recreation Inventory Map at the end of Section 5 shows the location of all protected open space in Town.

Table 5-1: Summary Open Space by Ownership and Level of Protection in Gill

PRIVATE PARCELS	Area in Acres	% of Total Open Space in Gill	% of Total Land Area in Gill
Privately Owned PERMANENTLY Protected Open Space			
Permanently Protected Agricultural Lands: Table 5-2	868	16.3%	9.2%
Permanently Protected Forestland: Table 5-4	495	9.3%	5.2%
Permanently Protected Conservation Foundation Owned Land: Table 5-6	200	3.7%	2.1%
	1,563	29.3%	16.5%
Privately Owned TEMPORARILY Protected Open Space			
Temporarily Protected Agricultural Lands (Chapter 61A): Table 5-3	1,172	21.9%	12.4%
Temporarily Protected Forestland (Chapter 61): Table 5-5	1,530	28.6%	16.1%
Temporarily Protected Open Space and Recreation Lands (Chapter 61B): Table 5-8	234	4.4%	2.5%
Temporarily Protected Utility-Owned Land: Table 5-7	325	6.1%	3.4%
	3,261	61.1%	34.4%
TOTAL PRIVATE LAND WITH SOME LEVEL OF PROTECTION	4,824	90.3%	50.9%
PUBLIC PARCELS	Area in Acres	% of Total Open Space in Gill	% of Total Land Area in Gill
Publicly Owned PERMANENTLY Protected Open Space			
Permanently Protected State-Owned Land : Table 5-9	274	5.1%	2.9%
Permanently Protected Town-Owned Land: Table 5-10	176	3.3%	1.9%
Permanently Protected Cemeteries: Table 5-11	7	0.1%	0.1%
	457	8.6%	4.8%
Publicly Owned TEMPORARILY Protected Open Space			
Temporarily Protected Town-Owned Land: Table 5-12	60	1.1%	0.6%
TOTAL PUBLIC LAND WITH SOME LEVEL OF PROTECTION	517	9.7%	5.5%
TOTAL PROTECTED OPEN SPACE (Private and Public Ownership)	5,341	Acres	
TOTAL LAND IN GILL	9,478	Acres	
PERCENT TOTAL PROTECTED OPEN SPACE	56%		
TOTAL PERMANENTLY PROTECTED OPEN SPACE (Private and Public Ownership)	2,020	Acres	
PERCENT TOTAL PERMANENTLY PROECTED OPEN SPACE	21%		

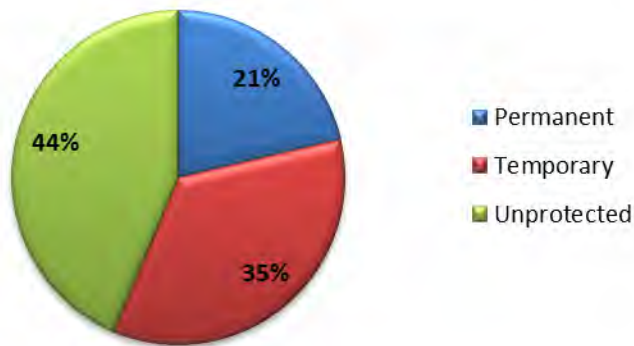
Source: Town of Gill Assessor's Maps, 2018; 2018 OSRP Working Group

Protection Status of All Land in Gill

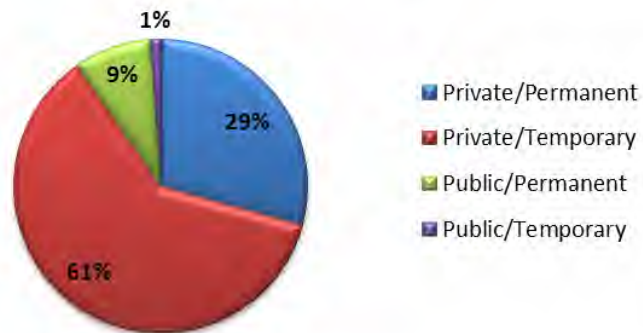


■ Perm Private APR ■ Perm Private CR ■ Perm Cons Fndtn ■ Temp Priv 61 ■ Temp Priv 61A ■ Temp Priv 61B
 ■ Temp Util ■ Temp Town ■ Perm Pub Town ■ Perm Pub State ■ Unprotected ■

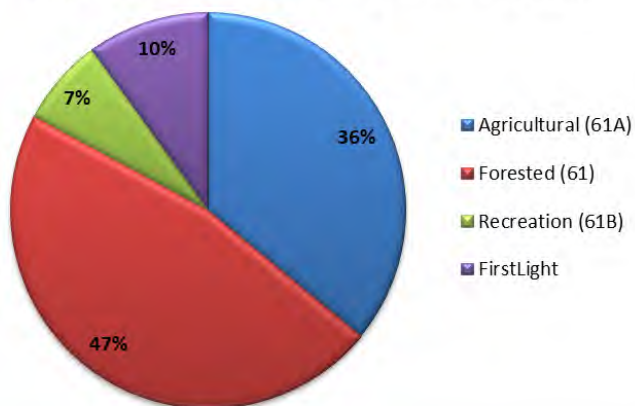
Protection Status of Land in Gill (5,341 protected acres as % of total land area)

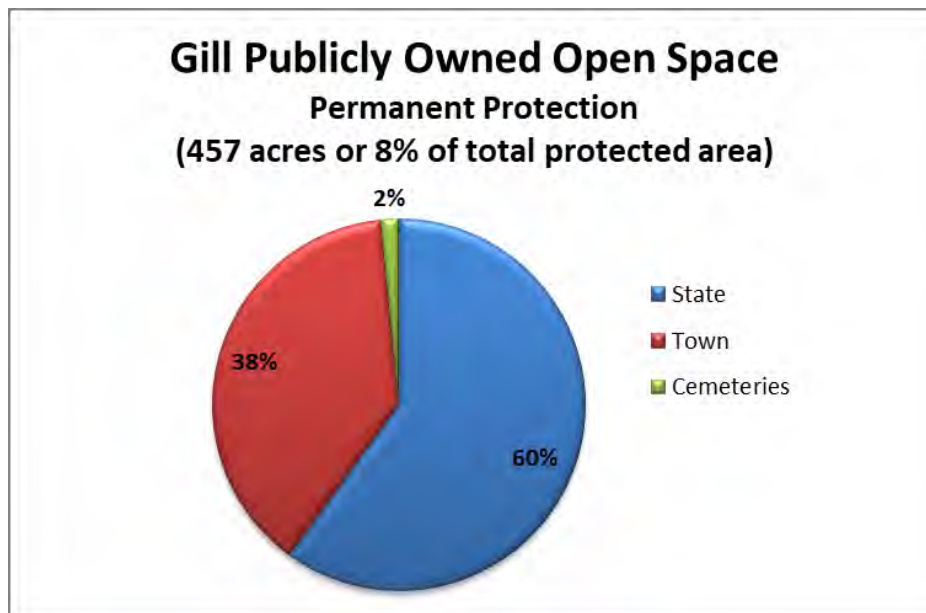
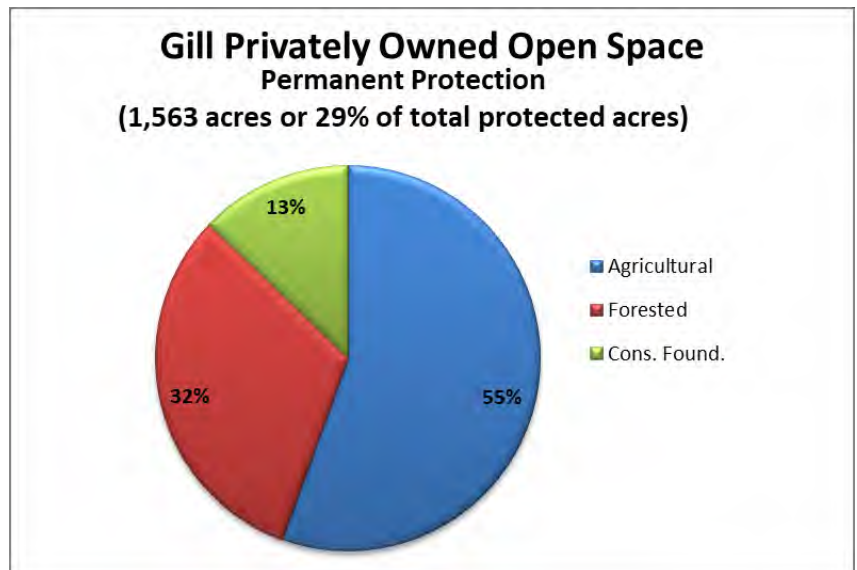


Protected Open Space in Gill (by ownership/protection level as % of 5,431 acres of protected land)



Gill Privately Owned Open Space Temporary Protection (3,261 acres or 62% of total protected acres)





It is important to consider land protection on a regional scale beyond the borders of Gill for a number of reasons. Forests clean the air, filter water supplies, control floods and erosion, sustain biodiversity and genetic resources, provide wood products and recreation, and sequester carbon. It takes large, intact natural landscapes to sustain these benefits over the long term. These services have tremendous value, from supporting the local economy through forest product jobs, outdoor recreation, and farming, to performing functions that otherwise would need to be engineered by humans. For example, the Massachusetts Audubon Society has estimated that the nonmarket value of the natural areas within the State—for flood control, climate mitigation, and water filtration—is over \$6.3 billion annually.

B.1 Privately Owned Open Space Parcels

Privately Owned Agricultural Land

There are 868 acres of permanently protected privately owned farmland, which constitute 16 percent of the total amount of open space in Gill with some level of protection from development. This land is protected by the Agricultural Preservation Restriction (APR) Program. These APRs are held by the Massachusetts Department of Agricultural Resources (MDAR), the Mount Grace Land Conservation Trust, the Franklin Land Trust, and Massachusetts Audubon. Information on permanently protected farmland in Gill is shown in Table 5-2, including ownership, holder of the restriction, location, map and lot numbers, acreage and value.

There are 1,172 acres of temporarily protected privately owned farmland, which make up about 22 percent of the total amount of open space in Gill with some level of protection from development. Information on temporarily protected farmland in Gill is shown in Table 5-3, including ownership, map and lot numbers and acreage. This land is enrolled in Chapter 61A.

Lands in the Chapter 61 program are considered only temporarily protected because a landowner may remove land that is enrolled in the Ch. 61 program at any time and pay any additional taxes due. If the landowner receives a formal offer from another party to purchase his/her parcel of land, which is in one of the Ch. 61 programs (61, 61A, 61B), the landowner must notify the Town. The Town has 120 days from the day the offer is made to exercise its right-of-first-refusal or transfer this right to a conservation organization. The Town would likely be much more successful in taking advantage of this opportunity if a Chapter 61 protocol is established ahead of time to outline the steps involved in the process. Ideally, the Town should also prioritize parcels or groups of parcels of conservation interest ahead of time.



Many agricultural lands in Gill are temporarily protected under the Chapter 61A program.

Table 5-2: Privately Owned Permanently Protected Agricultural Lands (APRs)

Owner/ Manager	Holder of APR	Location/Site Name	Acres	Assessor's Map	Assessor's Lot	Value
Bascom Hollow Farm LLC	MDAR	0 Bascom Rd	8.50	215	23	Prime Farmland Soils
Bascom Hollow Farm LLC	MDAR	0 Bascom Rd	85.70	215	22.2	Prime Farmland Soils
Bascom Hollow Farm LLC	MDAR	0 Bascom Rd	74.08	215	22.3	Prime Farmland Soils
Crosby Patricia H.	MGLCT	151 Center Rd	12.11	214	5.1	Prime Farmland Soils
Dunklee Revocable Trust	MDAR	North Main Rd	92.00	203	3	Prime Farmland Soils
Flagg Daniel R.	FLT	0 Boyle Rd	5.42	211	3	Prime Farmland Soils
French Richard C.	FLT	0 Main Rd	37.00	213	17	Prime Farmland Soils
French Richard C.	FLT	267 Main Rd	134.00	213	4	Prime Farmland Soils
Hatch Clifford C.	MDAR	0 Main Rd	30.20	211	4.1	Prime Farmland Soils
Hatch Clifford C.	MDAR	0 Boyle Rd	10.07	210	8.2	Prime Farmland Soils
Lilly Keith E.	MDAR	292 Main Rd	43.85	213	15	Prime Farmland Soils
Gardner, Elizabeth S.	MDAR	385 Main Rd	5.58	211	7	Prime Farmland Soils
Podlesny Frank E.	MDAR	0 Center Rd	19.00	209	8	Prime Farmland Soils
Podlesny Frank E.	MDAR	0 Ben Hale Rd	5.40	209	13	Prime Farmland Soils
Remillard Jeffrey R.	MDAR	0 Bascom Rd	52.90	215	24.1	Prime Farmland Soils
Split River Farm LLC	MDAR	0 River Rd	17.00	220	13	Prime Farmland Soils
Split River Farm LLC	MDAR	Stratton Pisgah Mtn Rd	62.80	220	11	Prime Farmland Soils
Split River Farm LLC	MDAR	Stacy Pisgah Mtn Rd	52.00	227	10	Prime Farmland Soils
Storrow Thomas W.	MDAR	0 River Rd	30.00	219	9	Prime Farmland Soils
Storrow Thomas W.	MDAR	0 River Rd	17.76	219	7.1	Prime Farmland Soils
Urgiel Alexander V. Jr.	MDAR	0 Munns Ferry Rd	18.90	204	2	Prime Farmland Soils
Urgiel Alexander V. Jr.	MDAR	464 Main Rd	54.00	204	6	Prime Farmland Soils
TOTAL ACRES:			868.27			

Source: Town of Gill Assessor's Maps, 2018; 2018 OSRP Working Group.

