STATE OF CONNECTICUT

DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION

Bureau of Natural Resources

Division of Forestry

FOREST MANAGEMENT PLAN
2016 through 2025

Breakneck Block
Nipmuck State Forest
Union & Woodstock

Approvals:

Jan 26, 2016

Christopher Martin, Director Date
Division of Forestry

2/2/16

William Hyatt, Bureau Chief Date
Bureau of Natural Resources

Susan Whalen Feb. 2, 2016

Susan Whalen, Deputy Commissioner Date
Outdoor Recreation & Natural Resources

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Contents

A. Executive Summary

The Breakneck Block of Nipmuck State Forest in Union and Woodstock totals 3,443.2 acres, 166.3 acres of which is open water, including the 97.7-acre Breakneck Pond for which the Block is named. There are 178.4 acres of open swamp or marsh. Unauthorized public vehicular access into Breakneck Block, with the resulting road degradation, erosion and illegal road and trail creation has been a longstanding problem. This plan will address this situation as much as reasonably possible, given current inadequate staffing levels. There are six functioning gates in the block. Five additional gates are planned to be installed, and the Town of Southbridge, Massachusetts will be asked to install one gate. Approximately five (5) miles of gravel roads will be improved, possibly using gravel and crushed stone from an existing gravel pit in the Block.

The forest of Breakneck Block is a mix of white pine, hemlock and mixed hardwoods dominated by red and white oak. Most of the stands are quite healthy, with some somewhat overstocked, and are dominated by small sawtimber. About 615 acres of mostly hardwood stands will be thinned fairly heavily and about 180 acres of mostly softwood stands will be treated with a selection regeneration harvest, which will create temporary small and mid-size openings which should benefit worm-eating and cerulean warblers, two of the Wildlife Division's priority bird species for this region.

An Old Forest Management Site of about 700 acres mostly surrounding Breakneck Pond and adjoining Bigelow Hollow State Park will be established to maintain the remote and wild nature of the Breakneck/Cat Rocks area.

Figure 1 - Breakneck Pond looking south.

B. History

1. Reason for acquisition and funding sources

Nipmuck is the second oldest Connecticut state forest, the first tract of 300 acres having been purchased in the Stickney Hill area of Union in 1905 for $3.57 an acre. State Forester Austin Hawes wanted the second state forest to be largely pine and the Union area fit the bill. Hawes wrote that "Union was at that time an inaccessible and almost abandoned town , but its old fields had grown up to second growth white pine in which the portable sawmills were doing a thriving business converting the trees to boxboards." Union's population in 1900 was 428, but there were probably close to a dozen working sawmills. The original name of the forest was Union State Forest. It was later changed to Nipmuck State Forest in honor of the Nipmuck tribe.

2. Development of resource prior to and after acquisition

The Nipmuck (or Nipmuc), meaning "Fresh Water People", lived in encampments or villages near bodies of fresh water in a territory (called "Nipnet") which extended from northeastern Connecticut and northern Rhode Island north into Massachusetts. These first Americans practiced vegetation management in creating and abandoning agricultural clearings, cutting firewood and with the use of fire for various purposes. These practices, along with natural processes such as severe weather events, beaver activity and on rare occasion lightning fires, maintained a mosaic of vegetation types and ages which helped sustain abundant wildlife food sources.

The vegetation of the Hatchet Lake Reservation in Woodstock prior to abandonment as described by Bromley (The Scientific Monthly, 1945) probably accurately portrays much of the area prior to colonization:

[T]he vegetation….was characterized by an open forest of oak, chestnut, and hickory on the slopes; white pine and hemlock in the swamps; and bushy plains and blueberry barrens on the overly drained acid-soil plateaus and hilltops. In other words, the uplands were essentially a subclimax maintained by the conflagrations set by the Indians during dry periods of fall, winter, and early spring to preserve the openness of the country, to facilitate travel and hunting, and to maintain an adequate food supply both for themselves and for the great abundance of game birds and mammals that this type of country was capable of supporting. In fact, the whole ecology of the Indian-occupied country was primarily a symbiotic relationship among the plant associations, the Indian, and his game animals. The Indians' fires favored the tough nut- and acorn-bearing timber at the expense of the fire-susceptible white pine, hemlock, birch, maple, and other trees of the natural climax, which on the whole were valueless for food in the Indian economy.

