SECTION 4: ENVIRONMENTAL INVENTORY AND ANALYSIS

A. Geology, Soils, and Topography

North Brookfield is located in the Central Uplands Region of Massachusetts (also known as the Worcester Plateau), which lies between the Worcester Lowlands Region to the east and the Connecticut Valley Lowlands Region to the west. The Central Uplands Region is a glaciated plateau-like area, which generally slopes gently to the South. The topography of North Brookfield is quite typical of the region: generally hilly, dissected by numerous small streams, with elevations ranging from slightly under 600 feet to slightly over 1, I 00 feet. Mean elevation is approximately 800 feet. Drumlins abound, as do stream-cut valleys. Areas defined by bedrock, at or near the surface, are usually irregular and hummocky. Glacial outwash, stream and lacustrine deposits have created nearly flat topography in some areas of town, especially the lower Five-Mile River valley.

Bedrock is metamorphic or igneous, consisting mainly of Paxton Quartz Schist (a chocolate brown to dark gray metamorphic rock), Brimfield Schist (a dark brown metamorphic rock containing an abundance of iron-bearing minerals as well as calcium and graphite), and intrusions of Hardwick Granite (a light colored, coarse-grained igneous rock). Visible rock outcrops often display pronounced foliation, indicating a complex deformational history. The area is also littered with glacial "erratics": stones that were plucked off the mountains of New Hampshire carried south and dropped by the melting glacier. Most of the numerous stonewalls in the area are built from these erratics.

Its ability to drain, its texture, and the gradient (slope) describe a soil at which it is found. These characteristics are determined by a combination of the soil parent material, the depth and nature of the substrata and underlying bedrock, and its topographical context, generally dependent upon glacial history. Soil characteristics can be interpreted to determine limitations for development, allowing planning for residential, commercial, industrial, recreational, and agricultural uses. For building purposes, the critical aspects of soil are its ability to drain (a function of its porosity), the permeability of its substratum and depth to bedrock. Poorly drained soils and muck soils, found in lowlands and depressions, have severe limitations for development because of extended periods of saturation, but are often ideally suited for wildlife habitat. While wet soils and muck pose obvious drainage problems, very permeable and porous soils can pose limitations where septic systems are necessary since they allow rapid percolation without adequate attenuation, posing a threat to area water resources. The more porous soils can also be unstable on slopes. Shallow soils make building difficult, if not impossible, and those underlain by hardpan severely affect the cost of facility installation. Depending on the depth of hardpan, these soils also stay wet for extended periods or have fluctuating water tables.

The most generalized soils map of the area, prepared for the Soil Report for Worcester County, Southern Part, by the US Department of Agriculture's Soil Conservation Service, lists four soil associations in North Brookfield. Within these groupings (defined on the next page) are well drained soils, moderately well drained soils, and poorly drained soils and mucks of differing depths. The soils map groups soils by their drainage and depth characteristics: (1) the deep to shallow moderately well drained soils underlain by hardpan or bedrock, (2) deep, well drained soils with permeable substrata, and (3) the poorly drained soils and mucks. Within the groupings the dominant soils comprise at least two thirds of the association.

- Paxton-Woodbridge-Ridgebury group: Formed in glacial till, this unit comprises the majority of land area in Town. The Paxton and Woodbridge series consist of gently sloping to steep, deep, moderately well drained soils on drumlins, hills and ridges (uplands). These soils formed in compact glacial till. Fine sandy loam top and subsoils are underlain by hardpan at 15 to 38 inches. Ridgebury soils are somewhat poorly drained, and are located in the depressions and drainage

ways of this group. Steep slopes, wetness, frost action, slow permeability in the substratum the firm substratum and depths to bedrock are the major limitations of this unit. Low-density residential development is possible, depending on specific soil depth, but construction costs may be higher, especially in a non-sewered area. Any high-density development in this soils group should be served by the municipal sewer system.

- Brookfield-Brimfield group: comprising a section of the north west part of Town (in the vicinity of Waite Comer Road, Boynton Road and Bigelow Road), this unit consists of upland hills and ridges with rock exposures throughout. Formed in glacial till derived from micaceous schist, stones cover more than 3% of the surface. While moderately well drained, these soils are underlain by bedrock at a depth of 10 to 20 inches. Steep slopes and shallow depth to bedrock are the major limitations. Several small areas of rock outcrop are also present in various locations throughout Town.

- Merrimac-Hinckley-Windsor group: Formed in water-sorted deposits of glacial outwash, these very deep soils are excessively to somewhat excessively drained. This map unit consists primarily of the glacial outwash plain, which defines the Five-Mile River valley, including the rolling to steep sides of the valley. Several sand and gravel operations are active in this area. To a much lesser degree, these soils can also be found in spots along Coy's Brook (southwest comer of town), and in the vicinity of Sucker Brook (northwest comer of town). Slope is the limiting factor in using these soils for development, as these sloping soils are unstable. Septic tank absorption fields may cause groundwater pollution because of the rapid percolation and poor filter capacity of these soils.