Table 5-3: Privately Owned Temporarily Protected Agricultural Land (Chapter 61A)

Owner	Location	Acres	Assessor's Map	Assessor's Lot
Cole Karen L.	457 Main Rd	7.54	204	16.1
Cotter Patrick M.	0 Munns Ferry Rd	9.10	203	5.3
Cotter Patrick M.	53 Munns Ferry Rd	36.15	203	11
Cotter Patrick M.	0 Munns Ferry Rd	55.30	203	5.2
Cutting Frank J.	81 Ben Hale Rd	13.60	203	4.2
Cutting Frank J.	0 Boyle Rd	77.00	206	1
Cutting Real Estate Trust	81 Ben Hale Rd	21.00	207	1.2
Cutting Real Estate Trust	81 Ben Hale Rd	36.00	207	4.1
Cutting Real Estate Trust	81 Ben Hale Rd	73.00	207	1.1
Flagg, Shirley E.	430 Main Rd	151.00	204	13.2
Flagg, Shirley E.	Cole Main Rd	45.20	204	8
Flagg, Shirley E.	421 Main Rd	134.00	204	14
Giknis James A.	155 French King Hwy	50.00	103	5
Hastings Ernest M.	0 West Gill Rd	73.40	207	6.1
Hastings Ernest M.	314 West Gill Rd	47.00	207	5
Hatch Clifford C.	411 Main Rd	40.00	211	10.1
Johnson Kenneth E.	15 Vassar Way	13.47	212	15
Keech Linda	47 Franklin Rd	45.00	216	14
Keech Linda	47 Franklin Rd	15.00	217	1.11
Kramer Susan J.	54 Boyle Rd	34.03	206	28-21
Lemieux Noreen	119 River Rd	20.00	219	10
McComb James H.	0 Dole Rd	6.51	208	11.2
McComb James H.	58 Dole Rd	11.57	208	11.1
Schechterle Steven J.	257 West Gill Rd	24.00	209	5
Schechterle Steven J.	36 Hoe Shop Rd	12.45	209	3.2
Urgiel Alexander V. Jr.	0 Munns Ferry Rd	14.68	204	3.1
Wiancko Laura & Greenstein Judd S.	0 Franklin Rd	34.00	217	35
Zak Farm Trust	0 River Rd	14.00	212	8

Owner	Location	Acres	Assessor's Map	Assessor's Lot
Zak Farm Trust	South Main Rd	10.50	213	5
Zak Farm Trust	0 Lyons Hill Rd	2.80	212	22
Zak Farm Trust	North Main Rd	44.30	211	22
Zak Farm Trust	0 Lyons Hill Rd	0.50	213	6
	TOTAL ACRES:	1,172.10		

Source: Town of Gill Assessor's Maps, 2018; 2018 OSRP Working Group.

Much of the land enrolled under Chapter 61A also abuts rivers and streams. While agriculture can have negative impacts on water quality, these impacts can be reduced or avoided through the use of best management practices. When best management practices are observed, agriculture is compatible with watershed protection because it keeps the land open, while development results in conversion of land to impervious surfaces with negative impacts on water quality.

Agricultural lands enrolled under the Chapter 61A program offer much value to the town even if the farmlands are only temporarily protected. These agricultural parcels often contain prime farmland soils that should be preserved for continuing use. These privately owned open spaces also contribute to the town's tax base and generate revenue, employment, and food products. In addition, some landowners may allow access to their property for recreational purposes, like hiking or snowmobiling. Most Chapter 61A landowners take pride in their land and practice good stewardship. They help to define a sense of place for Gill and contribute to community stability.

Privately Owned Forested Land

Approximately 495 acres are permanently protected privately owned forestland, which constitute approximately 9 percent of the total amount of open space in Gill with some level of protection from development. This land is protected by conservation restrictions (CRs). These restrictions are held by the Massachusetts Department of Agricultural Resources. Information on permanently protected farmland in Gill is shown in Table 5-4, including ownership, holder of the restriction, location, map and lot numbers, and acreage.

Table 5-4: Privately Owned Permanently Protected Forested Land (CRs)

Owner	Holder of CR	Location	Acres	Assessor's Map	Assessor's Lot
Bathory Michael J.	Department of Conservation and Recreation (DCR)	0 River Rd	31.00	220	10
Bathory Michael J.	DCR	0 River Rd	76.00	220	5
Brown Allen Tupper	DCR	58 River Rd	31.00	212	18
French Richard C.	DCR	0 Barney Hale Rd	13.75	221	11.1
French Richard C.	DCR	0 Barney Hale Rd	103.00	218	4
French Richard C.	Mount Grace Land Conservation Trust (MGLCT)	0 Mountain Rd	10.50	217	22
French Richard C.	DCR	0 Barney Hale Rd	19.00	219	14
Jenkins Peter L.	DCR	76 River Rd	83.32	218	5
Jenkins Peter L.	DCR	0 Barney Hale Rd	0.70	219	16
Jenkins Peter L.	DCR	3 Barney Hale Rd	4.01	219	17
Polatin Christopher	MGLCT	0 Mountain Rd	88.00	218	2.1
Wallace Allen	DCR	143 River Rd	34.40	220	8
TOTAL ACRES			494.68		

Source: Town of Gill Assessor's Maps, 2018; 2018 OSRP Working Group.



Forest land in Gill includes sugar bush, which supplies sap for local maple sugaring products.

Properties with conservation restrictions may have the potential for passive recreational use or for activities such as fishing or hunting but recreational use is dependent upon the wishes of the landowner.

Privately owned forestland with temporary protection from development is shown in Table 5-5. Approximately 1,530 acres are under the Chapter 61 program, which make up 29 percent of the total amount of open space in Gill with some level of protection from development.

Table 5-5: Privately Owned Temporarily Protected Forestlands (Chapter 61)

Owner	Location	Acres	Assessor's Map	Assessor's Lot
B And G Golf Associates	231 West Gill Rd	107.00	214	8
Berniche Charlene	127 West Gill Rd	79.00	216	4
Caron Thomas L.	195 French King Hwy	41.00	226	21
Cowls W D Inc~	0 Pisgah Mtn Rd	39.65	227	12
Diemand Daniel	8 Hickory Hill Rd	22.44	210	4
French Richard C.	0 Mountain Rd	35.50	222	5.2
French Richard C.	74 Mountain Rd	23.50	222	5.B
French Richard C.	0 Mountain Rd	19.00	222	11
French Richard C.	0 Center Rd	33.00	213	13
French Richard C.	0 Ben Hale Rd	27.00	207	2
Georgian Bernadette S.	0 Franklin Rd	77.00	217	37
Giknis James A.	0 Barney Hale Rd	24.30	221	5
Giknis James A.	0 Mountain Rd	12.00	221	6
Giknis James A.	0 French King Hwy	78.00	226	22
Giknis James A.	0 Mountain Rd	23.00	222	1
Giknis James A.	0 Mountain Rd	6.00	222	3
Motha & Herbert	31 Hoe Shop Rd	13.79	215	20
Hisz Michael A.	0 Main Rd	81.00	222	14
Krejmas Bruce E.	0 West Gill Rd	67.00	215	17
Krejmas Bruce E.	0 West Gill Rd	3.80	215	18
Lafleur Arthur J.	40 Atherton Rd	66.00	215	15
Lewandowski Jeffrey L & Gauthier Suzan	250 Mountain Rd	28.49	221	2.13

Owner	Location	Acres	Assessor's Map	Assessor's Lot
Nowill Paul	351 West Gill Rd	26.00	207	11.1
Parsons Irrevocable Trust	Rear Mountain Rd	36.10	221	14
Parsons Irrevocable Trust	0 Mountain Rd	67.78	218	3.1
Parsons Irrevocable Trust	0 Mountain Rd	4.62	221	2.9
Purington Ray	29 Atherton Rd	45.96	215	14.2
Schechterle Steven J.	257 West Gill Rd	61.00	209	3.1
Stotz Living Trust~	0 West Gill Rd	31.00	224	45
Stotz Living Trust	0 West Gill Rd	11.00	223	7
Stotz Living Trust	0 West Gill Rd	18.00	223	12
Striebel Stephen P.	Off Main Rd	50.00	205	10
Therhault Mark R.	9 West Gill Rd	21.38	224	39
Wiancko Laura & Greenstein Judd S.	25 Green Hill Rd	70.00	217	36
Zak Farm Trust	20 Lyons Hill Rd	180.00	212	20
TOTAL ACRES		1,530.31		

Source: Town of Gill Assessor's Maps, 2018; 2018 OSRP Working Group.

All the parcels in Table 5-5 are temporarily protected in Chapter 61. Protection of these parcels is short term. There are no public grants awarded as a result of the program. The owner agrees not to change the land's use for ten years while paying reduced property taxes during that time period. These lands are located in the Residential/Agricultural zoning district.

Chapter 61 lands are managed for forest products, which result in the employment of loggers, foresters, and local mill workers, income for landowners, and the availability of locally grown wood for flooring, furniture making, and firewood. Many forested lands also provide recreational value for Gill residents. The Chapter 61 program contributes to the preservation of forested landscapes valued by Gill residents.

Privately owned forestland offers many values to the community and is an important resource for several reasons. Many forestlands are large parcels with a low degree of fragmentation, preserving wildlife and plant habitats. When these forestlands are protected from development, they help to protect and provide clean water, air, and healthy wildlife populations. Forest soils have a high infiltration capacity, absorbing moisture and permitting little surface runoff. Once absorbed, water is released gradually, reducing flooding during large rain events and maintaining stream flow during low water months. Because forest soils are absorptive, soil erosion is reduced and fish habitat is preserved.

Privately-Owned Open Space and Recreational Land

There are 200 acres of privately owned permanently protected open space accounting for about 4 percent of the total amount of open space with some level of protection that is owned by non-profit conservation organizations. These include The Nature Conservancy (TNC), the Connecticut River Watershed Council (CRWC), and the Mount Grace Land Conservation Trust (MGLCT). Information on the parcels is shown in Table 5-6.

Table 5-6: Conservation Foundation Owned Open Space Permanently Protected from Development

Owner	Location	Acres	Assessor's Map	Assessor's Lot
CRWC	0 West Gill Rd	7.80	223	9
MGLCT	0 Barney Hale Rd	17.00	227	3
MGLCT	0 Center Rd	5.60	209	6
TNC	3 Pisgah Mountain Rd	13.70	228	8
TNC	0 Pisgah Mountain Rd	41.00	227	15
TNC	0 Pisgah Mountain Rd	10.40	227	14
TNC	0 Pisgah Mountain Rd	20.00	227	13.1
TNC	0 Pisgah Mountain Rd	20.86	227	16.2
TNC	Rear French King Hwy	58.00	228	10
TNC	0 Pisgah Mountain Rd	6.00	227	11
TOTAL ACRES:		200.36		

Source: Town of Gill Assessor's Maps, 2018; 2018 OSRP Working Group.

Other privately owned land in Gill that has temporary protection from development is land owned by FirstLight Power Resources. FirstLight Power Resources currently has licenses to operate the Turners Falls Dam and Northfield Mountain Hydroelectric Projects on the Connecticut River. These projects affect the Connecticut River, which borders the town of Gill. FirstLight Power owns most of the land in Gill along the Connecticut River. Land along the Connecticut River has many values for open space: it provides flood control, wildlife habitat, beautiful scenery and recreational opportunities. Most of the utility-owned land along the river is forested. FirstLight Power's ownership and management of this land is a condition of its Federal Energy Regulatory Commission (FERC) license for its hydroelectric facilities in Montague and Erving. Therefore, all land subject to the FERC license is considered to have limited protection from development.

Under its FERC license, FirstLight is required to provide recreational benefits to the communities bordering the river. In Gill, the company currently maintains a campground and canoe/kayak rental facility at Barton Cove. Facilities available for rent include a picnic pavilion for up to 100 people on the Connecticut River and a yurt that accommodates up to 30 people.

The hydroelectric power facilities on the Connecticut River owned by FirstLight Power are currently undergoing FERC relicensing, as the current license expires in April 2018. As discussed in Section 3: Community Setting, the process includes a review of how the hydroelectric facilities impact the river and communities through a number of required studies and public meetings. The Town of Gill, along with other local and regional stakeholder organizations, has been an active participant in the process. Through the process the Town has requested that under the new license, recreational access to the Connecticut River will be improved for residents. Specific improvements include: maintaining an acceptable minimum flow for recreation, such as white water rafting, and to support fish habitat; and providing Gill residents with adequate, user friendly public access points to the Connecticut River for

recreation, especially a public boat ramp and a dedicated canoe/kayak lane behind the island in Barton Cove.

The FERC license agreement requires that FirstLight Power Resources obtain flowage rights to the land bordering the river. Flowage rights are similar to land easements and allow for the impacts of a project dam including backwatering onto adjacent properties. The company is responsible for minimization and prevention of soil erosion and other adverse effects associated with hydroelectric projects within the flowage boundary. FirstLight Power Resources has implemented an erosion control plan to manage these properties. The erosion control plan outlines bank stabilization repair and erosion prevention measures that should be undertaken while FirstLight Power Resources operates the projects.

The primary purpose of the erosion control plan is riverbank stabilization and erosion control. In addition, FirstLight Power Resources has committed to provide recreational and environmental education facilities in areas impacted by the projects. These facilities serve to protect the areas scenic and historical assets as well as wildlife species habitat and are located in Gill, Northfield, and Montague.

The property owned by FirstLight Power Resources is considered temporarily protected as open space for the duration of the project license. The company owns parcels totaling about 325 acres as shown in Table 5-7, or about 6 percent of the total protected open space in Gill.