The Hatchet Lake Reservation was abandoned about 1831. Following European settlement several specific events have had major effects on the landscape of Nipmuck. Much of the area was cleared for farming in the 18th and early 19th centuries. Stonewalls built by the colonists are found throughout Nipmuck, along with old roads and foundations. Following large-scale agricultural abandonment in the 19th century the fields and pastures reverted to forest, much of it white pine, which was later cut for

lumber and boxwood. Chestnut, an important wildlife and timber tree, was eliminated as an overstory tree in the early part of the 20th century by the chestnut blight fungus.

In the early 1900's the George Wells family formed the Quinebaug Forestry Company to supply white pine used to make shipping boxes for the American Optical Company in Southbridge, Massachusetts. Quinebaug and George Hewitt Myers, a graduate of the Yale School of Forestry, began separately buying abandoned farms in the Union area for working forests. They soon agreed that Quinebaug would purchase parcels north of Bigelow Road and Myers south of Bigelow Road. Quinebaug sold 4,586 acres, including Breakneck Pond (for which the block is named) to the State to add to Nipmuck in 1944. About 450 acres of this land were cut out of Nipmuck to create Bigelow Hollow State Park in 1948. Myers donated his land to Yale University in the 1920s and it today is the 7,840-acre Yale-Myers Forest in Union, Ashford, Eastford and Woodstock.

The hurricane of 1938 caused extensive damage, demolishing many sawtimber-size stands, especially white pine, including large plantations. Many stands that are now small sawtimber-size were established by natural regeneration on blown-over areas after the hurricane.

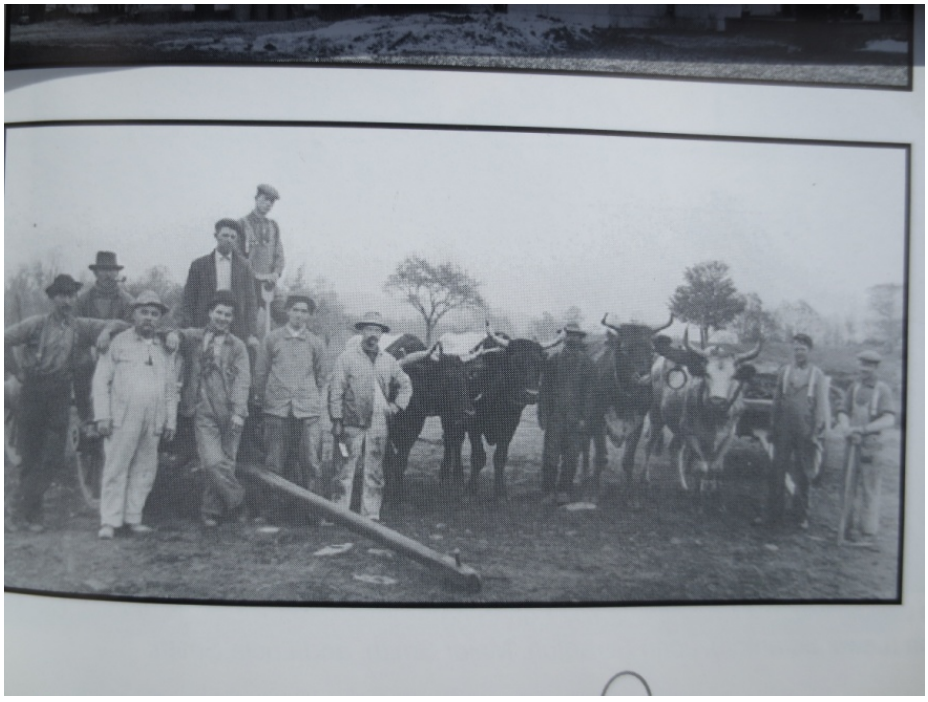

Figure 2 - Quinebaug Forestry Company logging crew with their oxen c. 1908.