- Swansea-Freetown group: These mucks lie in river and stream floodplains and other wetlands. Nearly level very deep, and poorly drained, these soils are adjacent to streams in old glacial lakes or small ponds, and are formed in organic deposits and alluvium. They are found in spots within the Five Mile River valley, surrounding Perry Pond Oust west of Lake Lashaway), at the lower end of Coy's Brook, and several other wet areas. These soils are very unsuitable for development due to poor drainage and high water table, and sites where they exist are usually classified as wetlands.

According to the US Department of Agriculture's Soil Conservation Service, 98% of the land in North Brookfield is comprised of soils with severe limitations for septic systems, including high water tables, shallow depth, slope, or poor filtering capability. Only 215 acres (1.7%) are rated as "moderate limitations", and 14 acres (0.1%) are rated as "slight limitations". Given these limitations, consideration of increasing lot size for un-sewered development should be considered for the protection of groundwater (private wells) and surface waters (reservoirs, lakes and ponds, streams and rivers).

Prime agricultural soils are plentiful in North Brookfield, scattered in small parcels throughout Town, divided by the numerous hills. Primarily classified as Paxton, Woodbridge, and Merrimac soil types; there are approximately 3,000 acres of “Prime” agricultural soils in Town (25% of the total land area). Additionally, there are over 3,200 acres with agricultural soils of "Statewide importance" (often the same basic soils as "prime", but with slight agricultural limitations due to slope or stone content). Any efforts by the Town or State to help preserve the Town's agricultural heritage should, at least in part, focus on the remaining undeveloped prime and important agricultural soils.

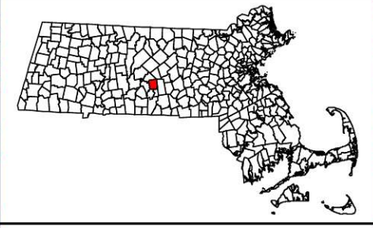
Town of North Brookfield
Open Space Plan
Soils

Legend

- Town Boundary
- Roads
  - Interstate
  - U.S. Route
  - State Route
  - Local
- Water Bodies
- Streams
- 10 Meter Contours
- Sand and Gravel Deposits
- Fine-Grained Alluvium
- Till or Bedrock
- Floodplain Alluvium

μ

Feet
0 700 1,400 2,800 4,200 5,600



Source: Data provided by MassHighway and the Executive Office of Environmental Affairs/MassGIS (EOEA/MassGIS).

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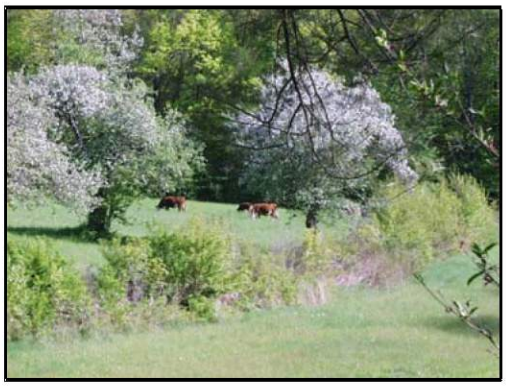
Printed April 10 2007
North Brookfield Open Space Plan 2007
NBrookfield_Soils_11x17.mxd

NEW BRAINTREE
WEST BROOKFIELD
BROOKFIELD
EAST BROOKFIELD
SPENCER
MILL ROAD
BARNES ROAD
RUFUS PUTNAM ROAD
STODDARD ROAD
POND ROAD
BROOKS POND ROAD
UNNAMED ROAD
DOANE DRIVE
WITT DRIVE
MURPHY ROAD
KING ROAD
WAITE CORNER ROAD
BARRETT ROAD
COLLINS ROAD
ROYNTON ROAD
CROOK-SUNNOD
BELL ROAD
HILLSIDE AVENUE
SCHOOL DRIVE
GROVE STREET
FOREST STREET
SAINT JOHN STREET
MOUNT GLYCO STREET
SCHOOL STREET
GROVE ROAD
HOWE ROAD
MAD BROOK ROAD
ADAMS ROAD
HILLSVILLE ROAD
KITTREDGE ROAD
BIGELOW ROAD
WIGWAM ROAD
BIGELOW STREET
SUMMER STREET
ELM STREET
WALNUT STREET
GILBERT STREET
PROSPECT STREET
AYERS STREET
TUCKER ROAD
SMITH HANSON ROAD
TUCKER CROSS ROAD
CIDER MILL ROAD
OLD WEST BROOKFIELD ROAD
BATES STREET
FULLAM HILL ROAD
MCCARTHY ROAD
DONOVAN ROAD
BIRCH HILL ROAD
WINE ROAD
WALKER ROAD
TOWN FARM ROAD
EAST BROOKFIELD ROAD
OLD EAST BROOKFIELD ROAD
BULLARD ROAD
BRICKYARD ROAD
SLAB CITY ROAD
NORTH STREET
LAKEVIEW ROAD
LAKE ROAD
SHORE ROAD
RIVER ROAD
EDNA CIRCLE
CHASE ROAD
LANE AVENUE
ASHLEY ROAD
RYAN ROAD
WARD STREET
HINES BRIDGE ROAD
LINCOLN ROAD
ORCHARD ROAD
GREEN ROAD

