

MARSH BILLINGS ROCKEFELLER

NATIONAL HISTORICAL PARK

As the country's only national park that promotes understanding and articulates the multifaceted history of conservation and environmental stewardship, Marsh-Billings-Rockefeller National Historical Park (MBR-NHP) stands alone in its national significance and operational direction. Its import draws from the complex interplay between landscape - natural and designed, architecture and artifact, history and biography - and intellectualism, considered both ideologically and through practical application over time.

This comprehensive approach to site interpretation and management, along with an emphasis on environmental and landscape history, made MBR-NHP an ideal choice for the pilot project for the Historic American Landscape Survey - sister program to the Historic American Buildings Survey and Historic American Engineering Record - which seek to provide inclusive insight through documentation.

The history of MBR-NHP begins in 1801, with its association with George Perkins Marsh, born at Mount Tom. As a U.S. congressman for Vermont and later as a U.S. diplomat abroad, Marsh became well-acquainted with both the extent of deforested landscapes at home and evolving international methods for managing and recreating lost and damaged landscapes. His landmark publication, *Man and Nature* (1864) - a major influence on the formation of the modern environmental movement - highlighted similarly

Town of Woodstock



lost and marred landscapes in his native Vermont and illustrated how such conditions stemmed from conscious human choice, often in the name of progress and need.

The environmental philosophy espoused by Marsh was put into active practice by the second dominant personality associated with MBR-NHP - Frederick Billings. Having made a fortune in law and real estate in California during the Gold Rush, Billings returned to the east with an appreciation of pristine natural grandeur and understood the potential for destruction as evidenced in the western gold fields. He purchased the former Marsh residence and grounds in 1869 and began to shift Vermont's sheep-based economy to an emphasis on dairying. Billings planned to reforest Mount Tom by employing modern forestry techniques.

Three generations of the Billings family continued and expanded the progressive dairying and forestry management efforts, employing the ideas of George Marsh in the locale in which he had lived. This active landscape management was sustained by Frederick Billings' wife and daughters after his death and continued by his granddaughter, Mary French, after her 1934 marriage to well-known conservationist Laurence S. Rockefeller. After inheriting the Billings house, grounds, and farm in 1951, the Rockefellers continued the historically superb stewardship and eventually established the Billings Farm & Museum (1983) and donated the mansion, surrounding grounds and 555

Farm



acres of forests and pastures on Mount Tom to the National Park Service (1992). MBR-NHP opened in 1998 with the mandate to maintain and build upon a nearly 200-year-old environmental legacy. In addition to insights gained from the remarkable natural and designed landscapes, the mansion remains a well-documented example of residential transformation with Federal, Second Empire, Slick and Queen Anne architectural elements. It houses a superb collection of nineteenth-century American landscape paintings by Thomas Cole, Asher Durand, Edward Moran and Albert Bierstadt. The mansion is surrounded by formal gardens that create a composite of features planned by Robert Morris Copeland (1869), Charles M. Platt (1899), Martha Brooks Hutcheson (1902), Ellen Biddle Shipman (1912) and Zenon Schreiber (1954).

In its entirety, MBR-NHP's varied landscapes, architecture, artifacts and historical associations - along with the related Billings Farm and Museum and the Conservation Study Institute - stand as an unparalleled cultural resource and a true national treasure.

The summer 2002 historic landscape documentation project was jointly sponsored by the Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscapes Survey (HABS/HAER/HALS); the Marsh-Billings-Rockefeller National Historical Park; the Conservation Study Institute; the Olmsted Center for Landscape Preservation; and the Park Historic Structures and Cultural Landscapes Division as a pilot project for the newly established HALS.

Mansion Grounds



The Marsh-Billings-Rockefeller NHP HALS project was conducted under the general direction of E. Blaine Cliver, Chief, HABS/HAER/HALS; Paul D. Dolinsky, Chief, HABS/HAER/HALS; Rolf Diamant, Superintendent, Marsh-Billings-Rockefeller NHP; Nora Mitchell, Director, Conservation Study Institute; Robert Page, Director, Olmsted Center for Landscape Preservation; Randy Biallas, Chief Historical Architect and Lucy Lawless, Historical Landscape Architect, Park Historic Structures and Cultural Landscapes.

The landscape documentation was executed by the following team:
Douglas Dilworth, Landscape Architect (Auburn, Alabama), USA
Barbara Furmanik, Landscape Architect (Center for Preservation of Historic Landscape / US/ICOMOS), Poland
Emma Hall, Landscape Architect (Heritage Conservation Program / US/ICOMOS), Canada
Betsy Melrose, Landscape Architect (Portland, Maine), USA
Norma Williams, Landscape Architect (Ridgefield, CT), USA (supervisor)

Landscape documentary photography was undertaken by Jack E. Boucher, HABS photographer, Washington, DC office. Direction and support was given by the professional staff of Marsh-Billings-Rockefeller NHP including Janet Houghton, Park Curator, Christina Maris, Outdoor Recreational Planner and Mea Arego, Park Administrative Officer; the staff of the Billings Farm & Museum and the Woodstock Foundation.

Forest



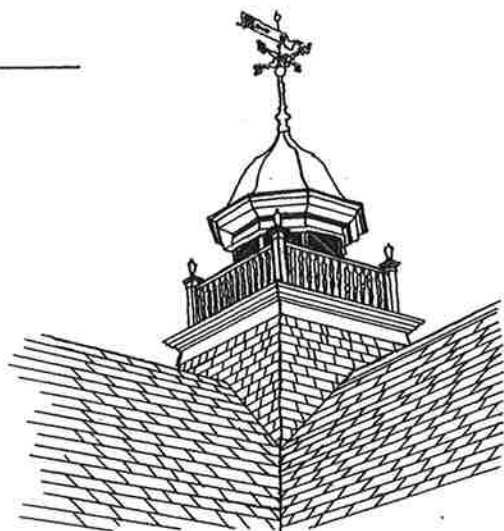
SOURCES

The references cited here were referred to in general terms, or specifically on one or more of the eighteen sheets. Please refer to the sheet numbers indicated in brackets at the end of each citation in order to ascertain relevant material used on a particular sheet.

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In the interest of brevity, Marsh-Billings-Rockefeller National Historical Park has been abbreviated to MBR-NHP.



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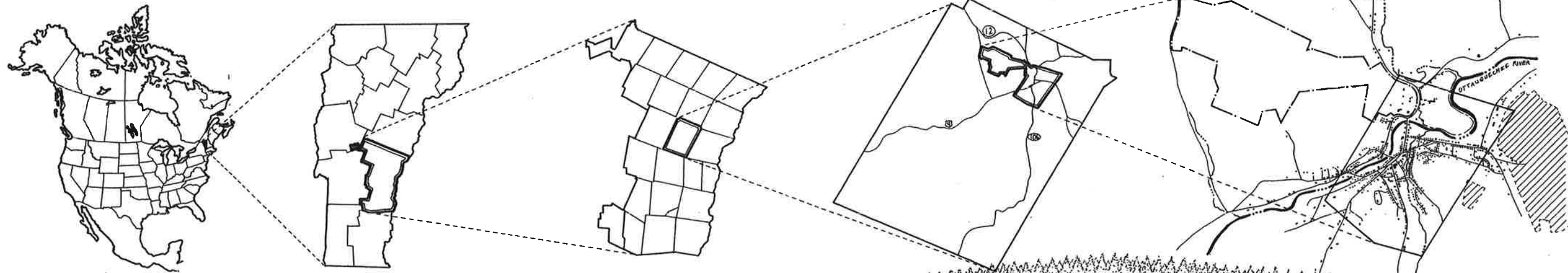
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GEO-POLITICAL CONTEXT



STATE OF VERMONT

WINDSOR COUNTY

TOWN OF WOODSTOCK

VILLAGE OF WOODSTOCK

Charles Marsh, the father of George Perkins Marsh, was instrumental in the development of Elm Street in 1797. It became lined with businesses, including Marsh's law office, residences, and the Congregational Church. In 1805, Marsh started construction of a brick house north of the river overlooking Elm Street. It would become the mansion house for Frederick Billings and later for Laurence & Mary Rockefeller. The ornamental portions of an iron bridge constructed in the 1870s have been integrated into the current Elm Street Bridge. Elm Street has connected the village of Woodstock and the Marsh, Billings, and Rockefeller families for over 200 years, and this connection continues today with the Marsh-Billings-Rockefeller National Historical Park.

Nestled at the foot of Mount Tom in eastern Vermont, Marsh-Billings-Rockefeller National Historical Park adjoins the village of Woodstock. The village, incorporated in 1772, was the shire town for Windsor County. For over a century it has been a resort town, and is known by many as one of New England's most beautiful villages. The town of Woodstock has an area of 27,776 acres and a population of 3,232.

The 555 acre historic zone of the Marsh-Billings-Rockefeller National Historical Park was donated to the United States of America by Mary F. and Laurence S. Rockefeller. It consists of the forest and residential area west of Elm Street. The 88 acre farm core east of Elm Street is designated a resource protection zone within the National Park Service legislative boundary. It is owned and operated by the Woodstock Foundation as the Billings Farm and Museum. Two scenic zones, consisting of approximately 300 acres where the federal government holds scenic easements, are located outside the park boundary.

SECTION LOOKING WEST ALONG ELM STREET



Congregational Church
(1807)

Collamer House
(1832)

Aylwin-Chapman
House
(1829)

Emmons House
(1800)

Ottauquechee River

Summer Houses
(1870s)

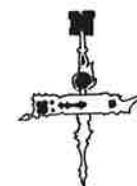
Mansion
(1805-07)

KEY

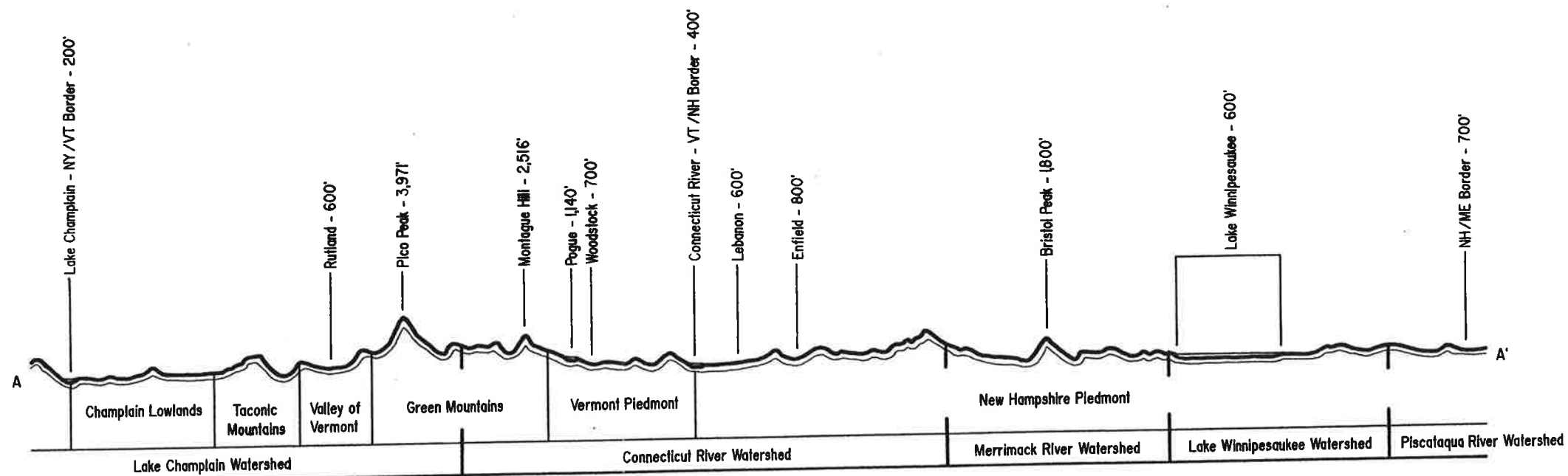
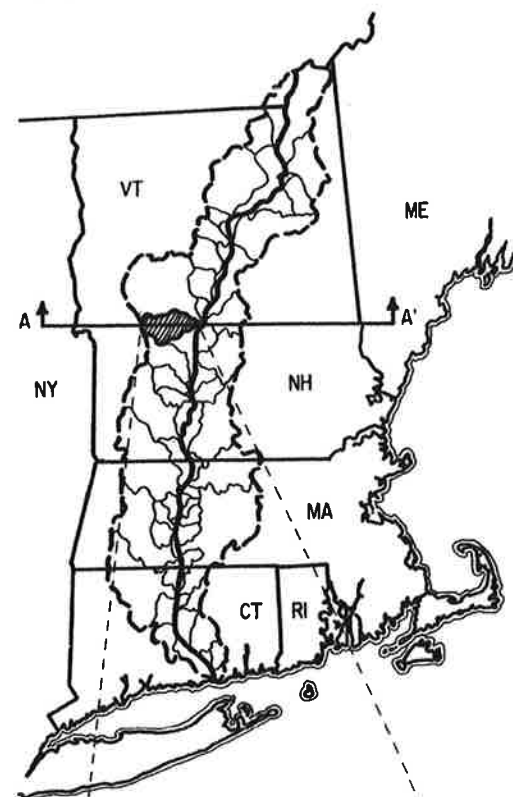
- MBR Boundary
- BFM Boundary
- Stream
- Building
- Road
- /// Scenic Easement

NOTE: For sources, see sheet 2 of 18

SECTION SCALE 1"=100'

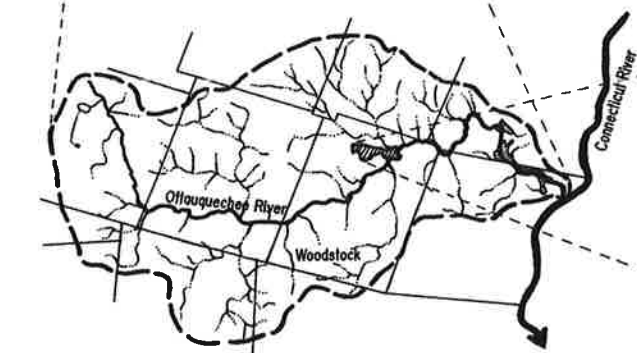


WATERSHEDS



SECTION A-A' - PHYSIOGRAPHIC REGIONS AND WATERSHEDS

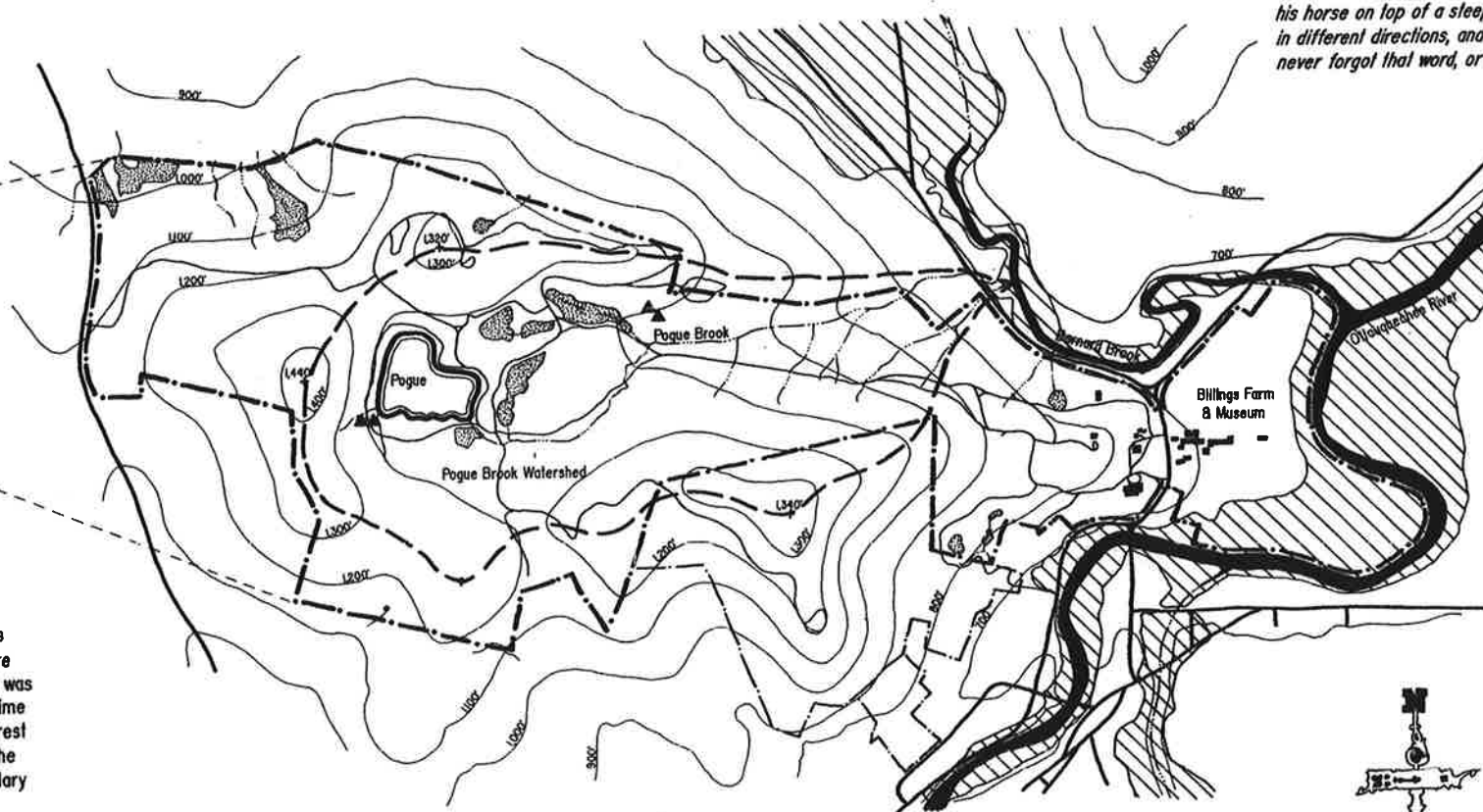
CONNECTICUT RIVER WATERSHED



OTTAUQUECHÉE RIVER WATERSHED

The relationship between watersheds and land development was the foundation for the evolution of the site. George Perkins Marsh grew up in an era of human misuse of the land. Deforestation and overgrazing by farm animals had led to mass erosion, major floods, and significant sedimentation of waterways, reducing water quality for wildlife. He learned through his father about how the definition of a watershed relates to topography and the composition of natural forest systems. In 1864, Marsh wrote a

book, called "Man and Nature," about the importance of people changing their attitudes about the land, because human activities were destroying the landscape. Frederick Billings was influenced by Marsh's book, and during the time of his tenure, he implemented a plan to reforest the denuded landscape to help rehabilitate the abused watershed systems. Laurance and Mary Rockefeller continued the conservation and stewardship values of George Perkins Marsh and Frederick Billings.



I sat on a little stool between my father's knees in the two-wheeled chaise he always drove. To my mind the whole earth spread out before me. My father pointed out the most striking trees as we passed them and told me how to distinguish their varieties. I do not think I ever afterward failed to know one forest tree from another...What struck me, perhaps most of all, he stopped his horse on top of a steep hill, bade me notice how the water there flowed in different directions, and told me such a point was called a watershed. I never forgot that word, or any part of my father's talk that day.