3. Changes in the last 10 years

There have been no harvest operations in Breakneck in the past ten years. In 2008 the Wildlife Division, the Parks Division, National Wild Turkey Federation volunteers and local Cub Scouts removed invasive plant species and other woody vegetation from a field near Griggs Pond (Stand 18-5) to create wild turkey brood habitat. There have been two acquisitions: 38.75 acres on the south side of Route 197 in Woodstock (from Sansone) and 2.1 acres on the north side of Bigelow Hollow Road in Union

(from Sitomer). The Sansone property has on it a cabin with a power line to it. The cabin has been vandalized and is a potential liability. It has been recommend for removal to Support Services. The Sitomer transfer included a ½-acre parcel on the south side of Bigelow Hollow Road, apparently resulting from a 1940's relocation of the road. A quit claim deed for this tiny piece could be given to Yale University to clear up the land records.

4. Rotations and cutting cycles used (acres of each)

The managed Mixed Hardwood stands (1,181 acres) will be managed with an approximately 120-year rotation, while the managed Northern Hardwood (23.2 acres) and Softwood Hardwood (1,106.6 acres) stands will have an approximately 30-year cutting cycle.

C. Acres and Access

1. Acres

The four blocks of Nipmuck in Union, Woodstock, Willington, Ashford and Stafford total 9,411.9 acres. Breakneck Block, in Union and Woodstock, totals 3,443.2 acres, including 166.3 acres of open water and 178.4 acres of open swamp or marsh. On the west side of Bigelow Hollow State Park a gravel forest road has been used as the boundary between Park and Forest, so that 35.8 acres of what is technically Park land is treated as Forest (Stand 4-2), along with a 5.5-acre parcel of Park land along Route 171 (Stand 1-2). On the east side of the Park the southern half of the Park/Forest boundary has always been marked along an old wire fence line along a small ridgeline, resulting in some Forest being treated as Park, roughly offsetting the effect on the west side of the Park.

2. Present access (roads for public and truck roads) (gates)

Unregulated and illegal public vehicle access into Breakneck Block, with the resulting road degradation, erosion and illegal road and trail creation, has been a longstanding problem. There is illegal camping at Breakneck Pond and Corbin Marsh. Breakneck's location on the State border adds to the problem by making access for management and enforcement more difficult. This plan will address this situation as much as reasonably possible. There are no roads in Breakneck which are intended to be used for public vehicle access except for the short road to the boat launch at Black Pond in Woodstock. Corbin Road, a discontinued gravel town road which runs through a portion of the Block in Woodstock, is currently not gated and is used for unauthorized vehicular access to the Corbin Marsh area. This plan provides for placing a gate on the road to Corbin Marsh and creating a parking area for several vehicles, so that there would be public vehicular access to near Corbin Marsh most of the year. A gate on Corbin Road, to be closed during mud and snow season, would protect the road from damage. There are numerous spots around the periphery of the Block where a vehicle can be appropriately parked and the forest walked into for recreational use, including Bigelow Hollow State Park.

Most of the truck roads in Breakneck are discontinued town roads or discontinued portions of old town roads (Ferry Tavern Road, Breakneck Hill Road, Corbin Road) or forest roads used by the Quinebaug Forestry Company. There are two truck roads off Route 198 in Woodstock, each having

been constructed or improved by Hull Forest Products when it owned the parcels more than twenty years ago. The northern boundary near Route 198 has a stone wall which has been repeatedly breached by ATV riders over the years. Three breaches were repaired by Parks and Forestry personnel in the summer of 2013. At least one location has since been breached again.

Figure 3 – Damage caused by illegal off-road jeep and truck activity in a wet area near west side of Breakneck Pond.

There are six functioning State gates in the Block, plus two in Bigelow Hollow State Park on roads leading into the Forest, and a private gate on Ferry Tavern Road. This plan provides for the installation of six (6) additional gates and blocking roads with boulders at two (2) locations. Additionally, the Town of Southbridge, Massachusetts will be requested to install a gate on Hatchet Road at the state border.

At the south end of Breakneck Pond (north end of Stand 8-2) there is a helicopter landing spot created by enlarging a log landing, in order to help expedite a helicopter medevac in the event of a medical emergency in this remote area.

