

FOREST MANAGEMENT PLAN

for the

Dowst-Cate/Weiss Town Forest

Deerfield, New Hampshire

203.7± acres



Commissioned By:
The Deerfield Conservation Commission

Prepared by:
Charles Moreno, LPF
Moreno Forestry Associates
PO Box 60, Center Strafford, NH 03815
(603) 335-1961
April 15, 2013



Handwritten signature of Charles Moreno.

Charles Moreno, NH LPF #115
Consulting Forester

Report Copy # _____

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for the
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203.7± acres



Deeply furrowed bark of an old black gum.

April 15, 2013

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The purpose of this plan is to provide natural resources information and forest and wildlife management recommendations to the Deerfield Conservation Commission, citizens of Deerfield, and others interested in the management of the Dowst-Cate/Weiss Town Forest in Deerfield, New Hampshire. This document is a work for hire done by Moreno Forestry Associates for the Town of Deerfield, New Hampshire, and may be used by the Town of Deerfield, New Hampshire for any purpose. Copying of this plan by any other individual or organization, including all written material, plan content and format, requires appropriate citation and/or the written permission of Charles A. Moreno, Consulting Forester.



Charles Moreno, Consulting Forester
Strafford, New Hampshire, (603) 335-1961
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MAPS

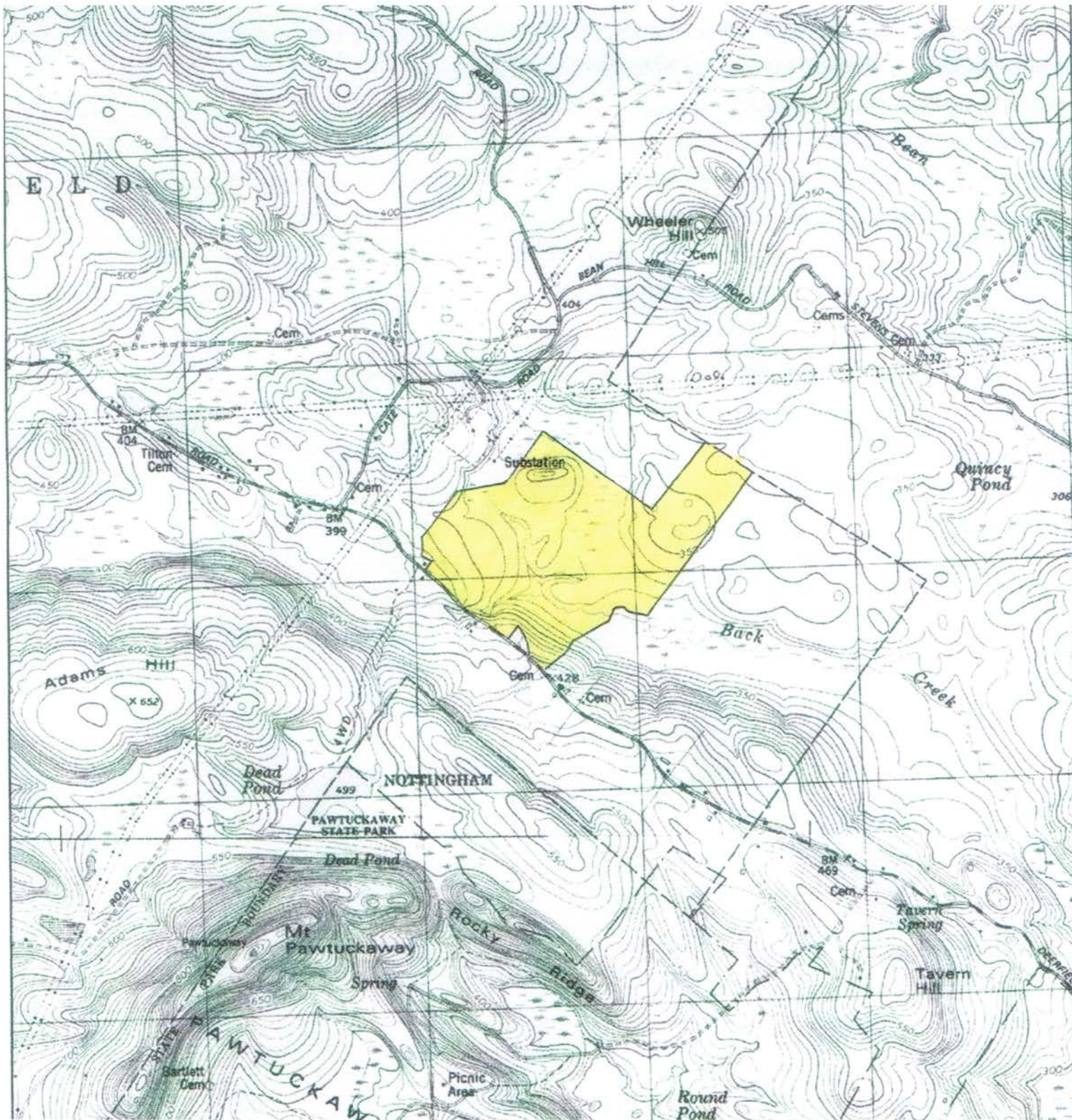


MAP SCALE:



1 inch = 2000± feet

Locus Map of the Dowst-Cate/Weiss Town Forest Deerfield, New Hampshire 203.7± Acres

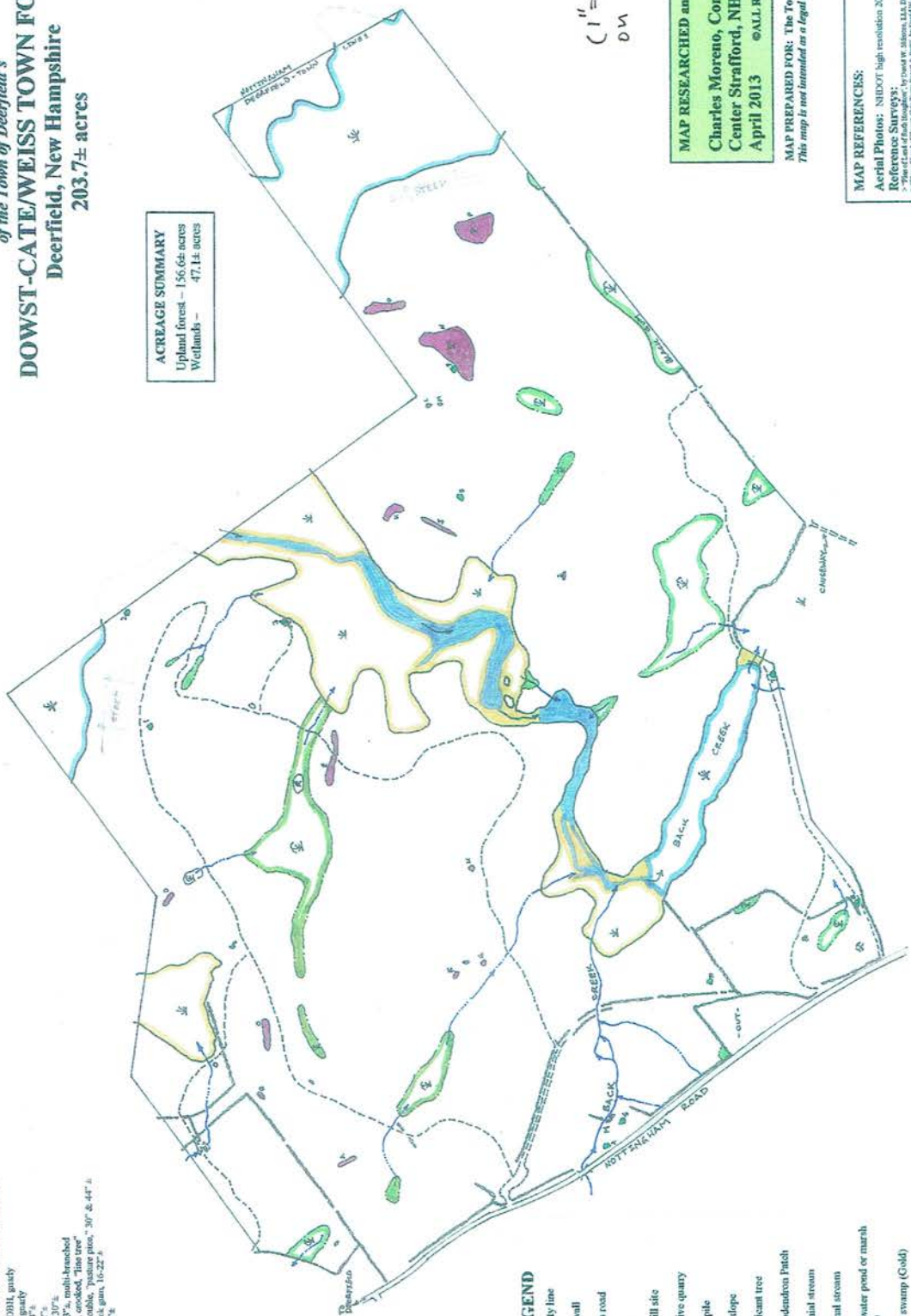


USGS Topographic Map, "Northwood" Quadrangle

Natural and Physical Features Map of the Town of Deerfield's DOWST-CATE/WEISS TOWN FOREST Deerfield, New Hampshire 203.7± acres

ACREAGE SUMMARY
Upland forest - 156.6± acres
Wetlands - 47.1± acres

- SIGNIFICANT TREE INDEX**
- 1- Black 24", 100ft, gnarly
 - 2- Black 22", gnarly
 - 3- White oak, 3-4"
 - 4- White oak, 22"
 - 5- Sugar maple, 30"
 - 6- Red maple, 25", multi-trunked
 - 7- Spruce, 15", gnarly
 - 8- White pine, double, "peaking pine", 30" & 44"
 - 9- Three old black gums, 15-22"
 - 10- Red oak, 30"



MAP SCALE:
0 100 200 400
1 inch = 400± feet

(1" = 650' ± Printed
on 8 1/2" x 11 paper)

MAP RESEARCHED and DRAWN BY:
Charles Moreno, Consulting Forester
Center Strafford, NH (603) 335-1961
April 2013 ©ALL RIGHTS RESERVED

MAP PREPARED FOR: The Town of Deerfield
This map is not intended as a legal description or for legal purposes.

MAP REFERENCES:
Aerial Photos: NHDOT high resolution 2005 & 2010 orthophotographs.
Reference SURVEY:
- "Plan of Land of said township", by David W. Wilson, L.L.M., December 1918, 80292-1012-10.
- "Plan of Land of said township", by David W. Wilson, L.L.M., December 1918, 80292-1012-10.
- "Plan of Land of said township", by David W. Wilson, L.L.M., December 1918, 80292-1012-10.
Property Reconnaissance:
Charles Moreno, Consulting Forester, 2013.