- George Perkins Marsh

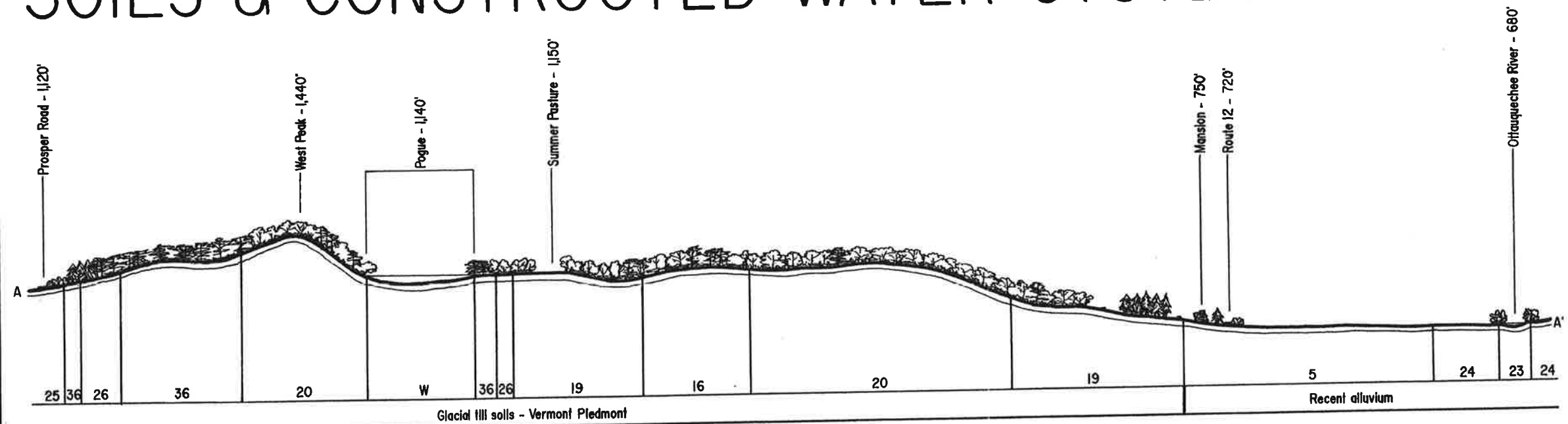
- KEY**
- Watershed boundary
 - ▲ Spring
 - Welland
 - Stream/Brook
 - Intermittent stream
 - 100-Year flood area
 - Town road
 - Carriage road
 - Woodstock park boundary
 - NPS legislative boundary

NOTE: For sources, see sheet 2 of 18

SCALE 1" = 800'

0 400 800 1600 2400

SOILS & CONSTRUCTED WATER SYSTEMS

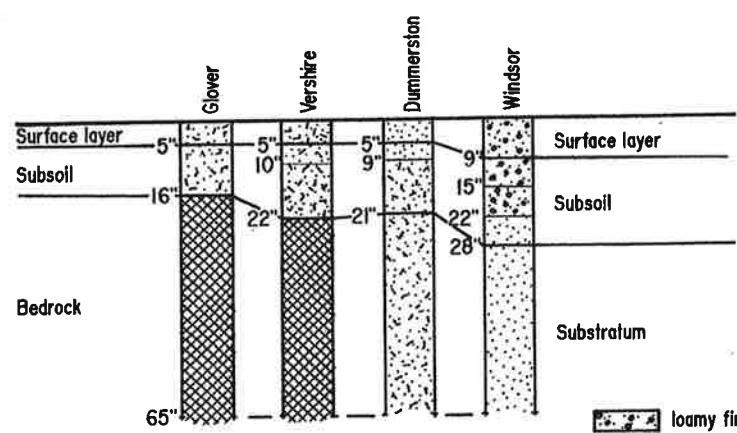


Natural hydrology, topography, and soils influenced constructed water systems and land use on this site. George Perkins Marsh's father, Charles Marsh, constructed an innovative system to harness natural water. "[T]he first aqueduct laid anywhere in the region" was constructed out of wood pipes hollowed out from trees. This "pump-log" aqueduct brought water to the Marsh house "from a spring on the north side of the hill, over against the mill-pond." Unfortunately, traces of this system no longer exist.

The original Pogue was a marshy bog that was part of the Dana property until 1884, when Frederick Billings purchased the property. Billings converted this marshy bog into the pond it is today by removing the peat (which was used to fertilize the farm fields) and by installing a dam in 1890. The high elevation of the Pogue and natural springs on site was capitalized on through the installation of a pipeline system constructed in 1900-02, as mentioned in early writings. The piped water was used throughout the Billings property and was even "turned into the village mains" during August and September in 1908.

On the Billings property, this water was used in the Mansion, Belvedere, Carriage Barn, farmhouse, garden areas, and watering troughs. Small wooden structures cover access points to the underground network of pipelines. Today, the piped water is used in the Hillside Gardens and for irrigation on the Mansion grounds and at the Billings Farm & Museum for crops.

SECTION A-A'

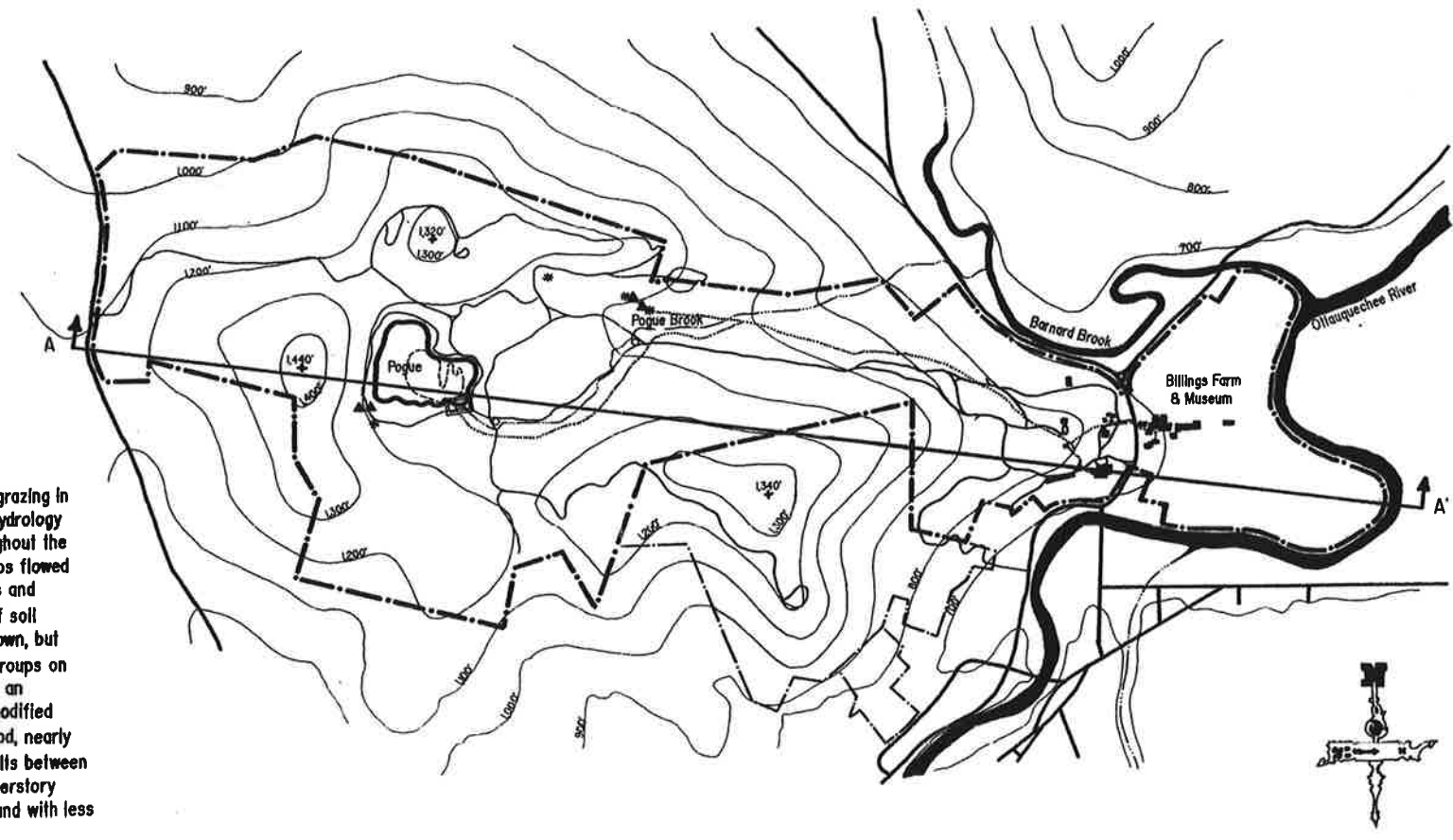


TYPICAL SOIL PROFILES

These typical soil profiles show depth of different soil layers and types, to 65 inches. Color and slope are also used to describe soils, with A being a shallower slope than E. Some soils located within the park are complex; meaning that differentiation has not been made where more than one soil type is located in the same area with similar pattern and proportion. The park consists of soils from two different types of parent material, recent alluvium and glacial till. Windsor, Podunk, and Ondawa soils are from recent alluvium, meaning from material such as sand, silt, or clay, deposited on land by streams. The remaining soils on the site are from glacial till, meaning from unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Removal of vegetative cover and overgrazing in the mid-1800s greatly affected the hydrology and soils of this site, as well as throughout the area. Soil eroded from denuded hilltops flowed down to rivers, causing massive floods and reducing water quality. The amount of soil eroded during this time period is unknown, but through knowledge of soil hydrologic groups on the site and approximate forest cover, an estimate can be developed. Using a modified Soil Conservation Service (SCS) method, nearly one and a half times more runoff results between a good stand of forested land with understory and leaf litter versus grazed pasture land with less than 50 percent ground cover.

- | | | | |
|-------------------|--|----|--|
| SOIL TYPES | | | |
| W | Water | 19 | Vershire-Dummerston complex, rocky |
| 5 | Windsor loamy fine sand | 20 | Glover-Vershire complex, very rocky |
| 15 | Dummerston fine sandy loam | 23 | Ondawa fine sandy loam, occasionally flooded |
| 16 | Dummerston fine sandy loam, very stony | 24 | Podunk fine sandy loam, occasionally flooded |
| | | 25 | Buckland fine sandy loam |
| | | 26 | Buckland fine sandy loam, very stony |
| | | 31 | Cabot loam, very stony |
| | | 36 | Teago-Pomfret complex, rocky |



- KEY**
- Stream/Brook
 - Pipeline (location not field verified)
 - Spring
 - Well
 - Water trough
 - Dam
 - Historic Pogue
 - Town road
 - Carriage road
 - Woodstock park boundary
 - NPS legislative boundary

NOTE: For sources, see sheet 2 of 18
SCALE 1" = 800'
0 400 800 1600 2400

LAND USE PATTERNS

INTRODUCTION

Land use patterns are a result of human use imposed upon the natural systems of the land. The landscape of Woodstock and the Marsh-Billings-Rockefeller National Historical Park is a result of millions of years of geologic history of bedrock formation and erosion. The retreat of the Wisconsin glacier about 12,500 years ago was the final force that gave the present character to the valleys and gentle hills in the area. For the past 4,500 years the landscape has been covered by a relatively stable beech-maple forest. Prior to European settlement in the 1700s this forest extended with very little interruption across all of present day Vermont.

The land we now called Vermont has been used by native people since 9000 B.C.E. The Woodland period dating from 900 B.C.E. to 1600 C.E. contained the people called the Abenaki or "People of the Dawnland". In the 1600s the Western Abenaki inhabited most of Vermont, New Hampshire, a portion of western Maine, and southern Quebec. They were hunter-gatherer-agricultural people who moved about the landscape to take advantage of the food supply. Their villages were generally overlooking rivers where there was an abundant water supply, good areas for fishing, and rich soil for growing crops. They moved up to their hunting camps in the forested mountainsides as the seasons changed. Although their impact on the land was slight, the Abenaki cleared areas for their villages and crops, often opened up areas in the forest to attract deer, and made paths to and from their villages and hunting camps.

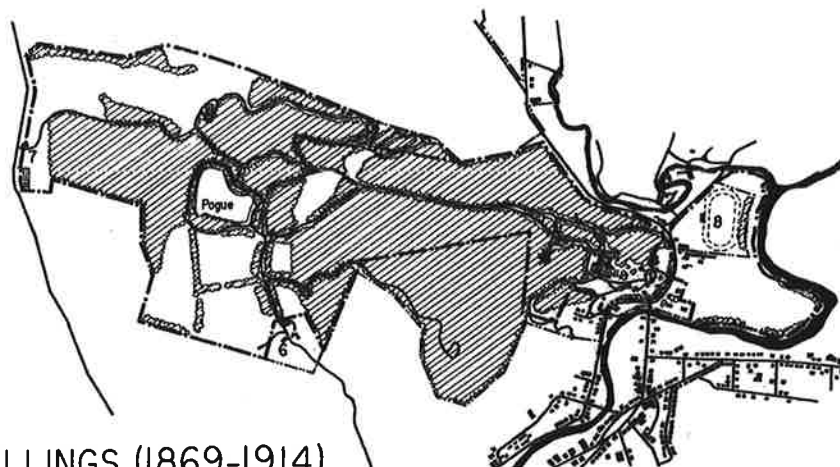
In Woodstock it was said that the Abenaki had a camping site in a cleared area among a grove of white pines on the Ottauquechee floodplain or intervale. This location would have provided all their needs for abundant water for drinking and fishing, rich alluvial soil for crops, and forested hillside habitat for game. Two groups of Europeans came to Vermont starting in the early 1600s; the French from the north along the St. Lawrence River to Lake Champlain and the English from the south along the Connecticut River. Slowly the landscape was cleared for crops and small buildings, but after the end of the Revolutionary War settlement intensified, mainly with settlers from southern New England.

"As soon as multiplying man had filled the open grounds along the margin of the rivers, the lakes, and sea, and sufficiently peopled the natural meadows and savannas of the interior, where such existed, he could find room for expansion and further growth only by the removal of a portion of the forest that hemmed him in. The destruction of the woods then was man's first conquest, his first violation of the harmonies of inanimate nature."
(George Perkins Marsh, 1864)



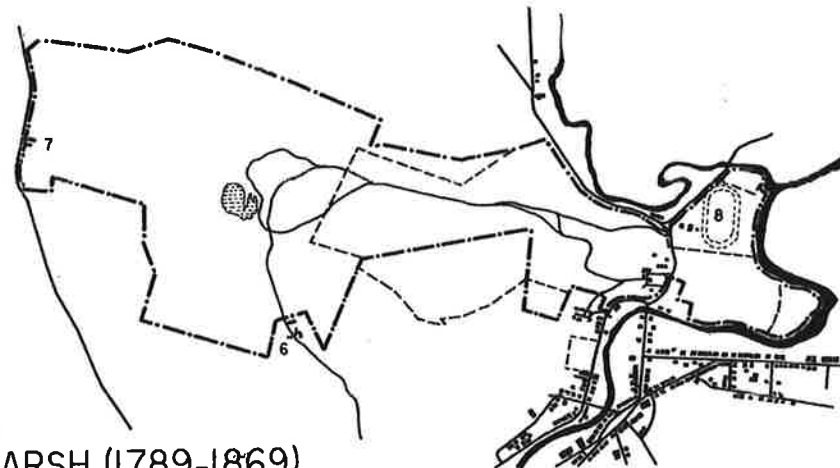
EUROPEAN SETTLEMENT (1760s-1789)

In 1760 New Hampshire established 112 new towns in the Connecticut River Valley, one of these was Woodstock. Temporary shelters were built by trappers and squatters soon after, including a log hut built by John Perkins in the Ottauquechee River intervale. In 1767 John Rogers received a tract of 1000 acres on Mount Tom. The town of Woodstock was organized under a royal patent in 1772 and the first permanent homesteads were located on the current town green. The impact on the land was minimal with areas cleared for crops and trees cut for building. In 1776 John Holsington acquired 200 acres on the Ottauquechee intervale and did further clearing for farming. In 1783 50 acres of this land was sold to James Cady.



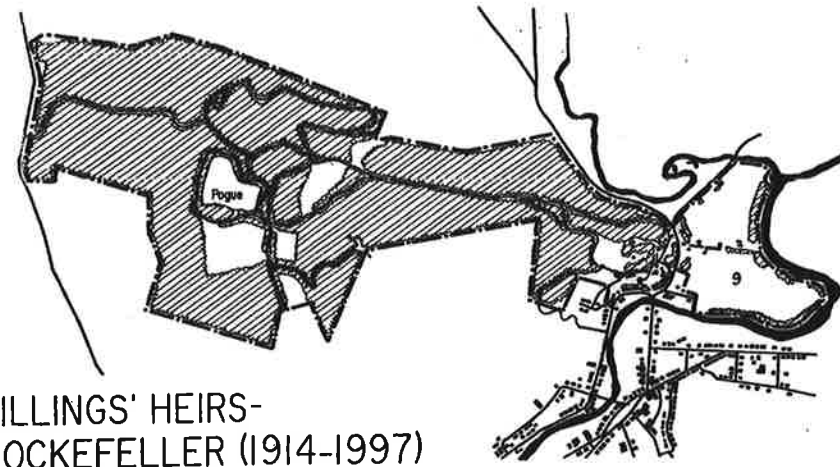
BILLINGS (1869-1914)

In 1869 Frederick Billings bought the Marsh farm and transformed the mansion and grounds into a fashionable country place, enlarging the house and redesigning the grounds in the English style. Billings also initiated a program to turn his estate into a model of rural improvements based on the conservation principles laid out by George Perkins Marsh. In 1874 he started major plantations of trees on the slopes of Mount Tom to correct the eroded conditions and add to the beauty of his estate. Later he built carriage drives to the summit that were open to the public for their enjoyment and edification. To improve his farm operations he hired a farm manager skilled in scientific farming principles. After Frederick Billings' death, his wife Julia continued his efforts and with her daughters added neoclassical terrace gardens to the mansion grounds.



MARSH (1789-1869)

In 1789 Charles Marsh purchased 50 acres of land on the Ottauquechee River intervale from James Cady. Marsh was a prominent lawyer and citizen of Woodstock and added further holdings to his farm, including part of the Rogers Tract on Mount Tom. In 1805 he built a large, Federal-style brick house at the end of Elm Street with views to the village and intervale. Like most of Vermont at this time, the hillsides of Mount Tom had been exposed by tree cutting, fire and over grazing. George Perkins Marsh grew up here and spent many hours observing the conditions in this landscape. Charles Marsh (Junior) ran the farm for 20 years after inheriting it. He sold some of the land, including 50 acres to the Windsor County Agricultural Fair, but made few other changes.



BILLINGS' HEIRS-ROCKEFELLER (1914-1997)

After Julia Billings' death in 1914, the property was divided among her children, who continued to enjoy it although it began to deteriorate. After WWII the farm was revamped and became a successful commercial venture. In 1951, after the death of Mary Montagu Billings French, the north and south peaks of Mount Tom were donated to the town, and Mary French Rockefeller inherited the mansion and grounds. She and her husband, Laurance Rockefeller, started to renovate them. In 1974 they purchased the farm and much of the Mount Tom lands, re-establishing the core of the Billings estate. Following his conservation beliefs, Rockefeller donated the properties to become the Billings Farm & Museum opened to the public in 1983, and the Marsh-Billings National Historical Park opened to the public in 1998.