3. Inaccessible areas (acres) and access potential

The largest inaccessible area is west of Breakneck Pond and northeast of Bigelow Hollow State Park, including the Cat Rocks, the east slope of a ridge with numerous large boulders and caves, just south of the Massachusetts border, formerly home to wild cats. The previous management plan proposed building a new road into this area. The road was not constructed. This plan instead designates an Old

Forest Management Site of about 700 acres in this area, mostly surrounding Breakneck Pond, which will maintain its remote and wild nature.

Figure 4 – Part of the Cat Rocks

4. Right-of-Way's

   There is an overhead power line ROW running from Route 171 through Stands 1-2 and 1-1 which supplies power to private cottages on Ferry Tavern Road in Union.

5. Boundary Conditions and total miles of boundary

   The boundary (26.25 miles) is in generally good condition, it having last been marked in 2005.

6. Known boundary problems

   There are several apparent encroachments by a commercial campground on Route 198 in Woodstock. This matter has been turned over to the Land Acquisition and Management Division for survey and is in the process of being resolved.

D. Special Use Areas

1. Lakes and ponds

   a. Breakneck Pond – This 97.7-acre pond is long and narrow, with the northern end and dam located in Massachusetts and dam maintenance responsibilities falls to the property owner in Mass. The area is currently used for fishing. Breakneck Brook flows to the north into the Quinebaug River in Sturbridge, Massachusetts. The Quinebaug flows east and then turns south into Thompson, Connecticut and continues south through eastern Connecticut, combining with the Shetucket and Yantic Rivers to form the Thames River. Two Adirondack shelters for overnight camping have been constructed by Scouts, one near the east shore and one at the south end of the pond.
   b. Griggs Pond – A dam is maintained by D.E.E.P. at the south end of the 40.8-acre pond which is used for fishing.
   c. Corbin Pond/Marsh – This pond and marsh were improved and enlarged by construction of an earthen dam in 1968 to create habitat for waterfowl and other wetland-dependent wildlife. There is a heron rookery at the marsh. The Wildlife Division is responsible for maintenance of the dam and water control structure. Wood duck nest boxes have been installed, monitored and maintained at the site for many years by DEEP staff. A total of ten new boxes were installed in 2009 and 2010 and have been checked annually by a nearby private landowner.

Figure 5 - Heron nests near the north end of Corbin Marsh.

d. Black Pond – A State boat launch provides access to Black Pond for boating and fishing.
e. Mashapaug Pond – The south shore and most of the west shore of Mashapaug border on Bigelow Hollow State Park. Breakneck Block comes close to Mashapaug on the west side, but does not quite touch it. Mashapaug is owned by the State, but the islands within it are privately owned.

2. Rivers and streams – The only named streams in the Block are Wells Brook, which flows through the northwest portion of the Block and Bigelow Hollow State Park into Mashapaug Pond, and Lebanon Brook, which flows south out of Griggs Pond.

3. Cultural sites – There are numerous stone walls throughout the Block. They will be kept as intact as reasonably possible during any harvesting or other activity.

4. Recreation and scenic sites – trails and signs

   a. The Nipmuck Blue Trail runs from Route 171 to the Massachusetts border along the east side of Breakneck Pond.
   b. The East Ridge Trail roughly parallels the Nipmuck Trail, west of the Nipmuck Trail south of Breakneck Pond, and east of the Nipmuck Trail near Breakneck Pond.
   c. The Ridge Trail runs from Bigelow Hollow State Park west of Breakneck Pond over a series of ridges and the Cat Rocks.
   d. The Breakneck Pond View Trail runs along the west side Breakneck Pond.
   e. The Mashapaug Pond View Trail runs through Bigelow Hollow SP and the portion of Nipmuck west of the park.

5. Critical Habitat (State listed rare or endangered plants and animals): See Natural Diversity Database letter dated May 19, 2014/NDDB reference #201402766 (Appendix A).