Table 5-7: Utility Company Land with Temporary Protection

Owner	Location	Acres	Protection	Assessor's Map	Assessor's Lot
Firstlight Hydro Generating Company	0 Riverview Dr	4.50	FERC	101	58
Firstlight Hydro Generating Company	0 Oak St	0.66	FERC	101	59
Firstlight Hydro Generating Company	0 Oak & Grove St	1.00	FERC	101	83
Firstlight Hydro Generating Company	0 Elm St	0.14	FERC	101	84
Firstlight Hydro Generating Company	0 Oak St Grove	0.32	FERC	101	85
Firstlight Hydro Generating Company	3 Riverview Dr	0.31	FERC	101	89
Firstlight Hydro Generating Company	0 Riverview Dr	23.18	FERC	101	118A-E
Firstlight Hydro Generating Company	0 Riverview Dr	20.40	FERC	101	119A-C
Firstlight Hydro Generating Company	0 Riverview Dr	2.00	FERC	101	120
Firstlight Hydro Generating Company	82 French King Hwy	2.06	FERC	102	26
Firstlight Hydro Generating Company	39 Oak St	0.86	FERC	102	31
Firstlight Hydro Generating Company	39 Oak St	0.34	FERC	102	32
Firstlight Hydro Generating Company	39 Oak St	0.64	FERC	102	33

Owner	Location	Acres	Protection	Assessor's Map	Assessor's Lot
Firstlight Hydro Generating Company	On Connecticut River/ Barton Cove Facility	160.34	FERC	103	17A,C-S,Z
Firstlight Hydro Generating Company	Rear Main Rd	26.75	FERC	203	6A-C
Firstlight Hydro Generating Company	Rear Main Rd	27.50	FERC	204	7A-D
Firstlight Hydro Generating Company	Rear River Rd	21.50	FERC	219	6A
Firstlight Hydro Generating Company	0 French King Hwy	4.00	FERC	224	43
Firstlight Hydro Generating Company	0 French King Hwy	28.50	FERC	228	9A-B
TOTAL ACRES:		325.00			

Source: Town of Gill Assessor's Maps, 2018; 2018 OSRP Working Group.



The public can access Barton Cove via the public boat ramp or via the Barton Cove Camp-ground and Canoe/ Kayak area owned by FirstLight Power.

Photo courtesy of CreativeCommons: www.city-data.com

Other than lands owned by FirstLight Power, there is relatively little privately-owned recreational land in the Town of Gill. Most of the properties are enrolled in Chapter 61B (234 acres), which is similar to Chapter 61 and 61A but is designed specifically for land in recreational use. Included in this category is the Oak Ridge Golf Course, owned by B &G Golf Associates, on West Gill Road.

Table 5-8: Privately Owned Temporarily Protected Open Space and Recreation Lands (61B)

Owner	Location	Acres	Assessor's Map	Assessor's Lot
B and G Golf Associates	231 West Gill Rd	17.64	214	9
Boyer Natalie	176 West Gill Rd	21.10	215	6
Dale Cynthia S.	0 French King Hwy	0.75	226	3
Dale Cynthia S.	0 French King Hwy	7.39	226	2
Draper William J.	38 Pisgah Mtn Rd	7.00	227	16.1
Holmes George E. Jr.	0 Main Rd	35.00	214	3.1
Kramer Susan J.	0 Cross Rd	16.74	210	14
Lemieux Noreen	119 River Rd	38.00	219	12
Meyer Timothy P.	53 Highland Rd	66.85	222	4
Putnam Jane	3 River Rd	24.00	212	9
TOTAL ACRES		234.47		

Source: Town of Gill Assessor's Maps, 2018; 2018 OSRP Working Group.

B.2 Publicly Owned Open Space

Publicly owned protected open space makes up approximately 10 percent of all of the open space that has some level of protection in town. The following inventory includes those parcels that are owned by the Commonwealth of Massachusetts, the Town of Gill, and state conservation organizations.

State-Owned Open Space

A total of 274 acres of permanently protected publicly owned state land are located in Gill, accounting for 5.1 percent of the total amount of open space in Gill. This land includes open space owned by the Department of Conservation and Recreation and by the Department of Fish and Game. These lands are described in Table 5-9.

Table 5-9: State Owned Permanently Protected Land

Property Owner	Site Name	Assessor's Map	Assessor's Lot	Acres	Current Use
DCR	Connecticut River Greenway State Park (CRGSP)	220	4	180.00	Conservation and Recreation
DCR	CRGSP	228	1	14.20	Conservation and Recreation
Department of Fish and Game	Barton Cove Boat Ramp	102	28	4.20	State Boat Ramp
DCR	CRGSP	228	6	40.20	Conservation and Recreation
DCR		224	41	5.20	Conservation and Recreation
DCR		228	7	15.00	Conservation and Recreation
DCR		224	30	15.10	Parking area next to Green River Honda
TOTAL ACRES:				273.90	

Source: Town of Gill Assessor's Maps, 2018; 2018 OSRP Working Group.

Town-Owned Open Space

The Town owns four cemeteries, which are considered permanently protected from development, as shown in Table 5-10. In addition, the Town owns four parcels of permanently protected open space that make up the Town Forest, consisting of 176 acres or about 3 percent of the total open space in Gill, as shown in Table 5-11 on the following page.

Table 5-10 lists the cemeteries in Gill that are owned by the town and are permanently protected from development. Most cemeteries represent well-maintained open space areas that are sometimes appropriate for walking and bird watching. These parcels total almost 7.5 acres, a tiny percentage of the overall protected open space in Town.

Table 5-10: Town Owned Permanently Protected Cemeteries

Owner/Property Manager	Site Name/Location	Assessor's Lot	Assessor's Map	Acres
Town of Gill	North Cemetery/0 Main Rd.	204	15	1.80
Town of Gill	Center Cemetery/0 Main Rd.	212	1	0.80
Town of Gill	West Cemetery/0 Hoe Shop Rd.	214	11	0.47
Town of Gill	Riverside Cemetery/0 Main Rd.	224	6	1.60
Town of Gill	Riverside Cemetery/0 Main Rd.	224	7	2.80
TOTAL ACRES:				7.47

Source: Town of Gill Assessor's Maps, 2018; 2018 OSRP Working Group.

The Town of Gill also owns 60 acres of open space under limited protection, or 1 percent of the total protected open space in Gill (see Table 5-12 below). These parcels are under the authority of the Select Board and are considered to have limited protection from development. If residents wanted to sell Town land for development, the Select Board or a Town Meeting vote could provide the authority.

It is not unusual for a community to set aside land for future expansion of schools, sports fields, police and fire stations, and drinking water supplies. Open space planned for these purposes might be used as open space today and placed under the authority of the Select Board. It may also be sensible to place town-owned land that clearly contains wetlands or wildlife habitat, but which does not provide for easy development, under the authority and protection of the Conservation Commission.



Slate Library is one of Gill's twelve town-owned parcels with limited protection.

Table 5-11: Town-Owned Permanently Protected Land

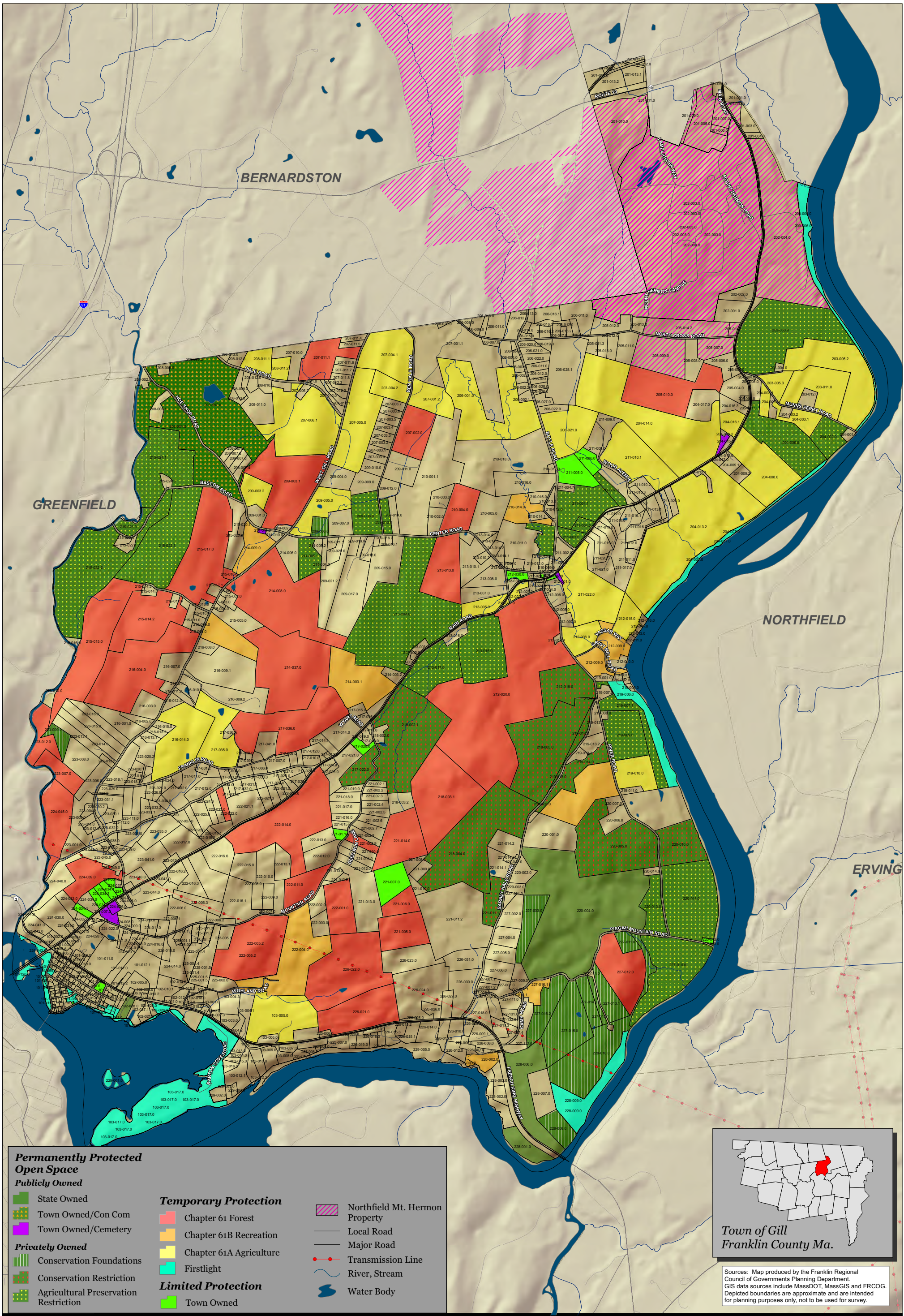
Property Owner/ Manager	Site Name/ Location	Current Use	Condition	Recreation Potential	Public Access?	Type of Public Grant Received	Zoning	Degree of Protection	Acres	Assessor's Map	Assessor's Lot
Town of Gill/ Conservation Commission	Town Forest/ Hoe Shop Road	Conservation Recreation – hiking, birdwatching	Improved trails	Trails, hunting, fishing	Yes, but undeveloped	Donation from Franklin Land Trust	Residential- Agricultural	Permanent	61.00	208	1
Town of Gill/ Conservation Commission	Town Forest/ Hoe Shop Road	Conservation Recreation – hiking, birdwatching	Undeveloped	Trails, hunting, fishing	Yes, but undeveloped	Donation from Franklin Land Trust	Residential- Agricultural	Permanent	112.63	208	7
Town of Gill/ Conservation Commission	Town Forest/ Hoe Shop Road	Conservation Recreation – hiking, birdwatching	Undeveloped	Trails, hunting, fishing	Yes, but undeveloped	Donation from Franklin Land Trust	Residential- Agricultural	Permanent	2.15	208	7.1
Town of Gill/ Conservation Commission	Town Forest/ 325 Main Road	Conservation Recreation – hiking, birdwatching	Undeveloped	Trails, hunting, fishing	Yes, but undeveloped	Donation from Franklin Land Trust	Residential- Agricultural	Permanent	2.59	208	7.2
TOTAL ACRES									175.78		

Source: Town of Gill Assessor’s Maps, 2018; 2018 OSRP Working Group.

Table 5-12: Town-Owned Land Under Limited Protection

Property Owner/ Manager	Site Name/Location	Current Use	Condition	Recreation Potential	Public Access?	Type of Public Grant Received	Zoning	Degree of Protection	Acres	Assessor's Map	Assessor's Lot
Town of Gill	Riverside Municipal Building (Old Green School)	Historical Commission, Water District, Playground, Private School	Good	Ball fields, basketball, potential site for rec facility and/or senior center	Yes	N/A	Residential-Agricultural	Limited	1.50	101	14
Town of Gill	Riverside Sewer Pumping Station	Pumping Station	Good	None	No	N/A	Village Residential	Limited	0.12	101	117
Town of Gill	Elementary School	Elementary School	Good	Playground structures, ball fields	Yes	N/A	Residential-Agricultural	Limited	13.30	211	5
Town of Gill	Elementary School Nature Area	Education	Not maintained	Trails, education	Yes	N/A	Residential-Agricultural	Limited	6.60	211	6
Town of Gill	Slate Library	Library	Good	Site for educational events	Yes	N/A	Residential-Agricultural	Limited	0.80	212	2
Town of Gill	Common	Events	Good	Outdoor public performances	Yes	N/A	Residential-Agricultural	Limited	0.32	212	26
Town of Gill	Town Hall	Administrative	Good	Site for educational events	Yes	N/A	Residential-Agricultural	Limited	0.47	212	27
Town of Gill	Boyle Parcel (Center Road)	Hay field	Rented	Ball fields	No	N/A	Residential-Agricultural	Limited	2.90	212	30
Town of Gill	Municipal Building	Highway, Police, Fire	Good	None	No	N/A	Residential-Agricultural	Limited	4.30	217	20
Town of Gill	0 River Rd.	Undeveloped Land	Good	River access	No	N/A	Residential-Agricultural	Limited	1.00	220	12
Town of Gill	325 Main Rd.	Undeveloped Land	Good	Trails	No	N/A	Residential-Agricultural	Limited	17.00	221	7
Town of Gill	Mariamante	Undeveloped Land	Hayfield	Educational or historical site	No	N/A	Residential-Agricultural	Limited	12.00	224	34.1, 34.2, 34.3, 34.4, 34.5, 34.6
TOTAL ACRES									60.31		

Source: MassGIS 2018; Town of Gill Assessor’s Maps, 2018; 2018 OSRP Working Group.