MAP LEGEND

- Property line
- Stonewall
- Woods road
- Trail
- Old mill site
- Primitive quarry
- Stone pile
- Steep slope
- Significant tree
- Rhododendron Patch
- Perennial stream
- Seasonal stream
- Freshwater pond or marsh (Blue)
- Shrub swamp (Gold)
- Forested swamp (Green)
- Vernal pool (Purple)

Map of the DOWST-CATE/WEISS TOWN FOREST

Deerfield, New Hampshire
203.7± acres

Showing Forest Types

Forest Type Key

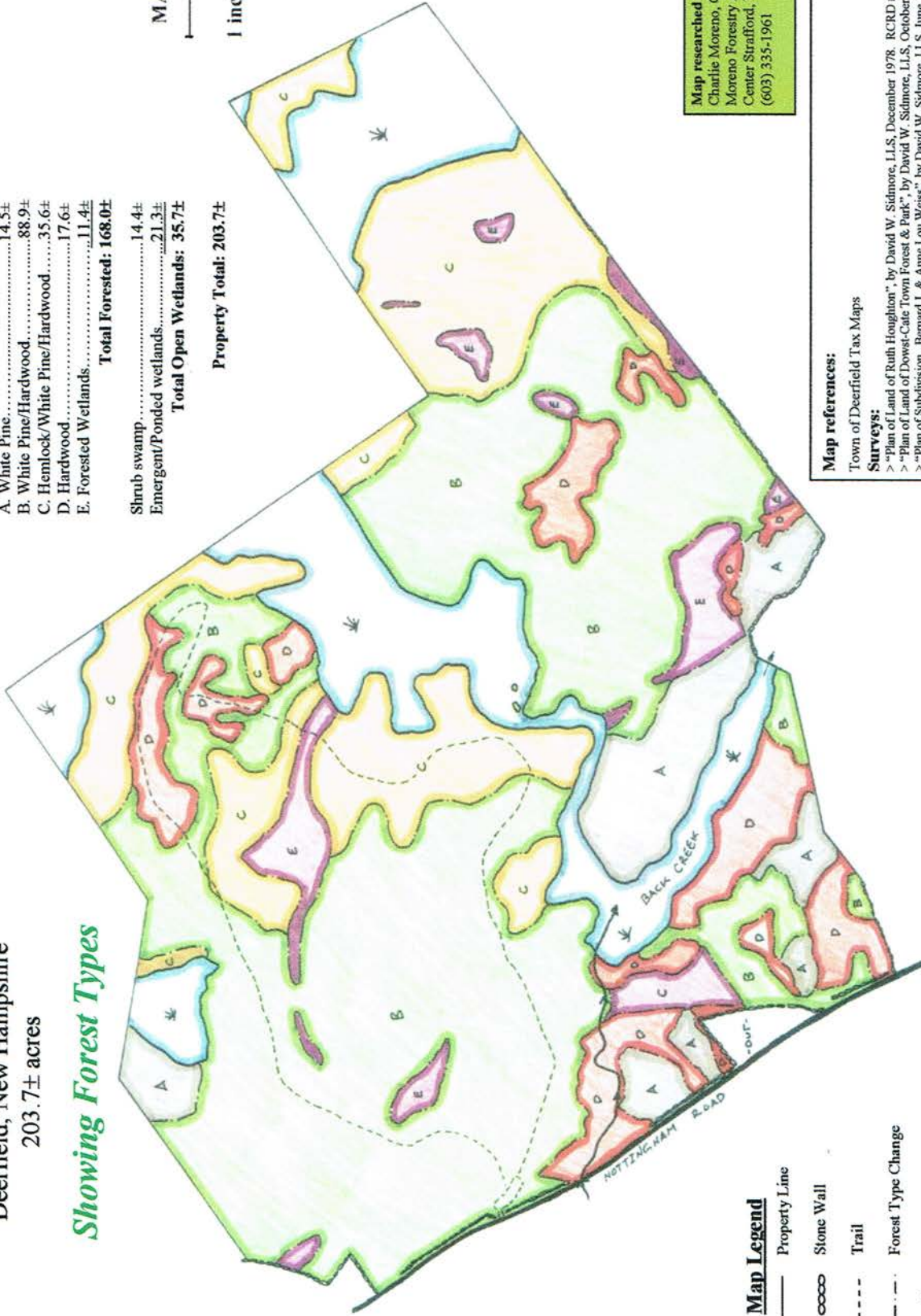
	Acres
A. White Pine.....	14.5±
B. White Pine/Hardwood.....	88.9±
C. Hemlock/White Pine/Hardwood.....	35.6±
D. Hardwood.....	17.6±
E. Forested Wetlands.....	11.4±
Total Forested:	168.0±

Shrub swamp.....	14.4±
Emergent/Ponded wetlands.....	21.3±
Total Open Wetlands:	35.7±

Property Total: 203.7±

MAP SCALE:

1 inch = 600± feet



Map Legend

- Property Line
- Stone Wall
- - - - Trail
- · - · Forest Type Change
- ✱ Wetland (Not Forested)

Map researched and drawn by:
Charlie Moreno, Consulting Forester
Moreno Forestry Associates
Center Strafford, NH
(603) 335-1961 April 2013

Map references:

Town of Deerfield Tax Maps

Surveys:

- > "Plan of Land of Ruth Houghton", by David W. Sidmore, L.L.S., December 1978. RCRD #8170.
 - > "Plan of Land of Dowst-Cate Town Forest & Park", by David W. Sidmore, L.L.S., October 1985. Unrecorded.
 - > "Plan of Subdivision...Bernard J. & Anne Lou Weiss", by David W. Sidmore, L.L.S., June 1992. RCRD #21712.
- Aerial Photos:** 2005 & 2010 high resolution orthophotography from NHDOT series.
Field Examination: (C. Moreno, 2013)

*This map is not intended as a legal description or for legal purposes.
Property lines, acreages, and interior details are approximate.*

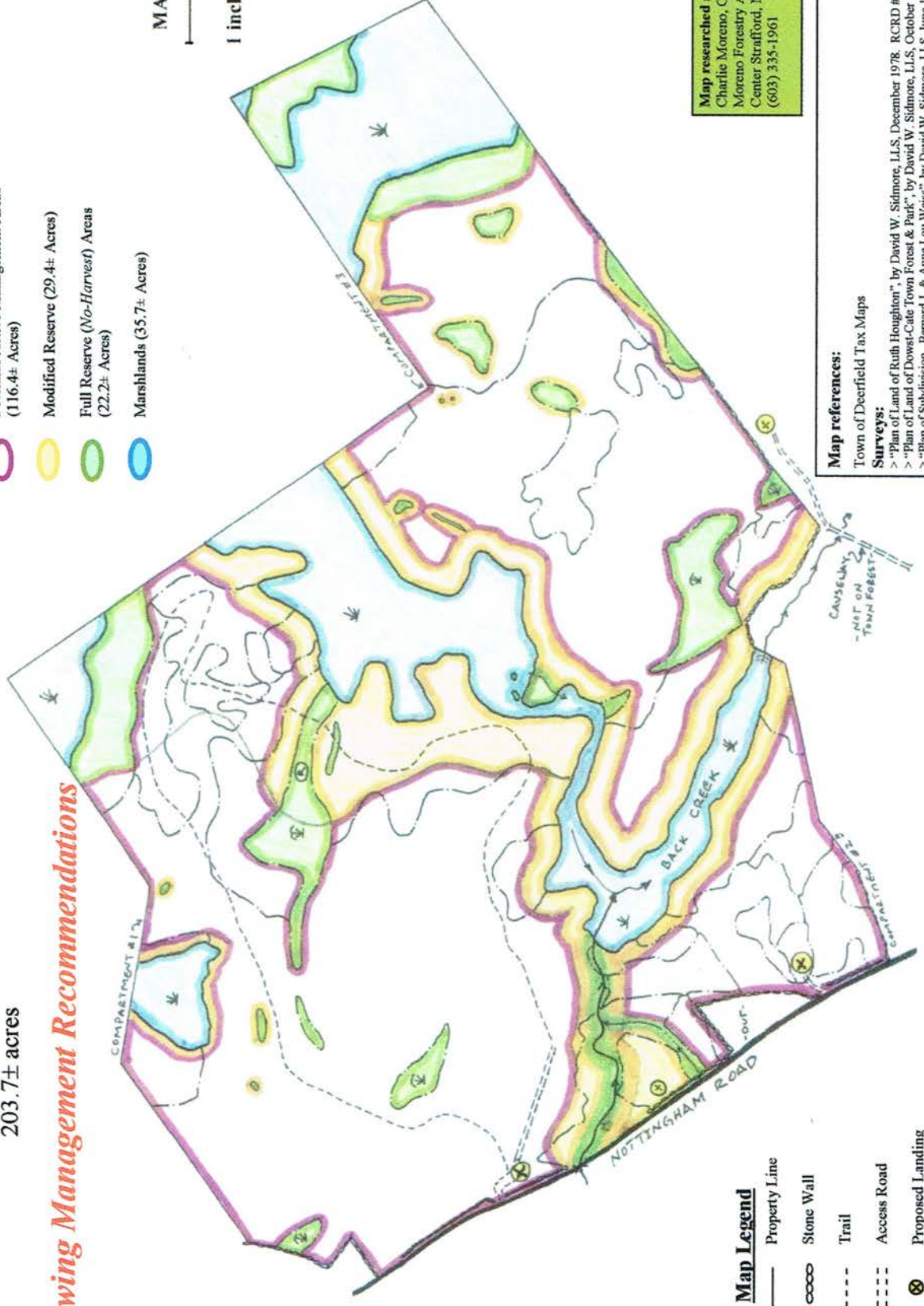
Map of the DOWST-CATE/WEISS TOWN FOREST

Deerfield, New Hampshire
203.7± acres

Showing Management Recommendations

- Management Areas**
- Potential Active Management Areas (116.4± Acres)
 - Modified Reserve (29.4± Acres)
 - Full Reserve (No-Harvest) Areas (22.2± Acres)
 - Marshlands (35.7± Acres)

MAP SCALE:
1 inch = 600± feet



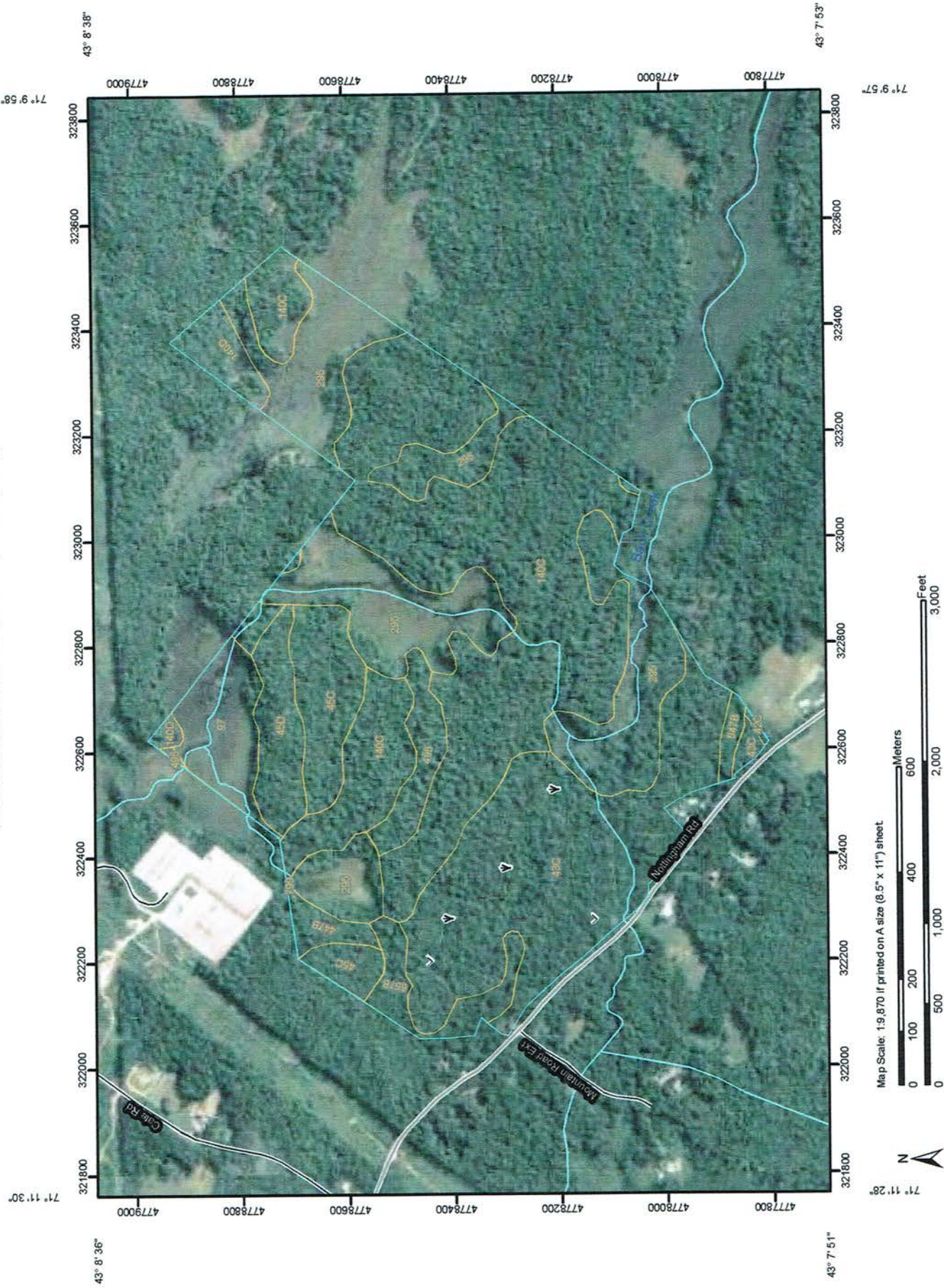
- Map Legend**
- Property Line
 - o-o-o Stone Wall
 - - - - - Trail
 - - - - - Access Road
 - ⊗ Proposed Landing
 - ⋈ Wetland (Not Forested)

Map researched and drawn by:
Charlie Moreno, Consulting Forester
Moreno Forestry Associates
Center, Strafford, NH
(603) 335-1961 April 2013

Map references:
Town of Deerfield Tax Maps
Surveys:
> "Plan of Land of Ruth Houghton", by David W. Sidmore, L.L.S., December 1978. RCRD #8170
> "Plan of Land of Dowst-Cate Town Forest & Park", by David W. Sidmore, L.L.S., October 1985. Unrecorded.
> "Plan of Subdivision... Bernard J. & Anne Lou Weiss", by David W. Sidmore, L.L.S., June 1992. RCRD #21712.
Aerial Photos: 2005 & 2010 high resolution orthophotography from NHDOT series.
Field Examination: (C. Moreno, 2013)

*This map is not intended as a legal description or for legal purposes.
Property lines, acreages, and interior details are approximate.*

Soil Map—Rockingham County, New Hampshire
(Dowst-Cate/Weiss Town Forest, Deerfield, New Hampshire)



Map Scale: 1:9,870 if printed on A size (8.5" x 11") sheet.