B. Landscape Character

Entering North Brookfield from any direction, the Town's rural character is immediately evident. Rolling hills, dissected by valleys, provide open vistas often enhanced by well-preserved farm buildings. The concentrated development in the central village, with many grand Victorian homes, reflects the economic boom of the latter half of the 19th century, fueled by the shoe industry. Sections surrounding the village have a more typically suburban look, with newer and smaller homes. The outer districts, while slowly experiencing the fragmentation of open space due to residential construction, still maintain a distinctive rural New England character, with many large parcels of farm and woodlands.



The Town's water resources further enhance the landscape. The reservoirs (Horse and Doane Ponds), Lake Lashaway, Brooks Pond, and the streams and marshes all contribute to landscape diversity and beauty. Efforts aimed at protecting natural resources and preserving town character have been modest in North Brookfield to date, in part because development pressure has not been intense enough to be viewed as a serious threat. Some watershed lands have been acquired to protect the water supply, and a few small areas have been set-aside as Town forest. State agencies, however, have acquired two important properties in the Five-Mile River valley (for flood control, and for a wildlife sanctuary). There is also a small parcel of landlocked State forest in the river valley. Fifty four (54) North Brookfield landowners participate in the Chapter 61 tax programs providing a temporary and limited level of protection to their lands and six (6) landowners participate in the Agricultural Preservation Restriction (APR) program, which provides permanent protection to the lands. The combination of these efforts has created a significant amount of land that is protected, in some way, throughout the Town.

C. Water Resources

North Brookfield's water resources are an invaluable asset to the Town, providing drinking water, flood control, recreational opportunities, wildlife habitat, and scenic diversity. All surface waters in Town are classified as "Class B" (fishable, swimmable) waters, with the exception of the reservoirs and their tributaries, which are Class A. (Note: these designations refer to purposes, not necessarily existing conditions.)

Horse Pond and Doane Pond: the two adjacent town reservoirs are the sole source of the municipal drinking water system. Surrounded by forest and farmland, this is a very scenic area. Passive recreation activities such as hiking, fishing from shore, ice fishing and skating are permitted.

Brooks Pond: An impoundment of the Five Mile River, this privately owned and managed pond is very picturesque and sparsely developed. Ringed with forest and containing several small islands, recreational opportunities include non-motorized boating and fishing. The marshy area at the north end of the lake provides and abundance of wildlife viewing opportunities.

Five Mile River: Originating in Oakham and Rutland, the lower reach runs through North Brookfield from Brooks Pond to Lake Lashaway. The river has high recreational value. Many fishermen enjoy walking parts of the river. The lower part of the river makes a scenic and remote canoe ride with tremendous wildlife viewing opportunities. The marshes and wetlands along the river provide wildlife habitat and store vast amounts of water during heavy rain or snowmelt and help to ease flooding.

Lake Lashaway: Surrounded by summer cottages and year-round homes, the lake provides a cornucopia of recreational opportunities. There is a public boat ramp providing access to fishermen, sailors, and water-skiers. Lashaway Park, located on the west side of the lake in North Brookfield, but owned by East Brookfield, is a public beach and picnic area shared by both towns. Swimming lessons are given each summer. Camp Atwater, founded in 1927, is listed on the National Historic Register as the first summer camp in the US established for African-American children.

Perry Pond: Just to the west of Lake Lashaway, this shallow pond with its large bog-like wetlands is privately owned, and the surrounding woodlands remain undeveloped. This area is excellent wildlife habitat.

Streams and Brooks: Forget Me Not Brook joins Dunn Brook near the East Brookfield town line and flows south to the confluence of the Quaboag River. Many smaller intermittent and perennial streams and brooks are found in North Brookfield including Coy's Brook in the southwest portion of Town and Sucker Brook to the northwest and many unnamed streams.

All of North Brookfield is located in the Chicopee River Watershed. North Brookfield is further divided into 12 tributary basins, the boundaries of which are depicted on the Water Resource Map (Map 3).

Wetlands: North Brookfield contains a great deal of wetlands, with much diversity. Scrub marshes abound along the Five Mile River and other streams, and the lower Five Mile River valley contains a large grassy flood plain marsh. The large bog-like marsh around Perry Pond is especially striking. Numerous forested wetlands of various sizes are scattered throughout town.