Town of Gill Open Space & Recreation Plan 2020

Open Space

Section 6: Community Vision

Description of Process

The Town of Gill's open space and recreation goal statement was developed through the following planning process:

- In 2017, the Select Board approved an Open Space and Recreation Committee to update the 2011 Gill Open Space and Recreation Plan. The Committee held eight public meetings and a public forum.
- The Open Space and Recreation Plan Committee developed an Open Space and Recreation Survey in early 2020. The survey was advertised via the Town newsletter. The survey was also made available online through SurveyMonkey and a link to the survey was posted on the homepage of the Town of Gill's website. Paper copies of the survey were available at the Town Hall, the Slate Library, and at polling locations during the March 2020 Presidential Primary Election.
- Results of the survey – along with the draft goals and objectives – were presented at the public forum, held on December 21, 2020.
- The results of the survey and input from the Forum – as well as analysis of existing conditions and the Inventory of Lands of Conservation and Recreation Interest were used as the basis for the development of the final goals statement as well as the final goals and objectives.
- The Open Space and Recreation Plan Committee developed draft sections of Gill's Open Space and Recreation Plan with input from members of the community. The Committee was comprised of the Town Administrator, Town Clerk, representatives of the Conservation Commission, Energy Commission, Cemetery Commission, and residents.
- There was a two-week public comment period following the Public Forum, in which comments were incorporated into the draft plan.

See the Appendix for meeting sign in sheets, agendas and a copy of the survey and its detailed results.

Vision Statement of Open Space and Recreational Goals

General Open Space and Recreational Goals

People live in Gill in part because they like its rural, small town character. According to the 2020 Open Space and Recreation Survey, respondents highly value the open fields and working farms, forests and trails, and rivers and streams. Many respondents of the survey (over 40%) said that they would be willing to donate money or pay higher taxes for the town to protect additional land.

Residents who responded to the Open Space and Recreation Survey and participated in the process of developing this Open Space and Recreation Plan confirmed that the vision from the

2011 OSRP still remains a valid future for Gill's natural, recreational and agricultural resources and its economic vitality.

Vision Statement

In a vision of its future, the Town of Gill will preserve its valued agricultural landscapes and working farms and forests and support sustainable economic development that protects the Town's natural, historic, and cultural resources, strengthens the tax base, and provides goods, services, and jobs for its residents. The Town will support a proactive planning process that encourages land uses to sustain the health of its waters, forests, wildlife and working farms and forests, preserves historic resources and that identifies areas appropriate for carefully planned commercial and industrial development. The Town will also identify ways in which working farms, forests, and waterways could contribute to the Town's economic development by potentially supporting agritourism and ecotourism.

The Town will strive to provide more information to residents on options to protect open spaces to assist landowners and developers in designing projects that sustain and enhance the community's shared assets and character. The Town will also strive to enhance the recreational experiences of its school children – and of all citizens – by supporting improved recreational opportunities and/or facilities. This Open Space and Recreation Plan is a vital component of a proactive, sustainable land planning and development process that will strive to effectively and equitably manage growth and development in Gill while preserving natural resources and wildlife habitat, historic features, scenic roads and vistas, and recreational opportunities for current and future residents of the town.

Goals

From this Vision Statement, several broad goals emerge. They include:

- Protecting Gill's natural, recreational and agricultural resources;
- Responding to the needs of farmers and foresters;
- Maintaining or improving recreational programs and facilities, particularly programming for youth;
- Collaborating with other entities to protect Gill's open space and recreational resources; and
- Supporting economic development.

Section 7: Analysis of Needs

The Gill Open Space and Recreation Plan incorporates the inventory of all the land-based cultural, historic, scenic, natural, archeological, and natural resources available in town (Section 4), identifies the areas containing these resources (Section 5), and, based on the community's general goals (Section 6), makes comparisons between the supply of resources and the demand (Section 7). In **Summary of Natural Resource Protection Needs**, the most important environmental issues are highlighted. In **Summary of Community's Needs**, the recreation and open space needs of the residents are discussed. Finally, in **Management Needs**, the obstacles to the effective resolution of these needs are addressed.

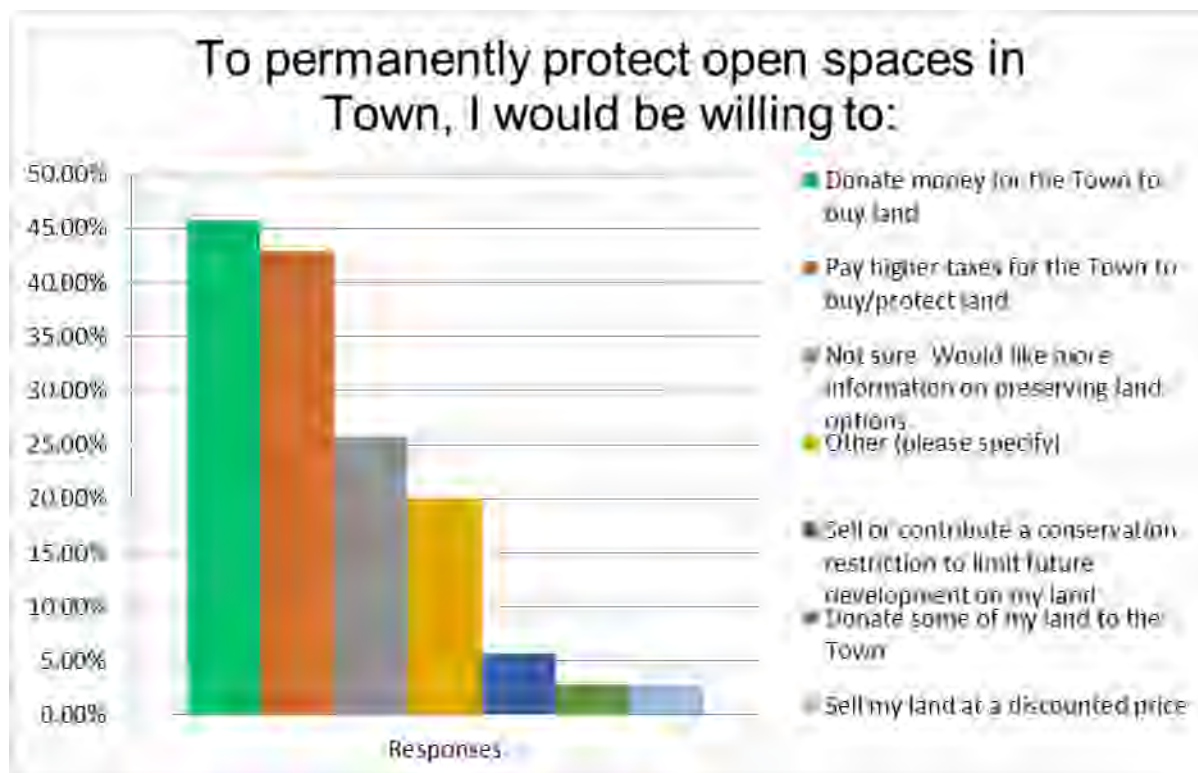
Summary of Natural Resource Protection Needs

The Town of Gill has an impressive number of cultural, historic, scenic, natural, archeological, and natural resources, many of which are shown in the Scenic Resources & Unique Environments Map at the end of Section 4. Residents said in the 2020 Open Space and Recreation Survey the three most important natural resource protection priorities for Gill should be:

- 1) Protect drinking water resources;
- 2) Encourage agriculture / protect farmland; and
- 3) Protect forest land.

The most efficient and effective way the Town of Gill could work towards achieving all three of these priorities is to actively continue public outreach and education on land protection options and work on developing criterion to help prioritize additional parcels for protection. Protection of land may become particularly important due to the ongoing COVID-19 pandemic. A potential consequence of the pandemic is there may be increased development pressures in rural towns with broadband, such as Gill, where people can live in a sparsely populated area, while being able to work from home. It is important to note in the 2020 survey many residents supported the idea of increasing the amount of permanently protected open space in town. Figure 7-1 below shows the various ways in which residents are willing to protect open space.

Figure 7-1: Gill 2020 Open Space and Recreation Plan Public Survey, Land Protection Strategies



Gill's landscape, in the form of forestland, farmland, and open fields, offers great benefits to protecting its drinking water. Fortunately, one of the best ways to protect water quality is to also protect forest lands – the third highest priority for survey respondents. To better target the protection of these resources, the Town of Gill may want to focus on continuing the good working relationships with regional land trusts for the purpose of assigning the Town's right-of-first refusal in the event a key parcel of land has important water quality protection assets. Often land trusts are able to bring together sources of income and potential buyers of land and development rights in a shorter time frame than if the Town were to try on its own. By being prepared, Gill may be more likely to see the preservation of choice parcels of forest containing wildlife habitat and other important natural resources. By setting aside town funds toward future land conservation projects, the Town will be able to react faster in the event matching funds are needed for a potential preservation project.

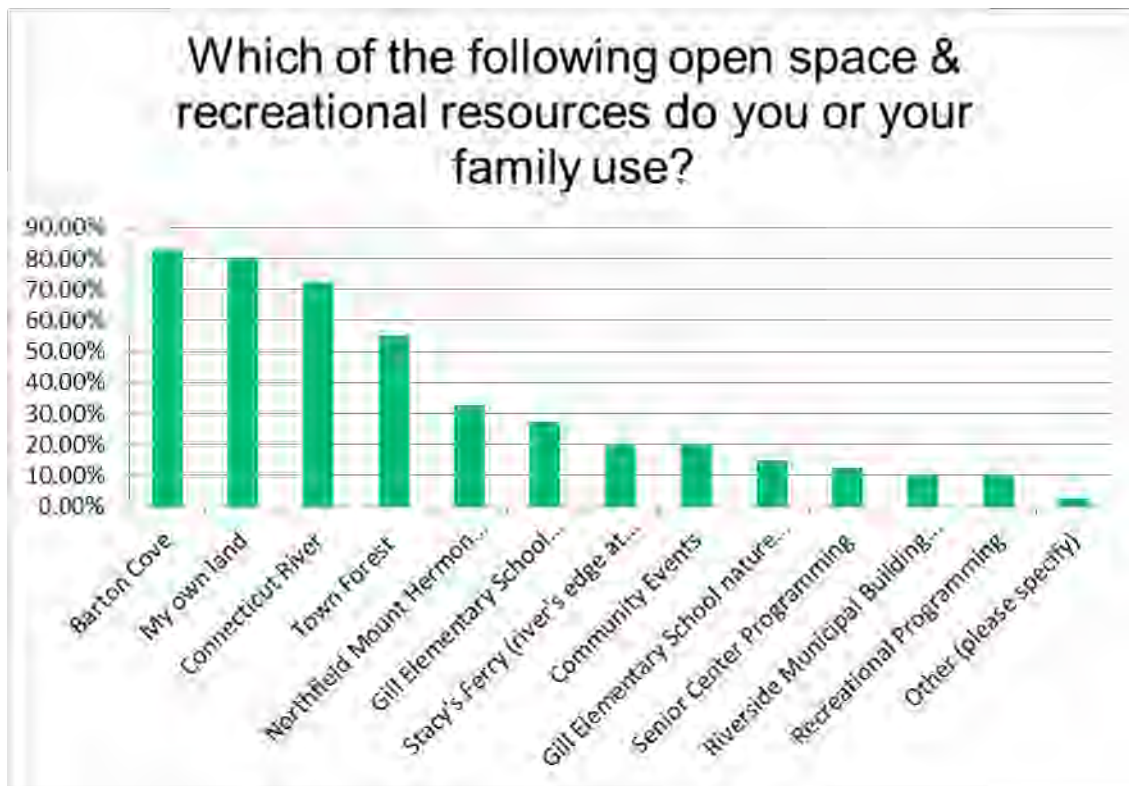
Of all its resources, one in particular has been discussed repeatedly throughout the planning process. As the demand for local food continues to grow in Franklin County, and as the number of small, diversified farms continues to increase, residents of Gill identify agricultural land as one of their most valuable resources. In some ways, Gill is well positioned to continue to grow its small, diversified farms and to continue to preserve agricultural land. Currently, over 800 acres of land containing prime farmlands is permanently protected and an additional 1,100 acres of agricultural land is temporarily protected under Chapter 61A. Where farming and farmland protection is concerned, one of the best resources Gill has is its active Agricultural Commission. Another consequence of the COVID-19 pandemic is the increased awareness of food security

and the importance of local farms and food supply. This should have a beneficial impact on Gill's farms and farm stands as people seek fresh food grown close to home.

Summary of Community Needs

Planning for a community's open space and recreation needs must satisfy the present population's desires for new facilities, spaces, and services, and also must interpret and act on the available data to prepare for the future needs of Gill residents. Although the Gill Open Space and Recreation Plan will be updated again in seven (7) years, the types of actions identified in Section 9 will take into account the needs of the next generation as well. The following Figure 7-2 shows which recreational and open space resources in town are the most and least used from the 2020 Open Space and Recreation Plan Survey.