INTRODUCTION & OBJECTIVES

The DOWST-CATE/WEISS TOWN FOREST

Deerfield, New Hampshire

INTRODUCTION

Consolidated from separate parcels into one contiguous property, the Dowst-Cate/Weiss Town Forest (DCWTF) is the town's largest forest tract, covering 203.7± acres. Well-established, high quality forest covers nearly 90% of the tract. The remaining area contains outstanding ponded and emergent wetlands that are associated with Back Creek, a tributary of the Lamprey River. The Dowst-Cate parcel contains a scenic loop trail with fine views of the Back Creek marshland. Much of the former Weiss Lot is remote and difficult to access, and is likely to remain as little-used backcountry. The DCWTF tract is an integral part of a 3,000± acre, largely undeveloped, open space block which includes several conservation properties and provides valuable wildlife habitat.

PROPERTY INFORMATION

LOCATION and GEOGRAPHY

The Dowst-Cate/Weiss Town Forest is located in the easternmost section of Deerfield on the northeast side of Nottingham Road and about 2.5± miles from the Deerfield Town Center.

The property is situated on the southerly edge of the Sebago-Ossipee Hills and Plain Ecoregion¹, approximately 24± miles inland from the Atlantic Ocean. The area's climate is moderated by the sea, which in turn, influences the forest's species composition. The DCWTF lies at the northerly extent of the Appalachian oak-pine zone, just shy of the transition hardwood-conifer zone². In this location, neither shagbark hickory nor red spruce are present, though both species are common a few miles south and north, respectively.

The property is situated within the Lamprey River watershed. Soils on the property are formed from glacial tills and are underlain by metamorphic bedrock. Topography is generally rolling (0 – 15±% grades), with moderately sloped knolls interspersed with level pockets. Two steep ledgy ridges are found (15 – 35±% grades) in the northwestern corner and northeastern section of the property, respectively. The property's high elevation is at 400± feet above sea level at the Weiss Lot road frontage and low elevation is 315± feet in the eastern section of the Back Creek marsh.

¹ Keys, J.E. and C.A. Carpenter. 1995. Ecological Units of the Eastern United States: First Approximation. U.S. Department of Agriculture, Forest Service.

² Sperduto, D. D. and W.F. Nichols. 2004. Natural Communities of New Hampshire. New Hampshire Natural Heritage Bureau and The Nature Conservancy.



REFERENCE INFORMATION

Surveys:

- > “Plan of Land Dowst-Cate Town Forest & Park”, by David W. Sidmore. LLS, October 1985. Unrecorded.
- > “Plan of Subdivision... Bernard J & Anne Lou Weiss”, by David W. Sidmore, LLS, June 1992. RCRD Plan #21712.
- > Plan of Land Ruth Houghton, by David W. Sidmore, LLS, Dec 1978. RCRD Plan #8170.

Aerial Photos: 2005 and 2010 high resolution orthophotography from NHDOT series.

Tax Maps: Deerfield Tax Map 6, Lots 67 (Dowst-Cate) and 45-1 (Weiss).

Acreeage: TOTAL – 203.7 Acres

Upland forest – 156.6± acres
Wetland forest – 11.4± acres
Wetlands (open) – 35.7± acres

PROMINENT PROPERTY FEATURES

- Back Creek wetland complex.
- Back Creek historic mill site.
- Colony of giant rhododendron.
- Scenic, well-established forest.
- 1.5± mile long loop trail.



Rare northern colony of Giant Rhododendron (*Rhododendron maximum*) in one of property's forested wetlands.



Remains of old mill site dam on Back Creek.

- Edge of old growth black gum swamp.
- Northerly stand of poison sumac.
- Significant trees.



KEY PROPERTY FINDINGS

- The Back Creek wetland complex is an interconnecting set of ponded marshlands and shrub swamps that are relatively pristine and provide outstanding riparian habitat.
- 77% of property area is upland forest.
- The property's diverse habitats support a wide variety of mammal and bird species.
- The property's habitats may support the following NH threatened/endangered species (not including fish and invertebrates): northern harrier (transient use), Blanding's turtle, and spotted turtle. Pied-billed grebe may also use the wetlands.
- The forest is well-established and mostly mid-aged (75 – 100+ years old), with some forest patches containing trees up to 120± years, and a few older trees, 150± years. Younger forest (under 65 years) of age covers less than 5% of the forested acreage.
- Beech, hemlock, and to a lesser extent, white pine, are the dominant forest regeneration.
- White pine and red oak are the property's most common species. Hemlock and red maple are also common.
- Pitch pine, red spruce, shagbark hickory, basswood, hophornbeam, ironwood and quaking aspen were not noted on the property.
- Forest structure is headed towards complexity. Presently, the presence of young and very old trees is minimal, while canopy stratification and woody debris accumulation continues.
- Stands of poison sumac (*Rhus vernix*) are found in the central marshlands. This is a northerly situation for this species.
- The property is largely free of non-native, invasive plants.
- Access: There is substantial area of the former Weiss Lot with poor management access.
- Access: The former Dowst-Cate Lot is readily accessible, though improvements may be necessary to stage the next harvest operation.



OVERALL PROPERTY MANAGEMENT TEMPLATE

Management Compartments: Management of the DCWTF is organized in specific areas referred to as “Management Compartments” (MC’s). Each MC has a distinct access route. Three MC’s are proposed, separated by the central wetlands and Back Creek. These are:

MC #1 – 105.4± acres. Includes most of the original Dowst-Cate parcel, but excluding the small area east of Back Creek. Management access is via the existing entrance off Nottingham Road.

MC #2 – 17.5± acres. This small compartment includes the land between Nottingham Road and Back Creek. Primary management access is via a former woods road and landing site on Nottingham Road.

MC #3 – 80.8± acres. This compartment includes all the “back acreage” of the former Weiss parcel, lying north and east of Back Creek and the central wetlands. The wetlands isolate this section, rendering it inaccessible from the property interior. Access must be negotiated through an abutting property.

Area Prescribed for Long-term, Active Forest Management: 116.4± acres, or approximately 70% of the property’s forestland, covering substantial interior areas of all three management compartments. However, it is possible that MC #3 is rendered inaccessible if access cannot be negotiated using the abutter’s causeway which crosses Back Creek. *This would reduce the area accessible to long-term management to 78.2 ± acres (47% of the forestland).* Thus between 47% and 70% of the forestland is recommended for active silvicultural management, as specified in the silvicultural prescriptions.

Recommended Forest Reserve Areas:

Full Reserve – 22.2± acres. Includes forest areas that are largely left to the course of nature, with minimal human disturbance, and where timber harvesting is excluded. Specifically, full reserves comprise forested wetlands (including several vernal pools), part of the Back Creek stream riparian area, steep-sided ridges, and inaccessible, isolated forest (such as the woodland pocket on the Deerfield-Nottingham town line).

Modified Reserve – 29.4± acres. “Modified reserve” means that minimal maintenance harvesting may take place in the area (tree removals generally limited to 10% of the basal area). In addition to forest maintenance, harvesting is geared towards natural disturbance response, as opposed to scheduled, periodic harvesting with long-term silvicultural goals. For example, some modified reserve areas contain a substantial hemlock presence, which is threatened by the hemlock woolly adelgid. As with acute natural disturbances, a decision will eventually be faced whether to salvage threatened, damaged, or dying timber, and/or to carry-out restorative treatment, or whether to leave the site alone.



MANAGEMENT OBJECTIVES

Recommendations for the management of the Dowst-Cate/Weiss Town Forest are based on the natural resource findings for this study and corresponding long-term management objectives which the Deerfield Forestry Committee has considered for the property. These objectives include:

- **TIMBER: Sustainably manage the timber resource.** Up to 70% of the property's forestland area is recommended for silvicultural management with periodically scheduled harvests. In the actively managed areas of the property, periodic harvests are for the purpose of maintaining forest health and wildlife habitat; improving forest growth and timber quality; regenerating a variety of tree species, including substantial commercially valuable species; and generating income for Town Forest management or other conservation purposes.
- **WETLANDS: Protect marshland and stream integrity.** Wetlands cover nearly $\frac{1}{4}$ of the DCWTF. The property is bisected by an outstanding wetland complex with extensive marsh and shrubland. Back Creek, a second order stream, weaves through the wetlands. The woodland acreage contains several forested wetlands, vernal pools, and seasonal streams. Protection of the property's wetlands and riparian areas is a major objective, in order to maintain water quality, hydrologic function, and valuable habitat. Recreational and forestry activities are minimized in the vicinity of the wetlands, particularly the marshes, Back Creek, and vernal pools, where minimal harvest buffers (75 to 100± feet wide) are suggested. The installation of appropriate stream fords for trail crossings is underway by town volunteers.
- **WILDLIFE: Protect and enhance wildlife habitat.** As part of a 3,000± acre block of unfragmented open space, the DCWTF contains a significant section of the largely undeveloped Back Creek wetland system. This largely undisturbed wetland and forest habitat is valuable for a diversity of mammals, birds, reptiles, amphibians, and fish. Management objectives are to retain the wetland areas in their pristine condition. Well-established forest covers the other 75% of the property, including some remote areas. Enhancements to forest cover in the managed acreage is to be accomplished in conjunction with silviculture. This largely involves progression towards structural complexity—multiple age classes, canopy layers, woody debris, etc., as well as promoting mast sources and dense cover—partly along the forest-wetland ecotone.
- **RECREATION: Manage for light-impact recreational uses.** The Dowst-Cate area of the tract (MC#1) is readily accessible, with a small parking area and a scenic, well-marked loop trail that traverses over 1.5 miles through the parcel. Continued use for walking, nature observation, and hunting are the main uses. By contrast, the Weiss Lot interior is inaccessible without crossing abutting property. Due to poor access and an absence of trails, the Weiss parcel area (MC#3), is lightly visited, primarily for hunting.
- **FINANCIAL: MC#1 has a history of careful management, currently supporting a substantial timber inventory.** While white pine sawtimber was harvested from MC#2 and #3 in the early 1990's, the stands still contain good timber as well as substantial pine regeneration. Carefully staged harvests in all the actively managed areas will improve the timber inventory and establish favorable regeneration. Financially, improvement cutting will provide a positive cash flow of \$15,000+, every 15 years, mostly from the Dowst-Cate parcel, MC#1.



- **ACCESS: Maintain property access.** The Dowst-Cate area (MC#1), has established access, which may need relatively minor improvements to stage forestry activities. This may result in a larger parking area for public access. MC#2 can be accessed via a former landing site. By contrast, the interior of the Weiss parcel (MC#3), is isolated by wetlands and does not have the potential to develop direct access. A causeway, in marginal condition, across an abutter's property may provide temporary logging access, if permission is granted, and if this access route proves to be financially feasible. Otherwise, MC#3 will remain a silvicultural reserve area, and for backcountry recreational use.