According to the National Wetlands Inventory maintained by the US Fish & Wildlife Service, North Brookfield contains roughly 1,094 acres of wetlands. According to the Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency, North Brookfield has approximately 1,221 acres of land falling within the 100-year floodplain. All of the resources mentioned in this paragraph are graphically depicted on the Water Resources Map (Map 3).

Town of North Brookfield
Open Space Plan
Water Resources

Legend

- Community Surface Water Source
- Emergency Surface Water
- Tributary Watershed Boundary
- Zones A and AE
- Aquifer Recharge Zone (Zone IIs)
- Aquifer
- Surface Water Protection Area (Zone A)
- Surface Water Protection Area (Zone B)
- Surface Water Protection Area (Zone C)
- Town Boundary

Roads
- Interstate
- U.S. Route
- State Route
- Local

- Water Bodies
- Streams
- Wetlands

Feet
0 700 1,400 2,800 4,200 5,600

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UPPER WARE RIVER Tributary Basin

NEW BRAINTREE

FIVE MILE RIVER Tributary Basin

CHICOPEE WATERSHED BASIN

QUABOAG RIVER Tributary Basin

WEST BROOKFIELD

BROOKFIELD

EAST BROOKFIELD

SPENCER

MILL ROAD
KING ROAD
MURPHY ROAD
BARRETT ROAD
WATE CORNER ROAD
COLLINS ROAD
BOYNTON ROAD
DOWNEY ROAD
BIGELOW ROAD
WIGWAM ROAD
SUMMER STREET
WITT DRIVE
BELL ROAD
HILLSIDE AVENUE
STODDARD ROAD
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BARNES ROAD
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UNNAMED ROAD
CROOKS ROAD
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ADAMS ROAD
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KITTREDGE ROAD
BELLS STREET
GROVE STREET
FOREST STREET
SAINT JOHN STREET
MOUNT GUYOT STREET
SCHOOL STREET
ELM STREET
GILBERT STREET
WALNUT STREET
WINTER STREET
AYERS STREET
SMITH HANSON ROAD
TUCKER ROAD
TUCKER CROSS ROAD
BATES STREET
EDNA CIRCLE
CHASE ROAD
LANE AVENUE
WARD STREET
RYAN ROAD
ASHLEY ROAD
HINES BRIDGE ROAD
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FULLAM HILL ROAD
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ORCHARD ROAD
GREEN ROAD
DONOVAN ROAD
WALKER ROAD
BIRCH HILL ROAD
TOWN FARM ROAD
EAST BROOKFIELD ROAD
OLD EAST BROOKFIELD ROAD
BULLARD ROAD
SHORE ROAD
RIVER ROAD
WINE ROAD
BRICKYARD ROAD
LAKEVIEW ROAD
LAKE ROAD
NORTH STREET
SLAB CITY ROAD

67
148
9
31
49

D. Vegetation

According to the document, Classification of the Natural Communities of Massachusetts, prepared in 2001 by the Natural Heritage and Endangered Species Program within the Division of Fisheries and Wildlife, North Brookfield falls within the Worcester/Monadnock Plateau. The Plateau contains the most hilly and mountainous areas of the Commonwealth's central upland, with elevations ranging from 500 to 1,800 feet above sea level. Transition hardwoods are common, but northern hardwoods also occur. Forested wetlands are common, and forested and non-forested peat lands are abundant. As mentioned previously, roughly two thirds of North Brookfield consists of forestland. North Brookfield is located at the southern end of the Transition Hardwoods-White Pine-Hemlock Zone, near the border of the more southern Central Hardwoods-Hemlock-White Pine Zone. The dominant vegetation in the latter includes a variety of oaks (black, red, white, chestnut, and scarlet), chestnut, red maple, shagbark and bitternut hickories and black birch. The former zone contains smaller amounts of most of these species mixed with the northern hardwoods (sugar maple, beech and yellow birch) and white ash. White pine and hemlock are of variable abundance in both zones, and their presence is strongly influenced by historical factors like fire and land use history.

Slope position has much to do with the forest types found in North Brookfield. Low areas are usually dominated by red maple along with yellow birch, American elm and sometimes hemlock. Moist but well drained sites with relatively rich soils support sugar maple, white ash and red oak. Drier sites, including ridges and hilltops, typically contain a mixture of oaks in which black, white and red oaks are prominent along with some hickory and red maple. White pine can be abundant in woods originating on abandoned pastures, but is only occasional in other areas. Hemlock is most frequent in damp areas and in stream valleys. Several non-forest vegetation types are represented in North Brookfield. These include marshes and shrub swamps associated with several ponds and streams. Prominent examples occur within Allen Swamp along the shorelines of the North Brookfield and Sevenmile Rivers, along the shorelines of Quaboag and South Ponds, as well as Great and Dunn Brooks. Alfalfa, clovers and various grasses (most of which are non-native) dominate the region's hayfields. Abandoned fields undergoing succession typically support some combination of gray birch, aspen, white pine and red maple.