Figure 7-2: Gill 2020 Open Space and Recreation Plan Public Survey, Recreational Resources



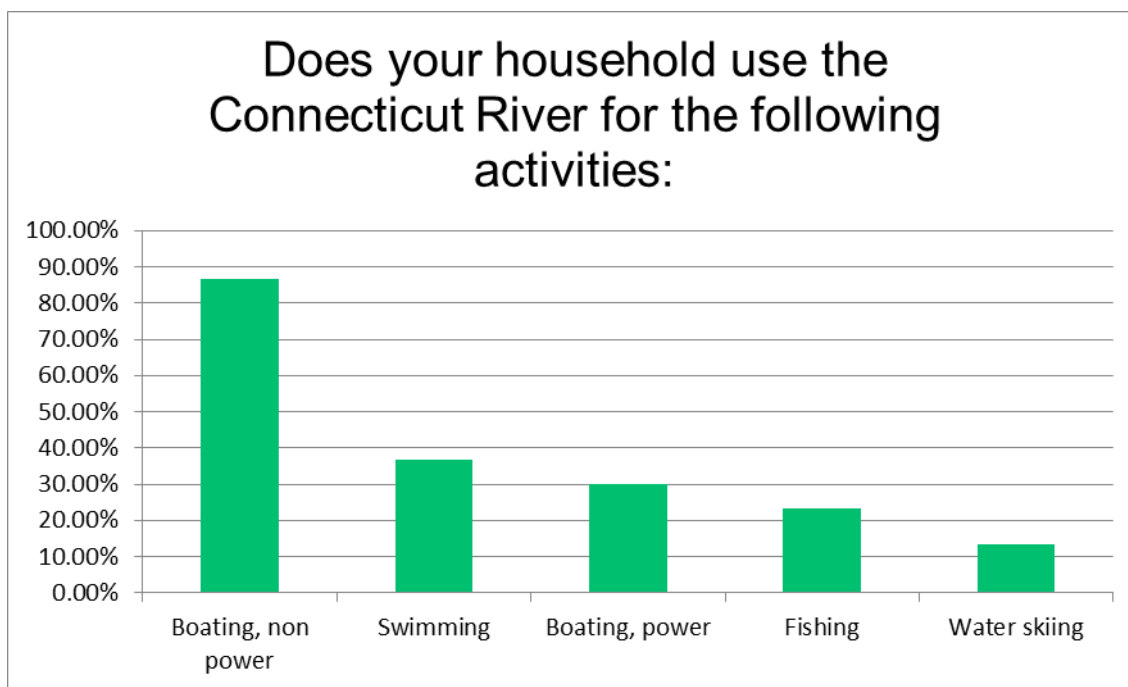


Children enjoy an unseasonable warm fall day at Gill Elementary School.

As shown in Figure 7-2, most people recreate on their own land, while the Connecticut River, Barton Cove and the Town Forest are also popular resources. The survey was conducted and finished during the earliest part of the COVID-19 pandemic, before many people truly understood quarantine, isolation, and social distancing. Based upon the heavy demand for Town Forest trail maps during the spring, summer, and fall of 2020, use of the Town Forest has boomed during 2020 and it is likely the Town Forest would rank higher in a survey conducted today. Most respondents (48%) said existing recreational facilities are in a good condition, while only 15% said they need improvement. A community need that was identified is better recreational options, particularly for those attending the Gill Elementary School. The Gill Elementary School nature trail, after a period of disrepair, has again become a source of recreation, education, and enjoyment after a parent group revived the trails a few years ago. Action items to address these deficiencies, including assessing the possibility of a new recreational facility for the school and/or community are included in the Action Plan.

The Connecticut River is an excellent natural resource that is the focus for recreational activities for Gill residents. As shown in Figure 7-3 below, the most popular activity on the Connecticut River is canoeing and kayaking. Residents can access the River via the public boat launch in the Riverside area. An additional access point in town is the little-used Stacy's Ferry, a one-acre Town-owned property. Stacy's Ferry was identified as a recreational area in need of improvement. Assessing strategies for improving Stacy's Ferry are included in the Action Plan. Some ideas include better non-power boat access to the river, a picnic area, and a park.

Figure 7-3: Gill 2020 Open Space and Recreation Plan Public Survey, Connecticut River



Protecting rivers and streams – particularly the Connecticut River – has been a priority in Gill for many years. As discussed in Section 4 in **Erosion on the Connecticut River**, ongoing riverbank stabilization projects have been conducted in Gill since the mid-1990s. Gill has had landowners serve as representatives on the Connecticut River Streambank Erosion Committee. The Town could continue to support a representative – potentially from the Conservation Commission – to serve on the Committee.

The Town of Gill could also encourage residents to participate in the annual Connecticut River Source to Sea Clean Up. Involving youth – including students from Gill Elementary, Four Winds School, and Northfield Mount Hermon School – in this program could help plant a seed for good stewardship of Gill’s natural resources and the natural resources wherever these students reside as adults. Action items relating to protecting river and streambanks include joining the Connecticut River Streambank Erosion Committee and exploring model floodplain protection bylaws.

Summary of Management Needs

The survey asked how well publicized recreational programs and facilities are in town. About 41 percent said they were aware of the recreational and open spaces resources listed in the survey, while 58 percent said they were not aware. The Committee discussed improving publicity by contributing a regular OSRP column to the quarterly Gill Newsletter and developing a guide to

OSRP facilities and programs for the Town's website. These strategies are included in the Action Plan.

Nearly all respondents think the recreational facilities in Gill are well-maintained. Parent volunteers have assisted with improvement at the Gill Elementary School playground and refurbishment of the nature trail at the School. Upgrading Stacy's Ferry is another recreational desire. Residents were also asked to list any additional recreational facilities or activities they would like to have in Town. Responses include:

- Hiking/mountain biking trails
- Swimming/pool area
- Paths for walking, biking, cross country skiing or snow shoeing
- Picnic area
- Summer town party/festival
- Dog park
- Playground at the Riverside Municipal Building

The creation of trails is a topic that came up during Committee meetings as well. Therefore, forming a trails committee and producing a trails map are included in the Action Plan.

Implementing the 2020 Open Space and Recreation Action Plan will require the support of the community and the oversight of an active, permanent OSRP Committee. Perhaps the most pressing management need is community support, an active, ongoing OSRP committee, and the support of such entities as the Select Board, Planning Board, Conservation Commission, Historical Commission, and Agricultural Commission. Strong and diplomatic leadership of the OSRP Committee will be key to good public involvement and successful implementation of the Action Plan over the coming years.

The Town's commitment to encouraging a permanent Open Space and Recreation Committee could be a next step in the process of achieving some of the natural resource protection and recreation needs. The Committee could continue the work started during this Plan update process by providing leadership to follow through on several key action items to address balancing conservation and recreation needs with some development.



Barton Cove provides a peaceful setting for a pair of fall fishermen.

Americans with Disabilities (ADA) Act Findings

The Town of Gill conducted an ADA Self-Evaluation and Implementation Plan in 2018 of all town-owned buildings and facilities. This included the recreational facilities of the Town Forest and school playgrounds. The school playground, in particular, needs to be improved to become more accessible. The findings can be found in Appendix D.

Park and Open Space Equity

Traditional measures of park and open space equity assess whether environmental justice populations in urban areas have the same access to open space and recreation resources as others in their community. Measuring park and open space equity is difficult in small, rural towns. In the case of Gill, no environmental justice populations are identified. These populations, as defined by the Executive Office of Energy and Environmental Affairs, are made up of “high minority, non-English speaking and low-income neighborhoods”.

Where Gill is concerned, there are few established parks and other public recreation spaces. However, the established parks and recreation spaces are distributed relatively equally throughout town. In the north part of Gill, the Northfield Mount Hermon School’s recreational facilities are available for residents to use, albeit on a rather limited basis (and not at all during the COVID-19 pandemic). There are also hiking trails throughout the NMH School property, which are available for residents to use. In Gill Center, the Gill Elementary School’s nature trail is available to the public and is an excellent open space and recreation resource. In the Riverside area of Gill, the Riverside Municipal Building’s recreation field is open to the public. The boat ramp in Barton Cove is also a recreational resource open to all residents. Walking trails in the Town Forest, the FirstLight-owned Barton Cove recreation area, and state forest land off Pisgah Mountain Road are also publicly available.

Additionally, there is much open space everyone has access to, either through ownership or through permission of friendly neighbors. And, as shown in the OSRP Public Survey, 80% of respondents indicated their own land is the most often used “recreation area or program” in Gill. Easy access to open space is one measure of open space and recreation equity in Gill.

As the population of Gill continues to age, as is the trend in town and throughout the country, there may be more pressure placed upon the town to provide open space and recreational activities for older citizens. Any future development of land or facilities for open space and recreation should include careful consideration of access for older citizens, as well as for those with disabilities. These needs should be also addressed as a matter of course under ADA requirements. However, specific programs could be specifically targeted at those citizens with special needs. Gill’s Council on Aging is a member of the Gill Montague Senior Center – through which many activities for seniors are offered, including lunches and fitness programs.

The recreational needs of teenagers in Gill are currently being met through the regional high school and middle school located in Turners Falls. There are also many teen-oriented programs available nearby in Greenfield. Some of the nearby recreational resources all residents can enjoy include:

- *Snowmobile Network*¹: Bernardston Gill Leyden Snowmobile Club
- *Recreational Resources at Northfield Mount Hermon*
- *Northfield Mountain Recreation and Environmental Center*²:
Northfield Mountain is a four-season recreation facility situated along a beautiful sweep of mountainside, with satellite facilities strung along a 7-mile stretch of the Connecticut River. Spend a day cross-country skiing, hiking and mountain biking on 26 miles of trails. Camp at Barton Cove, where you can put in for canoeing or kayaking, and hop on an upriver canoe shuttle at the Barton Cove recreation area. Take an interpretive riverboat cruise on the 44-seat Heritage Riverboat. Other offerings include public picnic areas, camping for boaters at Munn’s Ferry, rock climbing at Rose Ledge and a fishway for springtime viewing of thousands of migrating fish.

Regional Strategies for Open Space, Natural and Recreational Resource Protection

A variety of state and regional studies have been completed, which can help the Town of Gill further identify local recreation and land protection priorities. The Commonwealth completed the Statewide Comprehensive Outdoor Recreation Plan (SCORP), *Massachusetts Outdoors 2017*. SCORP plans are developed by individual states to be eligible for federal Land and Water Conservation Fund (LWCF) grants and serve as a tool for states to use in planning for future needs and uses of outdoor resources for public recreation and relaxation. As part of the update process to the 2017 SCORP, a survey of Massachusetts residents was conducted to assess their desires and needs for outdoor recreation. The surveys show the top priority for survey respondents is the desire for more trails of all kinds. Respondents said they want more town-wide

¹ <https://bglsnow.com/>

² <https://www.firstlightpower.com/recreation/>

trail systems, hiking trails, and multi-use trails for both walking and bicycling. These priorities reflect the responses from the 2020 Open Space and Recreation Survey distributed to Gill residents.

In 2009, the Franklin Regional Council of Governments completed a corridor management plan for the 29-mile eastern portion of the Mohawk Trail Scenic Byway (Route 2) from Greenfield to Athol. The vision for the plan is to expand economic, tourism and recreational opportunities along the Byway while educating people about the Byway and preserving its unique scenic qualities, natural resources, historical structures/places, industrial and agricultural heritage and community character.

Section 8: Goals and Objectives

The following goals and objectives were formulated from the results of the 2020 Gill Open Space and Recreation Planning Survey and were reviewed and modified through the public meetings of the Gill Open Space and Recreation Committee. Review of the 2011 Gill Open Space and Recreation Plan, the 2004 Gill Community Development Plan, the as well as public input and comment were also considered in the formulation of the goals and objectives.



Improvements to the Gill Elementary School nature trail are included in Goal 3.

To help achieve this Open Space and Recreation Plan's goals and objectives, a Seven-Year Action Plan is included in Section 9. The Action Plan includes responsible parties and potential funding sources as well as projected start dates. Establishing an ongoing Open Space and Recreation Committee is critical to a successful implementation of the Action Plan. The following objectives are listed in prioritized order.

Goals and Objectives

GOAL 1:

Ensure that the Town of Gill continues to protect its valued cultural, historical, scenic, and archeological resources through conservation and stewardship.

Objectives Related to Goal 1:

- Prioritize areas in Gill with significant cultural, historical, scenic, archeological resources so that town officials and residents can act efficiently when a parcel of land containing such resources becomes available for protection.
- Encourage landowners interested in protecting their land from development to work with Franklin Land Trust, Mount Grace Land Conservation Trust, with state and federal conservation agencies, and with the Town of Gill.

GOAL 2: Ensure that the Town of Gill continues to protect its valued natural resources (including water resources, wildlife habitat, forests and farmlands), while responding to the needs of farm and forest landowners and of other businesses producing local products in Town.

Objectives Related to Goal 2:

- Continue to protect river and stream banks, particularly the portions of the Connecticut River bank subject to chronic erosion.
- Explore the options for encouraging agritourism in Gill.
- Support the marketing of Gill farm and forest products as well as other locally produced products.
- Consider ways that the town might support agricultural and forest operations as they would other commercial or industrial businesses in town.
- Explore revisions and updates to Gill's "Conservation Development" zoning bylaw that would result in greater protection of valued "natural and cultural resources" and, which could also help to ensure any land development provides benefits that reflect the town's natural resource conservation goals.
- Build a comprehensive biological and geological inventory in selected areas of Gill using community volunteers.
- Support the training of local volunteers in vernal pool certification for students and citizens.
- Explore the potential for developing a private conservation land trust or land fund for Gill.
- Encourage a connection between Gill farmers and foresters and Gill's school children to foster knowledge of natural systems in children and to help satisfy any unmet recreational needs of children in an innovative manner.