6. Natural Areas – None.

7. Old Forestland Management Sites – 699.7 land acres from Breakneck Pond to Bigelow Hollow State Park will be designated as an Old Forest Management Site. This area includes the Cat Rocks area west of Breakneck Pond. This is a somewhat remote, rugged and difficult location to access. It also has diverse vegetation types, including white pine/hemlock, oak, a black spruce bog and open swamps. It is virtually free of invasive plant species. It appears that there has been no harvesting in this area under State ownership. Keeping it this way will maintain the remote backcountry feel of the Ridge Trail and Cat Rocks area and provide an interesting contrast between managed and unmanaged forest in future decades.

Figure 6 - View from the ridge atop the Cat Rocks to the east across Breakneck Pond.

8. Research Areas – None.

9. Miscellaneous – A small (3/4-acre) gravel pit (Stand 7-11) was most recently used in 1997. It has some gravel remaining and many large rocks which, if crushed, could be utilized with the gravel to improve existing roads within the Block.

Figure 6 - Gravel pit.

E. Extensive Areas of Concern

1. Trails/signs

   Official trails within Breakneck Block are maintained by the Connecticut Forest and Park Association. Signs within the Forest are maintained by the State Parks Division.

2. Wetlands

   The largest concern regarding wetlands in Breakneck Block is invasive plant species, principally Japanese barberry. When any harvest is done, the Forestry Division will make all reasonable efforts to remove any invasive species from the stand(s) being harvested and adjoining stands.

3. Unauthorized or illegal activity

   Illegal use by 4-wheel drive vehicles and ATVs has been a longstanding problem in the Breakneck Block. Installation of gates on roads and blocking of other unauthorized access routes and increased enforcement activities will be done to attempt to minimize this problem.

F. Wildlife Habitat – DEEP Wildlife (Ann Kilpatrick)

1. Investment in habitat improvement

   A cooperative project between the National Wild Turkey Federation (NWTF) and the DEEP was conducted in March, 2008 to convert an 8-acre overgrown field near Griggs Pond (Stand 18-5) to open grassland to create wild turkey brood habitat. On Connecticut State lands the primary limiting factor for wild turkey productivity is the lack of forest openings for brood habitat. A crew of NWTF volunteers, Cub Scouts and DEEP staff used chainsaws, loppers and a tractor to remove small trees and shrubs, primarily white pine, autumn olive and multiflora rose. Follow-up herbicide treatments and mowing were used to encourage desirable forbs and grasses to repopulate the field. The Wildlife Division has since mowed the area and intends to maintain for brood habitat.

2. Existing diversity situation – wetlands

   The Block has a good mix of wetland area, with 166.3 acres of open water, 178.4 acres of open swamp, 18.5 acres of red maple swamps, 93.6 acres of pine and hemlock wetlands and 8.5 acres of black spruce swamp.

3. Landscape context

   Avian callback surveys conducted in 2012 detected a number of species listed as “very important” or “important” on Connecticut’s list of Species of Greatest Conservation Need (GCN). It is not surprising that red-eyed vireo, a species that prefers undisturbed contiguous forest, was detected significantly more in Breakneck Block than the other blocks of Nipmuck, where more harvesting has occurred. Other notable forest interior bird species detected in Breakneck include black-throated green warbler, black-throated blue warbler, black and white warbler and scarlet tanager.

Management efforts in this part of the state are primarily focused on worm-eating and cerulean warblers, both of which are forest interior species and were found within Breakneck Block. Worm-eating warblers breed in upland deciduous forest and nest in areas with a dense shrubby understory or amongst sapling roots. Fledglings may benefit from openings in the interior of the forest. Recent research indicates that cerulean warblers benefit from more open canopies as found in harvests that remove about 50% of the canopy cover. Introducing group selection harvests and relatively heavy thinnings may allow for more cerulean warbler nesting opportunities, as well as increased use by early successional birds such as Eastern towhee, chestnut-sided warbler and other GCN species.

Another GCN species, the Blackburnian warbler, was also detected in Breakneck. Requiring tall conifers, especially hemlock and spruce, Blackburnian warblers are restricted to the northwestern and northeastern highlands of Connecticut, and are a significant conservation concern. Blackburnian warblers are especially dependent on hemlock, which is considerably vulnerable to exotic invasive insects (hemlock wooly adelgid and elongate scale). Whip-poor-will, another notable GCN species, is among the nightbirds found in Breakneck. They prefer deciduous forest with minimal underbrush and canopy cover, so thinning and woody plant removal should be beneficial.