The Natural Heritage Endangered Species Program within the Division of Fisheries and Wildlife have identified several plant species in North Brookfield that are considered endangered or threatened:

- Endangered species are native species that are in danger of extinction throughout all or part of their range, or are in danger of extirpation from Massachusetts, as documented by biological research. The Variable Sedge and Michaux's Sedge are the two endangered vascular plant species identified in North Brookfield.

- Special concern species are native species which have been documented by biological research or inventory to have suffered a decline that could threaten the species if allowed to continue unchecked, or which occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become threatened within Massachusetts. The only vascular plant species of special concern in North Brookfield is the Climbing Fern.

E. Fisheries and Wildlife

The mix of forest, fields, lakes, ponds, streams, the river and various types of wetlands found in North Brookfield create a diversity of habitats for wildlife. As a consequence, North Brookfield currently supports virtually every species that is common to Central Massachusetts, as well as a few uncommon species.

North Brookfield has a wealth of wetland habitats scattered throughout the town, with a diversity of type as well as size. Lakes, ponds, river, streams, marsh, bog and forest wetlands are all within, or partially within, town borders. These diverse wetlands provide habitat for a variety of fish, reptiles, amphibians, crustaceans, insects, furbearers, waterfowl and other birds. Wetlands are described as our most "dense" habitats because of the abundance of wildlife often found. Not only do they support the wetland species, but also upland species often visit wetlands to drink or feed. River corridors are often natural migration routes. The only three areas in Town listed as 'Estimated Habitats of Rare Wetlands Wildlife" by The Natural Heritage and Endangered Species Program are located on the Five Mile River or its tributary streams. Spotted and Wood Turtles and the Four-Toed Salamander (rare species of special concern as listed by the State Division of Fisheries and Wildlife) are found in the corridor. Great Blue Heron, Osprey, Egret, Northern and Snow Geese, and a variety of ducks are frequent visitors or temporary residents. Beavers are abundant and River Otters are also to be found. Other common species of turtles, frogs, salamanders, crustaceans, and other wetland species populate the river corridor. It is assumed that at least some if not most of these species can also be found in other wetland areas in Town.

Brooks Pond, Lake Lashaway, Perry Pond, and the several small farm ponds also support abundant wildlife, with many species in common with the other wetlands. On rainy nights in early spring, North Street is teeming with small frogs (wood frogs, spring peepers) and salamanders as they migrate from the woods to Perry Pond. The lakes and ponds are often feeding sites for Heron, Egret, Osprey, Cormorant, Mallard, and Black Duck. They are also important stops for migrating waterfowl, with large flocks of Northern Geese, Merganser, and Bufflehead seen during migration.

North Brookfield's upland habitats are a mixture of woodlands, pasture, and brush (old fields). Species diversity is greatest where different habitats converge, especially when adjacent to wetland habitats. Wildlife species commonly occurring in these areas include raccoon, white tailed deer, red and Grey fox, cottontail rabbit, partridge, woodchuck, chipmunk red and Grey squirrel, skunk, opossum several species of hawk and owl, and virtually all song birds common to Central Massachusetts. Moose sightings occur periodically and occasional rumors of black bear have been heard. Eastern coyote have arrived and expanded in numbers in recent years, as have wild turkey (resulting from a stocking by the Division of Fisheries and Wildlife). Pheasant are released in town annually. The Golden Winged Warbler (listed as endangered) has been seen in town on at least two occasions (1975, 1980).

Wildlife species have evolved over centuries to utilize all available habitats. In a town such as North Brookfield, future development not only threatens the total amount of open space but also truncates what remains into isolated patches, often too small to provide satisfactory habitat for food and water, breeding, and cover. In general, the larger the area, the more species occur. Preserving species diversity means preserving: (1) contiguous areas of upland and wetland habitats wherever possible; and at the very least, (2) Preserving wildlife migration corridors, which serve to connect various habitat areas.

Lake Lashaway, Brooks Pond and Perry Pond provide excellent fishing opportunities for warm water species (pan fish, bullhead, pickerel, and bass). Lashaway's drawdown program has actually improved its fishing, especially since the Division of Fisheries and Wildlife has deemed the conditions improved enough for the stocking of Northern Pike. The Five Mile River is stocked with Brook Trout annually, and some of its tributaries support native populations. Many residents avail themselves of the recreational opportunities these fisheries provide, and future growth in town should be carefully managed so as not to degrade these resources.

The Natural Heritage Endangered Species Program within the Division of Fisheries and Wildlife have identified several animal species in North Brookfield that are considered endangered, threatened or are of special concern:

- Endangered species are native species that are in danger of extinction throughout all or part of their range, or are in danger of extirpation from Massachusetts, as documented by biological research. The only endangered species listed in North Brookfield is the Golden-winged Warbler.

