

# NATURAL RESOURCES INVENTORY

## BROOKFIELD, NEW HAMPSHIRE

### INTRODUCTION

Brookfield, New Hampshire is a rural residential and agricultural town located in the extreme southern portion of Carroll County. On the south, it is bounded by the Town of Middleton along the dragon-toothed ridges of the Moose Mountain range; on the west by the Town of Wolfeboro; and on the east by the Town of Wakefield. Being somewhat triangular in shape with a northern apex, it furnishes water drainage to three significant watersheds: Lake Winnepesaukee to the west, Salmon Falls River to the east and south, and the Saco River to the north.

With a population of about 650 people, the Town is zoned Residential-Agricultural with the exception of a 638 acre Recreational zone which is the Moose Mountain Ski Area. The total area of the Town is 14,714 acres with 25.5% being classified as Conservation Areas (private and government agencies), and 51.6% of the total area is held in Current Use category.

In keeping with its statutory mandate, the Brookfield Conservation Commission has undertaken with the assistance of Moose Mountain Regional Greenways the production of a Natural Resources Inventory for the Town of Brookfield and has identified those large parcels of land in the Town which could be of interest for Conservation acquisition or designation. This project is now considered complete within its intended scope, but will be perpetually reviewed by the Conservation Commission as more information becomes available and circumstances dictate.

This document is intended to be used as a land use tool for the Planning Board, Board of Selectmen, as well as the Conservation Commission. Copies are also available to the general public through the Brookfield Conservation Commission. This document is also posted on the Town website.

## BROOKFIELD CONSERVATION PRIORITIES

June 4, 2008

In 2007, the Brookfield Conservation Commission prepared a Natural Resources Inventory (NRI) that identifies: 1) local conservation features of value, and 2) regions in town that possess these features. The 2006 Brookfield Master Plan supports these recommendations and specifically references the following land values (Master Plan section 2.05-3):

- Contiguous tracts of open land
- Land that can host an interconnected system of trails, parks, and natural areas with accessible recreational facilities
- Land that protects water quality and quantity, including land above aquifers, and land providing buffers to streams, lakes, and wetlands
- Working farms and forests
- Land that supports native wildlife and plant communities

Brookfield's Master Plan also recommends the following implementation policies (Master Plan section 2.05-10):

- Work with the Conservation Commission and private conservation organizations to assemble a database of parcels suitable for protection
- Work with owners of agriculture and forestry lands to encourage the donation and sale of conservation easements

The Brookfield Conservation Commission completed both of these action items in 2008. Commissioners met with Moose Mountains Regional Greenways (MMRG) staff to fine tune the NRI priorities and areas. MMRG and the Strafford Regional Planning Commission prepared a map that highlighted and overlaid each of these conservation resources using data from the NH Coastal Conservation Plan, the NH Department of Fish and Game Wildlife Action Plan, the MMRG wetlands maps, and the Carroll County soils maps. Conservation Commissioners also considered historical resources and local knowledge of working farms.

The Town of Brookfield is blessed with an abundance of conservation resources. However, Conservation Commissioners recognize that it is not practical to attempt to conserve, for example, 80% of the town's land. Therefore, Commission members looked for areas that featured more than one significant conservation resource – such as properties that include not only water resources, but also high quality farming soils and wildlife habitat.

Conservation Commissioners, with Moose Mountain Regional Greenways staff, identified several local properties possessing multiple conservation resources. They then assembled a database of these properties.

The Conservation Commission chairman subsequently mailed letters to all the property owners in the database inviting them to a workshop on “Tax Incentives for Landowners: Basic Income and Estate Tax Issues Related to Land Conservation” hosted by Moose Mountains Regional Greenways and funded by grants from the NH Estuaries Project and NH Moose Plate program.