4. Recreation Based Wildlife

Breakneck Block is open for public trapping and hunting (small game, waterfowl, turkey and non-lottery deer). Additional information can be found in the DEEP Hunting and Trapping Field Guide, including season dates, bag limits and license and permit requirements. Breakneck Pond, Griggs Pond and Corbin Wildlife Marsh are dammed water bodies that provide ample opportunity for recreational fishing and trapping.

Figure 7 - Helicopter Landing Zone south end Breakneck Pond

G. Vegetative Condition

1. Silviculture

Forest size classes by forest type (total forest)

Type	Seedling-Sapling	Pole Timber	Saw Timber	All Age	Total
Mixed Hardwood		6.1	1,214.3	114.2	1,334.6
Northern Hardwood			23.2		23.2
Softwood Hardwood		8.4	1,128.0		1,136.4
Softwood	4.5	16.7	545.0	26.0	592.2
Total Acres	4.5	31.2	2,910.5	140.2	3,086.4
			Grand Total Acres		3,086.4

Forest type, size class and condition class on areas to be managed

Mixed Hardwood Management Unit – 1,181.0 Acres

Size Class	OK at present	Thin – overstocked acceptable AGS	Regenerate – unacceptable AGS
Seedling-Sapling			
Pole Timber			
Saw Timber	390.7	676.1	
All Age	114.2		
Total	504.9	676.1	

Northern Hardwood Management Unit – 23.2 Acres

Size Class	OK at present	Thin – overstocked acceptable AGS	Regenerate – unacceptable AGS
Seedling-Sapling			
Pole Timber			
Saw Timber		23.2	
All Age			
Total		23.2	

Softwood Hardwood Management Unit – 1,106.6 Acres

Size Class	OK at present	Thin – overstocked acceptable AGS	Regenerate – unacceptable AGS
Seedling-Sapling			
Pole Timber		8.4	
Saw Timber	411.7	252.8	
All Age			
Total	630.1	294.9	

Softwood Management Unit – 433.7 Acres

Size Class	OK at present	Thin – overstocked acceptable AGS	Regenerate
Seedling - Sapling	4.5		
Pole Timber		5.5	
Saw Timber	213.9	28.2	181.6
All Age			
Total	218.4	33.7	181.6

Figure 8 - White pine seedlings and saplings under an overstory of pine, hemlock and oak as a result of a shelterwood in 1994 in Stand 4-1. If staffing levels permit, this stand will be treated with timber stand improvement (TSI) work to reduce mid-story competition to the pine and help facilitate release of the pine from overstory competition with a harvest in the next management period, when the pine will be taller than 17'.

2. Forest size class and condition class on areas to be managed
   Sawtimber stands dominate Breakneck Block. A major reason is the area was heavily affected by the 1938 hurricane. Many of the sawtimber trees date to right around 1938, so they are in the small to mid-sawtimber size and not yet mature. Many of the stands are in very good condition, but are somewhat overstocked and would benefit from thinning.

3. Forest type size class and condition class on areas to be managed
   Breakneck Block contains a mix of white pine, hemlock and mixed hardwoods dominated by red oak with substantial amounts of white oak. In northeastern Connecticut the Northern Hardwood type consists mostly of sugar maple and white ash. Only 23.2 acres in Breakneck are typed as northern hardwood, but there are several stands on soils which would support this type. Looking beyond this plan, making efforts to increase the Northern Hardwood acreage seems desirable to increase diversity.