- Species of Special Concern are native species that have been documented by biological research to have suffered a decline that could threaten the species if allowed to continue unchecked, or that occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become threatened within Massachusetts. The Wood Turtle is the only animal species of special concern identified in North Brookfield.

The Division of Fish & Wildlife has certified 2 vernal pools in North Brookfield and local conservationists believe there are many more. North Brookfield's State-certified vernal pools and its potential vernal pools are shown on the Unique Features and Scenic Resources Map (Map 4).

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, autumn pools and temporary woodland ponds, typically fill with water in the autumn or winter due to rising groundwater and rainfall and remain ponded through the spring and into summer. Vernal pools dry completely by the middle or end of summer each year, or at least every few years. Occasional drying prevents fish from establishing permanent populations. Many amphibian and invertebrate species rely on breeding habitat that is free of fish predators.

Some vernal pools are protected in Massachusetts under the Wetlands Protection Act regulations as well as several other federal and state regulations. The Natural Heritage Endangered Species Program (NHESP) serves the important role of officially "certifying" vernal pools that are documented locally. As certification is the first step towards protection, North Brookfield conservationists would do well to document the Town's vernal pools and submit said documentation to the NHESP for certification.

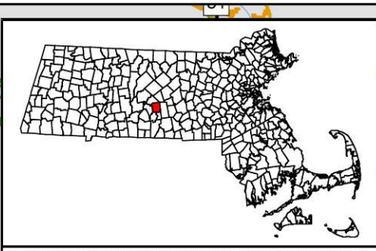
Town of North Brookfield
Open Space Plan
Unique & Scenic Features

Legend

- Water Bodies
- Streams
- NHESP Certified Vernal Pools
- NHESP Potential Vernal Pools:
  NOT equivalent to Certified Vernal Pools
- Wetlands
- NHESP Estimated Habitats for Rare Wildlife
- NHESP BioMap Core Habitat
- NHESP BioMap Supporting Natural Landscape
- Town Boundary

Roads
- Interstate
- U.S. Route
- State Route
- Local

Feet
0 700 1,400 2,800 4,200 5,600



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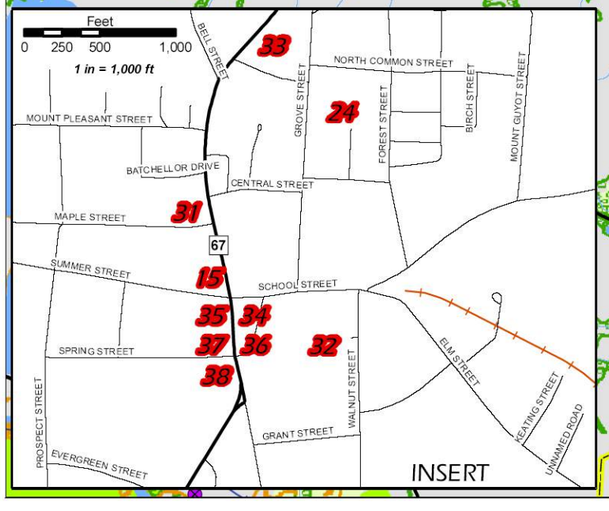
NBrookfield_UniqueScenic_11X17.mxd

NEW BRAINTREE
WEST BROOKFIELD
BROOKFIELD
EAST BROOKFIELD
SPENCER

See Insert



F. Scenic and Unique Environments:

Map #	Site	Reason
1	Historic Marker South Main Street	This is the site of the original Town Common and the First Meeting House.
2	Historic Marker - Bates Street	This is the location of the first Town Pound
3	Cemetery on Old West Brookfield Rd.	Historic Burial Ground
4	Woolcott House	Historic: Oldest House in North Brookfield for many years. Served as a Tavern on the old Boston Post Road.
5	Bates Observatory	Historic: Located on Bell Hill along the shore of the old reservoir it is said you could see the masts of ships entering Boston Harbor from this point on a clear day.
6	Old Stage Coach Road	Scenic Road
7	The Smallpox Caves	Historic/Archeological
8	Kiminski Farm on Green Road	Scenic area
9	Matthews Fulling Mill/Prouty's Woolen Mill	Historic Site of Industry
10	Murphy Run	Historic site of Town's Combing Mills
11	Reservoir and Surrounding Land	Open Space and Scenic Area and Drinking Water Supply
12	Brookfield Orchards	Tourist Attraction and functioning Orchard
13	Town Forest at the intersection of Routes 67 and 148	Open Space
14	Old Railroad Depot and Tracks	Historic: First rail depot in North Brookfield
15	Town House	Historic Building designed by Eldridge Boyden
16	Bennett's Hill/ North Brookfield Sportsmen's Club	Open Space
17	Coy-Sucker Brook Valley	Open Space
18	Valley View Farm	Open Space
19	Warren Farm	Sugar House and Syrup Farm with Scenic Views
20	Brooks Pond and Surrounding Area	Water Shed and Open Space
21	Five Mile River Corridor	Open Space and Wildlife Management Area
22	LeDoux Farm	Open Space
23	Longview	Historic Recording Studio and Open Space
24	Town Common	Open Space
25	Cider Mill Road and Wetlands	Historic site of North Brookfield's Cider Mills
26	Coy Brook Valley	Scenic Open Space
27	Martin Bergen Property	Historic Martin Bergen was one of the greatest baseball catchers of the 19th century and Open Space
28	Cemetery on Smith-Hanson Rd.	Historic Burial Ground
29	Walnut Grove Cemetery on Elm Street	Historic Burial Ground
30	Old French Cemetery	Historic Burial Ground
31	Maplewood Cemetery	Historic Burial Ground
32	Fire Station School Street	North Brookfield's Historic Engine House
33	St. Joseph's Catholic Church	The 1st Catholic Church in North Brookfield
34	First Congregational Church	Longest established congregation in North Brookfield
35	Union Star Building	1st Movie house in town once used as a Union Congregational Church.
36	Old Town Common	Historic Site
37	Haston Free Public Library	Historic Building
38	Ayres Tavern, Ayers Street	Historic Site