- **FOREST HEALTH: Maintain a healthy forest in managed areas:** 1) Improve forest growth and promote quality timber; 2) Remove diseased or poor quality trees (with low wildlife value); 3) Encourage the regeneration of diverse mid-successional species including white pine, red oak, white oak, sugar maple, white ash, black birch, and yellow birch. 4) Discourage beech regeneration; and 5) Manage for tree age variety, including patches of young growth, ample mid-aged forest, and eventually, extensive areas of older growth, 150 to 200+ years old.



RECOMMENDATIONS & LOGISTICS

CAPSULE RECOMMENDATIONS for PROPERTY

The following projects are recommended for the DCWTF, and categorized according to *present* priority:

High Priority:

- **Silviculture** – The 65± acre actively managed area of MC#1 (Dowst-Cate) was last harvested in 1990, and is ready for second stage improvement harvesting. This harvest is aimed at improving conditions for trees with good value-growth potential, as well as to begin the process of canopy gap creation to establish a new generation of trees. Follow-up TSI may be eventually needed to release favorable regeneration and minimize beech proliferation.
- **Water Quality** – Apply NH Best Management Practices (BMP's) for forestry activities at stream crossings or in wetland riparian zones. Maintain minimal harvest buffers along wetlands, streams, and vernal pools.
- **Rare Species** – Attempt to restore the property's rhododendron colony.

Medium Priority:

- **Access** – Post-harvest, restore and/or upgrade parking lot in Dowst-Cate parcel.
- **Wildlife** – Continue to develop complex forest structure in silviculturally managed areas: varied tree age, canopy cover, and accumulated woody debris. In addition to encouraging young growth and maintaining ample mid-aged forest, allow the development of scattered older growth (150+ years) forest pockets and individual trees. Promote dense shrub edge on forest-wetland ecotone.
- **Recreation** – Continue trail maintenance, including the installation of wetland crossings for pedestrian travel. Expansion of the present trail network is not recommended. Add a kiosk.
- **Silviculture** – The 11± acre actively managed area of MC#2 was last harvested in 1993, and is ready for second stage improvement harvesting.
- **Access** – Negotiate access across the causeway to MC#3, which was last harvested in 1993.
- **Silviculture** – If access is successfully negotiated, the 38± acre MC#3 managed area is ready for an improvement cutting and release of existing pine regeneration.

Low Priority:

- **Boundary Maintenance** – Property lines were recently axe-blazed and painted (2011±). The next boundary maintenance should be scheduled for 2021±. Collectively, the DCWTF has 9,500± feet of surveyed boundary requiring periodic maintenance.



FINANCIAL PROJECTIONS

Revenue

The recommended area for improvement harvesting on MC#1 (the Dowst-Cate parcel) covers 65± acres. Projected net revenue is \$15,000±, barring unexpected costs such as extensive access improvements. Presently, access improvements appear to be minimal. The projected net revenue includes forestry costs.

Income from improvement harvesting on MC#2 will be minimal, perhaps netting \$1,500±, due to the small area involved. As an economy of scale, this area should be included with the harvest of either MC#1 or MC#3, if the latter can be done.

Implementing an improvement harvest on MC#3 is entirely dependent on harvesting acquiring access via the abutter's causeway. Net revenue for this harvest on 38± acres is approximately \$8,000 - \$10,000±. However, the causeway will need improvements, which may cost several thousand dollars, diminishing the feasibility of the overall project.

Expenses

Minimal expenses are projected in the upcoming management of the DCWTF. These involve access improvements as described above. For MC#1, access improvements may range from 0 to \$3,000±. Minimal access costs are expected for MC#2. For MC#3, improvements to the existing causeway, if access is allowed, may be several thousand dollars.

A summary of projected costs/revenues follows:

	<u>MC#1 & MC#2</u>	<u>With MC #3</u>
Projected net income:		
(MC#1) 65± acre forest improvement cut	\$15,000±	
(MC#2) 11± acre forest improvement cut	1,500±	
(MC#3) 38± acre forest improvement cut		(\$9,000)±
Projected costs:		
(MC#1) Woods road and landing installation	(\$ 1,500)±	
(MC#3) Causeway upgrade		(\$5,000)±
PROJECTED NET REVENUE	\$15,000±	\$19,000±



FOREST ACCESS and RECREATIONAL USE

Forest Management Access

As discussed, the Dowst-Cate parcel (MC#1) of the Town Forest is readily accessible to management. In 1989-90, a comprehensive forest improvement harvest was conducted on this parcel, with staging established in a small opening off Nottingham Road. The landing site and main skid trail were situated on an abandoned segment of the old town road. A second major skid trail was located in a more or less north/northwesterly direction from the landing. Today, the landing serves as a small parking area for 2-3 vehicles, while the main skid trails form the basis for the parcel's loop trail.

It is possible that the landing site must be enlarged or possibly re-located to accommodate upcoming harvests. This will be the case if mechanized-biomass harvesting is used, as a biomass landing site is typically at least 1/3 of an acre in size. If conventional logging or cut-to-length are used, the landing may remain similar to the present footprint. It is noted that present skidding distances for operating in MC#1 range from 0 to almost 3,000± feet.

The landing site for MC#2 was last used in 1993, and is located about 75 feet from Nottingham Road. Dense pine saplings presently occupy the ¼ acre site. Though the entrance from Nottingham Road is awkward (with a marginal sight distance) and may need some gravel, it is expected that this landing can be re-used.

An old woods road traversed through the former Weiss Lot, entering the property where the MC#2 road and landing are, and running to the edge of the wetland on the eastern edge of the property. In 1993, the wetland was less significant, and abutments for a bridge crossing still existed. This fording point provided access for the 1993 logging of the Weiss property interior, when large logs were placed across the abutments to make a bridge deck. Over the ensuing years with beaver influence, water depths increased and the wetlands expanded. The bridge abutments have disappeared, likely dismantled by spring floods or other storm event. The present ford area where the bridge once stood contains over 25 feet of open water and an additional area of saturated marsh. A crossing at this site would now be prohibitively expensive and environmentally disruptive. There are no other fording options across Back Creek or the central wetlands from within the DCWTF to MC#3, as the wetlands are too wide.

Over the last decade or so, a road or "causeway" has been fashioned across the Back Creek marshland on the adjacent property, ending just beyond the eastern property line of the MC#3 interior. Built on a foundation of large rocks and logs, the causeway is 400± feet long. A large culvert (8± feet in diameter) provides the main drainage, though water seeps through the causeway foundation as well. The causeway was used by the abutting landowner to access a timber harvest on their land north of Back Creek. If permission is obtained, the causeway may also be usable for conducting an improvement harvest on the interior of the former Weiss Lot. However, the causeway needs considerable gravel fill, and an overall evaluation to determine if it is stable enough to sustain the passage of loaded logging trucks.

Other access routes from Stevens Hill Road to the north were studied to MC#3. All were found unfeasible due to inordinate distances and/or substantial wetland crossings.



Recreational Use and Access

Currently, trail-based hiking, hunting, and nature observation/photography are the main recreational activities on the Dowst-Cate/Weiss Town Forest. The existing parking area on Dowst-Cate (MC#1) holds 2-3 vehicles. An informational kiosk may be eventually added to the parking area.

A 1.5+ mile loop trail is located on the Dowst-Cate parcel, complete with the “White Oak” lookout point, where a scenic overlook of the central marshland is viewed. The loop trail traverses a variety of forest environments. A trail spur may be considered to the former mill site on Back Creek.

Presently, MC#2 and MC#3 contain no trails. Trail development appears unfeasible on MC#2 due to several streams that cross the area near the mill site, and the area’s overall small size. MC#3 is inaccessible from the Town Forest, as discussed. It is recommended that MC#3 remain trail-less, providing remote, undisturbed habitat for wildlife, and a backcountry area for recreational enthusiasts that prefer exploring less traveled areas.



NATURAL RESOURCES

NATURAL RESOURCE SUMMARY

SOILS PROFILE

Soil mapping is derived from the NRCS Web Soil Survey for Rockingham County. Soils types are described below.

Upland Soils

- 1) *Canton (42 & 43)* – This glacial till is deep and well-drained. The surface layer of *Canton* is gravelly loam, with a substratum (below 2½ feet) of loamy sandy and varying amounts of silt. While seasonal high water table is below 6 feet, *Canton* is typically wet during spring thaw or after extended rainy periods. This soil is productive for both the growth of pine and hardwoods.
- 2) *Chatfield-Hollis-Canton (140)* – Underlying more than one-third of the property, this soil complex is variable, including shallow-to-bedrock areas (*Hollis*), with some exposed ledge or low ridges. An example is the steep ledgy ridges on the northeast corner of the Weiss Lot, respectively. Most areas consist of glacial till material (*Chatfield*) or gravelly pockets (*Canton*), which tend to be well-drained. The soil complex ranges from pockets of low productive potential—ledgy, shallow soil areas—to broad areas with good productivity especially for red oak, black birch, and white pine. Enriched areas grow fine sugar maple and white ash.
- 3) *Montauk (45)* – This highly productive, well-drained glacial till—often found on the slopes of drumlins—is found in one pocket in the northwestern corner of the property. This soil is an excellent agricultural soil. In forest settings, it is especially favorable for the growth of quality hardwoods.

Mesic or Wetland Soils

- 1) *Greenwood and Ossipee (97, 295, & 495)* – Underlies the very poorly drained and ponded areas on the property where soils are an accumulation of organic peat. The layer of water-saturated mucky peat can exceed 5 feet in depth.
- 2) *Ridgebury (657)* – This moist, poorly-drained soil is found along the western property line. It has a hardpan layer at 1 to 2 feet in depth. Forest management is restricted in areas covered by this soil as it follows stream riparian zones.
- 3) *Scituate-Newfields (447)* – These intermixed sandy loams (till) underlays a small area of pine along the western property line. This soil complex has a seasonally high water table and is prone to wetness, particularly in spring and late fall, when logging equipment can easily create soil ruts. The soils are productive for mixed hardwoods and hemlock. While white pine grows well, trees may be prone to blowdown, though this has not yet occurred.
- 4) *Walpole (547)* very fine sandy loam, very stony – This poorly drained soil underlies a very small area of forested wetland in the southeastern portion of the property. Wetland hardwoods—species whose root systems can endure periods of water saturation, such as red maple and elm—are typically associated with this soil.



SURFACE WATER RESOURCES

The Dowst-Cate/Weiss Town Forest lies within the Lamprey River watershed. Back Creek, a second order stream, flows across the southern section of the property, while a second unnamed flowage, now flooded as an interconnected wetland complex, courses through the property's central area into Back Creek. Back Creek continues through extensive marshland, flowing east to Pawtuckaway Lake, and eventually the Lamprey River, about 4 to 5 miles downstream.



Central marshland with beaver lodge (center right).

The property's exceptional marshlands cover nearly 36± acres, and include ponded areas, hummocky marsh with grasses, cattails, and other emergents, and slightly denser shrublands. Several areas of the central wetland's shrub swamp contain stands of poison sumac, a species that is generally found further south.

The ponded area in the northeastern section of MC#3 contains the remains of snags from the former forest that covered the wetlands. This former wetland forest is notable: In the late 1980's, large-diameter, old growth black gum (tupelo) covered the swamp. Subsequent tree ring-analysis discovered trees ranging over 500 years of age. Beavers then flooded the gum forest in the early 1990's, killing the trees and establishing a shallow water impoundment. The snags that are present today, a mere 20 years later, are the remains of the ancient gum trees. The beaver have created outstanding habitat at the loss of the old trees, which provokes the question of why beaver had not flooded this particular wetland in the 500 preceding years? It is likely that beaver numbers today exceed the population in earlier centuries, prior to their 150 year extirpation, and that presently, beavers are forced to utilize less favorable wetlands. This process is presently re-occurring on a black gum swamp that is largely located on the adjacent property but overlaps along the eastern border of DCWTF. A fresh beaver dam has inundated the swamp, with hemlocks currently dying, and red maple and (old) black gum sure to follow, as water levels rise and remain.



Ancient black gum wetland forest is now a snag swamp.