4. Forest health
   a. Understory concerns, invasive exotic plants, insect and disease concerns, and weather-related damage

      The exotic emerald ash borer is expected to virtually wipe out white ash during the next ten years. In Breakneck the hope and expectation is that shade-tolerant sugar maple seedlings will occupy the growing space vacated by dying ash. The moist sites occupied by ash are also favored by the invasive Japanese barberry (*Berberis thunbergii*) shrub. Thus, removing as much barberry as reasonably possible is of utmost importance. Most of Breakneck Block has only small to moderate amounts of scattered barberry. In all harvest operations all barberry will be eradicated by the Forestry Division in the stand(s) being worked and all adjoining stands. Barberry eradication began in 2012 and continued in 2013 and 2014 in Stand 3-1, which had a moderate amount of barberry, and which is scheduled for a thinning in 2017. The stand will have to be monitored closely post-harvest, as nearby private land has a very large amount of barberry.

      The possibility of seeking funding for a regional invasive plant eradication program, covering an area including the Breakneck Block, the Yale-Myers Forest and the northern blocks of Natchaug State Forest, will be explored with Yale University and the University of Connecticut. The program would, ideally, seek to eradicate virtually all woody exotic invasive plants on all public and private lands in the region.

      Hemlock is under attack in Breakneck by the hemlock wooly adelgid and hemlock elongate scale, both exotic invasive insects. Hemlock is an important component of the forest in Breakneck. Hemlock will be given the benefit of the doubt, and regeneration of some hemlock, along with white pine and hardwoods, will be attempted in two stands with selection harvests.

H. Landscape Context – Forestry – adjacent land uses

1. Breakneck Block and Bigelow Hollow State Park are located in a thinly populated, heavily forested area, interspersed with small fields and pastures. Union's population in 2012 was 852, Woodstock's 7,904. Immediately north of the Block is extensive Town of Southbridge, Massachusetts watershed land, 392 acres of which is in Woodstock, Connecticut. Immediately south of Breakneck is the 7,840-acre Yale-Myers Forest, which abuts Hull Forest land and the West Ashford Block of Natchaug State Forest. Thus Breakneck Block provides excellent habitat for forest interior wildlife species. Red-eyed vireo, a bird species that needs undisturbed contiguous forest, has been detected by the Wildlife Division in significantly larger numbers in Breakneck Block than in the Stickney Hill and Hedgehog Hill Blocks of Nipmuck, where substantially more harvesting has taken place in recent years. On the other hand, the Wildlife Division's management priorities for this region of the state are focused on cerulean warbler and worm-eating warbler, and cerulean warbler requires forest openings. A selection harvest on about 180 acres scheduled for 2017 will create some small to mid-size temporary forest openings, which should benefit cerulean warbler.

I. Specific Acquisition Desires

1. On the east side of Hatchet Road in Woodstock is a sixty-acre wooded parcel now or formerly owned by the Estate of Anna Mae Pallanck. The parcel is surrounded by Nipmuck and a 392-acre wooded parcel owned by the Town of Southbridge, Massachusetts in Woodstock. The Southbridge parcel was part of the former Southbridge Water Company lands and contains Hatchet Pond and part of Hatchet Hill, and adjoins extensive watershed land in Southbridge. Both of these would be excellent acquisition parcels, beginning with the Pallanck land, and purchase should be explored as soon as funds are available.

J. Public Involvement

1. The draft plan was reviewed by the Town of Union First Selectmen and Public Works Department. This final plan addresses the towns' needs for emergency access to remote areas of the forest.

K. Adaptive Management

Any long-term forest management plan must have a degree of flexibility to deal with severe weather events, such as a major hurricane or tornado, or other events, such as insect outbreaks, which affect the forest resources or infrastructure. In addition, staffing levels of the Division of Forestry and other Divisions in the Department are subject to change and could affect the ability to accomplish work in the planned time frame. In such circumstances, the Division of Forestry and other Divisions will re-evaluate resource and infrastructure needs, and adapt management plans accordingly to deal with the changed conditions.

L. 10 Year Goals

1. Substantially reduce unauthorized vehicle activity and resulting erosion and resource degradation within Breakneck Block by placing gates and boulders in strategic locations and increasing enforcement activity.

2. Eradicate virtually all woody non-native invasive plant species in that portion of Breakneck Block north of Route 171.

3. Maintain the Cat Rocks/Breakneck Old Forestland Management Site free of invasive species.

4. In the managed forest area maintain a healthy, vigorous and high-quality forest by thinning approximately 615 acres of overstocked stands.