Commission members also agreed informally upon the following recommendations:

- To facilitate the conservation of parcels that will connect and expand the Moose Mountain Reservation, the Ellis Hatch Wildlife Management Area, and the Cople Crown parcel owned by the Lakes Region Conservation Trust.
  - This will help preserve a large, unfragmented forest block that supports wildlife habitat, working forestry, and recreational activity. These areas have also been identified as priorities in the NH Coastal Conservation Plan.
- To facilitate the conservation of the backland of the Moose Mountain ski area, but not necessarily the road frontage.
  - This will help expand the Moose Mountain Reservation while keeping those portions of the land best suited for development on the tax roles at a highest and best use rate.

- To facilitate the conservation of land in the Warren Brook Area.
  - This region has been identified as an area of high natural resource value by the NH Coastal Conservation Plan, the NH Fish and Game Wildlife Action Plan, and on the MMRG Wetland evaluation.
- To facilitate the conservation of land overlaying the stratified drift aquifer and wellhead protection areas in the southwest corner of Brookfield.
  - This region overlays important drinking water resources and has also been identified as an area of high natural resource value by the NH Fish and Game Wildlife Action Plan and on the MMRG Wetland evaluation.
- To facilitate the conservation of land along Churchill and Hanson Brooks and their related wetlands, including MMRG Wetland 6 located off of Tumbledown Dick Road.
  - Churchill Brook and Hanson Brook overlay and feed the stratified drift aquifer in the southeast corner of Brookfield.
  - This region supports important drinking water resources and has also been identified an area of high natural resource value by the NH Fish and Game Wildlife Action Plan and on the MMRG Wetland evaluation.
- To facilitate the preservation of water quality of Pike Brook and its adjacent wetland complexes. Commissioners recommend buffers around the northerly Pike Brook areas, rather than the permanent conservation of entire parcels.
  - The Commission’s goal is to conserve only those areas that have conservation value. Many parcels that include portions of the northerly Pike Brook complex also include land that possess little conservation value.

- The northerly portion of Pike Brook complex includes wetland areas that have been identified by the New Hampshire Natural Heritage Inventory as having rare and/or endangered species. These areas are also priorities of the NH Coastal Conservation Plan, the NH Fish and Game Wildlife Action Plan, and on the MMRG Wetland evaluation.
- The southerly portion of Pike Brook complex overlays important drinking water resources and has also been identified as an area of high natural resource value by the NH Fish and Game Wildlife Action Plan and on the MMRG Wetland evaluation.
- To facilitate the preservation of parcels located in the northernmost corner of Brookfield, including those properties located to the east of Tibbetts Hill Road.
  - Visible from public roadways, these properties offer scenic vistas and blueberry fields.

## THE INVENTORY

### BROOKFIELD, NEW HAMPSHIRE

#### Mountains

**Copple Crown** – Woodman Road – Protected by Lakes Region Conservation Trust

**Moose Mountains** – Located in Brookfield, Wakefield, and Middleton – largest contiguous forest in southern NH – A large part of it is now protected as a, “...permanent undeveloped oasis of forest within a stone’s throw of the heavily traveled Route 16.” Jane Difley, Society for the Protection of New Hampshire Forests

**Tumbledown Dick** – Located off of Tumbledown Dick Road

#### Wetlands

Ten identified by Blue Moon Environmental Group as a study for Moose Mountains Regional Greenways as part of the New Hampshire Estuaries Project.

See maps of wetlands in the study notebook located on the bottom shelf in the Town Office building.

1. Pike Brook (p. 18/53)
2. Churchill Brook (p. 19/53)
3. Robinson Road (p. 19/53-20/53) (downstream of Wetland 1)
4. Locke Brook (p. 20/53-21/53)
5. Pike Brook #2 (p. 21/53-22/53) (upstream of Wetland 1)
6. Tumbledown Dick (p.23/53-24/53)
7. Churchill Brook #2 (p. 24/53) (downstream of Wetland 2)
8. Pike Brook #3 (p.25/53-26/53) (downstream of Wetland 5)
9. Warren Brook (p. 27/53)
10. Wentworth Lake (p. 28/53) (downstream of Wetland 9)

## **Rivers and Streams**

Information that is in italics was taken from the Blue Moon Study for Moose Mountains Regional Greenways. Pages listed are from the User's Guide.