In addition to the marshlands, the property contains several seasonal streams, small forested wetlands, and approximately 16 (potential) vernal pools. The property's vernal pools cover a variety of sizes from under 500 square feet to over an acre. They also range from open to partially vegetated to full shrub/forested swamp. Hydroperiod and degree of functionality also vary.

Please refer (page 2) to the property's *Natural and Physical Features Map* for an illustration of the parcel's wetlands and streams. A summary of vernal pool conditions is found in the Appendix A.



WILDLIFE HABITAT

LANDSCAPE CONTEXT

The Dowst-Cate/Weiss Town Forest is situated in the western section of a 3,000± acre block of undeveloped and unfragmented land that straddles the Deerfield—Nottingham town line. With extensive forest and outstanding riparian habitat, this block is home to a variety of mammals, (including moose, beaver, otter, mink, and raccoon), as well as waterfowl (wood duck, black duck, teal, etc.), wading birds (great blue heron, green heron) and raptors.

PROPERTY HABITATS

The Dowst-Cate/Weiss Town Forest's core forest habitats include extensive mast forest (beech and oak); softwood thermal forest; and wetland forest. Wetland habitats include ponded wetland; emergent wetland; shrub/scrub wetland; vernal pool; and stream/riparian.

Forest Habitats

Mast forest is represented by Forest Types B and D, covering nearly 50% of the property's forest. Red oak is the primary source of hard mast—acorns—on the property. Beech and white oak are secondary sources. Older oaks with well-developed, spreading crowns are important for copious acorn production; silvicultural management of the forest will aim to retain and grow large-crowned oaks.



Pileated woodpecker holes in hemlock.

Softwood thermal forest (Forest Types A and C) covers about 1/3 of the forest area, often along the marshland edges. Hemlock is a primary overstory species in the more extensive Forest Type C. Winter and summer temperature extremes are moderated under the dense hemlock shade. Deer are attracted to the lower snow depths beneath hemlock, while ruffed grouse and snowshoe hare burrow into the snow under the hemlock cover. Barred owl and green throated black warblers are commonly found in this habitat.

Wetland forests (Forest Type E) are scattered through the forest, and vary from hardwood to hemlock-hardwood. The easternmost area contains older black gum, though this wetland has been recently flooded. Fruit-bearing shrubs, particularly highbush blueberry and winterberry holly are found in the wetland understories.

Wetland Habitats

Ponded wetlands—The property has extensive ponded environments created by beaver activity. The ponds contain hydrophytes and floating-leaved plants through the course of the summer. Mammals such as bats, muskrat, mink, otter, beaver, and moose use these areas in conjunction with other wetland habitats. Some still have remnant snags from their inundation period which provide habitat for cavity use (tree swallows), perching (kingbirds, kingfisher, green heron).



Beaver dam on Back Creek creates ponded wetlands.



Emergent wetlands are shallow water meadows with cattails, rushes, and sedge/grass hummocks with meadowsweet. Emergent wetlands line the edges of the central stream and are also found in a swamp on the property's western boundary. Blanding's turtle may utilize this habitat.

Shrub/scrub wetlands occupy the zone between emergent wetlands and the surrounding forest. Extensive in areas, the shrub swamps are periodically flooded and have saturated soils, but typically do not have much standing water. These zones have a variety of fruit-bearing shrubs, especially highbush blueberry, winterberry holly, speckled alder, and in areas, poison sumac. The forest-shrub swamp edge is often densely vegetated by shrubs, particularly, maleberry, highbush blueberry and winterberry. The dense shrub and woody stem growth provide cover and food for a variety of mammals, birds, reptiles, and amphibians.

Forested Wetlands—The property has several forested wetlands, most of which contain an abundance of cavity trees, snags, and woody debris, herbaceous growth, as well as fruit-bearing shrubs and dense cover, all features creating valuable habitat for wildlife. Red maple is typically dominant. Hemlock is present in some wetlands providing shaded conditions. Black gum is also found in some wetlands, including old gum trees in the easternmost swamp. Besides providing a sources of soft mast, many of the gum trees are hollow (often at the base), providing den sites.

Vernal pools—The property contains 16 potential vernal pools. Several of the smaller pools contain open water, while the larger pools are usually vegetated. Flowing inlet and outlet streams are not found in the vernal pools, though some may have shallow drainages (without a channel) that have short duration. The pools are ephemeral—generally flooding during the spring and sometimes autumn, and drying out during the summer. The resulting fish-free habitat provides important breeding sites for many amphibians, reptiles, and fresh-water crustaceans. Wood frogs, spring peepers, pickerel frogs, spotted salamanders, and fairy shrimp are indicator species utilizing vernal pools. The surrounding upland forest and any nearby forested wetlands are critical to the year-round activities of several of these species.

The flooding longevity after spring thaw—the hydroperiod—is an important factor in the habitat quality of a vernal pool. Many species associated with vernal pools occur in greatest abundance when the hydroperiod is long, not drying until July or later.³ Only a few of the pools appear to have a substantial hydroperiod. A summary of vernal pool conditions is found in the Appendix A.

Stream/riparian—The property's major streams—Back Creek and the central steam are par of the ponded/marshland environment previously described. In addition, DCWTF has a number seasonal streams. The streams, their embankments and riparian areas provide potential habitat and travel corridors for two-lined salamander, ribbon snake, mink, otter, and deer. Retaining shaded conditions along stream embankments where forest canopy is present helps regulate water temperature for fish.

SPECIES of CONCERN / NATURAL COMMUNITIES

The New Hampshire Natural Heritage Bureau was consulted in March 2013 about the potential presence of rare species (plant or animal) or exemplary natural communities on the subject property. A database check (Appendix B) does not indicate imperiled wildlife species, however, it is likely that Blanding's turtle (state-endangered species) and wood turtle (species of concern) inhabit this area.

³ Matt Tarr and Kimberly J. Babbitt. "The Importance of Hydroperiod in Wetland Assessment". UNH.



The property is contains a rare natural community, *Black gum-red maple basin swamp*, though the swamp reported is now inundated. Another gum swamp is found on the eastern property edge. Giant rhododendron is also listed as a rare plant species. 1992 records report 12-13 mature stems. Presently in 2003 there are only 3 shrubs left.

WILDLIFE HABITAT RECOMMENDATIONS

Wildlife habitat management has two general approaches on the Dowst-Cate/Weiss Town Forest. In active, silviculturally managed areas, it is integrated as part of improvement harvesting. In reserve areas, including forest and wetlands, habitat management is passive, allowing nature to take its course with minimal human interventions or disturbance.

General habitat recommendations for all areas include:

- ***Retain extensive low-disturbance, trail-less areas on the property*** to provide sections of undisturbed habitat for wildlife breeding, nesting, and denning.
- Monitor the property for invasive plants, and immediately remove any plants found.
- Discourage pollution sources and disturbances (soil/forest) near the property's streams and wetlands to maintain water quality and avoid damage to these sensitive habitats.
- Retain significant areas as forest reserve to allow older growth conditions to develop naturally over time.

Specific recommendations for forested, silvicultural areas include:

- Retain and encourage the growth of broad-crowned, mast-producing oaks.
- Encourage and/or introduce alternative sources of hard mast sources such as white oak, American chestnut, and beaked hazelnut.
- Retain snags, cavity trees, blowdowns, and downed woody debris.
- Promote the growth of fruit-bearing wetland shrubs, by clearing small patches near forested wetland edges.
- Through improvement cutting, increase forest canopy layering over time and develop more complex forest structure.
- Retain significant hemlock thermal cover and travel corridors.
- Retain and allow the growth of old legacy trees over time (trees that reach 200 to 300+ years). These may include scattered individuals as well as ancient tree groves.
- Leave a 50± foot minimal harvest buffer along the property's active vernal pools. Within 200 feet of the vernal pools, apply low-impact practices.
- Minimize stream crossings when harvesting.



FOREST RESOURCES

SPECIES COMPOSITION

The Dowst-Cate/Weiss Town Forest has relatively low tree species diversity, with white pine found throughout the property, and red oak a common species on substantial acreage. The dominance of these two species is favorable on several levels—economically, for wildlife, and from a forest regeneration point of view. Their continued strong presence is an important objective. Red maple and hemlock are also major species, though more common in particular stands. Small amounts of a variety of other species are also present, sometimes on specific sites, such as black gum in forested wetlands, or in one pocket such as sugar maple and white ash near the mill site on the east bank of Back Creek.

A qualitative approximation of the property's forest overstory tree species abundance is:

- Abundant – White pine.
- More Common – Red oak.
- Common – Red maple, hemlock.
- Less Common – Beech, black birch, white birch, yellow birch, white oak.
- Scarce – Black gum, white ash, big-tooth aspen.
- Rare – Red pine, sugar maple, black oak, black cherry, gray birch, American elm, black ash.
- Not Observed – Shagbark hickory, basswood, hophornbeam, ironwood, pitch pine, red spruce, red cedar, balsam fir, quaking aspen, black willow, American chestnut.

FOREST STRUCTURE

The DCWTF's woodlands developed from pasture that was abandoned between 1900 and 1925±. Stonewalls, barbed wire traces, and scattered "pasture pines" indicate the formerly open conditions.

Two extensive harvests occurred on the Dowst-Cate parcel since forest establishment. The first, in the late 1940's±, included the harvest of young pine sawtimber, and perhaps pulp and cordwood. The magnitude of this harvest varied from area to area, resulting in variable pine presence and tree age differentiation within the forest, including a second age class in some areas. A sawdust pile is barely discernible off the loop trail about 100± yards north of the woods road.

In 1989-90 an improvement harvest and TSI work were completed on 70± acres of Dowst-Cate. The magnitude of this harvest was light and fairly evenly applied. This harvest mildly modified the proportion of species, with pine and red oak favored. A third age class was generally not introduced due to the light harvest; in other words, the small canopy gaps were not persistent, closing-over mostly within a decade.

The Weiss Lot was partially cut about 1960± and experienced a substantial pine harvest in 1993. While pine sawtimber is still common along with other species, the harvest openings, especially along former skid trails, were large enough to allow a viable second generation of trees—now saplings—to become established. In many areas, the sapling growth is dense pine.

Accordingly, the forest is both even-aged and two-aged, though the second age class is much older—60 year old trees on Dowst-Cate—than the 20± year old sapling growth on Weiss. A less widespread third age class 55± years is found on Weiss.



SILVICULTURAL OVERVIEW and SCHEDULING

SILVICULTURAL OVERVIEW

The DCWTF is Deerfield's largest community-owned property. It likely holds the greatest potential for all-round resource management, including water quality, wildlife habitat, recreational use, and timber growth. The finest timber is found on the Dowst-Cate parcel, with an estimated inventory of approximately 565± MBF board feet of white pine and roughly 85± MBF of red oak.

With a closed main canopy and high stocking of favorable species, the white pine and pine/hardwood stands are ready for regeneration harvests, to insure the continuation of these species through natural regeneration. Canopy openings do not have to be large—scattered micro-groups with the removal of 2 to 6 ± trees are favored for two reasons: first, for aesthetic reasons, minimizing visual disruption from harvesting, and secondly, to retain as many sawtimber trees as possible, especially those with rapid value-growth. Retention of many large-crowned trees of favorable, mid-successional species will also provide the best chance to regenerate these species. Through this approach, the property's forest should continue to appreciate in value, while retaining its scenic beauty, and regenerating into valuable future forest.

Once regeneration is established, it is likely that non-commercial *timber stand improvement* (TSI) treatment will be necessary to insure that favorable seedlings and saplings thrive. Without TSI, beech and hemlock will eventually dominate the stands. TSI must likely be applied 5± years after adequate regeneration is established, and 5 to 10 years after that.

Timber value per acre on the Dowst-Cate/accessible Weiss Lot area (MC#1 and #2) is estimated at about \$1300±/acre. With careful, sustainable management—i.e., the woodlot is not overcut and the finest trees are allowed to fully mature (125-150+ years) and reproduce—it is possible to regenerate the forest and at least retain the forest's per acre value over time.