GOAL 3: Ensure that the Town of Gill maintains or improves the quality and accessibility of all its recreational facilities and programming.

Objectives Related to Goal 3:

- Evaluate the needs of all municipal recreational facilities and properties.
- Support the development of multi-use and limited-use trail systems, which can be accessed from publicly owned land or private lands with permission.
- Explore the feasibility of developing a new recreational facility for Gill Elementary School and residents of Gill.
- Promote existing and future recreational facilities and services.
- Continue to cooperate with private entities in town such as FirstLight, Gill-Montague School District, The Nature Conservancy, and Northfield Mount Hermon School that provide recreational facilities used by Gill residents.
- Identify recreational needs of residents of all ages and develop new programs and facilities as appropriate.

GOAL 4: Ensure that the Town of Gill residents and Town officials successfully work together and with others to guide the conservation of open space and recreation resources.

Objectives Related to Goal 4:

- Form a permanent Open Space and Recreation Advisory Committee.
- Conduct public outreach regarding the activities of the Open Space and Recreation Advisory Committee.
- Explore opportunities to partner with local, regional, and statewide land conservation organizations and agencies to better leverage limited town dollars and volunteer hours towards the conservation of priority resource areas.

GOAL 5: Identify ways to balance open space and recreation resources preservation in Gill with commercial and industrial development to ensure an adequate tax base to support the Town.

Objectives Related to Goal 5:

- Provide support and planning to individuals wishing to start new commercial or industrial businesses.
- Identify suitable areas to pursue additional commercial or industrial businesses in town.
- Determine what types of businesses, products and services are supported in town.

Section 9: Seven-Year Action Plan

This Seven-Year Action Plan on the following pages is intended to provide concrete steps towards implementing the goals and objectives discussed in previous sections of this Open Space and Recreation Plan. The Action Plan restates the goals and objectives followed by prioritized recommended actions, potential funding sources, the board or group responsible for implementation, and projected start dates. By implementing the recommended actions, each of the objectives will begin to be realized. The Action Plan Map at the end of this section is a graphical representation of highlights of the Action Plan.

Successful implementation will require the participation of existing town boards, committees and staff, including, but not limited to: the Open Space and Recreation Committee, Board of Selectmen, Planning Board, Conservation Commission, Historical Commission, and Agricultural Commission. Successful implementation will also require the collaboration of the town with other local and regional entities working in the town and the surrounding area such as the Connecticut River Watershed Council, Mount Grace Conservation Land Trust, Franklin Land Trust, the Franklin Regional Council of Governments (FRCOG) and the Natural Resources Conservation Service (NRCS).

Accomplishing the actions identified in this section will require time and commitment from dedicated volunteers. Forming an ongoing Open Space and Recreation Advisory Committee is critical to this Plan's success. Where money is required, it may be sought from state and federal governmental agencies, private non-profit conservation agencies, foundations, and individual donations in addition to municipal funds. A broad base of community support for the Open Space and Recreation Plan should facilitate the fundraising which may be needed to implement the action items.

Gill Open Space and Recreation Plan – Seven-Year Action Plan

GOAL/OBJECTIVES	ACTIONS	NOTES / STATUS OF ACTION ITEM IF CARRIED OVER FROM 2011	POTENTIAL FUNDING SOURCES	RESPONSIBLE BOARD/ GROUP	PROJECTED START DATES
GOAL 1: Ensure that the Town of Gill continues to protect its valued cultural, historical, scenic, and archeological resources through conservation and stewardship.					
Prioritize areas in Gill with significant cultural, historical, scenic, archeological so that town officials and residents can act efficiently when a parcel of land containing such resources becomes available for protection.	Develop a list of criteria which, if identified on a parcel being offered as a donation or for sale in Town, would signify priority for action. If the parcel is under Chapter 61, 61A, or 61B, this could trigger the town’s official consideration of its right-of-first-refusal to acquire or otherwise seek to conserve a parcel of land.	Not started.	Town, Direct Local Technical Assistance (DLTA), Volunteers	Open Space and Recreation Advisory Committee, Conservation Commission, Agricultural Commission	2021
	Develop a protocol for how the town would consider using its right-of-first-refusal (or assigning the right to a conservation land trust or conservation agency) regarding Chapter lands that are put up for sale for development.	Not started.	Town, DLTA, Volunteers	Open Space and Recreation Advisory Committee and Select Board	2022
	Using the list of criteria and the GIS maps in the Gill Open Space and Recreation Plan, identify general areas of conservation interest that would be considered to be priority areas with significant cultural, historic, scenic, natural, and archeological resources.	Not started.	Town, DLTA	Open Space and Recreation Advisory Committee and Conservation Commission	2022
	Meet with local land trusts to better understand the details of holding conservation restrictions and provide training for Town boards and other interested parties.	Not started.	Town, Local land trusts	Open Space and Recreation Advisory Committee, Select Board, Conservation Commission, Land Trusts	2022
	Implement, publicize, and monitor the effectiveness of the Gill Historical Commission’s Archaeology Accountability Policy adopted in 2015.	New in 2020	Town, Volunteers, Massachusetts Cultural Council	Historical Commission	2021 (ongoing process)
	Include an annual “what’s new in land conservation in Gill” article in the quarterly Gill Newsletter.	Not started.	Town, Volunteers	Open Space and Recreation Advisory Committee,	2021
	Along with prioritizing areas to protect, prioritize areas not to protect so that some development is possible. See also Goal 5.	Not started.	Town, Volunteers	Planning Board, Open Space and Recreation Advisory Committee, Development Committee (yet to be formed)	2022
Encourage landowners interested in protecting their land from development to work with Franklin Land Trust, Mount Grace Land Conservation Trust, with state and federal conservation agencies, and with the Town of Gill.	Invite Mount Grace Land Conservation Trust and Franklin Land Trust to a town forum to provide a presentation on their current activities and on the assistance they have to offer to Gill landowners.	Mount Grace and Franklin Land Trust did hold presentations in 2010. This is still an education action item and should remain in the plan.	Volunteers or supported by land trusts.	Open Space and Recreation Advisory Committee	2022

GOAL/OBJECTIVES	ACTIONS	NOTES / STATUS OF ACTION ITEM IF CARRIED OVER FROM 2011	POTENTIAL FUNDING SOURCES	RESPONSIBLE BOARD/ GROUP	PROJECTED START DATES
GOAL 2: Ensure that the Town of Gill continues to protect its valued natural resources (including water resources, wildlife habitat, forests and farmlands), while responding to the needs of farm and forest landowners and of other businesses producing local products in Town.					
Build a comprehensive biological and geological inventory in selected areas of Gill using community volunteers.	Work with the Massachusetts Association of Conservation Commissions (MACC) to coordinate annual spring walks to inventory animals, insects, fish, plants, trees and significant geological features in the Town Forest.	An inventory of fern species in the Town Forest was conducted in 2019-2020	Town, Volunteers, Town Forest trust fund, Massachusetts Cultural Council	Open Space and Recreation Advisory Committee, Town Forest Committee, Conservation Commission and MACC	2021 (ongoing process)
	Explore support for joining FRCOG's Regional Pollinator Habitat Corridor Project.	New in 2020	Town, Volunteers, Direct Local Technical Aid	Residents, Agricultural Commission, Select Board	2021
Support the training of local volunteers in vernal pool certification for students and citizens.	Encourage Northfield Mount Hermon and Gill-Montague Schools and residents to participate in a training program in vernal pool certification.	Not yet done. Still relevant.	Town, Volunteers, State funds (MVP)	Open Space and Recreation Advisory Committee, Gill-Montague School	2023
Explore revisions and updates to Gill's "Conservation Development" zoning bylaw that would result in greater protection of valued "natural and cultural resources" and, which could also help to ensure any land development provides benefits that reflect the town's natural resource conservation goals.	Request the Franklin Regional Planning Board – or Citizen Planner Training Collaborative (CPTC) - to present a program on zoning bylaws for the conservation of "natural and cultural resources" and encourage Gill residents to attend the meeting.	Not yet done. Still relevant.	UMass Extension Citizen Planner Training Collaborative	Planning Board and Open Space and Recreation Advisory Committee	2023
	Develop, publicize, and if received well by the residents of Gill, seek to adopt bylaw changes that will help to expand protection of valued "natural and cultural resources."	Not yet done. Still relevant.	Direct Local Technical Aid through Department of Housing and Community Development	Planning Board	2024
	Revisit the benefits of conservation/cluster development and determine whether current conservation development zoning is still the best option for Gill.	Not yet done. Still relevant.	Direct Local Technical Aid through Department of Housing and Community Development	Planning Board	2023
Explore the potential for developing a private conservation land trust or land fund for Gill.	Invite members of a small, private land trust, such as the trust in Whately, to a meeting of the Open Space and Recreation Advisory Committee as a first step to understanding the value and risks associated with having a local land trust. Include members of former and merged small land trusts to understand the evolution and life cycle of such organizations.	Revised for 2020	Town, Volunteers	Open Space and Recreation Advisory Committee	2023
	Further explore the possibility of adopting the Community Preservation Act.	Not yet done. Still relevant.	Town, Volunteers	Select Board, Planning Board, Historical Commission, Board of Assessors, Tax Collector	2022

GOAL/OBJECTIVES	ACTIONS	NOTES / STATUS OF ACTION ITEM IF CARRIED OVER FROM 2011	POTENTIAL FUNDING SOURCES	RESPONSIBLE BOARD/ GROUP	PROJECTED START DATES
Continue to protect river and stream banks, particularly the portions of the Connecticut River bank subject to chronic erosion.	Participate in the Connecticut River Streambank Erosion Committee.	Ongoing.	Town, Volunteers	Conservation Commission	Ongoing
	Take an active role in the FERC relicensing process for FirstLight's hydroelectric facilities and strongly advocate for riverbank stabilization and erosion mitigation measures to be included in the new 50-year operating licenses.	New in 2020 but ongoing since 2014.	Town, Volunteers, DLTA, FRCOG, Connecticut River Conservancy, Connecticut River Watershed Council, Landowners	Select Board, Conservation Commission, Landowners	2021
Consider ways that the town might support agricultural and forest operations as they would other commercial or industrial businesses in town.	At Town Meeting, vote to set aside funding each year for agricultural and forestland conservation.	Ongoing.	Town	Agricultural Commission, Conservation Commission, Town Administrator, Select Board, Finance Committee	2022 and ongoing annually
Support the marketing of Gill farm and forest products as well as other locally produced products.	Broaden publicity for events that feature local products to attract attendees from area towns.	Item is underway and is ongoing.	Volunteers, local farmers	Agricultural Commission	Ongoing
	Support farm-to-table relationships between Gill farms and local restaurants.	New in 2020	Volunteers, local farmers, DLTA, MDAR, school lunch programs	Agricultural Commission	2022
	Organize Gill Fall Picnic as a venue to showcase local agricultural products and foster community spirit.	Started in 2018	Volunteers, Town, State funds (Mass Food Trust or Ventures Program)	Agricultural Commission, Friends of Gill	2018 and ongoing annually
Explore the options for encouraging agritourism in Gill.	Consider hosting a farm tour to highlight farm products and strengthen the connection between farmers and potential and/or existing customers.	Begun and ongoing.	Volunteers, local farmers, State funds (Mass Food Trust or Ventures Program)	Agricultural Commission	Ongoing
Encourage a connection between Gill farmers and foresters and Gill's school children to foster knowledge of natural systems in children and to help satisfy any unmet recreational needs of children in an innovative manner.	Evaluate whether there is a way in which some of Gill school children's recreational needs could be met through field trips to farm or forest operations.	Item is underway and is ongoing.	Volunteers, MDAR, Massachusetts Cultural Council	Agricultural Commission, Open Space and Recreation Advisory Committee, Gill Elementary School Staff	Ongoing

<i>GOAL/OBJECTIVES</i>	<i>ACTIONS</i>	<i>NOTES / STATUS OF ACTION ITEM IF CARRIED OVER FROM 2011</i>	<i>POTENTIAL FUNDING SOURCES</i>	<i>RESPONSIBLE BOARD/ GROUP</i>	<i>PROJECTED START DATES</i>
GOAL 3: Ensure that the Town of Gill maintains or improves the quality and accessibility of all its recreational facilities and programming.					
Evaluate the needs of all municipal recreational facilities and properties.	Inventory and assess all existing recreational facilities, properties and programs and implement transition plan recommendations.	ADA assessment conducted in 2018	Town, Volunteers, Community Compact Commission, State funds (MOD)	Open Space and Recreation Advisory Committee, Town Administrator	2018 and ongoing
	Partner with Northfield Mount Hermon and the Gill-Montague School System to work on making their recreational facilities available to Gill residents during the week.	Not yet started.	Town, Volunteers	Open Space and Recreation Advisory Committee, Northfield Mount Hermon representative, Gill-Montague School representative	2023
	Explore the feasibility of improving the Stacy's Ferry public land for use as park, picnic area and river access for kayaks and canoes, including ADA accessibility.	Not yet started.	Town, Volunteers, State funds (PARC or DCR grants), FirstLight	Open Space and Recreation Advisory Committee, Select Board, Conservation Commission	2021
	Support re-establishment of a Recreation Committee	New in 2020.	Town, Volunteers, Recreation Committee Revolving Fund	Select Board, Finance Committee, Town Administrator	2021 or as residents step forward to volunteer
Explore the feasibility of developing a new recreational facility for Gill Elementary School and residents of Gill.	Apply for an MA Parkland Acquisitions and Renovations for Communities (PARC) Program grant to fund the development of a new recreational facility for Gill Elementary School and for residents of Gill.	Not yet started. Still relevant.	MA Division of Conservation Services, Town, Gill Elementary PTO, Community Donations	Open Space and Recreation Advisory Committee, Gill Elementary PTO, Select Board, School Committee	2023
	Monitor conditions, maintain, and upgrade Riverside School recreation facilities and encourage more use of them.	Revised in 2020.	Town, Volunteers, Four Winds School, State funds (PARC)	Open Space and Recreation Advisory Committee, Town Administrator	2021 (ongoing process)
	Support the repair and ongoing maintenance of the Gill Elementary School nature trail.	Parent volunteers began the work in 2017.	Town, Volunteers, MA Division of Conservation Services (PARC)	Gill Elementary parent volunteers, Conservation Commission	2017 (ongoing process)
Promote existing and future recreational facilities and services.	Submit a regular “Open Space and Recreation” column to the Gill Newsletter.	Several articles about the Town Forest have appeared since 2015.	Volunteers	Recreation Committee, Open Space and Recreation Advisory Committee, Town Forest Committee	Ongoing.