Pike Brook 1, 3, 5, 8 – **Wetland 1** is located north of Route 109, south of Robinson Road and west of the railroad tracks. It lies within the Salmon Falls River Watershed and is approximately 30.5 acres in size. It overlies a stratified drift aquifer and is located within a source water protection area. (p. 18/53)

**Wetland 3** is located northeast of Route 109, south of Robinson Road, and west of Route 16. It is approximately 58 acres in size. It overlies a stratified drift aquifer and is located within a source water protection area. (pp. 19/53 and 20/93)

**Wetland 5** is approximately 95.6 acres. It is located along the railroad tracks northeast of Clark Road.

**Wetland 8** is approximately 71.6 acres and is located in the upper reaches of the Pike Brook watershed (p. 25/53). Wetland 8 is mapped by the New Hampshire

*Natural Heritage Inventory as having a known location for a rare and/or endangered species. (p. 26/53)*

*Churchill Brook 2, 7 – **Wetland 2** is located east of Tucker Road along Churchill Brook and Pike Brook. It lies within the Salmon Falls River Watershed and is approximately 202 acres in size. Wetlands 2 overlies a stratified drift aquifer and is within a source water protection area. There are two public water supplies located within the wetland. Churchill Brook flows from Wetland 7 into Wetland 2 until it converges with Pike Brook. Pike Brook enters from the north, converges with Churchill Brook and flows into Wakefield Wetland 5 and the Branch River. (p. 19/53)*

***Wetland 7** is encompassed by Tucker Road, Governor's Road, and Route 109. It is approximately 32 acres in size. It overlies a stratified drift aquifer and lies partially within a source water protection area, (p. 24/53)*

*Warren Brook 9 – **Wetland 9** is an approximately 22 acre wetland located in a large portion of undeveloped land between Lake Wentworth, Route 109, and Kingswood Lake. (p. 27/53)*

*Lock Brook 4 – **Wetland 4** is approximately 20 acres. It is located in the headwaters of Pike Brook in the northernmost part of Brookfield close to Tibbets Hill Road. (p. 20/53) This wetland is mapped by the New Hampshire Natural Heritage Inventory as having a known location for a rare and/or endangered species. (p. 21/53)*

***Wetland 6** is approximately 30.4 acres in size and is in the Salmon Falls River Watershed. It is located near Tumbledown Dick Road. It is important wildlife habitat. It is a tributary to Churchill Brook. (p. 23/53)*

***Wetland 10** is approximately 168 acres and is located in the Lake Wentworth sub-drainage of the Lake Winnepesaukee Watershed. The wetland buffers a stream that flows into the eastern end of Lake Wentworth. (p. 28/53)*

In the August 2006 book The Land Conservation Plan for New Hampshire's Coastal Watersheds prepared for the New Hampshire Estuaries Project, Pike Brook and the Moose Mountains are listed as Conservation Focus Areas. Other water bodies

not studied but important to the watershed are Townsend Brook and Jones Brook.

**Hanson Brook** – is part of a stratified drift aquifer, as shown on the map in the document Town of Brookfield, New Hampshire, Master Plan: Toward the Year 2020, Aquifers p. 2.02-4. It is located along Moose Mountain Road. It flows through Mountain Lake in the Moose Mountains in Brookfield.

## **Important Wildlife and Plant Habitats in the Moose Mountains and Pike Brook areas**

This list comes from the August 2006 book The Land Conservation Plan for New Hampshire's Coastal Watersheds prepared for the New Hampshire Estuaries Project. The letter & number designation is defined as: G = Global Rarity (scale 1-5), S = State Rarity (scale 1-5)

Autumn Coralroot, endangered G5, S1

Small Whorled Pogonia, endangered, G2, S2

Moose Mountains Floodplain Forest, Marsh, Peat land, Ridge/Talus

Pike Brook Marsh, Peat Land

Three-Birds Orchid, threatened, G3 S2

Red maple-black ash-swamp saxifrage swamp

Rich Sloping fen system

Arethuse (*Arethusa bulbosa*)

Large Yellow Lady's Slipper (*Cypripedium parviflorum* variety)