KEY

- 1. John Strong's Mill
- 2. John Perkins' log hut (ca 1769)
- 3. James Cady's house (ca 1783)
- 4. Robert Taylor's house (pre 1787)
- 5. John Holsington's house
- 6. Dana farm
- 7. McKenzie farm
- 8. Windsor County Agricultural Society Fair grounds
- 9. Billings Farm & Museum

- Buildings
- Forest, plantations
- Open areas (meadows, pasture)
- Wetland
- Pogue
- Rivers, streams
- Orchards
- Flower beds
- Town roads
- Carriage roads
- Marsh holdings boundary (ca 1869)
- Billings holdings boundary (ca 1914)
- NPS legislative boundary

NOTE: For sources, see sheet 2 of 18



SCALE 1" = 1500'

0 750 1500 3000 4500

MARSH-BILLINGS-ROCKEFELLER NATIONAL HISTORICAL PARK

WOODSTOCK, VERMONT

54 ELM STREET

BARBARA FURMANIK

TEXT BY: NORMA WILLIAMS

SUMMER 2002

NATIONAL PARK SERVICE

UNITED STATES DEPARTMENT OF THE INTERIOR

WINDSOR COUNTY

HISTORIC AMERICAN LANDSCAPES SURVEY

SHEET 6 OF 19 SHEETS

VT-1

DATE OF DELINEATOR, DATE OF THE DRAWING

REPRODUCED PLEASE CREDIT HISTORIC AMERICAN LANDSCAPES SURVEY, NATIONAL PARK SERVICE, NAME OF DELINEATOR, DATE OF THE DRAWING

CHARACTER AREAS

FOREST

The forested hillsides of Mount Tom make up the Forest Area, where the often steep topography dominates the character of the landscape. However, the variations in the vegetation and land use, the views and man-made features add to the complexity and subtlety of the character of this zone. The Mount Tom Carriage Road, built by

Frederick Billings as a source of pleasure and recreation for the public and a way for them to view his experiment in reforestation on Mount Tom, ties areas of different character together as it winds up the mountain. Openings in the forest provide views of sunlit pastures and fields, the Pogue is discovered lying between the mountaintops, and views across meadows frame Mount Ascutney to the south. The character of the forest changes too, with forest plantations of single species having subtly different character from the mixed forest stands. The regularity of spacing and size, as well as the height of the canopy and composition of the understory gives the plantations a distinctive character. The carriage road culminates at the south peak of Mount Tom with a panoramic view of the village of Woodstock and the Ottauquechee River valley.

In the Forest Area, as in the rest of the site, traces of prior human use such as solitary wolf trees, granite boundary markers, and stonewalls speak of prior uses as upland farms. Turns in the carriage road reveal stone walls constructed to maintain an easy grade up the mountain. Formal elements such as water troughs along the road in the forest and a wrought iron hitching post at the peak are reminders of Billings' intention that this forest be a place for public pleasure as well as a model for good conservation practices.



MANSION GROUNDS

The manicured lawns, shade trees, and ornamental shrubs surrounding the brick mansion house give this area the character of a well-cared for country place. Evergreen plantings screen the property from the street, except for a break that permits a panoramic view east across the farm land in the Ottauquechee River intervalle to the hillside beyond covered with a mosaic of fields and forests. The drives curve throughout the grounds, fitting onto the topography and joining the various outbuildings. Majestic Norway spruce are the signature trees, forming a backdrop to the north and west of the mansion, making up much of the screening to the south and east, and as a single specimen at the center of the entrance.

To the west of the mansion the landscape has a slightly different character. The ground has been terraced to accommodate a quincunx-plan flower garden, greenhouses, Belvedere, and other structures that give the area a more formal feeling. Surrounding the garden and lawn, naturalistic rock garden plants are set around the stone walls and rock outcroppings in an informal fashion. The Long Terrace walk extending west from the flower garden ends with a white-painted neoclassical-style bench with tall evergreen trees behind framing a vista to Mount Tom. North of the formal garden area, a grass-covered drive enters a shady wooded area on the hillside. The drive passes by a series of intimate, naturalistic gardens that draw your eye to the low-growing plants and small pools, and continues to the Bungalow with vistas to the north and east. The varied styles and well-cared-for domestic character of this area speak of the generations who have been stewards of this estate.



FARM

The open, flat landscape with farm buildings, crops, pasture and farm animals are the lasting impression of the Farm area. Clearing has exposed the floodplain, or intervalle, of the Ottauquechee River which forms the eastern boundary of the site and can be easily distinguished by the trees and other vegetation which line its course.

From the shady border along the river, there are panoramic views back to the mansion and Mount Tom hillside. Elm Street forms the farm's western boundary and two farm residences are set back from the road on a slightly elevated area with their front doors and porches facing the street. Lawns with shade trees and ornamental plantings give a pleasant, residential character to this area. South of the residences a small orchard is laid out in an open area gently sloping down from Elm Street.

The Billings Farm & Museum Visitor Center is located behind the residences and is designed in a style compatible with the vernacular farm structures. The visitor center, working barns and outbuildings are organized in an orthogonal fashion, with many of the structures connected to each other. Split rail fencing divides up the pastures and other work areas in a similar fashion, and the crops growing south of the barns maintain this overall orthogonal layout. The parking lot is set behind a pasture north of the visitor center, and simple plantings of ornamental trees and perennials help it to fit harmoniously into the landscape. Although a working, utilitarian landscape and now a popular tourist destination, the farm has a well-cared-for, prosperous appearance, fitting its role as an educational institution and carrying on Billings' tradition of land stewardship.



"To the natural philosopher, the descriptive poet, the painter, and the sculptor, as well as to the common observer, the power most important to cultivate, and, at the same time, hardest to acquire, is that of seeing what is before him. Sight is a faculty; seeing, an art. (...) The revelation of the nature, of the seasons, with their alternations of temperature, and of length of day, the climates of different zones, depend upon causes for the most part cosmical. (...) But, as we have seen, man has reacted upon organized and in-organic nature, and thereby modified, if not determined, the material structure of his earthy home. The measure of that reaction manifestly constitutes a very important element in the appreciation of the relations between mind and matter."

(George Perkins Marsh, 1864)

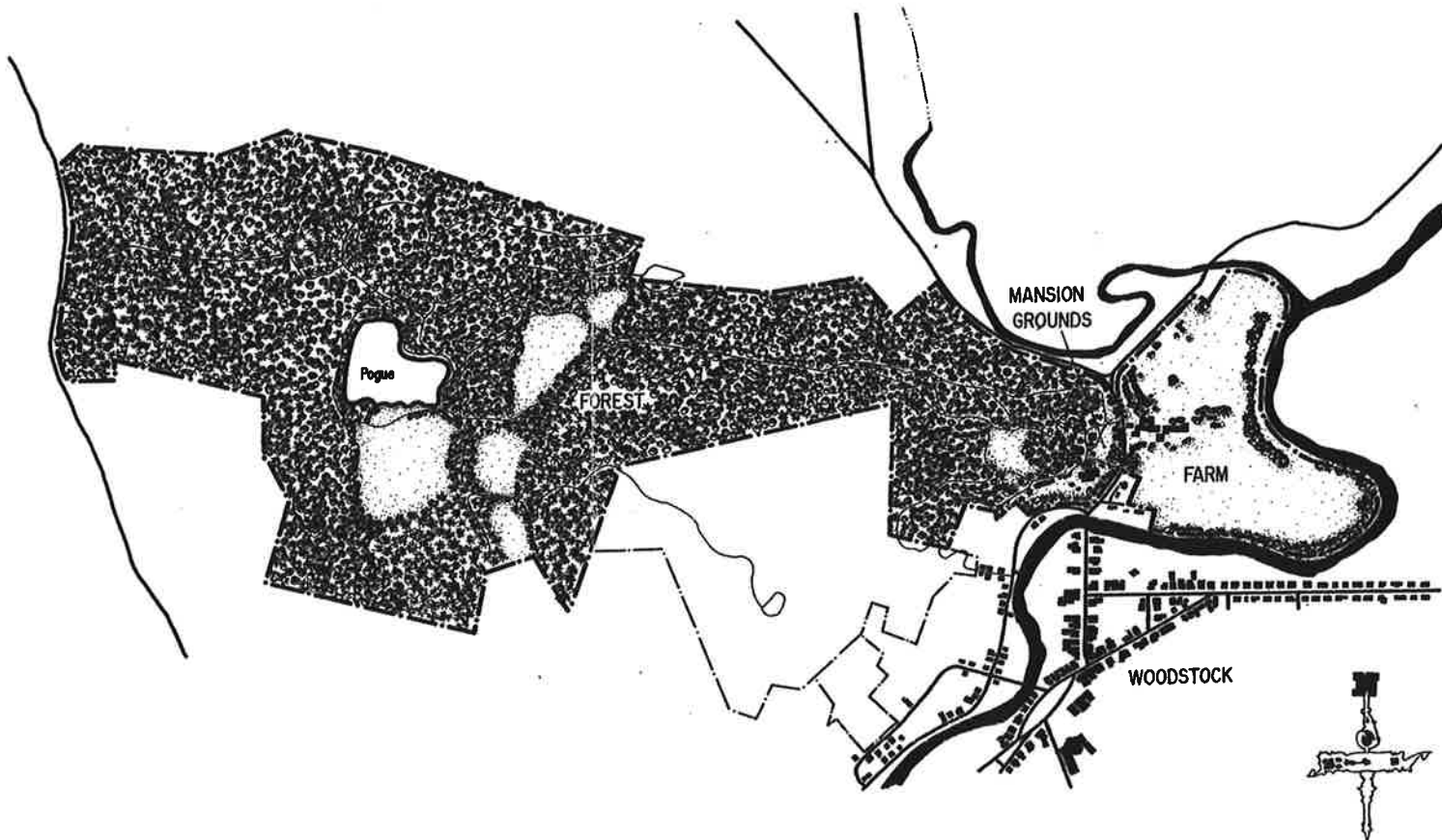
WOODSTOCK

The village of Woodstock, located south of the Marsh-Billings-Rockefeller National Historical Park, gives the impression of a small New England town, with a green in the middle of its main street surrounded by residences, churches, and public buildings.

The commercial district, which extends from the green to the east, is compatible in style and scale. Although the village has grown and spread out over its more than 200-year history, it has maintained a compact character. It is organized in a linear fashion along the main street, U.S. Route 4, following the Ottauquechee River, with other streets often set at right angles as the topography allows. The other major street in the village is Elm Street which angles off Route 4 just east of the green, and continues north across the river. Although the mansion house originally looked down Elm Street, the mature plantings at the edge of the property now screen it from view.



Mount Tom and the Ottauquechee River, which were both important in determining the form of the town, remain dominant features in the landscape. Faulkner Park and Billings Park, town parks located at the base of Mount Tom, physically link the village to the Marsh-Billings-Rockefeller National Historical Park with trails that ascend to the South Peak of Mount Tom and join the Mount Tom Carriage Road. Three crossings of the river make it more accessible and a part of the life of the village. Mature trees and sidewalks border the streets, with ornamental plantings and fences in the residential areas, and window boxes and planters in the commercial area, making it a pleasant place for tourists and residents. The churches, public buildings and public open spaces give the village the character of a prosperous community.



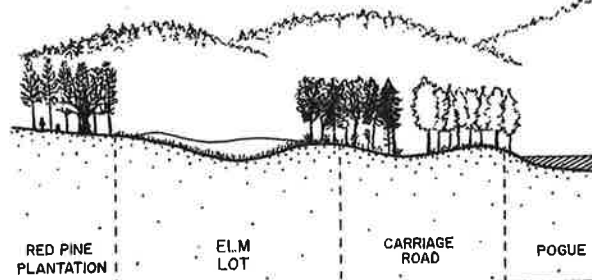
- KEY
- Buildings
 - Forest, plantations
 - Open areas (meadows, pasture)
 - Pogue
 - Rivers, streams
 - Town roads
 - Carriage roads
 - Woodstock park boundary
 - NPS legislative boundary

NOTE: For sources, see sheet 2 of 18

EXPERIENCING THE LANDSCAPE

HIKING TRAILS

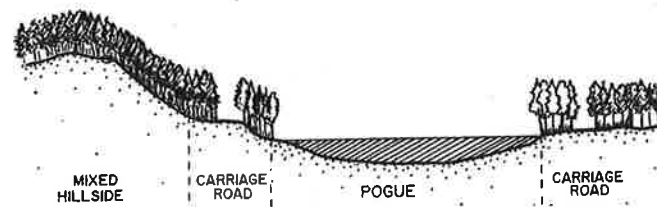
A 20 mile network of footpaths and carriage roads connect the village of Woodstock with the forests of Mount Tom. Frederick Billings constructed these trails for public enjoyment. A few of the trails that are part of the network include the Precipice, Lower Link, and Faulkner trails. These can be found in Faulkner Park and Billings Park leading to the South Peak of Mount Tom and extending into MBR parkland. A hiker in MBR-NHP will experience Vermont's first and oldest tree farm, which also, is one of North America's oldest continuously managed woodlands. The woodland encompasses fifty different forest stands, eleven remaining tree plantations of single and mixed species, as well as former farming fields.



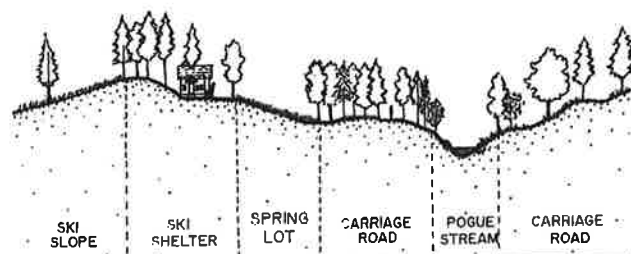
SECTION A-A'

SKIING TRAILS

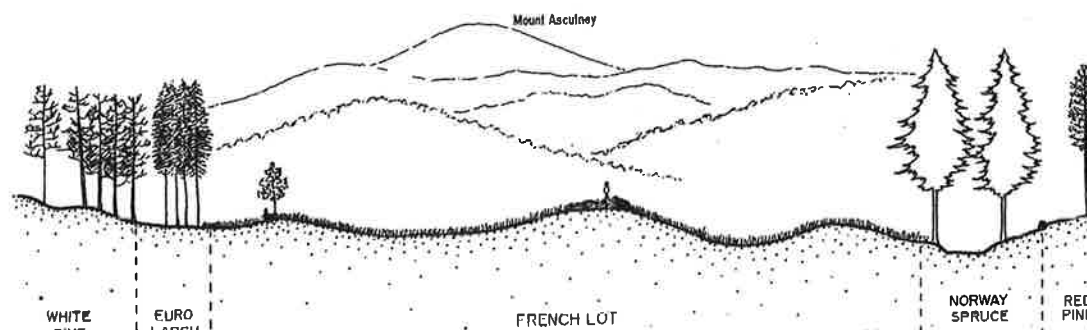
During the winter, a network of trails on Mount Tom serves snowshoers and cross-country skiers. Operated by the Woodstock Ski Touring Center as early as 1910, 19 miles of trails transverse Mount Tom and allow users to experience this landscape during all four seasons. Prior to use of snowshoes or skis on Mount Tom trails, one must obtain a trail pass at the touring center. Located on the northern boundary of MBR-NHP, the Mount Tom log cabin is a popular destination to relax, warm up, and enjoy refreshment.



SECTION C-C'



SECTION B-B'



SECTION D-D'

CARRIAGE ROADS

Frederick Billings is primarily responsible for overseeing the construction of the current network of nearly 10 miles of carriage roads throughout the park. Billings began connecting existing farm roads that were used to access remnant woodlots and hillside pastures. Learning from the writings of George Perkins Marsh, Billings sought to implement conservation philosophy by restoring the environmental stability of Mount Tom. He began reforestation of the land to serve as a model of conservation and scientific forestry management. The roads that once carried away Mount Tom's trees and subsequent habitat are now used to renew our connections to the land and continue to demonstrate appropriate forestry practices. Visitors on foot, horseback, and carriage can access these now reforested slopes. An easy grade of crushed stone and gravel winds through this diverse environment, allowing a chance to learn about ecological recovery through experiencing the landscape.

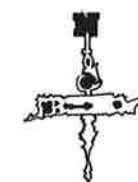


SECTION F-F'

KEY

- NPS legislative boundary
- Faulkner Park Boundary
- Billings Park Boundary
- ★ Trailhead
- - - Hiking Trail
- - - Ski Trail
- Carriage Road
- Tree Canopy
- Stream
- ↗ View or Vista
- ▨ Scenic easement
- Ⓜ Cemetery

NOTE: For sources, see sheet 2 of 18



SCALE 1" = 1000'
0 500 1000 2000 4000

DOUGLAS B. DILWORTH

SUMMER 2002

NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

54 ELM STREET

MARSH-BILLINGS-ROCKFELLER NATIONAL HISTORICAL PARK

WINDSOR COUNTY
WOODSTOCK, VERMONT

SURVEY NO. VT-1
HISTORIC AMERICAN
LANDSCAPE SURVEY
SHEET 8 OF 19 SHEETS

IF REPRODUCED, PLEASE CREDIT: HISTORICAL AMERICAN LANDSCAPE SURVEY, NATIONAL PARK SERVICE, NAME OF DELINEATOR, DATE OF DRAWING

FARM

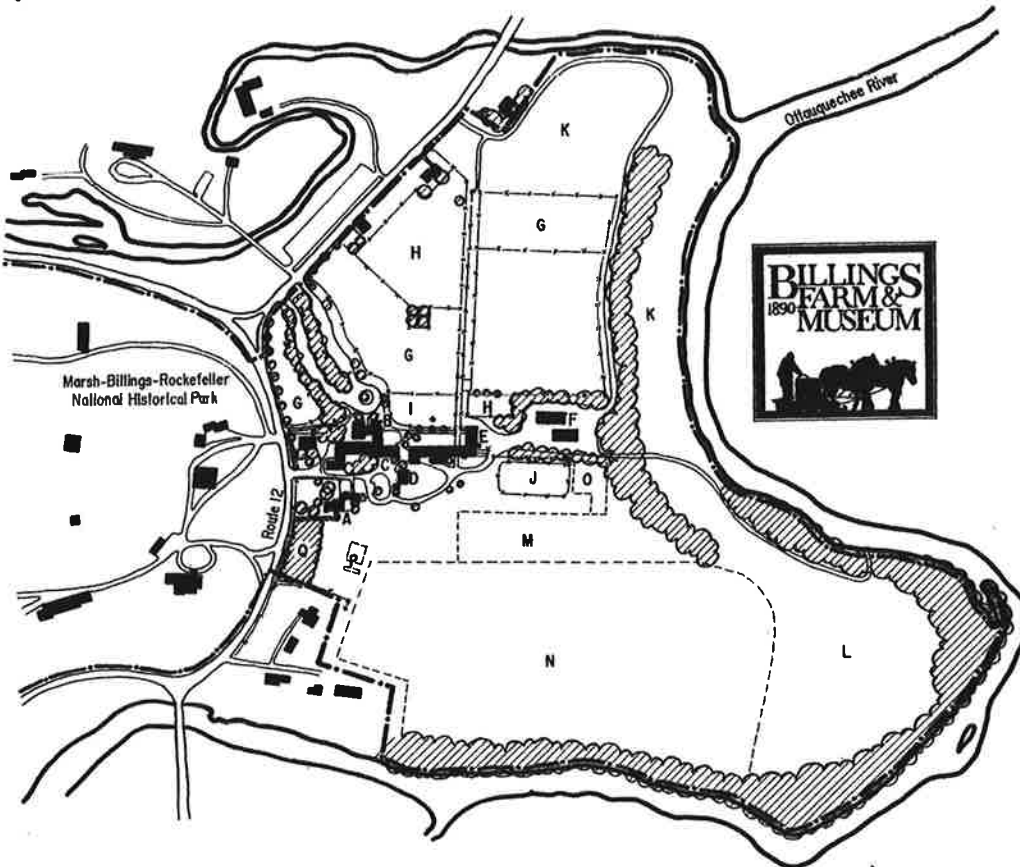
FARM HISTORY

The interval along the Ottauquechee River has been the location of farming activities for hundreds of years due to its fertile soil and proximity to water. When Yankees first settled in the area in the 1770s, they found a cleared area along the river, most likely an Abenaki temporary settlement where they camped and tended gardens. The family of George Perkins Marsh developed the first farm on the site in the 1790s. In 1869, Frederick Billings bought the Marsh farm. During the Billings Era (1869-1954) the farm expanded to its largest size, approximately 1,420 acres. The plan below does not illustrate the location of approximately 120 acres in Pomfret. The McKenzie and Hilltop/Dana farms were included in the farm property, and utilized for farming operations.