G. Environmental Challenges:

G-1. Surface Water Pollution

Development has resulted in a host of negative impacts to North Brookfield's water resources, including failing septic systems, excessive shoreline development, poor erosion control, or non-point pollution such as washed away salt from roadway maintenance efforts, manure seepage from agricultural uses, fertilizers from lawn maintenance, or pesticide applications. Both State and local water quality monitoring efforts highlight the Town's water quality issues.

The MA Department of Environmental Protection (DEP) designates six classes of water quality, based largely on the standards of the Federal Clean Water Act. Class A refers to those surface water resources that are used as water supply sources. Class B waters are considered safe for fishing, swimming and boating. The remaining four water quality categories cover those surface water resources with lesser water quality. The majority of the surface water resources in the Chicopee Watershed meet the Class B water quality standards. There are, however, several ponds and river segments that do not meet the Class B standards.

Under the regulations of the Federal Clean Water Act, states are required to file a report every two years that identifies those surface waters that are not expected to meet the Act's surface water quality standards (Class A, Class B, etc.). This report, known as the Massachusetts Section 303(d) List of Waters, was last prepared in 2004 through a joint effort of the Executive Office of Energy and Environmental Affairs (EOEEA) and the DEP. The table below lists those surface waters in North Brookfield that, according to the 2004 303(d) report, *do not* meet the water quality standards of the Federal Clean Water Act.

Surface Water Resource	**Sub-Watershed**	**Pollutants/Stressors**
Lake Lashaway	Five Mile River Basin	exotic aquatic species
Dunn Brook	Quaboag River Basin	organic enrichment /low dissolved oxygen

The State has also identified Lake Lashaway as being mercury-impaired. In the report entitled, A TMDL Alternative Regulatory Pathway Proposal for the Management of Selected Mercury-Impaired Waters, prepared jointly by the EOEEA and DEP, Lake Lashaway is categorized as Class C4 waters, meaning it a waterbody impaired by pollution and its restoration will require measures beyond the development and implementation of a Total Maximum Daily Loads (TMDL) plan. The TMDL plan is essentially a "pollution budget" designed to restore the health of the impaired waterbody. The Federal Clean Water Act requires that states must develop a TMDL plan for each waterbody identified as being impaired. Components of a TMDL plan include identifying the source(s) of the pollutant from direct discharges (point pollution sources) and indirect discharges (non-point pollution sources), determining the maximum amount of the pollutant that can be discharged into a specific waterbody to meet water quality standards and developing a plan to meet that goal. The State has yet to prepare a TMDL plan for Lake Lashaway.

It should be noted that North and East Brookfield have been working together in an effort to address the water quality issues affecting Lake Lashaway and have formed a joint committee for this purpose. The 2005 spring Town Meeting season saw North Brookfield appropriate $175,000 for the preparation of a comprehensive wastewater management plan that will look two decades into the future. Unfortunately, East Brookfield voters rejected a similar funding proposal at the spring 2005 Town Meeting. It is likely that this proposal will be resurrected at a later date. If and when such a study is fully funded, it will result in an inter-municipal strategy for dealing with Lake Lashaway's identified water quality problems.