The Weiss Lot interior (MC#3) is currently inaccessible. As discussed previously, access must be negotiated with an abutter who has a causeway across the Back Creek marshland that provides logging access to the forest north of the wetland. If access is gained, silvicultural treatment on MC#3 will focus on releasing the copious white pine sapling pockets which grew since the area was last harvested in 1993. In addition to commercial removal of overtopping trees, release may also require follow-up TSI to remove competing saplings. Other silvicultural goals are to provide growing space and upgrade the quality over the forest overstory, and to attempt to regenerate a wider diversity of species.

HARVEST CYCLE

Silvicultural treatment of the managed areas MC#1 and MC#2 on the Dowst-Cate/Weiss Town Forest is planned on a 15± year harvest interval. These areas should not be commercially harvested more than once within this interval. Silvicultural prescriptions are detailed under the forest type descriptions, following this section.



Unlike MC#1 and MC#2, a 30-year harvest cycle is recommended for MC#3, if access can be gained. In other words, harvests in MC#3 would “skip” a cycle, but still coincide with treatments in the Town Forest’s other areas. A long harvest cycle is recommended due to the challenging access to the area, requiring less frequent negotiated access.

The prescribed harvests are on a sustainable level: The timber (chipwood, cordwood, pulp, sawlogs) removed generally does not exceed the forest’s capacity to re-grow this timber volume over the intervening growing-cycle (15±) years.

TREATMENT SCHEDULE

The scheduled harvest cycles for the Dowst-Cate/Weiss Town Forest are summarized as follows:

Harvest Schedule	Timeframe		Elapsed Time from Present
	Dowst-Cate/Weiss (MC#1 & MC#2)	Weiss Interior (MC#3)	
Past (1 st)	1990		-23 years
Past (1 st)		1993	-20 years
Present (2 nd)	2013±		0
Present (2 nd)		2013±	0
Future (3 rd)	2028±		+15 years
Future (3 rd)		2043±	+30 years
Future (4 th)	2043±		+30 years

HARVEST LOGISTICS

The best times to stage harvests on the DCWTF are June-October and January-February.

Any of the three harvesting methods—conventional, mechanized/biomass, cut-to-length—are feasible to carry-out the silvicultural prescriptions on the DCWTF. Conventional logging needs only a small landing, while treetops are lopped and left in the forest to recycle into the soil. Some conventional logging crews are better able to navigate long skids while also removing low quality trees. Mechanized biomass harvesting is an efficient method of operation, enabling the removal of poor-quality, low-value trees for improvement harvesting, while managing the long skidding distances. Treetops are generally removed providing a neater appearance, though some brush remains. This form of harvesting will require an expanded landing in Dowst-Cate. Cut-to-length operations allow for a relatively small landing and long skids. Treetops are left in the forest. At present, there are few contractors that operate locally.



FOREST TYPES

FOREST TYPES – INTRODUCTION

Sections of the Dowst-Cate/Weiss Town Forest vary considerably in forest structure and species composition. Forest types define the distinctive character of various forested areas: A *forest type* represents a homogeneous forest area, often by species composition, which results from similar soils, hydrology, land uses, and disturbance history.

Five broad forest types were defined and delineated on the property, all with variants, as part of the forest assessment phase of this management plan. These are illustrated in the “Forest Type Map”, and described in detail in the upcoming pages of this chapter. Each forest type is described and the plan then specifies silvicultural goals for each forest type, with corresponding prescriptions for wildlife and forest management.

Most of the forest types have *variant* areas. Though these areas are broadly similar in species composition and the type of site they occupy, there are differences in the proportions of species, and/or the age and structure of the forest type. Variants are described within each forest type, and specific prescriptions are made.

A *stand* is a pocket of a particular forest type, which is located separately from other pockets of the same forest type. In the Forest Type Map, the forest types are delineated as stands with cumulative acreage calculated for each forest type. Silvicultural prescriptions are generally the same for the *same* variants of one forest type, though the variant areas may be located in separate stands. Though prescriptions differ between forest types, all forest types/stands within one management area are usually treated concurrently during a harvest, each to their own specification.

Please refer to the “Forest Type Map” for the locations of each forest type.



A. White Pine – 14.5± acres

Description – This forest type is distinct because white pine constitutes at least 75%, and up to, 100% of overstory stocking. Found as seven stands, the white pine forest type is described as three variants, including:

A1) White Pine, Lower Density Stands. Found in the westernmost area of Dowst-Cate (MC#1), and in a couple of pockets in the Weiss area (MC#2 & #3), this variant has somewhat younger trees: 70 – 90± years. Pine quality is promising and stands are well-stocked.



A2) White Pine, Older and/or Higher Density. This variant is more widespread, found as several stands. Preeminent is the pine stand in MC#3, just north of Back Creek. Thinned in 1993, this stand now contains excellent pine regeneration and carries a substantial timber inventory.

A3) White Pine, Older, Hemlock Mid-story. Found in the stands east of the mill site near Nottingham Road on the former Dowst-Cate parcel (MC#2), these are perhaps the most majestic with trees 85+ feet tall. Hemlock densely stocks this stand's mid-story, however, since it not fully part of the overstory, the stand is classified as white pine.



Timber Potential – The primary stands of this forest type carry some of the highest timber volumes per acre on the property (15+MBF/acre). As overstory timber matures, it is critical to insure good regeneration and that similar growing stock is developing.

Species Composition –

Primary¹ – White pine.

Secondary² – Hemlock, red oak, red maple.

Tertiary (less common)³ – Red pine, beech, black birch.

Regeneration – White pine, beech, black birch. Some hemlock.

¹ Dominant tree species in main canopy layer.

² Moderately common, or common in patches.

³ Less common or unique tree species.



Forest Structure –

	A1) Pine – Lower Density Variant	A2) Pine – Higher Density Variant	A3) White Pine with Hemlock Mid-story
<i>Composition</i>			
Stand Structure	Even-aged with residuals	Even-aged/Two-aged.	Even- aged
Silvicultural Stage	Mid-intermediate	Mid to late-intermediate	Late-intermediate
Stand Age	70 – 90± years.	85 – 100± years.	85 – 100± years.
<i>Tree Size</i>			
DBH range	7 – 18± inches (26")	9 – 24± inches	14 – 24± inches
Mean DBH	15± inches	15± inches	17± inches
Avg. Maximum Height	75-80± feet	75-90± feet	75-90± feet
<i>Stand Density</i>			
Relative Stocking	Considerable	Dense	Considerable/Dense
Basal Area/Acre	140± sq. ft./acre	240± sq. ft./acre	220± sq. ft./acre
Trees per Acre	120± trees	200± trees	140± trees
Canopy Closure	100±%	90 - 100%	100%
<i>Wildlife/Ecological</i>			
Wildlife Features	Scattered pasture pines provide good vertical structure for perching and roosting. Pines seeds are a food source. Occasional white pine snags are present with substantial downed woody debris.		
Canopy Stratification	Good – Understory, mid-story and full overstory.	Fair to Good – Dense understory/overstory. Mid-story is lacking.	Good mid-story/overstory, lesser understory due to heavy shade.
Woody Debris	Good accumulation.	Fair to good accumulation.	Fair accumulation.
Invasive Plants	None observed.	None observed.	None observed.

Forest Type A – White Pine

SILVICULTURAL PRESCRIPTION

Objectives – Favor finest quality, healthiest white pines; grow large-diameter timber. Release favorable pined understory when present. Also, regenerate at least partially into pine, by harvesting after abundant pine cone years and scarifying the soil.

Structural Progression: Even/two-aged (present condition)→Two/Three-aged (2040±)

Harvest Cycle: MC#1 —15± years; MC#3—30 years

Silvicultural Treatment:

2013±: *Single-tree selection/micro group selection.*

2018±: *Follow-up TSI.*

2028±: *Single-tree selection/Expanded group selection/Liberation (of regeneration).*

2043±: *Single-tree selection/Expanded group selection/Liberation (of regeneration).*



B. White Pine/Hardwood – 88.9± acres

Description – By far the property’s most extensive forest type, Pine/Hardwood mix covers much of the property’s central area. This forest type is distinct in that along with white pine, upland hardwoods are an important component. Though generally prevalent, white pine stocking varies from 25±% to 75±% of the overstory. Upland hardwoods constitute the remaining stocking, with red oak most widespread and common.

Due to its past harvest history, this forest type varies in species proportions and age structure. Three variants are described:



B1) White Pine/Hardwood, Even/Two-aged with Residuals. This widespread stand on the Dowst-Cate parcel contains varying proportions of sawtimber-sized white pine and red oak. (Above left photo captures typical stand conditions. Above right is a canopy view.)

B2) White Pine/Hardwood, Younger. Also found on Dowst-Cate (MC#1), this variant covers a few small pockets of younger trees. The pockets were likely clearcut in the late 1940’s harvest.

B3) White Pine/Hardwood, Two-Three Aged. This variant is found covering a wide area of the former Weiss Lot. Pine proportions are variable. The interior stands of this variant contain abundant pine sapling growth that seeded after the 1993 harvest. (Photo below shows abundant pine regeneration in a canopy opening created during the 1993 Weiss Lot harvest).



Timber Potential – This forest type contains substantial 16-22” white pine and 14-18” red oak sawtimber. Trees are of good quality. There is also a substantial second age class of 8 – 12” trees. Overall, this forest type contains the main portion of sawtimber inventory on the property. As overstory timber matures, it is critical to insure good regeneration. The stands have the potential to be continuously productive for sawtimber over many generations, if regeneration is carefully managed.

<i>Species Composition</i>	B1 and B2) Variants	B3) Variant
Primary	White pine, red oak	White pine
Secondary	Beech, red maple, black birch, white oak.	Red maple, red oak, white birch, hemlock.
Less Common	Yellow birch, white birch.	Red pine.
Understory	Witch-hazel	Witch-hazel, lowbush blueberry.



Forest Structure –

	B1) Pine/Hardwood- Even/Two-aged with Residuals	B2) White Pine/Hardwood- Younger Variant	B3) White Pine/Hardwood, Two/Three-aged
Composition			
Stand Structure	Even/Two-aged with residuals	Even-aged with residuals	Two/Three-aged with residuals
Silvicultural Stage	Late-intermediate	Mid-intermediate	Mid-late intermediate
Stand Age	50-60±//85-110± years.	50-60± years.	20//50-60±//80-100+ years
Tree Size			
DBH range	18-26± inches	6 - 15± inches	<1-22± inches (26")
Mean DBH	15± inches	11± inches	13± inches
Avg. Maximum Height	85-95± feet	65± feet	75± feet
Stand Density			
Relative Stocking	Considerable	Considerable	Considerable
Basal Area/Acre	125± sq. ft./acre	180± sq. ft./acre	160± sq. ft./acre
Trees per Acre	105± trees	260± trees	170± trees
Canopy Closure	100± %	90 to 100± %	80 to 100± %
Wildlife/Ecological			
Wildlife Features	Substantial mast source, especially red oak. Cavity trees, some woody debris.		
Canopy Stratification	Good to excellent—multi- layered mid-story. Overstory and supercanopy. Low understory is light.	Good, understory, mid- story, overstory.	Variable—Patches of dense regeneration/ understory. Good overstory/supercanopy
Woody Debris	Fair to good accumulation; some large trunks.	Fair/good accumulation.	Fair/good accumulation.
Invasive Plants	No incidence observed.	No incidence observed.	No incidence observed.

Forest Type B – White Pine/Hardwood SILVICULTURAL PRESCRIPTION

Objectives – Continue development of pine and oak sawtimber. Initiate small canopy openings (gaps) to allow the establishment of young growth. Harvesting near the time of good seed years increases the “catch” of oak and pine seedlings. Goal: white pine and red oak should represent at least 50% of future stocking. White oak, yellow birch, and black birch regeneration should also be favored.

Structural Progression: Even/Two/Three/Multi-aged (present condition)→Two/Three/Multi-aged (2040±)

Harvest Cycle: MC#1 —15± years; MC#3—30 years

Silvicultural Treatment:

2013±: *Single-tree selection/micro group selection.*

2018±: *Follow-up TSI.*

2028±: *Single-tree selection/Expanded micro-group selection/Liberation (of regeneration).*

2043±: *Single-tree selection/Expanded group selection/Liberation (of regeneration).*



C. Hemlock/Pine/Hardwood – 35.6± acres

Description – This scenic forest type is readily differentiated because of the significant presence of hemlock in the forest overstory (or main canopy). Hemlock may also be found in mid-story and to a lesser extent, understory canopies. White pine and mixed hardwoods are typically part of the mix in varying proportions, though pine is largely absent in some stands.