Frederick Billings almost immediately began working with his farm manager to develop the Billings farm as a model for agricultural improvement and land stewardship. Billings worked with farm manager George Aiken to develop the farm to its maximum potential. The farm imported Jersey dairy cows, Southdown sheep, Berkshire hogs, and Buff Cochins chickens to maximize farm production. Billings also implemented a pioneering reforestation program, establishing Norway spruce, European larch, eastern white pine, and mixed deciduous plantations. Sugarbushes on the property were used for sugaring operations and timber was harvested and milled on site at the woodshed.

After Frederick Billings' death in 1890, his heirs continued to develop the farm in his tradition. His widow and daughters purchased additional land, expanding the farm to its full extent. Additional plantations were established, and the farm continued producing award winning Jersey cattle. At the 1893 World's Fair, cows from the Billings Jersey herd were named best in the nation. George Aiken died in 1910, and in 1917, Arthur Snyder was hired as the new property manager. Hard times hit during the Great Depression and World War I and Snyder helped the Billings family continue farm operations. In 1932, Frederick Billings' wish finally came true to purchase the Windsor County Fairgrounds, located adjacent to the farm's livestock barns. The hard times of the Great Depression affected the farm, and the herd was dispersed in 1936. Only a few cows remained through World War II, when the farm's interval fields were given over to Victory Gardens filled by Woodstock residents. In 1946, Arthur Snyder retired as property manager and Harold Corkum was hired. He led the redevelopment of the farm as a profitable commercial dairy serving the surrounding area.

Laurance S. Rockefeller bought the Billings farm from Mary Rockefeller's brother, John French, in 1974. The Rockefellers hired James R. "Bob" Lord, a well-known Jersey cattle breeder, to maintain the tradition of excellence at the farm, an achievement realized in 1989-90, when Billings Top Rosanne was judged North American Grand Champion two years running.

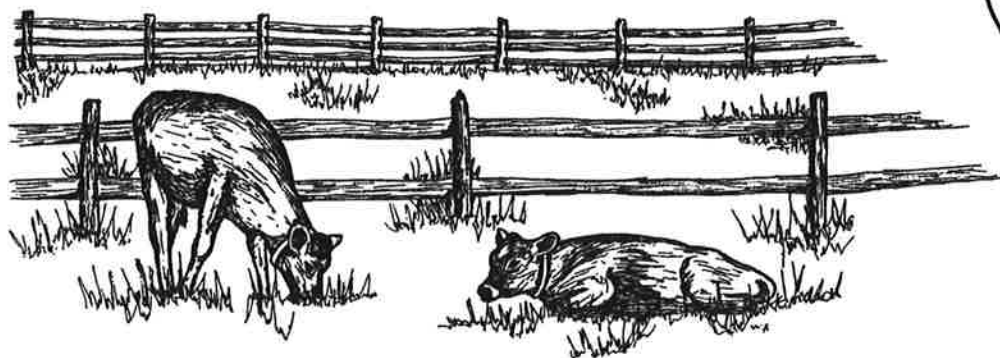


BILLINGS FARM & MUSEUM

SCALE 1" = 300'

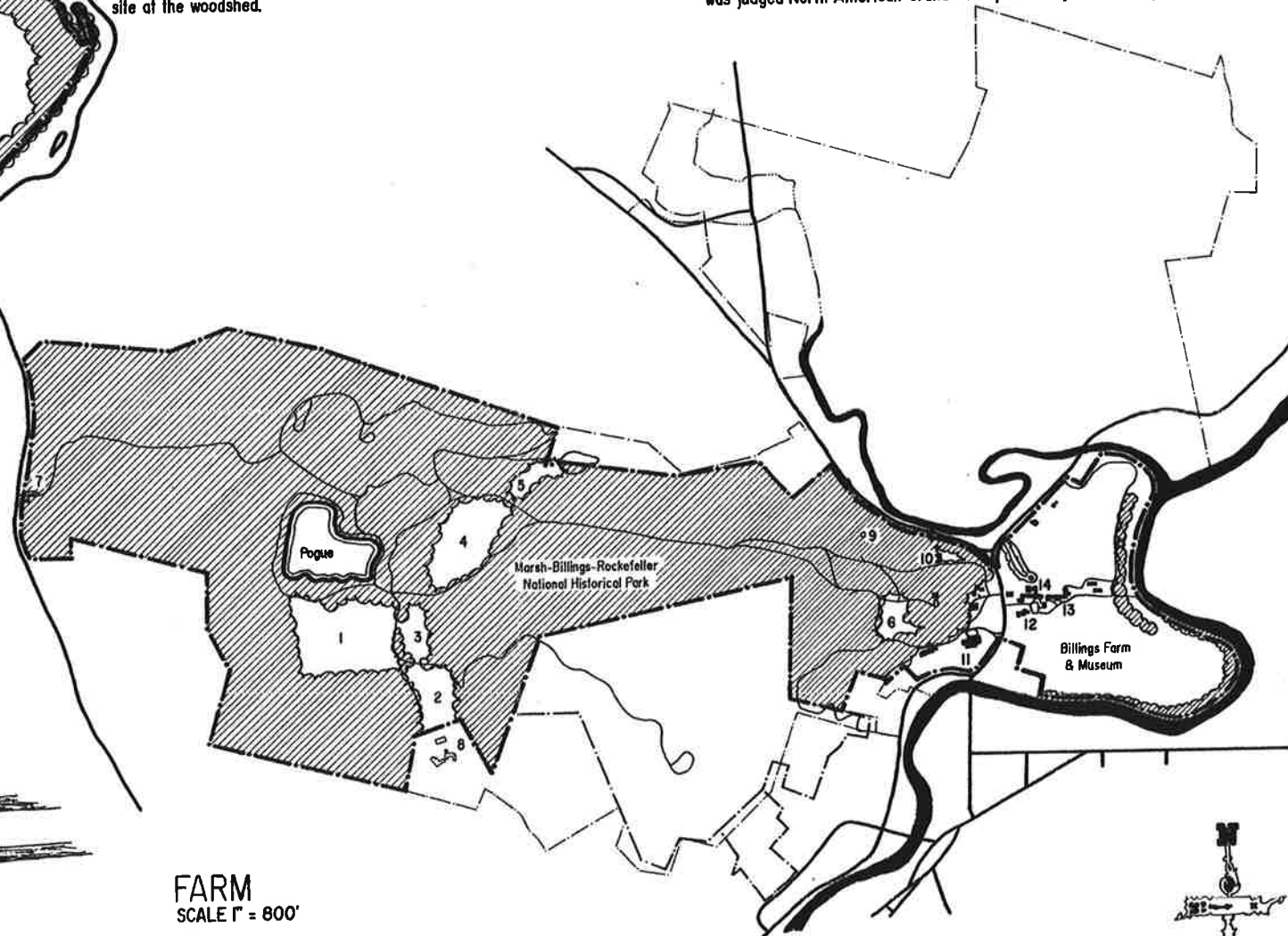
The Billings Farm & Museum opened to the public in 1983. It is a working dairy farm, a historic site, and an educational museum of agriculture and rural culture that depicts life in Vermont during the late 1800s. It is owned and operated by the Woodstock Foundation, and the core of the farm, as shown above, is designated as a Resource Protection Zone within the National Park Service legislative boundary (east of Route 12).

Today, livestock on the farm property include Jersey cows, sheep, horses, and chickens. The summer pasture in Marsh-Billings-Rockefeller National Historical Park is occasionally used for a cow pasture during the summer months. Crops including hay, alfalfa, corn, oats, and soybeans are planted in rotation, varying the field configuration yearly. Extensive cropland is also cultivated across the Ottauquechee River. There are two vegetable gardens: the heirloom garden features historical vegetable varieties and another vegetable garden is not on public display. An heirloom orchard consists of nearly 60 apple trees.



FARM

SCALE 1" = 800'



KEY - BILLINGS FARM & MUSEUM

- A. 1890 farmhouse
- B. Visitor center
- C. Farm life exhibits
- D. Wagon barn
- E. Livestock barns
- F. Maintenance barns
- G. Cow pasture
- H. Horse pasture
- I. Sheep pen
- J. Livestock paddock
- K. Hay field
- L. Clover field
- M. Soybean crop
- N. Corn crop
- O. Vegetable garden
- P. Heirloom garden
- Q. Heirloom orchard

SCALE 1" = 300'

0 300 600 900

KEY - FARM

- 1. Elm lot
- 2. French lot
- 3. Maple lot
- 4. Summer pasture
- 5. Spring lot
- 6. Upper meadow
- 7. McKenzie farmhouse
- 8. Hilltop/Dana farmhouse
- 9. Sugar house
- 10. Woodshed
- 11. Mansion
- 12. 1890 Farmhouse
- 13. Livestock barns
- 14. Visitor center

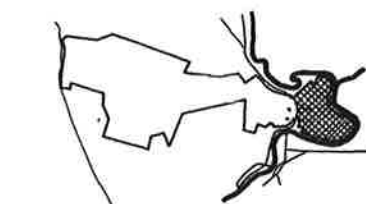
SCALE 1" = 800'

0 400 800 1600 2400

KEY

- Fence
- - - Crop delineation, approximate
- - - Former Billings farm boundary
- ~ Stream/Brook
- Town road
- Carriage road
- - - Woodstock park boundary
- - - NPS legislative boundary

NOTE: For sources, see sheet 2 of 18



DRAWN BY: BETSY MELROSE

SUMMER 2002
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

MARSH-BILLINGS-ROCKEFELLER NATIONAL HISTORICAL PARK
WINDSOR COUNTY
WOODSTOCK, VERMONT

54 ELM STREET

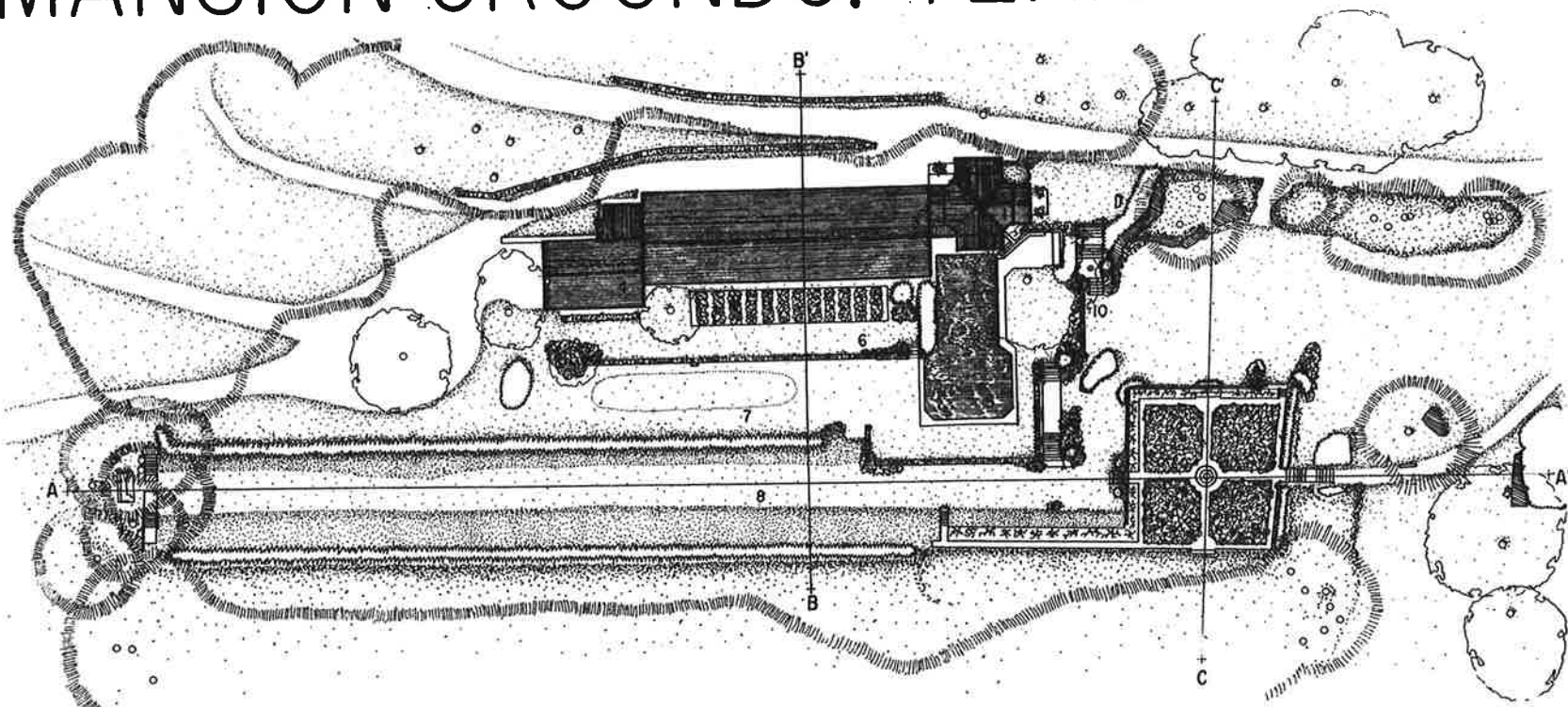
HISTORIC AMERICAN
LANDSCAPE SURVEY
SHEET 9 OF 19 SHEETS

SURVEY NO.

VT-1

IF REPRODUCED, PLEASE CREDIT: HISTORIC AMERICAN LANDSCAPE SURVEY, NATIONAL PARK SERVICE, NAME OF DELINEATOR, DATE OF THE DRAWING

MANSION GROUNDS: TERRACE GARDENS



Located in the southern area of the mansion grounds and today known as the Terrace Gardens, the neoclassical garden was designed for Frederick Billings in the 1870 s. The area was a complex of buildings, greenhouses and gardens positioned on terraces built into sloping ground. In 1894 Laura Billings finalized plans for an addition to the garden. Charles A. Platt designed a Neoclassical "garden room", which exists today as the quincunx flower garden with central Italian Renaissance Revival fountain, and the Long Terrace, both surrounded by hedges. In 1931, the Billings heirs had a swimming pool constructed on the foundations of the Octagon and Tropical House. During the Rockefeller era, architect Theodor Muller and landscape designer Zenon Schreiber designed a terrace around the pool in 1957. In the 1950 s the flower garden was remodeled to create open space with low hedges and more informal flower beds. Schreiber added a series of rock gardens as a transition between the pool terrace and the adjoining lawn.

The Terrace Gardens, as they exist today, are a characteristic spatial feature of the Rockefeller era.

PLANT LIST (JUNE-AUGUST 2002)

TREES AND SHRUBS

Scientific name	Common name	Location
<i>Abies balsamea</i> 'Nana'	Dwarf balsam fir	R
<i>Abies koreana</i>	Korean fir	R
<i>Acer rubrum</i>	Red maple	T
<i>Acer saccharum</i>	Sugar maple	T
<i>Azalea</i> sp.	Azalea	F
<i>Cotoneaster horizontalis</i>	Rock cotoneaster	R
<i>Gleditsia triacanthos</i> var. <i>Inermis</i>	Thornless common honey locust	T
<i>Juniperus chinensis</i> 'Old Gold'	Golden Chinese juniper	R
<i>Juniperus communis</i> 'Berkshire'	Berkshire common juniper	R
<i>Juniperus horizontalis</i>	Creeping juniper	R
<i>Juniperus virginiana</i> 'Grey Owl'	Silver eastern red cedar	R
<i>Kalmia latifolia</i>	Mountain laurel	F
<i>Mahus</i> sp.	Crab	T
<i>Quercus rubra</i>	Red oak	T
<i>Picea abies</i>	Norway spruce	T
<i>Picea abies</i> 'Little Gem'	Dwarf Norway spruce	R
<i>Picea abies</i> 'Nidiformis'	Bird's-nest	R
<i>Picea abies</i> 'Procumbens'	Alberta spruce	R
<i>Pieris japonica</i>	Andromeda	R
<i>Pinus strobus</i>	White pine	T
<i>Pyrus</i> sp.	Pear tree	T
<i>Rhododendron x laelevator</i>	Wilson rhododendron	R
<i>Rhododendron</i> sp.	PJM rhododendron	R
<i>Rhododendron</i> sp.	Fairy hill rhododendron	R
<i>Syringa vulgaris</i>	Lilac	RT
<i>Taxus cuspidata</i>	Japanese yew	F
<i>Taxus cuspidata</i> 'Nana'	Dwarf Japanese yew	R
<i>Taxus x media</i> 'Denialformis'	Dwarf anglojap yew	R
<i>Taxus x media</i> 'Hicksii'	Hicksii anglojap yew	R
<i>Thuja occidentalis</i>	Eastern arborvitae	R
<i>Thuja occidentalis</i> 'Globosa'	Dwarf eastern arborvitae	R
<i>Tsuga canadensis</i>	Canadian hemlock	F

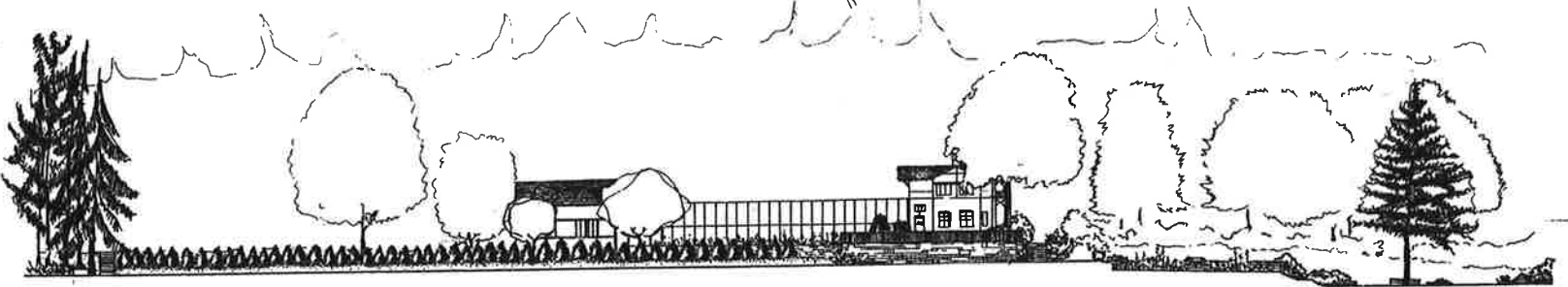
KEY

1. Belvedere
2. Greenhouse
3. Bowling Alley
4. Garden workshop
5. Swimming pool
6. Cutting Garden
7. Putting Green
8. Long Terrace
9. Flower Garden
10. Rock Garden

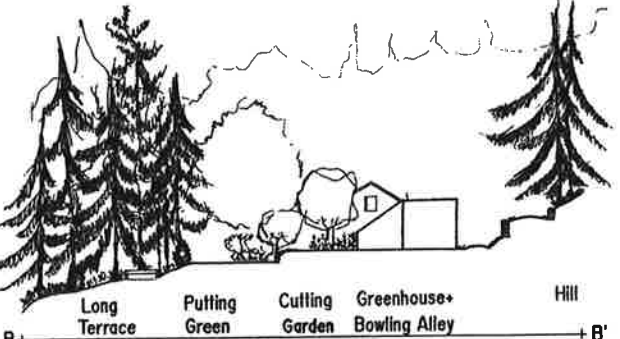
- Walls, steps
- Italian fountain
- Sundial
- Stone, iron and ceramic benches
- Neoclassical wooden bench
- Baigneuse Drapee (sculpture)
- Rocks
- Deciduous and conifer trees
- Deciduous and conifer shrubs
- Hedges
- Flower beds
- Roses
- Wild flowers and herbaceous
- Lawn
- Terra-cotta planters
- Paths, carriage roads

NOTE: For sources, see sheet 2 of 18

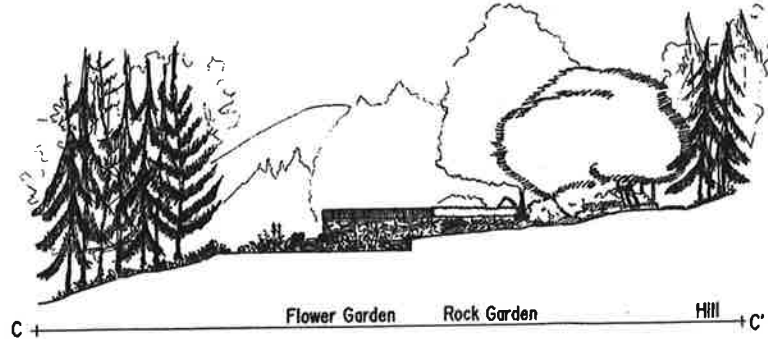
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SECTION A-A'



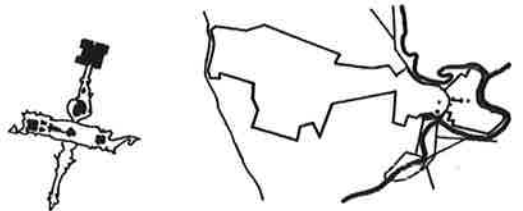
SECTION B-B'



SECTION C-C'

See sheet 11 of 18 for list of annuals and perennials.