GOAL/OBJECTIVES	ACTIONS	NOTES / STATUS OF ACTION ITEM IF CARRIED OVER FROM 2011	POTENTIAL FUNDING SOURCES	RESPONSIBLE BOARD/ GROUP	PROJECTED START DATES
	Develop a guide to facilities, programs, and trail systems in town.	Town Forest trail map and brochure published in 2018.	Town, Volunteers, Town Forest trust fund, State funds (DCR Stewardship grant)	Recreation Committee, Open Space and Recreation Advisory Committee, Town Forest Committee, Volunteer with graphics skills	Ongoing.
	Develop a one-page, easily reproduced flyer that shows the locations of different recreational facilities in and around Gill. Mail to all residents each year as part of a regular Gill Newsletter mailing.	Not yet done. Still relevant.	Town, Volunteers, DLTA, Public Health grants	Recreation Committee, Open Space and Recreation Advisory Committee, Volunteers	2023
Continue to cooperate with private entities in town such as FirstLight, Gill-Montague School District, The Nature Conservancy, and Northfield Mount Hermon School that provide recreational facilities used by Gill residents.	Include FirstLight, the Gill-Montague School District, The Nature Conservancy, and Northfield Mount Hermon School as well as other entities on the mailing lists for meetings of the Open Space and Recreation Advisory Committee and the Recreation Committee as a way of communicating the town's interest in a mutually beneficial relationship with these organizations.	Not yet done. Still relevant.	Town, Volunteers	Recreation Committee, Open Space and Recreation Advisory Committee	2022
	Request FirstLight to host an annual outdoor education program at one of its Gill properties.	New in 2020.	FirstLight	Open Space and Recreation Advisory Committee, FirstLight	2022
Support the development of multi-use and limited-use trail systems, which can be accessed from publicly owned land or private lands with permission.	Encourage the formation of a non-municipal trails committee.	Not yet done. Still relevant.	Town, Volunteers, DCR funding for trail access over private lands (MassTrails)	Volunteers	2022
	Inventory and map the existing system of largely informal trails on Town and State-owned land.	Town Forest trail map published in 2018	State funds (MassTrails), DLTA	Town Forest Committee, Trails Committee	2023
	Use the Gill Newsletter to promote a meeting on trails and trail development. Gauge interest among landowners for allowing public access and the creation of new trails in town. If interest is strong, encourage a secondary meeting to establish a course of action.	Not yet done. Still relevant.	Town, Volunteers, DCR funding for trail access over private lands (MassTrails)	Recreation Committee and Open Space and Recreation Advisory Committee, Volunteers	2022
	Establish a public access trail along the Fall River from the Town Forest (Gill/Bernardston town line) to the confluence of the Fall and Connecticut Rivers in Factory Hollow.	New in 2020.	Town, Volunteers, MA Division of Conservation Services (MassTrails)	Recreation Committee and Open Space and Recreation Advisory Committee, Town Forest Committee, Volunteers	2022

GOAL/OBJECTIVES	ACTIONS	NOTES / STATUS OF ACTION ITEM IF CARRIED OVER FROM 2011	POTENTIAL FUNDING SOURCES	RESPONSIBLE BOARD/ GROUP	PROJECTED START DATES
	Investigate with FirstLight the possibility of creating a public access park on land between Riverview Drive and the Connecticut River, similar to the walking path and picnic area on the Montague side.	New in 2020.	FirstLight	Select Board, Conservation Commission, Open Space and Recreation Advisory Committee, Volunteers	2021
Identify recreational needs of residents of all ages and develop new programs and facilities as appropriate.	Use the Gill Newsletter to report results of the OSRP survey and to request volunteers to take on activities that most interest them. If volunteer recruitment is unsuccessful, seek grants from the Massachusetts Cultural Council to fund staff time and direct costs for the most desired program.	Not started. Still relevant.	Massachusetts Cultural Council	Recreation Committee and Open Space and Recreation Advisory Committee, Volunteers,	2021
GOAL 4: Ensure that the Town of Gill residents and Town officials successfully work together and with others to guide the conservation of open space and recreation resources.					
Form a permanent Open Space and Recreation Advisory Committee.	Use the Gill Newsletter to explore if there are volunteers interested in serving on an Open Space and Recreation Advisory Committee.	New in 2020	Town, Volunteers	Select Board, Town Administrator	2021
	Request the Select Board approve a warrant article for Town Meeting vote that asks to establish a standing Open Space and Recreation Advisory Committee.	Not started. Still relevant.	Volunteers	Select Board	2022
	Monitor the implementation of the 2020 Gill Open Space and Recreation Plan.	Not begun. Still relevant.	Volunteers	Open Space and Recreation Advisory Committee	2021 (ongoing)
	Revise and update any sections of the OSRP throughout the seven-year period in preparation for the next OSRP.	Not begun. Still relevant.	Volunteers	Open Space and Recreation Advisory Committee	2021 (ongoing)
	Encourage existing committees to periodically review their Action Plan responsibilities.	New in 2020.	Volunteers	Town Committees	2021 (ongoing)
Conduct public outreach regarding the activities of the Open Space and Recreation Advisory Committee.	Create an online presence for Open Space and Recreation activities in Gill via the Town website or Facebook.	Not begun. Still relevant.	Volunteers	Open Space and Recreation Advisory Committee, Town Administrator	2022
Explore opportunities to partner with local, regional, and statewide land conservation organizations and agencies to better leverage limited town dollars and volunteer hours towards the conservation of priority resource areas.	Meet annually with conservation organizations such as Mount Grace Conservation Land Trust, Franklin Land Trust and other entities to discuss any potential conservation projects.	Not begun. Still relevant.	Volunteers	Open Space and Recreation Advisory Committee	2022
	Send a town representative to attend quarterly meetings of the North Quabbin Regional Landscape Partnership to engage land conservation agencies and organizations and other town open space committees in efforts that focus on Gill priorities as well as on broader landscape-scale conservation.	Not begun. Still relevant.	North Quabbin Regional Landscape Partnership	Open Space and Recreation Advisory Committee	2022

<i>GOAL/OBJECTIVES</i>	<i>ACTIONS</i>	<i>NOTES / STATUS OF ACTION ITEM IF CARRIED OVER FROM 2011</i>	<i>POTENTIAL FUNDING SOURCES</i>	<i>RESPONSIBLE BOARD/ GROUP</i>	<i>PROJECTED START DATES</i>
GOAL 5: Identify ways to balance open space and recreation resources preservation in Gill with commercial and industrial development to ensure an adequate tax base to support the Town.					
Provide support and planning to individuals wishing to start new commercial or industrial businesses.	Establish a study committee to promote new commercial and industrial development in Town. Learn about and publicize availability of assistance for individuals wishing to state new businesses in Town.	Not yet started. Still relevant.	Town, Volunteers	Planning Board, Development Study Committee (yet to be formed)	2023
	Conduct outreach to regional organizations, such as the Franklin County Community Development Corporation, Franklin County Chamber of Commerce, and the Franklin Regional Council of Governments, to research existing business development and entrepreneurial resources	Not yet started. Still relevant.	Town, Volunteers	Planning Board, Development Study Committee (yet to be formed)	2023
	Based upon results of research, create a public outreach and education webpage and/or a brochure that identifies resources to individuals wishing to start a new business in Town.	Not yet started. Still relevant.	Town, Volunteers, DLTA funds	Development Study Committee (yet to be formed)	2024
	Encourage home-based businesses in order to expand the number of commercial businesses without developing new parcels of land.	Not yet started. Still relevant.	Town, Volunteers	Development Study Committee (yet to be formed)	2023
Identify suitable areas to pursue additional commercial or industrial businesses in Town.	Revisit and update the 2004 Gill Community Development Plan as a starting point to identify areas in Gill suitable for commercial or industrial development.	Not yet started. Still relevant.	Town, Volunteers, DLTA funds	Planning Board, Development Study Committee (yet to be formed)	2024
	Conduct periodic reviews of the zoning bylaws to determine if they continue to accommodate economic development efforts.	Not yet started. Still relevant.	Town	Planning Board, Zoning Board of Appeals	2022 (ongoing)
Determine what types of businesses, products and services are supported in town.	Conduct a survey to evaluate the types of businesses, products and services that are supported in Town.	Not yet started. Still relevant.	Town, Volunteers	Development Study Committee (yet to be formed)	2023

Work with the Massachusetts Association of Conservation Commissions (MACC) to coordinate annual spring walks to inventory animals, insects, fish, plants, trees and significant geological features in the Town Forest.

Take an active role in the FERC relicensing process for FirstLight's hydroelectric facilities and strongly advocate for riverbank stabilization and erosion mitigation measures to be included in the new 50-year operating licenses.

Partner with Northfield Mount Hermon and the Gill-Montague School System to work on making their recreational facilities available to Gill residents during the week.

Apply for an MA Parkland Acquisitions and Renovations for Communities (PARC) Program grant to fund the development of a new recreational facility for Gill Elementary School and for residents of Gill.

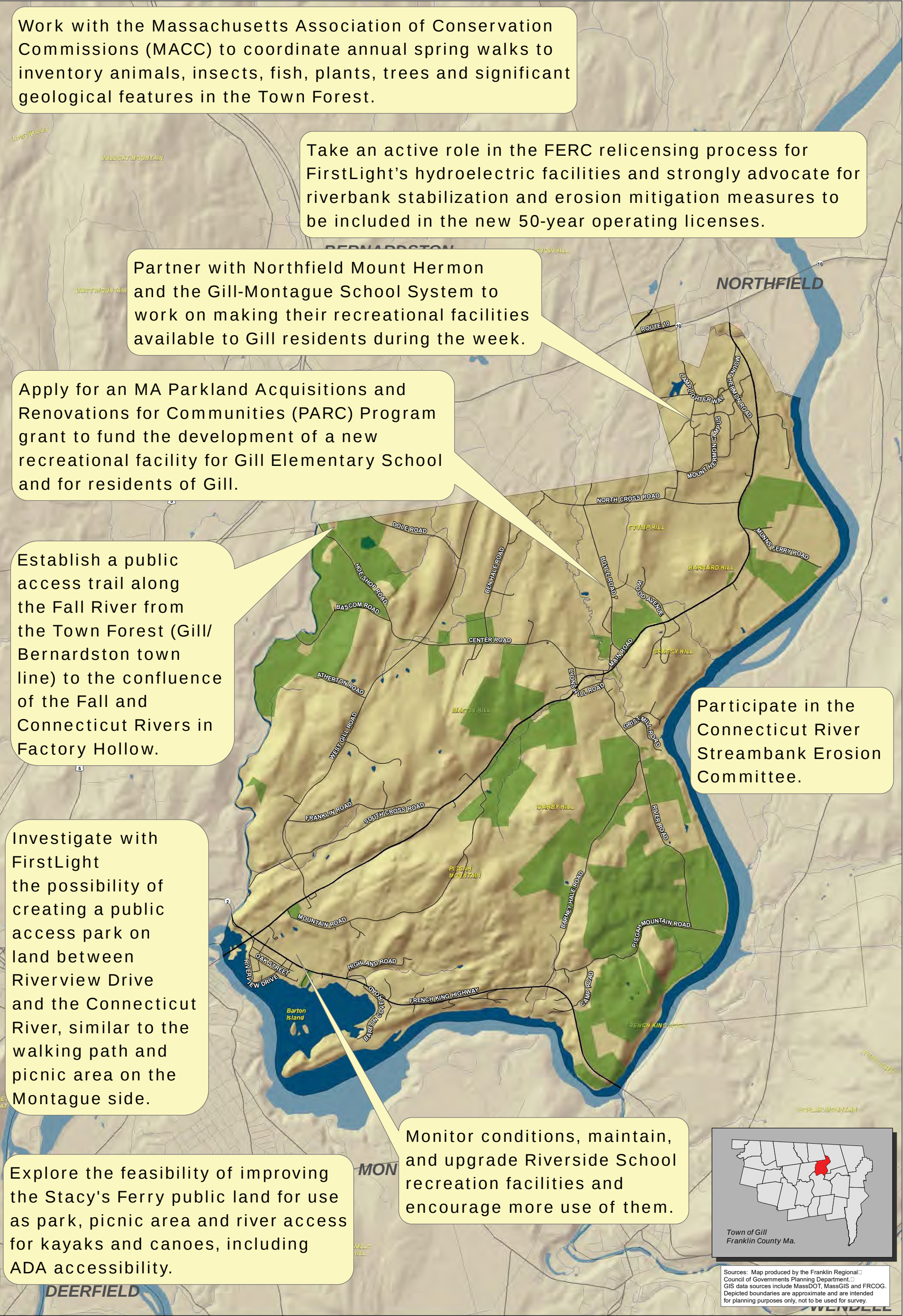
Establish a public access trail along the Fall River from the Town Forest (Gill/ Bernardston town line) to the confluence of the Fall and Connecticut Rivers in Factory Hollow.