Though no sign of its presence was noted presently, hemlock wooly adelgid (HWA) poses a threat to the hemlock stands in the near future.

Five variants were noted:

C1) Hemlock/Pine/Hardwood, 2-aged. This maturing variant is found along the western edges of the central wetland in the Dowst-Cate parcel. Only sections of this stand were harvested in 1990.

C2) Hemlock/Hardwood, 2-aged. This older variant is also found along the marshland edges of Dowst-Cate. The variant contains only a small proportion of white pine. (Photo at right is typical of the C2 variant).



C3) Hemlock/Pine/Hardwood, Even/two-aged. This variant is located on the former Weiss Lot. Some good quality white pine timber, 12-22", was noted, as was red oak. Young white pine, red oak, and black birch are developing in the harvested openings. (Photo at left depicts the C3 variant).

C4) Hemlock/Hardwood, Younger Two-aged. Also found on the Weiss parcel (an example lies along the black gum swamp), this two-aged type has a younger second age class than C2). White pine is much less common.

C5) Hemlock/Pine. This variant is found as one small pocket of dense maturing hemlock and pine with virtually no hardwoods, located in the interior of Dowst-Cate. The scenic stand contains a few red pines. (Photo to the right depicts this scenic pocket.)



Timber Potential – This forest type has generally lower timber potential, as hemlock, the main species, carries relatively low value. The stands' white pine, where present, represents the main future value. Much of the area covered by this forest type is to be managed as modified or full reserve.

Species Composition –

Primary – Hemlock. White pine and red oak are common in some variants.

Secondary – Red maple, black birch, white birch, beech.

Less Common – White oak (Dowst-Cate only).

Regeneration (saplings) – Often sparse due to heavily shaded forest floor. Hemlock is the most common regeneration.



Forest Structure –

	C1) H/W/H – Two-aged	C2) H/H – Two-aged	C3) H/W/H – Even & Two-aged	C4) H/H – Younger Two-aged
Composition				
Stand Structure	Two-aged	Two-aged, possibly more.	Even/Two-aged	Two-aged
Silvicultural Stage	Late –intermediate to Mature	Mature	Mid to late- intermediate	Mid to late- intermediate
Stand Age	60-70±//110-125± years	60-70//110- 125±years	75-110± years	35-40//100-120± years
Tree Size				
DBH range	9 – 25± inches	6 – 28± inches	6 – 20± inches	2 – 18± inches
Mean DBH	14.5± inches	18± inches	13± inches	12± inches
Avg. Maximum Height	90± feet	95± feet	75± feet	60± feet
Stand Density				
Relative Stocking	Dense	Dense	Considerable	Considerable
Basal Area/Acre	265± sq. ft./acre	300± sq. ft./acre	160± sq. ft./acre	140± sq. ft./acre
Trees per Acre	230± trees	160± trees	180± trees	170± trees
Canopy Closure	100%	100±%	80-100±%	80-100±%
Wildlife/Ecological				
Wildlife Features	Hemlock thermal cover moderates both winter and summer temperature extremes.			
Canopy Stratification	Moderate - No understory. Mid- story and full overstory with pine supercanopy.	Good – Some understory. Hemlock branches create mid-story. Full overstory and supercanopy.	Fair to good—light understory.	Good understory, mid- story and overstory.
Woody Debris	Good accumulation.	Moderate to good accumulation.	Fair accumulation.	Fair/good accumulation.
Invasive Plants	No incidence.	No incidence.	No incidence.	No incidence.

Forest Type C – Hemlock/Hardwood

SILVICULTURAL PRESCRIPTION

Management Objectives:

Much of this forest type lies within reserve areas. In actively managed areas, retain hemlock presence, but decrease its proportion over time. Create light openings in hemlock that are large enough to allow the introduction of hardwood and pine regeneration. Manage towards mixed species with a multi-aged structure. Monitor for presence of HWA, with possible salvage if stands are attacked, including in reserve areas.

Structural Progression: Two -aged (present condition)→Three/Multi-aged (2040±)

Harvest Cycle: MC#1 & #2—15± years; MC#3—30 years

Silvicultural Treatment:

In actively managed areas—

2013±: *Single-tree selection/micro group selection.*

2028±: *Single-tree selection/Expanded micro-group selection/Liberation (of regeneration).*

2043±: *Single-tree selection/Create new small group openings/Liberation (of regeneration).*



Charles Moreno, Consulting Forester

Strafford, New Hampshire, (603) 335-1961

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D. Hardwood – 17.6± acres

Description – The hardwood forest type is found as a number of small stands throughout the property, with red oak- and red maple-dominated variants. Pine and hemlock are secondary or uncommon components of the stands. Two variants are described.



D1) Upland Hardwood, Red Oak Variant. Found as several stands mostly in MC#1, red oak dominates. Secondary species include beech, white oak, black birch, and white pine. Red maple is *not* common. (Photo above left shows a small, red oak-dominated pocket).

D2) Upland Hardwood, Red Maple Variant. This variant is found mostly in MC#2 and MC#3, occupying moister sites than in MC#1. Red maple dominates, with variable amounts of red oak, white birch, and beech. In small, enriched pockets, such as on the east side of the mill site, white ash, sugar maple, and popple are found. (Photo above left depicts a red maple-dominated hardwood stand.)

Timber Potential – The red oak variant contains developing red oak mostly from 10 to 16” diameter. The red maple variant has a wider diversity of trees of reasonably good quality. Overall, value per acre is only moderate (\$300-\$400±).

Species Composition –

Primary – Red oak, red maple.

Secondary – White pine, beech, hemlock, black birch, white birch.

Less Common – Yellow birch, white oak, white ash, sugar maple.

Regeneration – White pine, beech, hemlock.



Forest Structure –

<i>Forest Structure</i>	D1) Hardwood— Red Oak Variant	D2) Hardwood—Red Maple Variant
<i>Composition</i>		
Stand Structure	Even-aged	Even/Two-aged with residuals
Silvicultural Stage	Late-intermediate	Mid- late intermediate
Stand Age	85-100± years	70-90± years.
<i>Tree Size</i>		
DBH range	8 –18± inches	6 – 16± inches (18”)
Mean DBH	11± inches	14± inches
Avg. Maximum Height	60± feet	55-65± feet
<i>Stand Density</i>		
Relative Stocking	Considerable	Considerable
Basal Area/Acre	120± sq. ft./acre	95± sq. ft./acre
Trees per Acre	180± trees	90± trees
Canopy Closure	90-100± %	90-100± %
<i>Wildlife/Ecological</i>		
Wildlife Features	Acorns in oak-dominated sections. Cavity trees in other stands.	
Canopy Stratification	Good high understory, mid-story. Full overstory. Some supercanopy.	Good –Understory, mid-story, overstory.
Woody Debris	Fair accumulation.	Fair/good accumulation.
Invasive Plants	No known incidence.	No known incidence.

Forest Type D – Hardwood

SILVICULTURAL PRESCRIPTION

Management Objectives: Continue to develop good quality hardwoods, especially red oak, favoring trees which are increasing in value. Over long-term (50-100 years), encourage pine and oak regeneration in gap openings as the current overstory is slowly harvested, with the goal of creating multi-aged pine/hardwood stands in the future. Retain, enhance wildlife features (cavity trees, mast production—large-crowned oaks).

Structural Progression: Even-aged/Two-aged (present condition)→Two/Three-aged (2040±)

Harvest Cycle: MC#1 & #2—15± years; MC#3—30 years

Silvicultural Treatment:

2013±: *Improvement cut/Crown thinning.*

2028±: *Single-tree selection/Micro-group selection/Liberation (of regeneration).*

2043±: *Single-tree selection/Expanded group openings/Liberation (of regeneration).*



E. Forested Wetlands – 11.4± acres

Description – This forest type encompasses the forested, poorly- and very-poorly drained soil “basins” on the property. Species mix and forest structure varies widely between swamps, the largest of which is only about 3½ acres. Most of the forested wetlands are less than 1 acre in size, and several function as vernal pools, as the lack inflow and outflow streams.

Four variants are described for the forested wetland forest type as follows:



E1) Softwood/Hardwood Mix. Hemlock is present in the overstory of this wetland variant along with red maple. Yellow birch and white pine may be secondary species. The giant rhododendron colony is located within this forested wetland variant. (Photo left shows hemlock/hardwood mix in the E1 variant).

E2) Red Maple, Older. 8 to 16± inch red maples dominate this older variant, which is found both in MC#1 and MC #3, and as small inclusions in MC#2. In some areas, hemlock fills the understory/mid-story. A few black ash were noted in an enriched pocket of the larger forested swamp in MC#3. Stand density is typically high.

E3) Red Maple, Younger. Moderately younger than E2) variant, E3) is typical of the composition of some of the vernal pools in MC#3. Maples are mostly pole-sized and densely stocked. Black gum is an occasional secondary species. Highbush blueberry densely stocks the wetland understory. (Photo right shows the dense younger maple in variant E3).



E4) Black Gum/Red Maple. Found as one stand in MC#3 only, where a moderately-sized black gum swamp overlaps onto the property from the adjacent land, black gum dominates this variant. Older, deeply furrowed trees are indicative of over 2 centuries of growth. Beaver activity has recently raised the swamps water levels, threatening the gum’s future. (Photo left shows black gum-dominated forested swamp.)

Timber Potential – This forest type holds little quality timber-growing potential, as wetlands are generally impassable to logging equipment. Wetland edges may be carefully harvested for habitat improvements or timber salvage.



<i>Species Composition</i>	E1) Softwood/ Hardwood Wetlands	E2) Older Red Maple Wetlands	E3) Younger Red Maple Wetlands	E4) Black gum/Red Maple Wetlands
Primary	Hemlock, red maple.	Red maple.	Red maple.	Black gum, red maple.
Secondary	Yellow birch, white pine.	Yellow birch.	Black gum.	Hemlock.
Less Common	Black gum.	Hemlock, white pine, black ash.		
Understory	Sparse, some hemlock.	Winterberry holly, highbush blueberry.	Highbush blueberry.	

Forest Structure –

	E1) Sfld/Hdwd Mix	E2) Older Red Maple	E3) Younger Red Maple	E4) Black Gum/ Red Maple
<i>Composition</i>				
Stand Structure	Even/Two-aged	Even/Two-aged	Even-aged with residuals	Multi-aged
Silvicultural Stage	Late –intermediate	Late-intermediate	Mid to late-intermediate	Late-intermediate to Mature
Stand Age	75 - 100± years	80 – 110±years	70-100± years	100 – 300+ years
<i>Tree Size</i>				
DBH range	3 – 16± inches	7 – 19± inches	6 – 12± inches	5 –24± inches
Mean DBH	12± inches	13± inches	8± inches	11± inches
Avg. Maximum Height	55± feet	65± feet	50± feet	55± feet
<i>Stand Density</i>				
Relative Stocking	Considerable/Dense	Considerable	Dense	Considerable
Basal Area/Acre	220± sq. ft./acre	120± sq. ft./acre	80± sq. ft./acre	115± sq. ft./acre
Trees per Acre	270± trees	140± trees	240± trees	180± trees
Canopy Closure	100%	100±%	90-100±%	90-100±%
<i>Wildlife/Ecological</i>				
Wildlife Features	Good herbaceous layer in areas, shrubs in others. Fruit-bearing shrubs, present, as well as an abundance of snags and woody debris in areas.			
Canopy Stratification	Excellent – diverse groundcover and shrub layer, mid-story, and overstory.			
Woody Debris	Fair to good accumulation of deteriorated trees. A few uprooted trees.			
Invasive Plants	No incidence observed.			

Forest Type E – Forested Wetlands

SILVICULTURAL PRESCRIPTION

Management Objectives – Enhance wildlife attributes of vegetation on *accessible* wetland edges only. No treatment or intervention is recommended for wetland interiors, with the exception of problems with invasive exotic plants, insects, or diseases, if these occur in the future.

Silvicultural Treatment: No Treatment.