Location in the gardens
F - Flower Garden
R - Rock Garden
T - Terraces



PLANT LIST (JUNE - AUGUST 2002)

ANNUALS

Scientific name	Common name	Key
<i>Ageratum houstonianum</i> 'Hawaii blue'	Floss flower	F
<i>Androsace primuloides</i> 'Yunnan'	Rock jasmine	R
<i>Antirrhinum majus</i>	Snapdragon	F
<i>Begonia sempervirens</i>	Wax begonia	F
<i>Cleome spinosa</i> 'Cherry Queen'	Rose spider flower	F
<i>Cleome spinosa</i> 'Helen Campbell'	White spider flower	F
<i>Dahlia hybrida</i>	Dahlia hybrids	F
<i>Gladiolus</i> sp.	Gladioli	T
<i>Globularia cordifolia</i>	Globe daisy	R
<i>Helianthus</i> sp.	Sunflower	T
<i>Heracium lautatum</i>	Hawkweed	R
<i>Hydrophyllum virginianum</i>	Virginia waterleaf	R
<i>Impatiens</i> hybrids	Impatiens hybrids	F
<i>Nierembergia scopana</i>	Cupflower	F
<i>Salvia azurea</i>	Blue sage	FT
<i>Zinnia elegans</i>	Zinnia hybrids	F

PERENNIALS

Scientific name	Common name	Key
<i>Achillea filipendulina</i> 'Gold plate'	Fernleaf yarrow	F
<i>Allium albopilosum</i> x <i>elatum</i> 'Globemaster'	Globemaster onion	F
<i>Allium senescens</i> 'Glaucum'	Dwarf blue onion	R
<i>Allium senescens</i>	Ornamental onion	R
<i>Allium sphaerocephalon</i>	Onion	R
<i>Allium stellatum</i>	Prairie onion	R
<i>Allium thunbergii</i> 'Ozowas'	Ozowas onion	R
<i>Anthemis marschalliana</i>	Yellow camomile	R
<i>Aquilegia vulgaris</i>	Columbine	F
<i>Aruncus</i> sp.	Goat's beard	T
<i>Asarum canadense</i>	Canadian ginger	R
<i>Asarum europeum</i>	European wild ginger	FR
<i>Asplenium trichomanes</i>	Maidenhair spleenwort	R
<i>Astilbe</i> x <i>arendsii</i> 'Bridal Veil'	White astilbe	F
<i>Astilbe</i> x <i>arendsii</i> 'Europa'	Pink astilbe	F
<i>Astilbe</i> x <i>arendsii</i> 'Fanal'	Red astilbe	F
<i>Astilbe chinensis</i> 'Pumila'	Dwarf chinese astilbe	R
<i>Astilbe simplicifolia</i> 'Sprite'	Sprite star astilbe	R
<i>Athyrium filix-femina</i>	Lady fern	R
<i>Athyrium niponicum</i> 'Pictum'	Japanese painted fern	R
<i>Baptisia perfoliata</i>	Indigo	T
<i>Brunnera macrophylla</i>	Siberian bugloss	F
<i>Calluna vulgaris</i> hybrids	Scotch heather hybrids	R
'Barnet Anley'		
'County Wicklow'		
'Kinlockruel'		
'Rubrum'		
'Silver Knight'		
'White Lawn'		
<i>Campanula glomerata</i> 'Joan Elliot'	Clustered bellflower	F
<i>Campanula glomerata</i> 'Superba'	Clustered bellflower	R

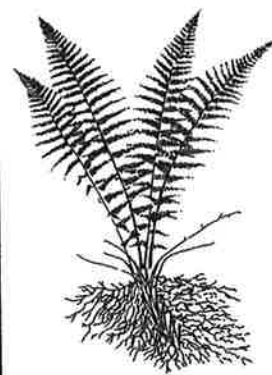
Scientific name	Common name	Key
<i>Campanula persicifolia</i>	Blue peach-leaved bellflower	FR
<i>Campanula poscharskyana</i>	Serbian bellflower	F
<i>Centaurea montana</i>	Mountain bluet	F
<i>Chrysanthemum</i> sp.	Chrysanthemum	F
<i>Chrysanthemum weyrichii</i>	Miyabe	R
<i>Cimicifuga racemosa</i>	Black cohosh	R
<i>Cimicifuga simplex</i> 'Brunette'	Brunette Autumn snakeroot	F
<i>Claytonia virginica</i>	Spring beauty	R
<i>Clematis integrifolia</i>	Clematis	R
<i>Convallaria majalis</i>	Lily-of-the-valley	R
<i>Coreopsis auriculata</i> 'Nana'	Dwarf coreopsis	F
<i>Coreopsis verticillata</i> 'Moonbeam'	Moonbeam tickseed	R
<i>Cornus canadensis</i>	Bunchberry	R
<i>Delphinium</i> x <i>hybrida</i>	Pacific hybrid cultivars	F
<i>Delphinium</i> 'King's Alfred'	King's Alfred delphinium	F
<i>Dianthus</i> 'Blue Hills'	Blue Hills pink	R
<i>Dianthus gratianopolitanus</i> 'Tiny rubies'	Cheddar pink	R
<i>Dianthus simulans</i>	Pink	R
<i>Dicentra eximia</i> 'Snowdrift'	Fringed bleeding heart	R
<i>Dicentra formosa</i>	Western bleeding heart	R
<i>Dicentra spectabilis</i> 'Alba'	Common white bleeding heart	F
<i>Digitalis grandiflora</i> 'Ambigua'	Dwarf foxglove	F
<i>Digitalis x mertonensis</i>	Foxglove	F
<i>Digitalis purpurea</i> 'Excelsior'	Excelsior foxglove	F
<i>Draba densiflora</i>	Rock cress	R
<i>Echeveria agavoides</i>	Hens-and-chickens	R
<i>Echinops ritro</i>	Globe thistle	T
<i>Echinops sphaerocephalus</i>	White globe thistle	T
<i>Erigeron scopularum</i>	Fleabane	R
<i>Euphorbia characias</i> subsp. <i>characias</i>	Spruge	R
<i>Euphorbia epithymoides</i>	Cushion spurge	R
<i>Festuca glauca</i>	Blue fescue	R
<i>Filipendula hexapetala</i>	Meadow sweet	F
<i>Galax urceolata</i>	Galaxy	R
<i>Genista</i> 'Royal Gold'	Royal Gold gentian	R
<i>Genista lutea</i>	Great yellow gentian	R
<i>Geranium</i> 'Johnson's Blue'	Johnson's blue cranesbill	F
<i>Geranium renardii</i>	Renard's cranesbill	R
<i>Geranium sanguineum</i> var. <i>lancastriense</i>	Bloody cranesbill	FR
<i>Geranium sanguineum</i> 'New Hampshire'	Bloody cranesbill	R
<i>Gypsophilla repens</i> 'Rosea'	Creeping gypsophilla	R
<i>Helenium autumnale</i>	Sneezeweed	F
<i>Helianthemum nummularium</i>	Rock rose	F
<i>Hemerocallis hybrida</i> 'Stella d'Oro'	Stella d'Oro day-lily	FR
<i>Heuchera micrantha</i> 'Palace Purple'	Small flowered alumroot	F
<i>Heuchera sanguinea</i>	Coralbells	F
<i>Hosta hybrida</i> 'Gold Standard'	Gold standard hosta	R
<i>Hosta hybrida</i> 'Krossa Regal'	Krossa regal hosta	R
<i>Hosta sieboldiana</i>	Sibold's hosta	R
<i>Iris pumila</i>	Dwarf lily	R
<i>Iris pseudacorus</i>	Yellow iris	R
<i>Jeffersonia diphylla</i>	Twingleaf	R
<i>Kalanchoe grandiflora</i>	Kalanchoe	R
<i>Lavandula angustifolia</i>	Munstead dwarf lavender	R

Scientific name	Common name	Key
<i>Lewisia cotyledon</i>	Lewisia	R
<i>Ligularia dentata</i> 'Desdemona'	Golden groundsel	F
<i>Ligularia</i> 'Przewalski'	Przewalski groundsel	F
<i>Lilium canadense</i>	Wild canadian lily	F
<i>Lilium martagon</i>	Tiger lily	F
<i>Lilium</i> sp.	Lily hybrids	F
<i>Linaria genistifolia</i> 'Dalmatia'	Toadflax	F
<i>Lysimachia ciliata</i>	Purple loosestrife	F
<i>Lysimachia clethroides</i>	Gooseneck loosestrife	F
<i>Malva sylvestris</i> 'Mauritania'	Mauritania mallow	F
<i>Matteuccia struthiopteris</i>	Ostrich fern	R
<i>Monarda didyma</i> 'Blaustrumpf'	Blue stocking bee balm	F
<i>Monarda didyma</i> 'Cambridge Scarlet'	Cambridge Scarlet bee balm	F
<i>Monarda didyma</i> 'Mahogany'	Purple bee balm	F
<i>Muscari americanum</i>	Grape hyacinth	R
<i>Nierembergia caerulea</i> 'Mont Blanc'	White cup flower	F
<i>Onoclea sensibilis</i>	Sensitive fern	R
<i>Osmunda claytoniana</i>	Interrupted fern	R
<i>Osmunda cinnamomea</i>	Cinnamon fern	R
<i>Oxalis adenophylla</i>	Sorrel	R
<i>Parthenocissus tricuspidata</i>	Boston ivy	FRT
<i>Penstemon hisutis</i> 'Pygmaeus'	Beardtongue	R
<i>Penstemon hartwegii</i> 'Holly'	White beardtongue	R
<i>Petasites japonicus</i>	Japanese coltsfoot	F
<i>Phlox hybrida</i> 'Crackerjack'	Crackerjack phlox	R
<i>Phlox paniculata</i>	Garden phlox	F
<i>Phlox subulata</i>	Creeping phlox	FR
<i>Phlox subulata</i> 'Fire Crockel'	Mountain phlox	R
<i>Platycodon grandiflorus</i> 'Misato Purple'	Balloon flower	R
<i>Platycodon grandiflorus</i>	Blue balloon flower	F
'Sentimental Blue'		
<i>Podophyllum peltatum</i>	Mayapple	R
<i>Polemonium coeruleum</i>	Jacobs' ladder	F
<i>Potentilla</i> sp.	Potentilla	R
<i>Primula beesiana</i>	Bee's primrose	R
<i>Primula japonica</i> 'Redfield Strain'	Redfield primrose	F
<i>Primula laurentiana</i>	Bird's-eye primrose	R
<i>Ranunculus</i> sp.	Buttercup	R
<i>Rosa</i> sp.	Miniature roses	R
<i>Rosa</i> 'Alexander MacKenzie'	Cold hardy climbing rose	F
<i>Rosa</i> 'John Davis'	Agriculture Canada rose	F
<i>Rosa</i> 'J.P.Connel'	Agriculture Canada rose	F
<i>Rosa</i> 'Mr. Lincoln'	Hybrid Tea rose 'Mr. Lincoln'	F
<i>Rudbeckia fulgida</i> var. <i>sullivantii</i>	Goldstrum rudbeckia	F
'Goldstrum Strain'		
<i>Salvia nemorosa</i> 'Vida Klose'	Vida Klose sage	F
<i>Salvia vanhouttei</i>	Van Houttei sage	F
<i>Salvia</i> sp.	Sage varieties	F
<i>Sanguinaria canadensis</i>	Bloodroot	R
<i>Saxifraga arendsii</i>	Saxifraga	R
<i>Saxifraga cochlearis</i>	Saxifraga	R
<i>Saxifraga rotundifolia</i>	Saxifraga	R
<i>Scabiosa caucasica</i> 'Butterfly Blue'	Blue pincushion flower	R
<i>Scabiosa lucida</i>	Scabious	R
<i>Scilla numidica</i>	Scilla	R
<i>Sedum acre</i>	Stonecrop	F
<i>Sedum aizoon</i>	Aizoon stonecrop	FR

Scientific name	Common name	Key
<i>Sedum maximum</i> 'Atropurpureum'	Red great stonecrop	R
<i>Sedum kamtschaticum</i>	Orange stonecrop	R
<i>Sedum purpureum</i>	Red stonecrop	R
<i>Sedum sieboldii</i>	Sibold's sedum	R
<i>Sedum spectabile</i>	Showy stonecrop	R
<i>Sedum spectabile</i> 'Autumn Joy'	Autumn Joy sedum	F
<i>Sedum</i> 'Icicle'	Icicle sedum	R
<i>Sedum</i> 'Ruby Glow'	Ruby glow sedum	R
<i>Sempervivum arachnoidium</i>	Cobweb ice plant	R
<i>Sempervivum tectarum</i>	Hens and chickens	R
<i>Sisyrinchium bellum</i>	Blue-eyed grass	R
<i>Sisyrinchium striatum</i>	Yellow blue-eyed grass	F
<i>Succisa pratensis</i>	Devil's bit scabious	R
<i>Thalictrum aquilegifolium</i>	Columbine meadow rue	F
<i>Thalictrum rochebrunianum</i>	Lavender meadow rue	F
'Lavender Mist'		
<i>Thymus x citriodorus</i>	Lemon thyme	R
<i>Thymus</i> 'French white'	French white thyme	R
<i>Thymus vulgaris</i>	Common thyme	R
<i>Tradescantia x andersoniana</i>	Zwanenburg blue spiderwort	R
'Zwanenburg Blue'		
<i>Trillium sessile</i>	Toadshade	R
<i>Veronica amena</i>	Speedwell	R
<i>Veronica incana</i> 'Minuet'	Woody speedwell	R
<i>Veronica liwanensis</i>	Turkish speedwell	R
<i>Veronica officinalis</i>	Common speedwell	R
<i>Veronica prostrata</i>	Creeping speedwell	F
<i>Veronica spicata</i> 'Incana'	Silver leaved spike speedwell	F
<i>Veronica spicata</i> 'Goodness grows'	Blue spike speedwell	R
<i>Vinca minor</i>	Common periwinkle	R
<i>Yucca filamentosa</i>	Adam's needle	R

Location in the gardens
F-Flower Garden
R-Rock Garden
T-Terraces

HILLSIDE GARDENS - LILY POND



MALE FERN



INTERRUPTED FERN



SENSITIVE FERN

FERNS

Scientific name

Adiantum pedatum
Onoclea sensibilis
Thelypteris novboracensis
Osmunda regalis
Osmunda claytoniana
Matteuccia struthiopteris
Dryopteris filix-mas
Athyrium filix-femina
Woodsia obtusa
Polystichum acrostichoides
Thelypteris hexagonopteris

Common name

Maidenhair fern
 Sensitive fern
 New York fern
 Royal fern
 Interrupted fern
 Ostrich fern
 Male fern
 Lady fern
 Woodsia fern
 Christmas fern
 Broad Beech fern



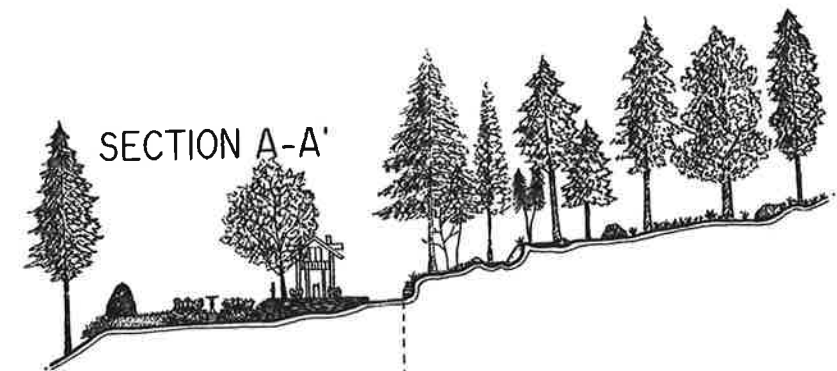
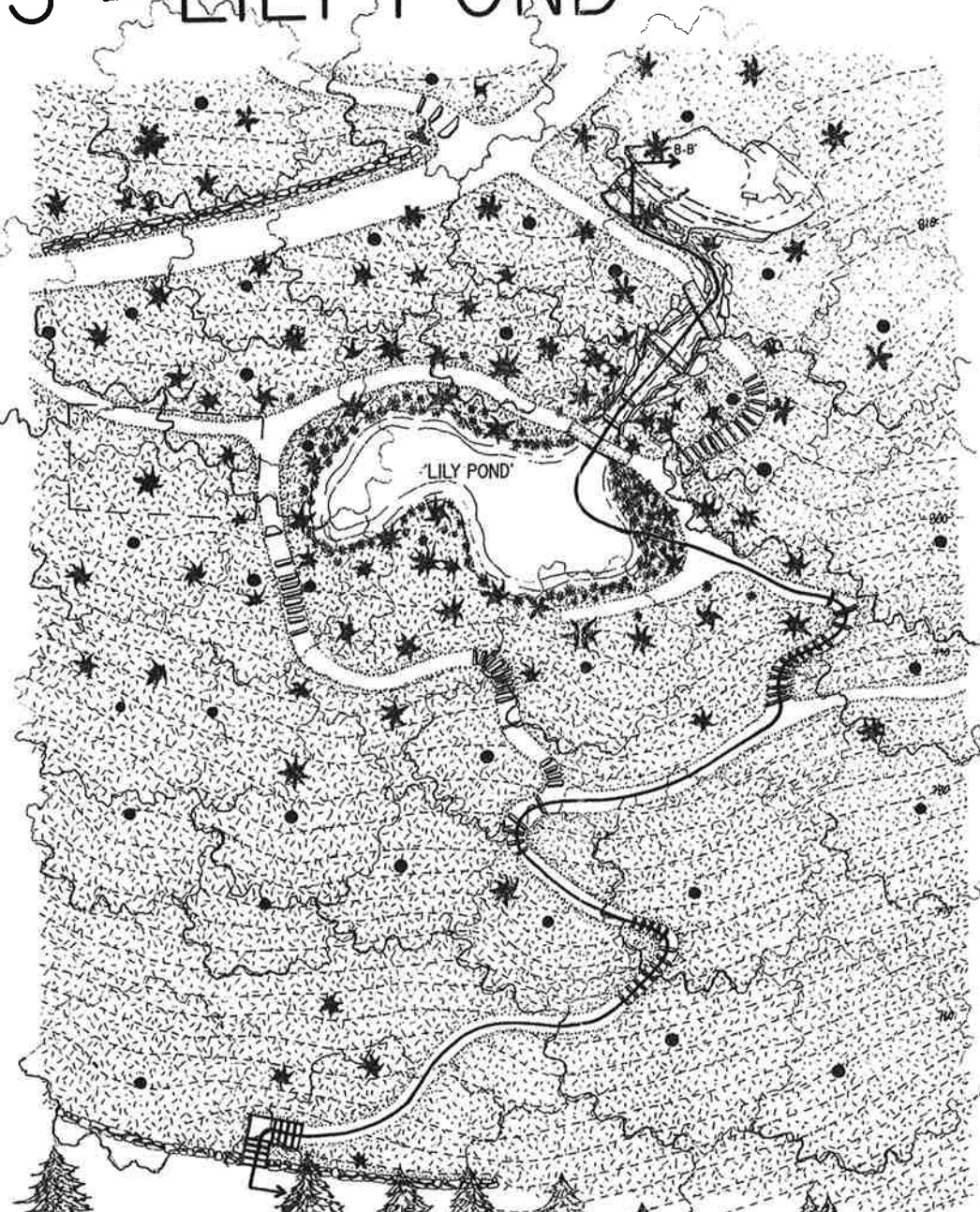
MAIDENHAIR FERN



OSTRICH FERN



LADY FERN



FORMAL TERRACE GARDENS

HILLSIDE GARDENS

When Frederick Billings started work on his estate, the hillside northwest of the Mansion grounds was covered by a grove of oaks and a meadow with several rock outcroppings and springs. His first planting of trees on his property was on this hillside in 1874 with over 600 Norway Spruce to prevent erosion in areas disturbed by construction for the greenhouse. In the late 1880s, Billings created an ornamental Lily Pond in a boggy area below the oak grove consisting of two small pools built under an existing rock outcropping.