Investigate with FirstLight the possibility of creating a public access park on land between Riverview Drive and the Connecticut River, similar to the walking path and picnic area on the Montague side.

Explore the feasibility of improving the Stacy's Ferry public land for use as park, picnic area and river access for kayaks and canoes, including ADA accessibility.

Monitor conditions, maintain, and upgrade Riverside School recreation facilities and encourage more use of them.

Participate in the Connecticut River Streambank Erosion Committee.



Sources: Map produced by the Franklin Regional Council of Governments Planning Department. GIS data sources include MassDOT, MassGIS and FRCOG. Depicted boundaries are approximate and are intended for planning purposes only, not to be used for survey.

Town of Gill Open Space & Recreation Plan 2020

Action Plan

0 0.25 0.5 1 Miles

Oct. 11, 2018



Permanently
Protected



Franklin Regional
Council of Governments

Section 10:Public Comment

Public input was encouraged throughout the planning process. As described in the Introduction, the Open Space and Recreation Plan Update Public Forum was held on December 21, 2020 during the Gill Selectboard meeting via teleconference due to the COVID Pandemic. All comments expressed at the public forum and during the two-week public comment period following the Public Forum were recorded in Section 10: Public Comments.

Draft sections of the OSRP were posted on the Town's website throughout the planning process and members of all Town Boards and Committees were notified of their location and were asked to comment. Letters of support were received from several entities and are included here.

Public feedback provided during the entire planning process is difficult to document due to the fact that the plan constantly incorporated these changes and enhancements.

Public input was gathered via Public Survey. Along with answering specific questions, the public was given the opportunity to offer general comments as well.

The successful implementation of this Plan will depend upon involvement of citizen volunteers. First, a standing Open Space and Recreation Advisory Committee will need to be formed and a Recreation Committee will also need to be re-established. With the help of town citizens and staff, they will be able to complete many of the action items included in the Action Plan.

From: Carter Wall [<mailto:Carter.Wall@firstlightpower.com>]
Sent: Monday, January 04, 2021 8:29 AM
To: Ray Purington/Gill Selectboard <administrator@gillmass.org>
Subject: letter of support

Ray – with apologies for the delay, would you let me know if this meets your needs? Happy to make any changes.

By the way, I noticed that in the “Community Needs” section (Section 7) on page 7-8 there is an old (broken) footnote link to our predecessor organization – would suggest replacing it with this: <https://www.firstlightpower.com/recreation/>



Carter Wall
Manager of Government Affairs and Community Relations

FirstLight Power
99 Millers Falls Road
Northfield, MA 01360
Carter.Wall@firstlightpower.com
413-834-2126

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TOWN OF GILL

MASSACHUSETTS



www.gillmass.org

January 4, 2021

Melissa Cryan
Division of Conservation Services
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, 9th Floor
Boston, MA 02114

Dear Ms. Cryan:

On behalf of the Gill Planning Board I am pleased to provide this letter of support for the updated Open Space and Recreation Plan prepared by the Open Space Update Committee with the administrative support of the Franklin Regional Council of Governments (FRCOG).

The Open Space Update Committee composition includes the Gill Town Administrator and Assessors' Clerk (both of whom are town residents), representatives (and residents) from the town's Conservation Commission, Cemetery Commission, and Energy Commission, as well as a member of the community. Each representative provides a unique perspective to help develop a comprehensive plan that will meet the recreational and open space needs, challenges, and opportunities of our community.

The Committee has thoughtfully conducted a community survey process and reflected on the feedback provided by the citizens of Gill. With this information the Committee spent months reviewing each chapter of the plan, identifying priority action items and goals to achieve within the next seven (7) years. The Planning Board recognizes the importance of our community's open space resources and is happy to be involved with the plan's goals and objectives.

The Planning Board has reviewed the updated Open Space and Recreation Plan prepared by the Committee and supports its submission to your office for approval.

Respectfully,

Douglas Smith, Chair
Gill Planning Board

TOWN OF GILL

M A S S A C H U S E T T S



www.gillmass.org

January 4, 2021

Melissa Cryan
Division of Conservation Services
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, 9th Floor
Boston, MA 02114

Dear Ms. Cryan:

The Gill Selectboard is pleased to provide this letter of support for the updated Open Space and Recreation Plan prepared by the Open Space Update Committee with the administrative support of the Franklin Regional Council of Governments (FRCOG).

The Open Space Update Committee composition includes the Gill Town Administrator and Assessors' Clerk (both of whom are town residents), representatives (and residents) from the town's Conservation Commission, Cemetery Commission, and Energy Commission, as well as a member of the community. Each representative provides a unique perspective to help develop a comprehensive plan that will meet the recreational and open space needs, challenges, and opportunities of our community.

The Committee has thoughtfully conducted a community survey process and reflected on the feedback provided by the citizens of Gill. With this information the Committee spent months reviewing each chapter of the plan, identifying priority action items and goals to achieve within the next seven (7) years.

The Selectboard has reviewed the updated Open Space and Recreation Plan prepared by the Committee and supports its submission to your office for approval.

Respectfully,

Randy Crochier, Chair
Gill Selectboard

TOWN OF GILL

M A S S A C H U S E T T S



www.gillmass.org

January 4, 2021

Melissa Cryan
Division of Conservation Services
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, 9th Floor
Boston, MA 02114

Dear Ms. Cryan:

The Gill Conservation Commission is pleased to provide this letter of support for the updated Open Space and Recreation Plan prepared by the Open Space Update Committee with the administrative support of the Franklin Regional Council of Governments (FRCOG).

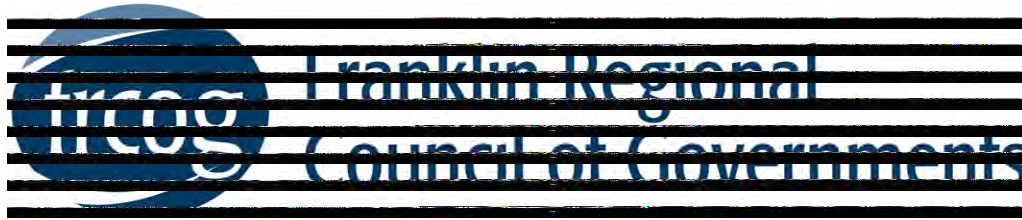
The Open Space Update Committee composition includes the Gill Town Administrator and Assessors' Clerk (both of whom are town residents), representatives (and residents) from the town's Conservation Commission, Cemetery Commission, and Energy Commission, as well as a member of the community. Each representative provides a unique perspective to help develop a comprehensive plan that will meet the recreational and open space needs, challenges, and opportunities of our community.

The Committee has thoughtfully conducted a community survey process and reflected on the feedback provided by the citizens of Gill. With this information the Committee spent months reviewing each chapter of the plan, identifying priority action items and goals to achieve within the next seven (7) years. We are pleased the Conservation Commission has an important role to play in implementing the action items that support the plan's goals and objectives.

The Conservation Commission has reviewed the updated Open Space and Recreation Plan prepared by the Committee and supports its submission to your office for approval.

Respectfully,

Phil Gilfeather-Girton, Chair
Gill Conservation Commission



January 21, 2021

Ms. Melissa Cryan
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, 9th Floor
Boston, MA 02114

Dear Ms. Cryan,

The Franklin Regional Council of Governments (FRCOG) is pleased to endorse the work of the Gill Open Space Update Committee to update the Gill Open Space and Recreation Plan (OSRP). We support their submission of the 2021 Gill OSRP to the Massachusetts Division of Conservation Services for review and approval.

The Plan was developed by the Gill Open Space Update Committee, which included the Gill Administrative Assistant, Town Clerk, and representatives from the town's Conservation Commission, Cemetery Commission, and Energy Commission, as well as a member of the community. The FRCOG provided technical assistance to complete the update. The Plan represents several years of work to gather public input, build consensus, and prioritize natural, recreation, and open space needs in Town. The goals and objectives in the Open Space and Recreation Plan reflect the vision and values of Gill residents gathered during the public input process.

The 2021 OSRP will provide Town officials and volunteers with resources to help inform decisions regarding land use, recreation, cultural, and open space issues. The Plan update, once approved by the State, will make Gill eligible for funding to implement open space and recreation projects. In addition, the Town will be better able to collaborate with neighboring towns, local land trusts, the FRCOG, and others to work towards the OSRP goals and objectives of protecting and enhancing Gill's significant natural, cultural, and recreational resources. We congratulate the Town of Gill on completing this project!

Sincerely,

Kimberly Noake MacPhee, P.G., CFM
Land Use and Natural Resources Program Manager



January 4, 2021

Melissa Cryan
Division of Conservation Services
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, 9th Floor
Boston, MA 02114

Dear Ms. Cryan:

FirstLight Power is pleased to provide this letter of support for the updated Open Space and Recreation Plan prepared by the Town of Gill's Open Space Update Committee with the administrative support of the Franklin Regional Council of Governments (FRCOG).

FirstLight Power is a New England-based diversified clean energy provider and steward of more than 14,000 acres and hundreds of miles of shoreline along some of our region's most beautiful rivers and lakes, including Gill and surrounding towns. As part of the company's commitment to environmental awareness and sustainability, FirstLight maintains and operates nature trails and recreation and environmental programs at our facilities in Gill and elsewhere.

The Town of Gill is home to an impressive number of cultural, historic, scenic, natural, archeological, and natural resources, of which it has been a careful steward. FirstLight commends the Committee for their thorough work on this update. The Committee has conducted a thoughtful community survey process involving many stakeholders in the community and the region, and has developed a comprehensive plan that will meet the recreational and open space needs, challenges, and opportunities of our community.

Respectfully,

A handwritten signature in black ink, appearing to read "C. Wall", written over a light blue circular graphic element.

Carter Wall
Manager, Government Affairs and Community Relations



P.O. Box 450
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Outreach & Education
Linda Alvord
Administrative Assistant
Marie Henry
Financial Administrator

January 21, 2021

Melissa Cryan
Division of Conservation Services
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, 9th Floor
Boston, MA 02114

Dear Melissa:

The Franklin Land Trust is very pleased to write this letter in full support of the updating of Gill's Open Space and Recreation Plan in partnership with the Franklin Regional Council of Governments. The process of public input for a thorough review of natural and agricultural resources, public access, opportunities for conservation, and focus on areas of concern, as well as addressing community resilience issues make this a timely and important project.

Over the past 30 years, Franklin Land Trust has worked with community residents, town officials and volunteers to complete 10 projects conserving over 500 acres including assistance on state APRs and the conservation of the 162-acre Gill Town Forest. We also hold conservation restrictions on several private lands and worked with DCR to conserve scenic and historic lands along the Mohawk Trail in Gill.

Success of these and future projects depends on the thoughtful planning and support for priorities within the Town of Gill. Updating the OSRP is part of encouraging and focusing town residents and resources to make sound decisions regarding open space within the town.

The Franklin Land Trust looks forward to continued partnership with Gill residents with support from this well crafted Open Space and Recreation Plan.

Sincerely,
Alain
Alain Peteroy
Director of Land Conservation



1461 Old Keene Road, Athol, MA 01331-9734

Phone: (978)248-2043 Fax: (978)248-2053

landtrust@mountgrace.org

www.mountgrace.org

Protecting land and encouraging land stewardship in North Central Massachusetts

January 20, 2021

Melissa Cryan
Division of Conservation Services
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, 9th Floor
Boston, MA 02114

Dear Ms. Cryan:

Mount Grace Land Conservation Trust enthusiastically supports the updated Gill Open Space and Recreation Plan, as prepared by the Open Space Update Committee with administrative support from the Franklin Regional Council of Governments (FRCOG).

We are particularly pleased to be listed as a partner in the Action Plan, and we welcome the opportunity to partner with the Town to engage high priority landowners (Action Plan Goal 1) and to collaborate to protect priority resource areas (Action Plan Goal 4). We strongly support the Town's desire to enhance the quality of public access opportunities in Gill, notably along the Fall River and the Connecticut River. We are also encouraged to learn that the 2020 community survey uncovered clear support for "the idea of increasing the amount of permanently protected open space in town."

The goals outlined in this updated OSRP are aligned with Mount Grace's efforts to conserve and steward land in and around Gill. We are grateful to the Open Space Update Committee, FRCOG, and Gill residents for collectively dedicating their time, financial resources, and expertise to crafting this compelling and comprehensive OSRP. We look forward to helping them implement it.

Warmly,

A handwritten signature in blue ink that reads "Emma Ellsworth". The signature is written in a cursive style and is positioned above a horizontal line.

Emma Ellsworth
Executive Director



The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Kathleen A. Theoharides
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181

March 31, 2021

Megan Rhodes
Franklin Regional Council of Governments
12 Olive Street
Greenfield, MA 01301

Re: Open Space and Recreation Plan

Dear Ms. Rhodes:

Thank you for submitting the Open Space and Recreation Plan for Gill to this office for review and compliance with the current Open Space and Recreation Plan Requirements. I'm pleased to write that the plan has received final approval and the town is eligible to apply for DCS grants through April 2028. Please contact me melissa.cryan@mass.gov if you have any questions or concerns.

Sincerely,

Melissa Cryan

Melissa Cryan
Grant Programs Supervisor

Section 11: References

Please note: In addition to the following references, other sources are cited in the body of the text or as footnotes.

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