APPENDICES

VERNAL POOL INVENTORY
Dowst-Cate/Weiss Town Forest, Deerfield, New Hampshire

March-April 2013

VP	Area (±)	Type	Vernal Pool Hydroperiod*	Vegetation/Hydrology	Woody Debris
A	1,600 sq. ft.	Open	Short-Medium	Elongated pool. Surrounded by white pine/hardwood forest.	Moderate
B	600 sq. ft.	Open	Short	Small pool. Heavily shaded.	Moderate
C	6,400 sq. ft.	Partially vegetated	Short-Medium	Shaded and hummocky. Vegetated with highbush blueberry.	Substantial
D	1,200 sq. ft.	Open	Short-Medium	Small pool near property boundary. Shaded by surrounding white pine, hemlock and mixed hardwoods.	Moderate
E	0.5 acres	Forested	Short-Medium	Large, elongated pool. Loop trail goes through pool.	Substantial
F	1,000 sq. ft.	Forested	Short	Shallow, heavily shaded by mixed hardwoods, hemlock, and pine. Close to Pool G.	Substantial
G	700 sq. ft.	Densely vegetated	Short-Medium	Small, shallow pool. Densely vegetated with highbush blueberry.	Substantial
H	400 sq. ft.	Open	Short-Medium	Small, open pool, shaded by mixed hardwoods, hemlock, and white pine.	Light
I	750 sq. ft.	Open	Medium	Small but, deep, pool.	Light
J	2,500 sq. ft.	Partially vegetated	Short	Shallow, elongated pool.	Substantial
K	3,600 sq. ft.	Partially vegetated	Short-Medium	Surrounded by hemlock/hardwood forest.	Moderate
L	600 sq. ft.	Partially vegetated	Short-Medium	Vegetated on edges with red maple and highbush blueberry. Close to pool M.	Light
M	1,000 sq. ft.	Partially vegetated	Medium-Long	Small but deep pool. May have high functionality.	Light
N	1 acre	Forested	Medium	Red maple basin swamp with a few black gum. Shallow. No permanent outlet stream.	Moderate
O	5,600 sq. ft.	Forested, rocky	Medium	Open water areas with rocks and hummocks. Surrounded by hemlock/hardwood forest.	Substantial
P	14,500 sq. ft.	Forested	Medium	Shaded by hemlock and mixed hardwoods including black gum. Highbush blueberry.	Moderate

NOTES:

- > All vernal pool locations and observations were conducted in March-April 2013. Vertebrate/invertebrate presence requires springtime assessment.
- > Most of the listed vernal pools are year-round ephemeral, with dry period(s), but may hold water in seasons besides spring, including summer, late fall and winter.
- > The area covered by each vernal pool is the estimated average size, i.e., the inundated area during early spring (March-April) conditions.
- > Vernal pool hydroperiod is **estimated** by the depth of the pool and the vegetation present. Precise assessment requires 3 or more observations through the course of the spring/summer, which are then repeated over at least two to three years.
- > Hydroperiod* key (length of time typically holding water after spring thaw in spring/summer): **Short**--<60 days; **Medium**--80± days; **Long**-->100 days.
- > "Woody debris" includes all tree or shrub deadfall--trunks, branches, twigs--as well as live branches. Branches and twigs provide anchoring locations for amphibian egg masses. Partially submerged trunks may be used by turtles for basking.



NEW HAMPSHIRE NATURAL HERITAGE BUREAU

DRED - DIVISION OF FORESTS & LANDS
PO BOX 1856 -- 172 PEMBROKE ROAD, CONCORD, NH 03302-1856
PHONE: (603) 271-2214 FAX: (603) 271-6488

To: Charles Moreno, Moreno Forestry Associates
PO Box 60
Center Strafford NH 03815

From: Sara Cairns, NH Natural Heritage Bureau

Date: 2013-03-15

Re: Review by NH Natural Heritage Bureau of request dated 2013-03-14

NHB File ID: 1466

Project type: Landowner Request

Town: Deerfield

Location: South of Wheeler Hill (Tax Map:416; Lots 16, 18)

I have searched our database for records of rare species and exemplary natural communities on the property(s) identified in your request. Our database includes known records for species officially listed as Threatened or Endangered by either the state of New Hampshire or the federal government, as well as species and natural communities judged by experts to be at risk in New Hampshire but not yet formally listed.

NHB records on the property(s):

	Mapping Precision	% within tract	Last Reported	Listing Status		Conservation Rank	
				Federal	NH	Global	State
Natural Community							
Black gum - red maple basin swamp	Good	4	1997	--	--	-	S3
Plant species							
Giant Rhododendron (Rhododendron maximum)	Good	100	1992	--	T	G5	S2

NHB records within one mile of the property(s): **None**

A negative result (no record in our database) does not mean that no rare species are present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

NOTE: This review cannot be used to satisfy a permit or other regulatory requirement to check for rare species or habitats that could be affected by a proposed project, since it provides detailed information only for records actually on the property.

New Hampshire Natural Heritage Bureau - Community Record

Black gum - red maple basin swamp

Legal Status	Conservation Status
Federal: Not listed	Global: Not ranked (need more information)
State: Not listed	State: Rare or uncommon

Description at this Location

Quality Rank: Excellent quality, condition and landscape context ('A' on a scale of A-D).
 Quality Comments: >300 trees.

Detailed Description: 1997: Originally consisted of ca. 40 acres. In 1990, the largest (ca. 22 acres) basin and several smaller basins were flooded by beaver, killing almost all trees. The other eight basins, ca. 15 acres, still contain one of the largest black gum populations in the state. Most appear to be hydrologically isolated and are therefore not likely to be flooded by beavers. A relatively high concentration of large and old black gum remains, with many exceeding 500 years of age. One tree had a dbh ring count of 562 years in 1996. The vegetation of the remaining basins is similar to many other **black gum - red maple basin swamps**. It is highly variable in structure and composition, varying from forest (greater than 60% tree cover) to sparse woodland (10 to 25% tree cover). *Nyssa sylvatica* (black gum) and *Acer rubrum* (red maple) dominate the tree canopy, with smaller contributions by other hardwood and softwood species. *Vaccinium corymbosum* (highbush blueberry) and *Ilex verticillata* (winterberry) are typically the dominants in the shrub layer, with a variable component of other tall and medium-height shrub species. *Osmunda cinnamomea* (cinnamon fern) is generally abundant in the herbaceous layer, which consists of a combination of some species indicative of moist, acidic conditions (particularly in hollows) and others characteristic of drier habitats (typically on hummocks). Sphagnum mosses often form a patchy to dense layer, particularly in hollows and on the lower sides of hummocks. 1990: No details. 1986: Canopy dominants are *Nyssa sylvatica* (black gum), *Acer rubrum* (red maple), and *Tsuga canadensis* (hemlock). Ground cover includes *Nemopanthus mucronatus* (mountain holly), *Vaccinium corymbosum* (highbush blueberry), *Osmunda cinnamomea* (cinnamon fern), *Aralia nudicaulis* (wild sarsaparilla), *Coptis [trifolia var.] groenlandica* (goldthread), and *Sphagnum* spp. (sphagnum mosses). *Nyssa* varies from 10-60% cover. *Nyssa* and red maple 25 inch DBH.

General Area: 1997: The swamp system is surrounded by upland **hemlock - beech - oak - pine forests** on stony till soils in gently rolling, hilly terrain typical of southeast NH. Small peatland pockets are perched in concavities of this landscape, some of which contain **black gum - red maple basin swamps**. Back Creek, the main drainage just to the south, is a beaver wetland complex and likely the source of beavers that invaded the largest basin in 1990. 1986?: Several sub-associations apparent within swamp.

General Comments: 1986: Good old growth. Needs field check for *Thelypteris simulata* (Massachusetts fern).
 Management
 Comments:

Location

Survey Site Name: Deerfield Black Gum Swamp
 Managed By: Weiss Town Forest

County: Rockingham	USGS quad(s): Northwood (4307122)
Town(s): Deerfield	Lat, Long: 430824N, 0711017W
Size: 36.5 acres	Elevation: 350 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: North of Pawtuckaway State Park. Take dirt road from Nottingham Road. Alternate route: Follow powerline from substation on Cate Rd. Go southeast where trail crosses right-of-way.

Dates documented

First reported: 1986

Last reported: 1997-06-23

Sperduto, Dan, Bill Nichols and Doug Bechtel. 1997. Field survey to Deerfield Blackgum Swamp on June 10.

Sperduto, Daniel D., William F. Nichols, Katherine F. Crowley, and Douglas A. Bechtel. 2000. Black Gum (*Nyssa sylvatica* Marsh) in New Hampshire. Prepared by New Hampshire Natural Heritage Inventory for the U.S. Environmental Protection Agency. Concord, NH.

New Hampshire Natural Heritage Bureau - Plant Record

Giant Rhododendron (*Rhododendron maximum*)

Legal Status

Federal: Not listed
 State: Listed Threatened

Conservation Status

Global: Demonstrably widespread, abundant, and secure
 State: Imperiled due to rarity or vulnerability

Description at this Location

Quality Rank: Historical records only - current condition unknown.
 Quality Comments:

Detailed Description: 1992: Some 1200 vegetative stems in a ca. 50x60 foot area with small outlier areas. Perhaps 12-13 mature stems.

General Area: 1992: North-facing slope at edge of basin swamp.

General Comments:

Management

Comments:

Location

Survey Site Name: Dowst-Cate Town Forest
 Managed By: Dowst - Cate Town Forest

County: Rockingham

Town(s): Deerfield

Size: 2.8 acres

USGS quad(s): Northwood (4307122)

Lat, Long: 430817N, 0711053W

Elevation: 330 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: From Deerfield, head southeast on Rte. 107 (Parade Road) to the Dowst-Cate Town Forest.

Dates documented

First reported: 1992-01-03

Last reported: 1992-01-03

Sperduto, Dan. 1992. Field survey to Dowe Cate Town Forest on January 3.

CHARLES MORENO, LPF
Consulting Forester, Forest Ecologist

New Hampshire Licensed Professional Forester #115
Maine Forester License #2000

EDUCATION

B.S. FORESTRY – University of New Hampshire, Magna Cum Laude, May 1980
SAF Study Tour of France – Three-week study of French silvicultural methods, September 1983

PROFESSIONAL SERVICE and AFFILIATIONS

Forest Stewards Guild – Board of Directors (1999-2005), Chair (2005)
Society of American Foresters (SAF) – NH Chairman (1996)
New Hampshire Tree Farm Program – Executive Committee (1984-87)
Society for the Protection of New Hampshire Forests

WORK EXPERIENCE

1980 - FORESTRY CONSULTANT, founder and proprietor of Moreno Forestry Associates.
Present Thirty-three years experience managing private and public forests in New Hampshire. Projects include forest and wildlife management planning and implementation, ecological assessments, forest inventory and appraisals, timber sales, mapping, forest taxation and litigation, forest improvement and habitat enhancement, and conservation plans for towns, corporations, and private landowners. 30,000+ acres under management.

1984- TOWN FOREST MANAGER for the Towns of Exeter, Londonderry, Candia, Plaistow,
Present Brentwood, East Kingston, Deerfield, Epping, Brentwood, Sandown, Rye, Pittsfield, Derry, Dover, Madbury, Strafford, and Rochester developing/implementing multiple-use plans for publicly owned forests.

1985- ALTON TOWN FORESTER. Consultant to the Town on Current Use Assessment
1992 and NH Timber Tax matters.

1980- K-F TREE FARM, Forest Manager. Experience in all areas of woodland and wildlife
1988 management in this intensively managed, 700-acre property in Alton, New Hampshire. Selected as 1988 Belknap County Tree Farm of the Year.

PROFESSIONAL RECOGNITION

New Hampshire Outstanding Forester Award (Society of American Foresters) -- 2001
National Outstanding Tree Farm Inspector Award -- 1999
Austin Cary Practicing Professional Award – (New England SAF, 1998)
NH Wildlife Stewardship Award – 1995
Outstanding New Hampshire Tree Farm Award 1987, 1992, 2002, & 2006
NH Tree Farm Inspector of the Year – 1985, 1990, 1992, 1993, 1998
Xi Sigma Pi (Forestry Honor Society, 1978)
Eagle Scout (1976)



Charles Moreno, Consulting Forester
Center Strafford, New Hampshire
(603) 335-1961