G-2. Identified Polluted Sites in Town

According to the Massachusetts Department of Environmental Protection currently 27 releases have been reported on 22 21E sites (also known as "brownfields") in North Brookfield:

RELEASE TRACKING NUMBER	Address	Site Name	Category	Compliance Status	Date	Chemical Type
2-0000971	BIGELOW ST	CROWLEY FUEL CO	NONE	RAO	5/30/1995	Oil
2-0011571	BRICKYARD AND BULLARD	POLE 17	TWO HR	RAO	3/18/1997	Oil
2-0010509	EAST BROOKFIELD RD	J MAC WIRE CO	TWO HR	RAO	1/13/1995	Oil
2-0013140	24 EAST BROOKFIELD RD	EM INDUSTRIES INC	120 DY	RAO	12/29/2000	Oil and Hazardous Material
2-0013256	70 EAST BROOKFIELD RD	CHASE PRECAST	72 HR	RAO	12/30/2003	Oil
2-0013272	70 EAST BROOKFIELD RD	CHASE PRECAST	TWO HR	RAO	12/30/2003	Hazardous Material
2-0013451	70 EAST BROOKFIELD RD	CHASE PRECAST CORP	120 DY	RAO	12/28/2000	Oil
2-0014233	70 EAST BROOKFIELD RD	CHASE PRECAST	TWO HR	RAO	5/17/2002	Oil
2-0014794	70 EAST BROOKFIELD RD	CHASE PRECAST CONCRETE	TWO HR	RAO	7/29/2003	Oil
2-0014848	70 EAST BROOKFIELD RD	CHASE PRECAST	TWO HR	RAO	8/27/2003	
2-0012824	GREEN RD	POLE 78	TWO HR	RAO	8/11/1999	Oil
2-0011543	10 GROVE ST	AZTEC INDUSTRIES	TWO HR	RAO	1/25/2001	Oil
2-0011130	MILL RD	POLE 13	TWO HR	RAO	4/25/1996	Oil
2-0012111	MILL ST	RAILROAD BED FMR	TWO HR	RAO	4/21/1998	Oil
2-0011690	10 MILL ST	BULK OIL FACILITY	TWO HR	RAO	6/24/1997	Oil
2-0013058	12 MILL ST	CROWLEY FUEL CO	120 DY	RAO	7/30/2004	Oil
2-0015325	10 NEW SCHOOL DR	NORTH BROOKFIELD HIGH SCHOOL	120 DY	RAO	11/19/2004	

2-0016503	193 NORTH MAIN ST	TOWN HALL NORTH BROOKFIELD	120 DY	UNCLASSIFIED	12/14/2006	Oil
2-0010464	229 NORTH MAIN ST	GILLETTE CONTRACTING	TWO HR	RAO	11/23/1994	Oil
2-0014021	326 NORTH MAIN ST	VINER RESIDENCE	TWO HR	RAO	1/26/2005	Oil
2-0010408	327 NORTH MAIN ST	EXPRESS AUTO WASH	120 DY	TIER 2	7/3/1995	Hazardous Material
2-0014964	60 PROSPECT ST	BFI	TWO HR	RAO	12/12/2003	
2-0000568	17 SCHOOL ST	QUABAUG RUBBER	NONE	RAO	4/19/2000	
2-0012560	58 SCHOOL ST	NORTH BROOKFIELD DPW	72 HR	RAO	4/5/1999	Oil
2-0013596	84 SOUTH MAIN ST	GAS STA FMR	120 DY	RAO	8/9/2002	Oil and Hazardous Material
2-0013937	84 SOUTH MAIN ST	CUSHING ST SERVICE STATION	72 HR	RAO	8/9/2002	Oil

In addition to these 22 sites there are two others that have not had a reported release but are of concern locally. A site on Brown Street that has functioned as an auto repair facility and scrap metal reclamation area is viewed as a source of possible contamination and the concern is further increased due to the proximity of the site to several small brooks and an area of Town that is serviced by private wells. The other site is located on Oakham Road (Rt. 148). This site has been a long-term automobile repair facility, which previous owners failed to maintain properly. Currently there is a lower intensity repair facility, however, the Town fears the damage has already been done.

North Brookfield no longer operates a landfill facility. This facility was capped in 1996 and is monitored for air and groundwater quality. The Town also monitors several private wells in the area to ensure there is not contamination. The Town now uses a portion of the landfill property for its successful recycling program. The recycling center on East Brookfield Road is open every Wednesday mornings and all day on Saturday and accepts the following materials: plastic, glass, mixed paper, newspaper, cardboard, antifreeze, motor oil, car batteries, florescent light bulbs, tires and scrap metal. Also, plastics labeled #1, #2, and #3 are accepted, along with bottles eligible for deposit. The site also contains a building material "take it or leave it" center for the recycling of household goods, furniture and children's toys. This site also serves as the Town's transfer station. The average weekly amount of solid waste collected in 2006 was roughly 14.2 tons per week. This total only represents a portion of the Town's trash as residents have the option of purchasing private curbside collection. The Town also joins with the neighboring Brookfields to sponsor a household hazardous waste collection day twice a year. The four Brookfields and Spencer pay for their residents to participate in these collections. Residents from Oakham, New Braintree and Hardwick can participate as well, but must pay at the site for the collection and disposal of their waste.

G-3 Erosion, Chronic Flooding & Sedimentation

The North Brookfield, Highway Superintendent and Board of Health were interviewed regarding the issues of erosion, chronic flooding and sedimentation in Town. No such problems were identified at this time.