After the death of her father in 1890, Elizabeth Billings, an accomplished botanist, continued to make changes to the hillside. By 1897 she had added a waterfall which tumbled over rocks into five pools and started a "Fernery" consisting of plants collected from on site and around the world. Later, Elizabeth started mushroom and grass gardens and an arboretum on the hillside. In 1913 a small swimming pool was installed over part of the Lily Pond.

After Elizabeth's death in 1944, the hillside fell into disrepair until the Rockefeller era. For two decades starting in the 1960s, the Fernery, Waterfall Garden, Lily Pond, and the paths through the woods were repaired, reconfigured, and replanted. This work was done by Zenon Schreiber, a landscape architect who was designing rock gardens in the terrace garden.

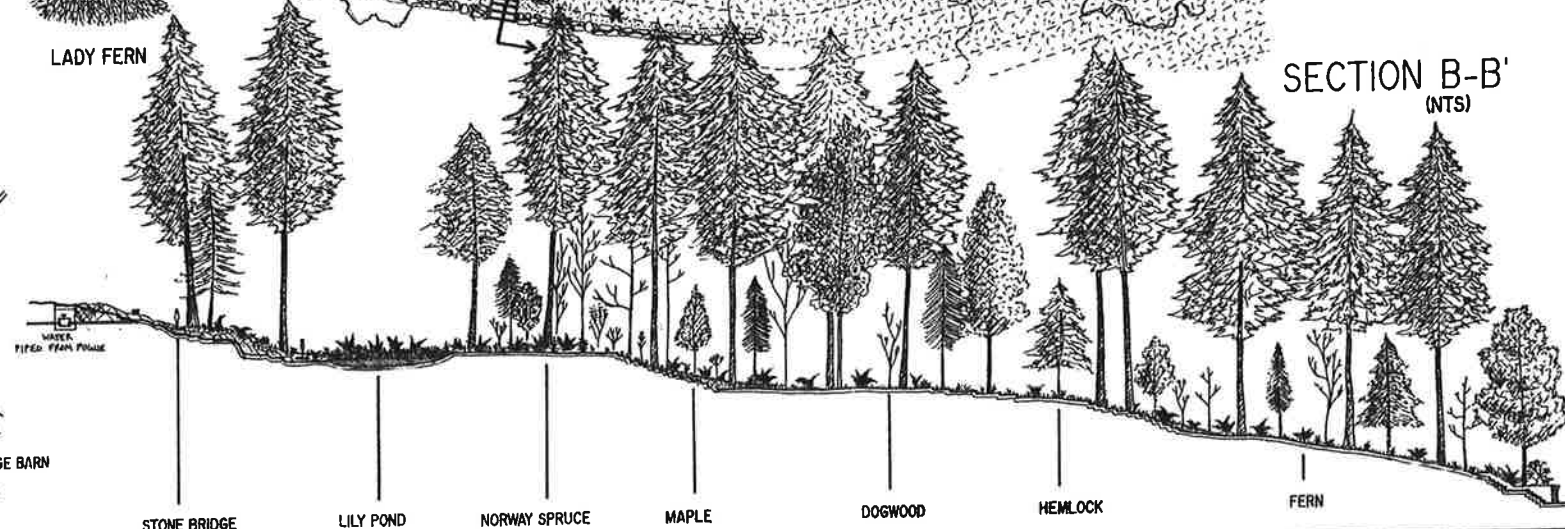
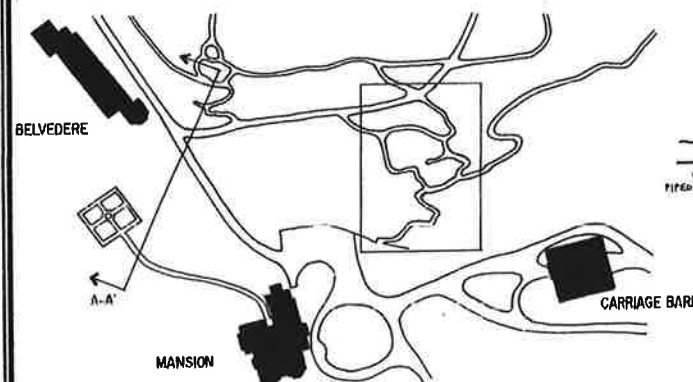
KEY

- Stonewall
- Bench
- Bridge
- Step
- Fern
- Swimming pool remnant

PLAN SCALE 1"=15'

0 7.5 15 30 45

NOTE: For sources, see sheet 2 of 18



STONE BRIDGE

LILY POND

NORWAY SPRUCE

MAPLE

DOGWOOD

HEMLOCK

FERN

FOREST: PLANTATIONS

The forests of Woodstock were harvested bare in the mid 1800s by pioneers who needed to clear land to settle, for agriculture and for fuel. Their efforts left the lower slopes of the Vermont piedmont patterned by field and pasture for sheep grazing.

Little evidence suggests that cutting on the property during the Marsh tenure involved planned forest management. Tree planting activities during this time were limited to ornamental planting near the residence.

The trees that presently make up the forest are largely the vision of Frederick Billings.

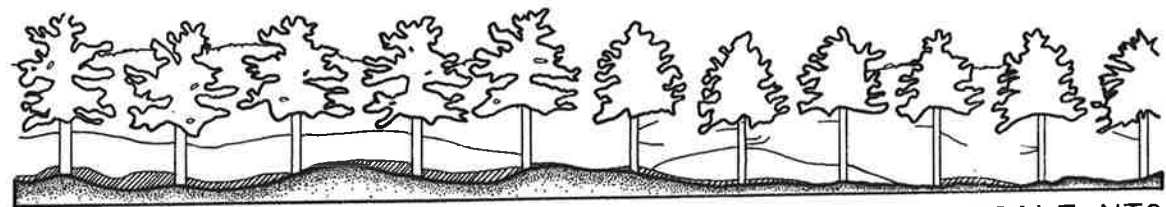
The practice of clear cutting changed with ownership and a change in attitudes. Over decades, thousands upon thousands of nursery seedlings were planted in the spring during Billings' tenure. He believed in the commercial benefits of good, scientific forest management for individual farmers and tourism, and, most importantly, in George Perkins Marsh's environmental philosophy set forth in *Man and Nature* (1864). These progressive ideals were practiced by Billings' farm manager, George Ailken, a founding member of the Vermont Forestry Association.

Over time the forest has been managed in such a way that harvesting has occurred in controlled cuts. In the 1930s, lumbering work was provided for local men in need of work during the Depression, and informally inspired by Roosevelt's New Deal policy. Other larger events of the time included natural disasters. The forest was decimated by major fires in 1800 and 1845, and a hurricane in 1932. There was also a white pine blister rust infestation in 1919, amongst other, more minor insect infestations.

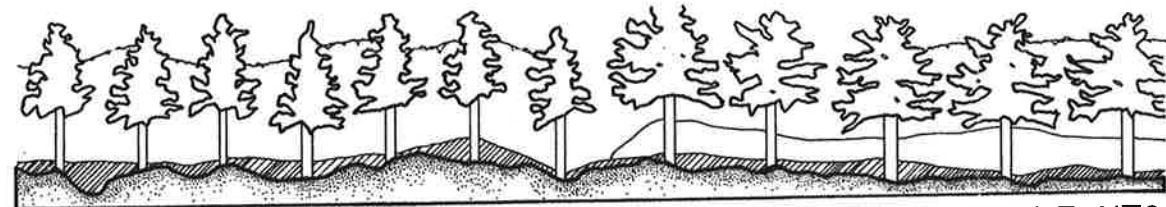
To date the maintenance regime has included pruning and thinning of the canopy and understory to manage views inside the forest, and viewsheds off the property. The additional benefit of this type of maintenance was to ensure that the forest was safe and accessible.

"We are, even now breaking up the floor and wainscotting and doors and window frames of our dwelling."

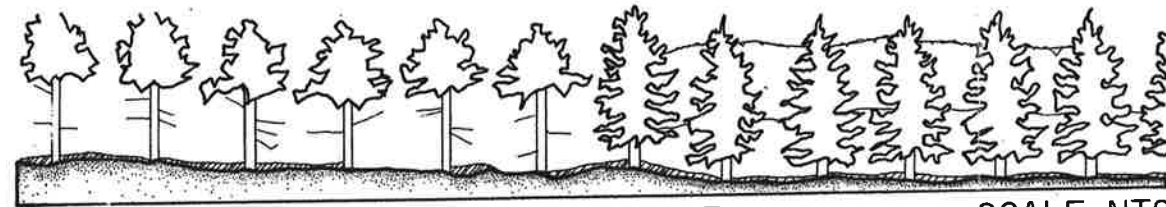
(George Perkins Marsh, 1864) on wasteful forestry practices in *Man and Nature*



SECTION A-A': WHITE PINE / RED PINE SCALE: NTS



SECTION B-B': EUROPEAN LARCH / WHITE PINE SCALE: NTS



SECTION C-C': RED PINE / NORWAY SPRUCE SCALE: NTS

Frequently occurring native species (most to least frequent)

WHITE PINE	
canopy	maple
understory	maple, beech, white pine, birch, hemlock
herbaceous	ferns sp., beech, maple, false solomon's seal, violet
RED PINE	
canopy	maple
understory	beech
herbaceous	beech, maple, fern sp., violet, grasses

EUROPEAN LARCH

canopy	maple
understory	n/a
herbaceous	beech, maple, fern sp., clubmoss
WHITE PINE	
canopy	maple
understory	beech, maple, white pine
herbaceous	fern sp., maple

RED PINE

canopy	n/a
understory	n/a
herbaceous	maple, fern sp.

NORWAY SPRUCE

canopy	white pine, beech
understory	maple
herbaceous	fern sp., clubmoss

Plantations do not refer to self-seeded species. They are varieties planted specifically in the interests of scientific forest regeneration.

This sheet can be reviewed in conjunction with the Forest: Renewed Ecology, sheets 14 and 15, which indicate areas of original forest and places of rich northern hardwood succession in the understory.

Plantations comprise approximately 26 percent of the site. Most of the coniferous species were placed on a grid, planted approximately 15' on diameter, regardless of era planted. Their growth habits are a product of the plantation layout. Some of the dates for the plantations are conjectural. There is some question as to the connection between the date of plantations, the construction of the carriage roads and the intent of designed vistas.

The conifers chosen for reforestation were climate appropriate, but would not be planted in modern forestry practice. Some of the plantations consist of exotic species such as Norway spruce and Scotch pine.

The sections schematically demonstrate 'renewing' ecologies that indicate 'forest architecture' or stratigraphy - the herbaceous layer, the understory and the tree canopy. These illustrate clear boundaries between different plantations.

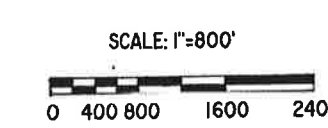
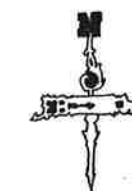
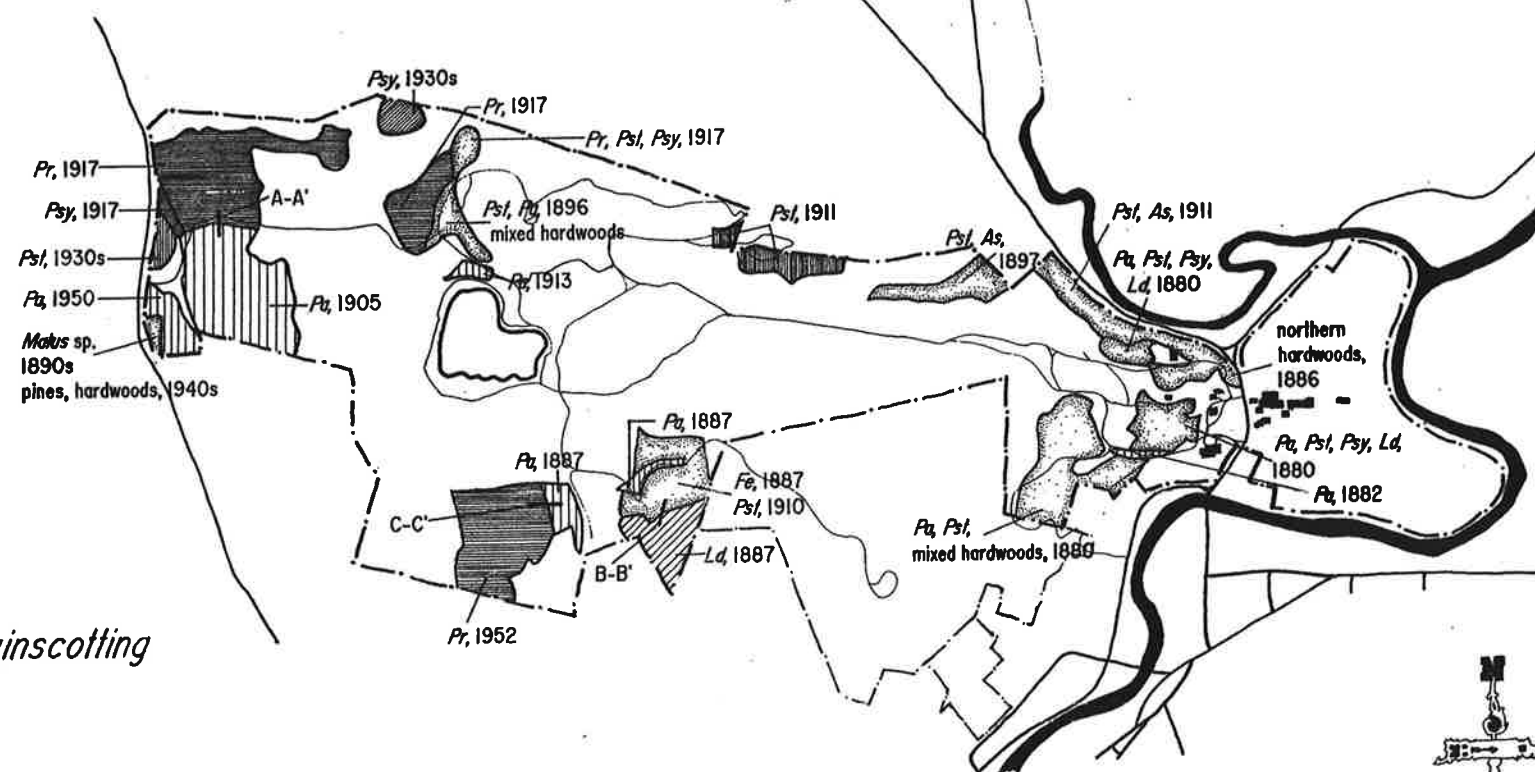
1869-90	Frederick Billings era
1891-1913	Billings family era
1914-52	Billings/French era

KEY

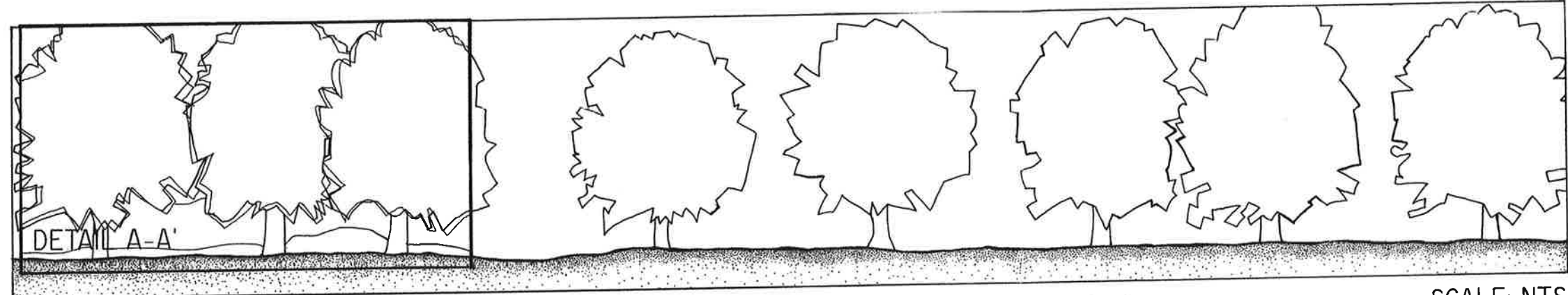
Scientific name	Common name
<i>Larix decidua</i> (Ld)	European larch
<i>Picea abies</i> (Pa)	Norway spruce
<i>Pinus resinosa</i> (Pr)	Red pine
<i>Pinus strobus</i> (Ps)	White pine
<i>Pinus sylvestris</i> (Psy)	Scotch pine
Mixed hardwoods:	
<i>Acer saccharum</i> (As)	Sugar maple
<i>Fraxinus excelsior</i> (Fe)	European ash

—	Town road
—	Carriage road
—	Woodstock park boundary
—	NPS legislative boundary

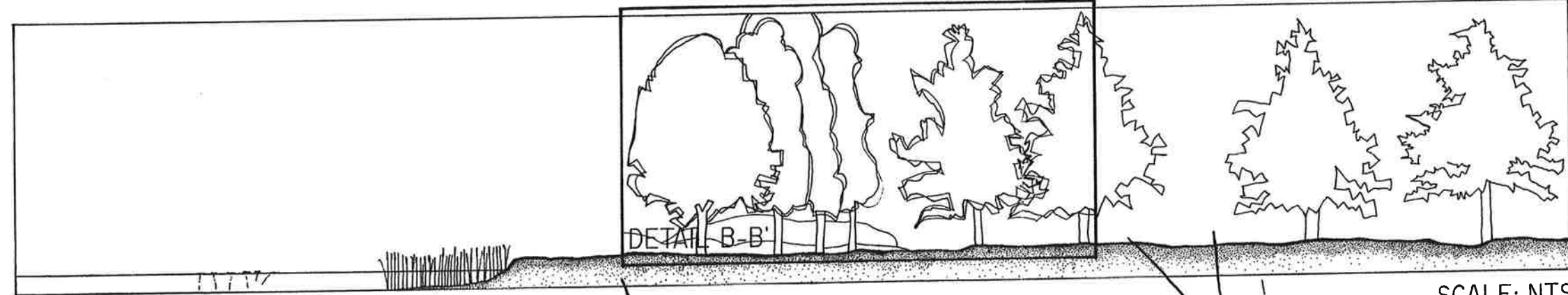
NOTE: For sources, see sheet 2 of 18



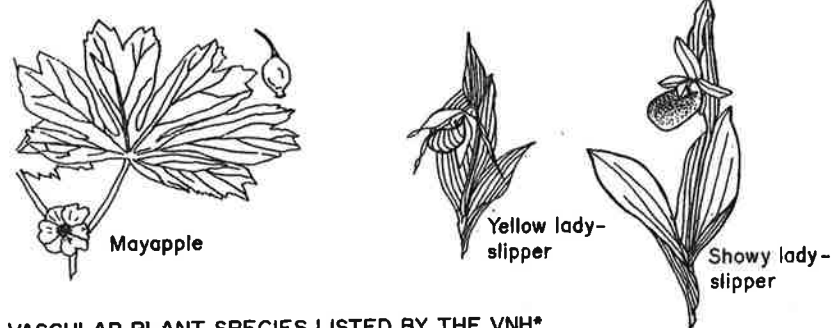
FOREST: RENEWED ECOLOGY



SECTION A-A': UPLAND NATURAL COMMUNITY approximate elevation: 1,250'