Purple Trillium, Cotton Valley Road

Pale Green Orchid (*Platanthera flava* var. *herbiola*)

Ram's-head Lady's Slipper (*Cypripedium arietinum*)

Yellow Lady's Slipper (*Cypripedium Parviflorum* var. *Makasin*)

Common Loon (*Gavia immer*)



Others: Purple Trillium, Jack-in-Pulpit, Marsh Marigolds

## **Forests**

Unfragmented forest block of approximately 15,740 acres in the Moose Mountains (parts in the towns of Brookfield, Middleton, and Wakefield)

## **Lakes**

**Mountain Lake** (owned by NH Fish and Game) – Hanson Road. The lake is part of the Jones Brook Wildlife Management Area (also referred to as the Ellis Hatch Wildlife Management Area on some maps) which also contains Jones Pond.

**Kingswood Lake** (formerly called Cook’s Pond) – located off of Route 109. The lake contains Loon Sanctuary Island. The Brookfield Trust Green Belt was established in 1945 establishing land abutting parts of the lake as wildlife habitat.

## **Wildlife**

Coyotes

Beaver

Deer

Fox

Moose

Bear

Wild Turkeys

Bobcats

## **Rocks and Minerals**

To be developed

## **Watersheds**

Salmon Falls Watershed

Winnepesaukee Watershed

Saco River Watershed

## **Flood Plains**

Along Churchill Brook

## **Soils**

To be developed

## **Aquifers**

Aquifers as shown on map 2.02-4 in Master Plan toward the Year 2020

See maps in Town Office – Drinking Water Resources & Potential Contamination Sources for the Town of Brookfield, Feb 15, 2000 NHDES-WSEB

Warren Brook area

Churchill Brook area

Hanson Brook area

Townsend Brook Area

## **Prime Agricultural and Soils of Statewide Importance**

- Master Plan toward the Year 2020 map Strafford Regional Planning Commission, printed April 22, 2007
- 535 acres (p. V-8, Brookfield Master Plan 1990)
- 50 acres of blueberry fields off of Tibbets Hill Road
- Working farms – Tumbledown Dick Road off Route 109
- Via Lacteal – off Stoneham Road
- Iron Brook Farm – off Route 109

## **Conservation and Public Lands**

Map Brookfield, NH Granite Stafford Regional

	Map	Lot	Acres	
<b>Conservation Trusts</b>				
Lakes Region Conservation Trust, Woodman Hill Road, Copple Crown	37	1	75	
	44	2	89	
	44	3	53	
	44	4	85	
	45	1	90	
	45	2	110	
	45	3	230	
	Subtotal		<b>732</b>	
<b>Conservation Trusts (Privately Owned)</b>				
<b>(Easement held by Conservation Organizations)</b>				
Georgiana White/Nature Conservancy/Stoneham Road	3	11	15	
Dulcie & Tom Lavender/Stafford Rivers Conservation	9	14	41	
	9	13	45	
Dulcie & Tom Lavender/Town of Wakefield holds easement	9	9	32.9	
	10	9	<u>29</u>	
	Subtotal		<b>162.9</b>	
<b>Society for Protection of NH Forests</b>				
(Moose Mountain)	34	1	407	
	32	2	60	
	32	1	<u>91</u>	
	Subtotal		<b>558</b>	
<b>State of New Hampshire</b>				
NH Fish & Game				
Hanson Road (includes Jones Brook Wildlife Management Area)	35	1	53	
	35	1A	8	
	36	3	180	
	30	6	244	
	35	2	156	
	48	1	133	
	48	2	80	
	29	6,7,9,10-15	310	
	36	1	<u>100</u>	
	Subtotal		<b>1264</b>	
Railroad Tracks	8	2	<b>26</b>	
Kingswood Lake and surrounding land	28	16	0	dam
	27	4	0.37	island
	10	6	1.9	
	17	11	0.3	

	17	16	0.14
	17	17	0.12
	17	19	1.5
Subtotal			<b>4.33</b>
State of New Hampshire Subtotal			<b>1294.33</b>