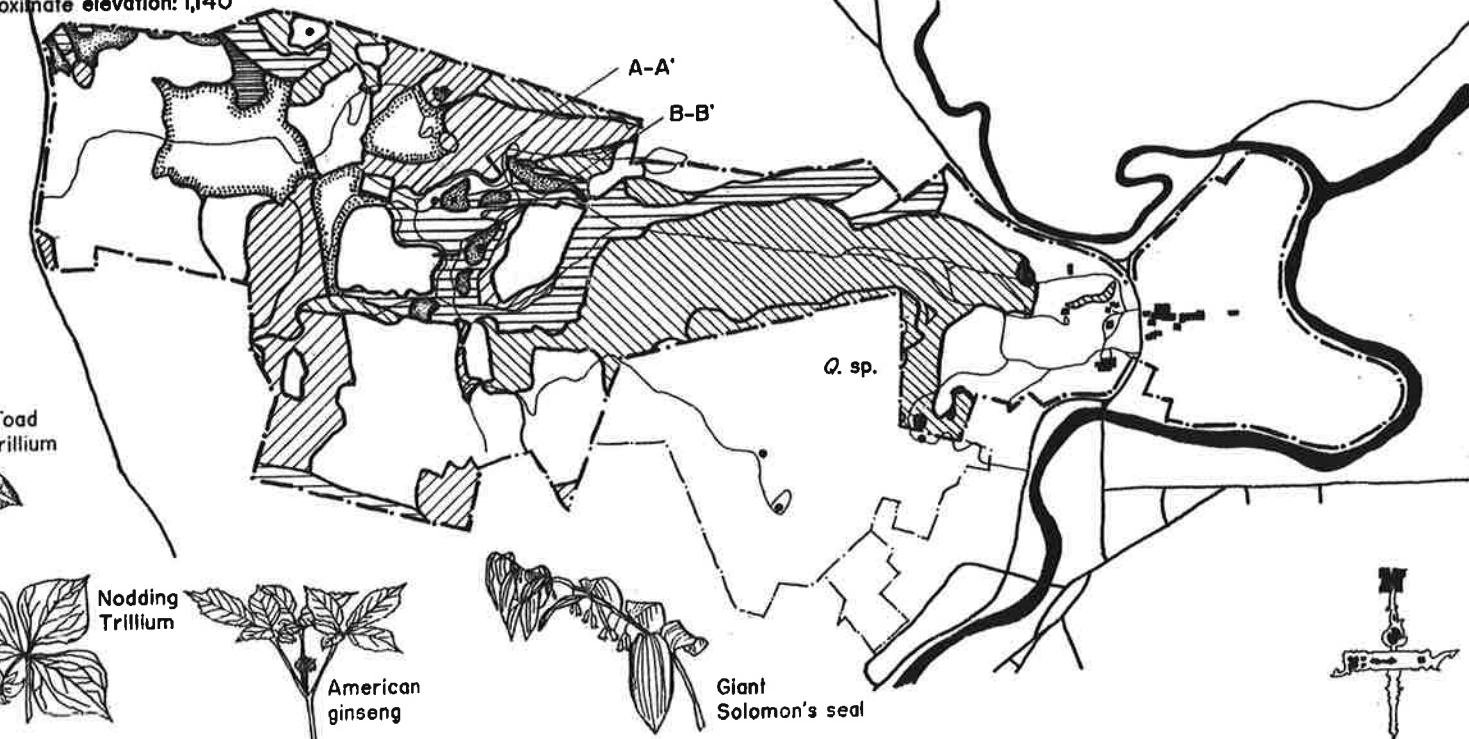


SECTION B-B': WETLAND NATURAL COMMUNITY approximate elevation: 1,140'



Scientific name	Common name
<i>Botrychium lunaria</i>	Moonwort grape fern
<i>Botrychium matricariaefolium</i>	Daisy-leaved moonwort
<i>Botrychium multifidum</i>	Leathery grape fern
<i>Carex albursina</i>	Minnesota sedge
<i>Cypripedium calceolus</i>	Yellow lady-slipper
<i>Cypripedium reginae</i>	Showy lady-slipper
<i>Dryopteris filix-mas</i>	Male fern
<i>Panax quinquefolium</i>	American ginseng
<i>Podophyllum peltatum</i>	Mayapple
<i>Polygonatum biflorum</i>	Giant Solomon's seal
<i>Thelypteris hexagonopteris</i>	Broad beech fern
<i>Trillium cernuum</i>	Nodding trillium
<i>Trillium sessile</i>	Toad trillium

* species listed by the Vermont Non-Game and Natural Heritage Program



- KEY
- UPLAND NATURAL COMMUNITIES
- Northern hardwood
 - Sugar maple-White ash
 - Hemlock
 - Hemlock-hardwood
 - Q.sp. Dry oak
- WETLAND NATURAL COMMUNITIES
- Maple-Ash swamp
 - Hemlock swamp
 - shallow pond
 - seep
 - vernal pool
- Town road
- Carriage road
- Woodstock park boundary
- NPS legislative boundary

NOTE: For sources, see sheet 2 of 18



This 555-acre site does not exist as an isolated biophysical unit. There are natural community types in the park that contribute to species distribution, richness, diversity and relative abundance - all indicators of the overall health of the local ecosystem.

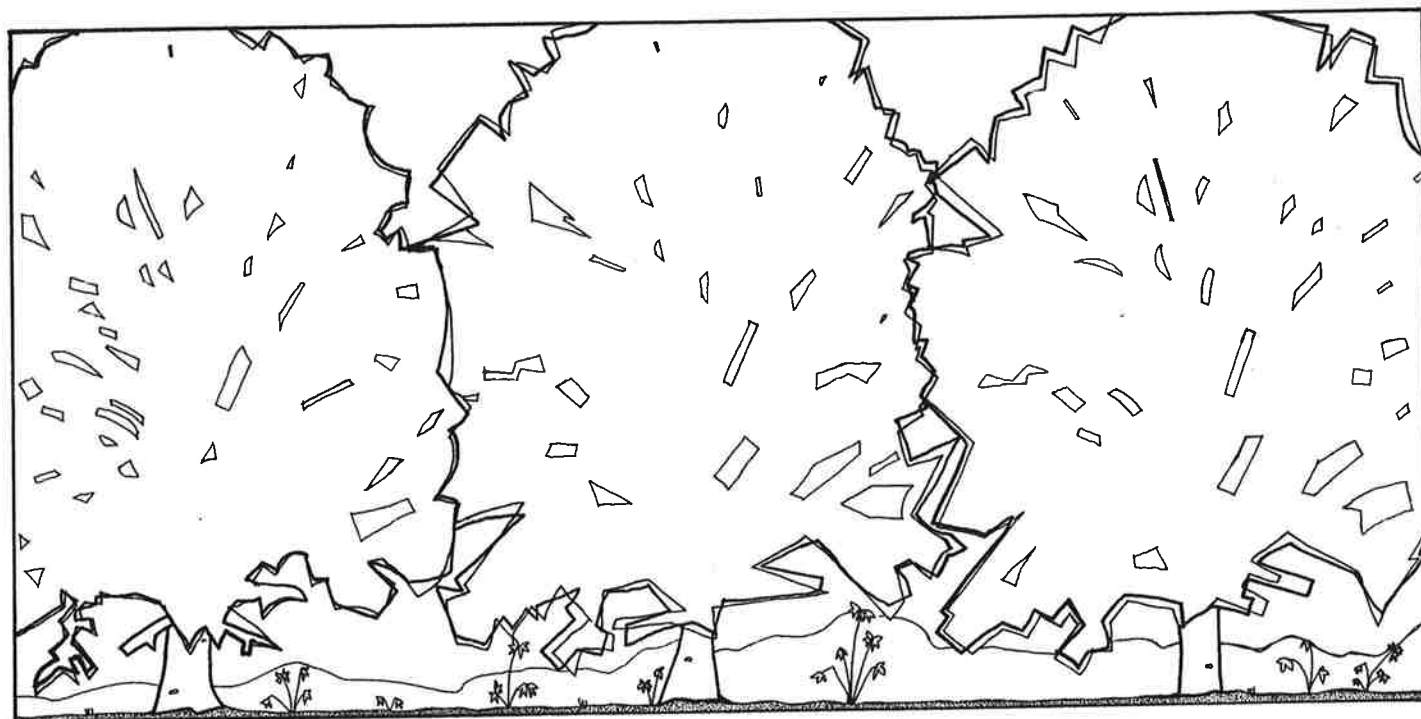
Vegetation and habitat distribution highlight distinct patterns in the landscape. These are created by physical factors including hydrology, geology, topography, soils, solar exposure and climate.

The site is a significant habitat, particularly because of wetland areas, specifically the Pogue, seeps and vernal pools, which support breeding populations of various amphibian and reptile species - including the rare Jefferson salamander.

Located mostly near streams, the shady canopy and moist soils of the original tree species (Eastern hemlock, Red oak, Sugar maple and White pine), together with the areas of renewed northern hardwood forest provide for over five hundred vascular plants, including ten uncommon species. The gnarled bark of these forests are critical habitats for insects, bats and birds.

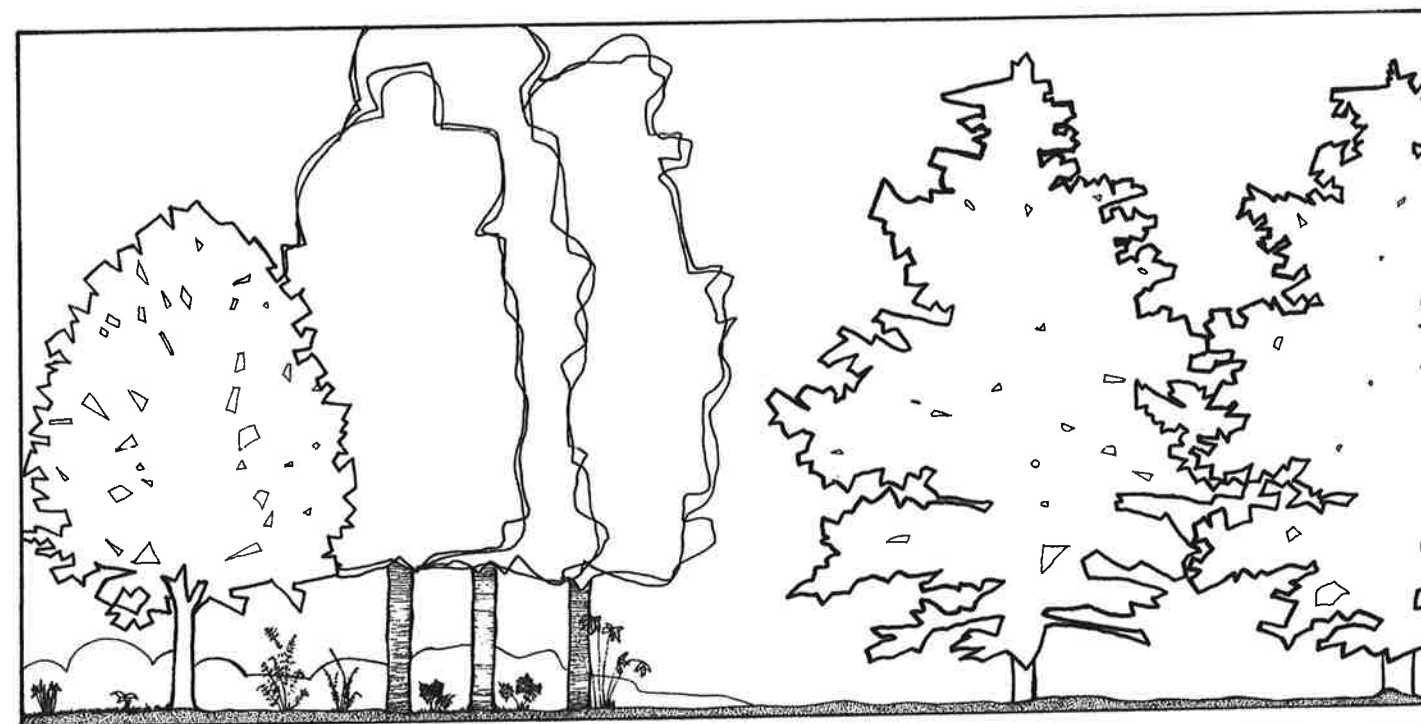
The pastures are also significant territory for bats and birds. Collectively the hardwood and hemlock forests and wetland areas provide a diverse habitat connected to the rest of the Vermont piedmont by migration corridors and the Ottauquechee River watershed.

FOREST: RENEWED ECOLOGY-DETAIL



DETAIL A-A': UPLAND NATURAL COMMUNITY

SCALE: NTS



DETAIL B-B': WETLAND NATURAL COMMUNITY

SCALE: NTS

FREQUENTLY OCCURRING VASCULAR PLANT SPECIES (for more species please see Hillside Gardens, sheet 12)

Scientific name	Common name
<i>Actea pachypoda</i>	White baneberry
<i>Adiantum pedatum</i>	Maidenhair fern
<i>Allium tricoccum</i>	Wild leek
<i>Aralia nudicaulis</i>	Wild sarsaparilla
<i>Arisaema triphyllum</i>	Jack-in-the-pulpit
<i>Asarum canadense</i>	Wild ginger
<i>Aster macrophyllus</i>	Large-leaved aster
<i>Carex plantaginea</i>	Plantain-leaved sedge
<i>Caulophyllum thalictroides</i>	Blue cohosh
<i>Dennstaedia punctilobula</i>	Hayscented fern
<i>Dryopteris goldiana</i>	Goldie's fern
<i>Epitagus virginiana</i>	Beechdrops
<i>Epipactis helleborine</i>	Helleborine
<i>Eupatorium rugosum</i>	Whitesnake root
<i>Huperzia lucidula</i>	Shining clubmoss
<i>Maianthemum canadense</i>	Canada mayflower
<i>Mitchella repens</i>	Partridgeberry
<i>Monotropa uniflora</i>	Indian pipes
<i>Parthenocissus quinquefolia</i>	Virginia creeper
<i>Polygonatum pubescens</i>	Solomon's seal
<i>Sambucus pubens</i>	Red-berried elder
<i>Smilacina racemosa</i>	False Solomon's seal
<i>Solanum dulcamara</i>	Nightshade
<i>Trillium grandiflorum</i>	White trillium
<i>Viola sp.</i>	Violet

FREQUENTLY OCCURRING TREE SPECIES

Scientific name	Common name
<i>Acer saccharum</i>	Sugar maple
<i>Betula lutea</i>	Yellow birch
<i>Cornus alternifolia</i>	Alternate-leaved dogwood
<i>Fagus grandifolia</i>	Beech
<i>Fraxinus americana</i>	White ash
<i>Ostrya virginiana</i>	Hophornbeam
<i>Prunus serotina</i>	Black cherry
<i>Tilia americana</i>	Basswood
<i>Tsuga canadensis</i>	Eastern hemlock

FREQUENTLY OCCURRING REPTILE AND AMPHIBIAN SPECIES

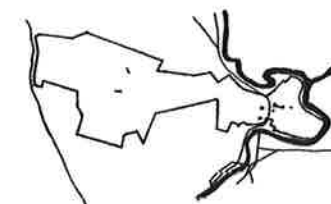
Scientific name	Common name
<i>Ambystoma jeffersonium</i>	Jefferson salamander
<i>Ambystoma maculatum</i>	Spotted salamander
<i>Bufo americanus</i>	American toad
<i>Chrysemys picta</i>	Painted turtle
<i>Eurycea bislineata</i>	Northern two-lined salamander
<i>Lampropeltis triangulum</i>	Milk snake
<i>Rana sylvatica</i>	Wood frog
<i>Thamnophis sirtalis</i>	Common garter snake

FREQUENTLY OCCURRING MAMMAL SPECIES

Scientific name	Common name
<i>Blarina brevicauda</i>	Short-tailed shrew
<i>Microtus pennsylvanicus</i>	Meadow vole
<i>Myotis lucifugus</i>	Little brown bat
<i>Myotis septentrionalis</i>	Northern long-eared bat
<i>Napaeozapus insignis</i>	Woodland jumping mouse
<i>Odocoileus virginianus</i>	White tailed deer
<i>Parascalops breweri</i>	Hairy tailed mole
<i>Sorex cinereus</i>	Masked shrew

FREQUENTLY OCCURRING BIRD SPECIES

Scientific name	Common name
<i>Catharus guttatus</i>	Hermit thrush
<i>Dendroica caerulescens</i>	Black-throated warbler
<i>Junco hyemalis</i>	Dark-eyed junco
<i>Parus atricapillus</i>	Black-capped chickadee
<i>Seiurus aurocapillus</i>	Ovenbird
<i>Vireo olivaceus</i>	Red-eyed vireo



DESIGN BY: EMMA HALL

SUMMER 2002
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

54 ELM STREET

MARSH-BILLINGS-ROCKEFELLER NATIONAL HISTORICAL PARK
WINDSOR COUNTY

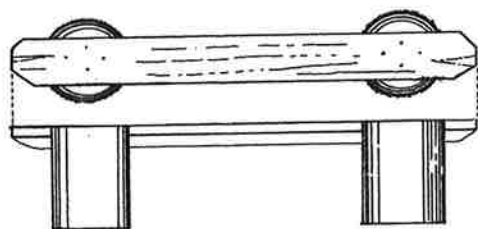
WOODSTOCK, VERMONT

SURVEY NO.
VT-1

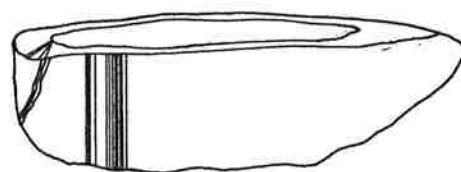
HISTORIC AMERICAN
LANDSCAPES SURVEY
SHEET 15 OF 19 SHEETS

IF REPRODUCED, PLEASE CREDIT: HISTORIC AMERICAN LANDSCAPES SURVEY, NATIONAL PARK SERVICE, NAME OF DELINEATOR, DATE OF THE DRAWING

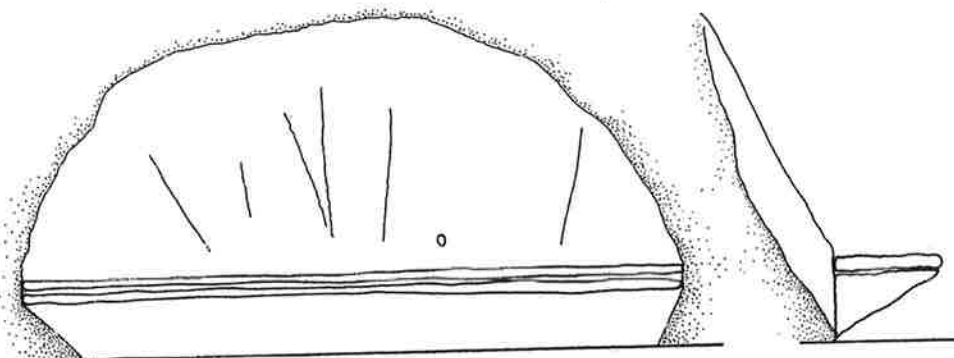
FORMAL ELEMENTS



'VISTA' BENCH, ca. 1970s
material: wood
designer: unknown
location: French lot; serves as part of the cross country ski trail system



WATER TROUGH (one of two) ca. 1896
material: limestone
manufacturer/designer: unknown
location: at intersections of the mountain roads; south of North Ridge and east of the Pogue



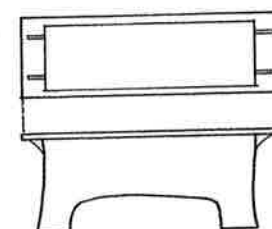
RUSTIC 'STONE LEDGE' BENCH, ca. 1904
material: limestone
manufacturer/designer: unknown
location: Hillside Garden



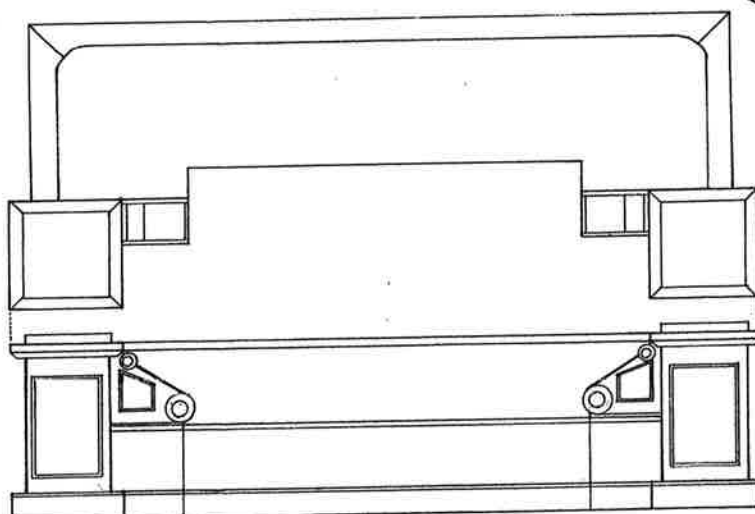
HITCHING POST (one of three), possibly ca. 1897
material: cast iron
manufacturer/designer: unknown
location: summit of Mount Tom (where an identical post is also located, the third - different in appearance - is by the Carriage Barn entrance)



FOUNTAIN, ca. 1898
material: marble
designer: Charles M. Platt - drainage basin and pedestal basin is Italianate Renaissance revival - imported
location: quincunx Terrace Garden



TARIKI STONEWARE BENCH, 1992 (the larger one of two)
material: ceramic
designer: Eric O'Leary
location: on stairs below the Belvedere; the second bench is located in the Hillside Garden



NEOCLASSICAL 'LONG TERRACE' BENCH (one of two, the other now demolished)
ca. 1898, reconstructed in 1987 and 1999
material: wood
designer: Charles M. Platt
location: end of terrace garden allée, intended to serve as a focal point

There are a number of formal elements located throughout the entire park. These objects serve to knit together the seemingly different public and private areas. Further, they help the observer to read the landscape as one that has been consciously designed to reflect the preferences of different eras and the interests of different occupants.



- KEY
- Town road
 - Carriage road
 - Woodstock park boundary
 - NPS legislative boundary

NOTE: For sources, see 2 of 18

SCALE: 1/8"=1'

0 4 8 16 24

SCALE: 1"=800'

0 400 800 1600 2400



TRACES



VERMONT WOODLAND FLORA EXHIBIT

John Wiggin designed the Vermont Woodland Flora Exhibit, at the request of the Rockefeller's, for tourists visiting the Woodstock Inn and other area attractions. This 6-acre exhibit opened in 1980. The design included labeled native plants installed in six distinct zones: cool deciduous northern forest, dry upland woods, marsh, evergreen woods, bog, and moist bottomland woods. A winding wood chip pathway brought guided visitors over stone and wooden bridges and along mossy log and stone steps through the featured areas. A 'dripping rock wall' planted with ferns and serviced with piped Pogue water was created on the stone retaining wall for the carriage road. Maintenance of the garden was curtailed in ca. 1993, and it began fading into the landscape. Today, the pathways can still be followed and some of the plastic plant tags remain, although most of the featured plant material has vanished.



WOLF TREE - SUGAR MAPLE

'Wolf' trees, a type of legacy tree, are located where there historically was no competition from other trees, typically in an open field or pasture. These trees developed a wide spreading habit, distinctive even after the succession of other trees or plantations have infringed upon them. Sugar maple, white ash, eastern hemlock, and white pine are typical 'wolf' trees in the park, some of which have been located on this plan. Documenting the locations of these trees will help determine historical land use and vegetative cover on the park property.



WALLS AND FENCES

Along the Elm Lot next to the red pine plantation exists a stone wall and a fence made of wooden posts and sheep wire. Stone walls, typical of New England farms, are located throughout the park, delineating property boundaries as well as field or pasture boundaries. Typically, stones were removed from cleared fields to construct the walls. Wire fencing is a clue that historically a pasture for livestock was at that location. On the plan, the locations of some of these traces are on property boundary lines, so they have been placed within the park boundary for visual clarity. The locations of all the stone walls and fences have not yet been documented and this further research will help to determine historic pasture and field boundaries.



GRANITE PROPERTY MARKERS

In the mid-1880s, Frederick Billings placed granite markers at some of the corners of previously separate property lots within his property. Inscribed on four of these markers is the name of the previous property owner, name of the person the property was sold to, and the location of the marker on the historic property parcel. Numerous uninscribed markers also exist.

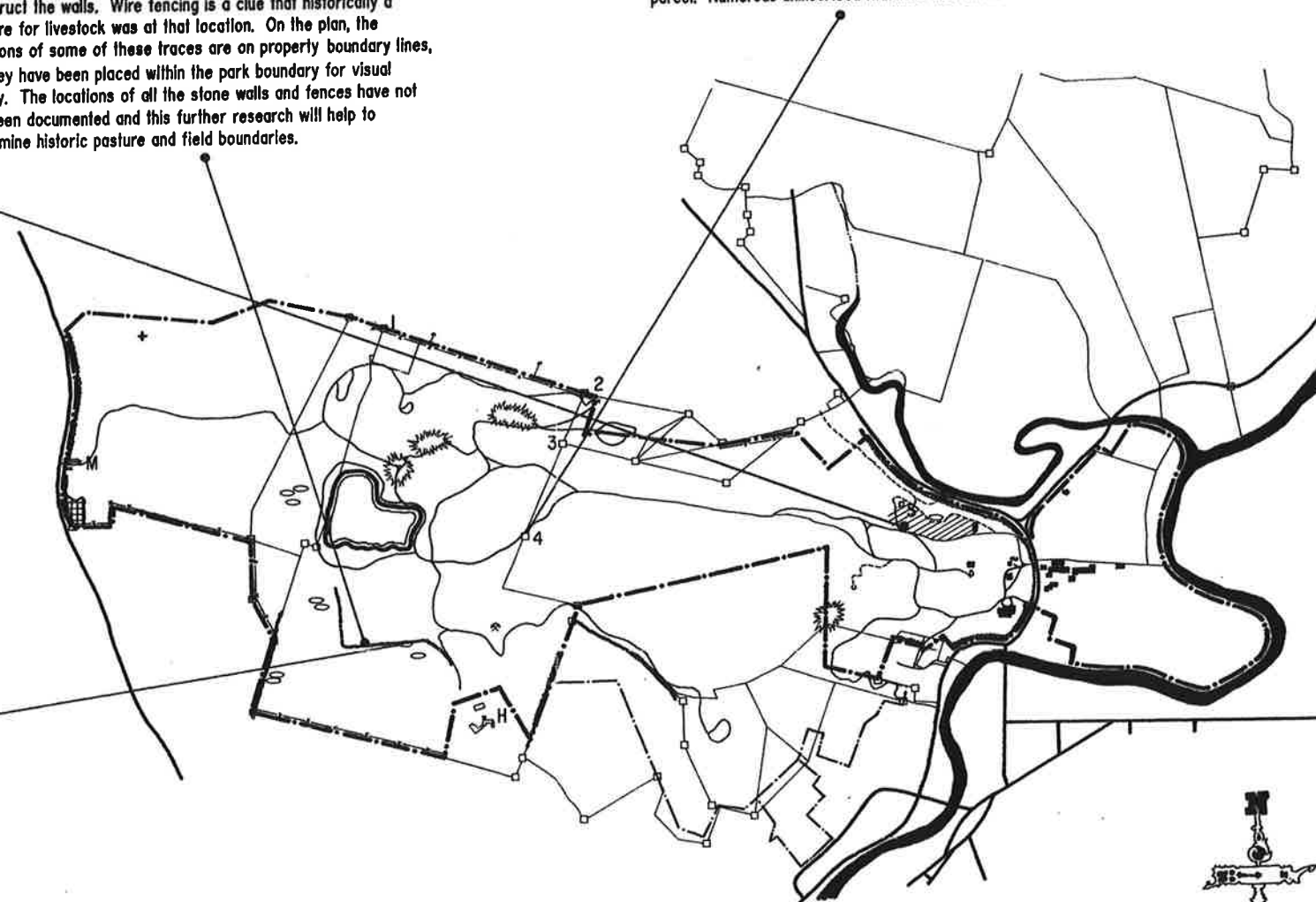
Natural and man-made trace features in the landscape tell stories about times past. In the future, these features will disappear from the land, taking clues to the evolution of the landscape with them. Illustrations of some traces within the park are on this sheet. Some features not illustrated include remnant old growth, carriage roads, and building foundations.

Remnant old growth within the park is a type of legacy tree that survived the deforestation of the 1800s. On this property, remnant old growth includes red oak and some eastern hemlocks that are nearly 400 years old.

Some carriage roads within the park are not actively being used, and are becoming narrower and overgrown. Many of these former roads have become hiking, ski, and snowshoe trails.

Traces of former farmhouse complexes and sugar houses can be seen as building foundations throughout the property. The McKenzie farmhouse was part of the Frederick Billings' property from 1894 until 1918 when it was sold. The property was re-purchased by the Billings daughters in 1933, after a fire destroyed the farmhouse in the previous year. The Hilltop farmhouse was built in 1866, and stood for 49 years until a fire in 1935. The remaining barn stood until the 1940s. The Hilltop farmhouse area is not within the NPS legislative boundary.

The foundation of a sugar house exists on the property, as well as several other suspected sugar houses. Archaeological investigations would help to determine the uses of these former buildings.



KEY

- Historic carriage road
- Stone wall
- Fence
- * Dump
- + Cox monument
- ⊗ Orchard
- ⊗ Vermont Woodland Flora Exhibit
- ⊗ LEGACY TREES (approximate location)
- ⊗ 'Wolf' trees
- ⊗ Remnant old growth
- GRANITE PROPERTY MARKERS
- Granite marker
- 1 NW Corner, Rogers to Marsh, 1800
- 2 NE Corner, Rogers to Marsh, 1800
- 3 NW Corner, Burch to Marsh, 1803
- 4 SE Corner, Rogers Tract
- BUILDING FOUNDATIONS
- M McKenzie farmhouse
- H Hilltop/Dana farmhouse (former site)
- S Sugar house
- Town road
- Carriage road
- Woodstock park boundary
- NPS legislative boundary

NOTE: For sources, see sheet 2 of 18

SCALE 1" = 800'

0 400 800 1600 2400

DRAWN BY: BETSY MELROSE

SUMMER 2002
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

54 ELM STREET

MARSH-BILLINGS-ROCKEFELLER NATIONAL HISTORICAL PARK

WINDSOR COUNTY

WOODSTOCK, VERMONT

HISTORIC AMERICAN
LANDSCAPE SURVEY

SHEET 17 OF 18

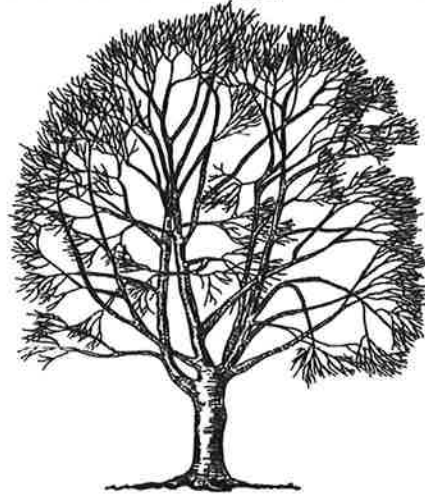
REPRODUCED, PLEASE CREDIT: HISTORIC AMERICAN LANDSCAPE SURVEY, NATIONAL PARK SERVICE, NAME OF DELINEATOR, DATE OF THE DRAWING

PHOTOGRAPHIC STATIONS



MANSON AREA

WINTER TREE CHARACTERISTICS



AMERICAN BEECH- *FAGUS AMERICANA*
SIZE: 60-120 FEET

A FREE STANDING BEECH CAN BE A MASSIVE BUT EXTREMELY ELEGANT TREE. IN THE WINTER THE SILVERY, GRAYISH-BLUE BARK STANDS OUT NOTICEABLY. THE BUDS ARE LONG AND TAPERING AND THE DENSE NATURE OF TWIG GROWTH ALONG THE OUTER EDGE OF THE BRANCHES PROVIDES A DISTINCT RUFFLED APPEARANCE. THE BEECH HAS A DISTINCTIVE OVAL OR ROUNDED SILHOUETTE. SOMETIMES IN MATURE SPECIMENS GROWN IN THE OPEN THE LOWER BRANCHES WILL BE HORIZONTAL AND MAY SWEEP THE GROUND.



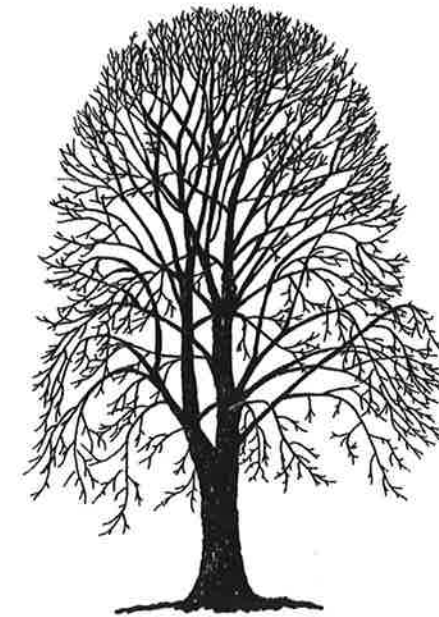
AMERICAN ELM- *ULMUS AMERICANA*
SIZE: 80-100 FEET

THE VASE SHAPE OF THE AMERICAN ELM IS ITS MOST DISTINCTIVE WINTER CHARACTERISTIC. THE TWIG STAND OUT ALTERNATELY ALONG SMALL BRANCHES AND ARE SLENDER AND REDDISH BROWN IN COLOR. THE POINTED, SMOOTH AND BUDS ARE LIGHTER BROWN WITH DARK-EDGED SCALES. THE BARK IS ASH-GRAY AND DEEPLY FISSURED INTO BROAD, SCALY RIDGES.



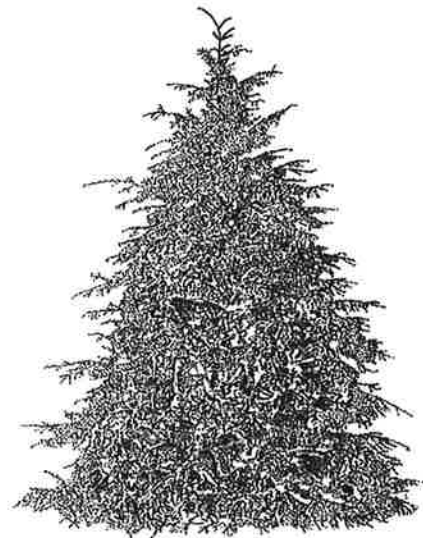
SUGAR MAPLE- *ACER SACCHARINUM*
SIZE: 70-100 FEET

THE TWIGS ARE SLENDER PALE REDDISH BROWN IN WINTER, WITH SHARP-POINTED, PALE BROWN BUDS THAT HAVE NUMEROUS SCALES. THE TERMINAL BUD IS ONLY ABOUT ONE-QUARTER INCH LONG, AND THE SIDE BUDS ARE SMALLER. THE BARK OF THE OVAL FORMED MAPLE IS DARK GRAY AND DEEPLY FURROWED, OFTEN CLEAVING UP AT ONE EDGE IN LONG, THICK PLATES.



AMERICAN BASSWOOD- *TILIA AMERICANA*
SIZE: 70-90 FEET

THE BASSWOOD REVEALS AN OVAL SILHOUETTE IN THE WINTER WITH MODERATELY THICK TWIGS THAT ARE RED GREEN. THE BUDS APPEAR ALTERNATELY IN A ZIGZAG FASHION AND ARE POINTED, FAT EGG-SHAPED, AND SHINY WITH TWO SCALES. THE COLORING OF TWIGS AND BUDS INTENSIFIES AS SPRING COMES ON, BUT THERE IS NO TRUE TERMINAL BUD. DEEPLY FURROWED.



EASTERN HEMLOCK- *TSUGA CANADENSIS*
SIZE: 45-90 FEET

WITH FINE TWIGS AND SLENDER, DROOPING LEADER AT THE TOP, THE HEMLOCK IS ONE OF THE MOST GRACEFUL EVERGREENS. THE NEEDLES ARE DARK GREEN ABOVE AND LIGHT GREEN BELOW, WHICH GIVES THE FOLIAGE A SILVERY TONE. THE FRUIT IS AN OVOID CONE, RED-BROWN AND ABOUT 3/4 INCH LONG THAT HANG ON THE BRANCHES.



NORWAY SPRUCE- *PICEA ABIES*
SIZE: 30-60 FEET

THE FORMAL, PYRAMIDAL SHAPE OF THE NORWAY SPRUCE IS ITS MOST STRIKING CHARACTERISTIC. RARELY MORE THAN 60 FEET TALL, MANY SMALL, SLENDER BRANCHLETS HANG FROM THE MAIN BRANCHES. THE NEEDLES ARE DARK GREEN, CURVED, SHARP AND BETWEEN 3/4 AND 1 INCH LONG AND THE FRUIT IS A 3-6 INCH PENDANT CONE. THE BARK IS ROUGH WITH REDDISH BROWN SCALES.



WHITE PINE- *PINUS STROBUS*
SIZE: 80-220 FEET

THE WHITE PINE IS THE LARGEST IN THE UNITED STATES WITH A GRADUALLY TAPERING TRUNK ONCE FOUND AS TALL AS 250 FEET IN THE CONNECTICUT RIVER VALLEY. IT IS DISTINGUISHED BY ITS FINE, BLUE-GREEN NEEDLES AND ALSO BY THE HORIZONTAL BRANCHES ON MATURE TREES. THE FRUIT IS OFTEN CURVED, GREENISH CONES, 4-10 INCHES LONG WITH WING 1 INCH LONG. YOUNG PINES HAVE SMOOTH, THIN, GREENISH-BROWN BARK, WHILE MATURE TREES HAVE DARK GRAY, THICK, HEAVY RIDGES THAT ARE LONGITUDINAL AND FLAT TOPPED.



RED PINE- *PINUS RESINOSA*
SIZE: 50-75 FEET

THIS TALL PINE HAS STOUT, HORIZONTAL BRANCHES THAT FORM A BROAD, ROUNDED, RATHER OPEN CROWN. THE 4 TO 6 INCH LONG NEEDLES ARE FOUND IN CLUSTERS OF TWO, SHARP AND LUSTROUS DARK GREEN. THE FRUIT IS AN OVATE CONE ABOUT 2 INCHES LONG, LIGHT MOTTLED BROWN, WITH WINGS 1 1/2-3/4 INCHES LONG. THE TWIGS ARE ORANGE-BROWN AND THE BARK IS SHALLOWLY FISSURED, THICK AND RED BROWN.