5. In the managed forest area increase age and structural diversity of the forest by regenerating a mix of softwood and hardwood species with approximately 180 acres of selection harvesting.

M. Work Plans

1. Road Maintenance – Parks Division with assistance from Support Services and Forestry

   2016 & 2017 - Smooth and improve drainage as much as reasonably possible with a bulldozer on all roads east of Breakneck Pond (approximately 5 miles). Efforts will be made by Forestry to obtain funding from the Revolving Account or other sources to purchase the services of a rock crusher to utilize crushed stone from the gravel bank.

2. Gates – Parks Division with assistance from Support Services

   2016 & 2017 - Install gates at the following locations:
   a. Route 198, Woodstock, on a log truck haul road near the northeast corner of the Block, replacing a cable (close year round).
   b. Corbin Road, south of Bush Road in Woodstock (close seasonally). The proposed location for this gate is not on State land, in order to protect as much of Corbin Road as possible from rutting, so the Forestry Division will contact the several landowners who would have to agree to the proposed location. If agreement is not reached, the location will be moved to the south to State land.
   c. Corbin Marsh access road, approximately 300' from the dam, and construct a parking area for several vehicles (close year round).
   d. At the boundary with Town of Southbridge land south of Hatchet Pond (close year round).
   e. On the old forest road off Route 171 near the southwest corner of the Block, and construct a parking area for several vehicles (close year round).
   f. Breakneck Hill Road west of Breakneck Pond, at the Massachusetts border (close year round).

3. Road Blocking with Boulders – Parks Division with assistance from Support Services

   2016 & 2017
   a. East side of Breakneck Pond at Massachusetts border
   b. West side of Breakneck Pond at Massachusetts border

4. Cabin Removal – Parks Division with assistance from Support Services

   2016 – Remove the cabin on the south side of Route 171 in Stand 9-1.

5. Boundary Marking – Forestry

   2017 & 2018

6. Wildlife Habitat Improvement - Wildlife Division

   A visit to the field near Griggs Pond (Stand 18-5) conducted in June, 2011 noted that the clover component in the field continues to increase; however, goldenrod was also abundant. This may reduce the ability of turkey poults to easily travel through the field and capture insects. The Wildlife Division will continue to maintain the field through mowing and possibly prescribed fire to benefit wild turkeys and other wildlife that use forest openings, such as prairie warblers, New England cottontail rabbits, box turtles and meadow voles. The Wildlife Division also will continue to oversee the monitoring and maintenance of wood duck nest boxes in Corbin Marsh, mow the dam annually and maintain the structure (i.e., inspect for beaver activity, remove debris and trap beavers as necessary). Consideration will be given to replacing the water control structure with an in-line structure as funding becomes available to assist in water level management and improve emergent marsh habitat.

7. Forest Stand Harvests – Forestry Division

2017 – Stands 2-1 & 3-1	Thinning	~200 acres	Eradicate invasive plants
2018 – Stands 8-2 & 8-3	Selection	~180 acres	
2020 – Stands 13-1 & 13-3	Thinning	~105 acres	Eradicate invasive plants
2022 – Stands 16-2 & 16-3	Thinning	~200 acres	Eradicate invasive plants
2024 – Stands 10-4 & 10-5	Thinning	~110 acres	
Unscheduled – Stand 17-7	TSI	~8 acres	Eradicate invasive plants
Unscheduled – Stand 4-1	TSI	~40 acres	

Unscheduled – Eradicate invasive plants in all other stands north of Route 171

Appendix A: Natural Diversity Database Review Letter

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

Bureau of Natural Resources
Wildlife Division
Natural History Survey – Natural Diversity Data Base

May 19, 2014

Mr. Edward McGuire
Department of Energy and Environmental Protection (DEEP)
Forestry Division
Shenipsit State Forest Headquarters
166 Chestnut Hill Road
Stafford Springs, CT 06076

Regarding: Breakneck Block, Nipmuck State Forest, Union & Woodstock
Natural Diversity Data Base 201402766

Dear Mr. McGuire:

In response to your request for a Natural Diversity Data Base (NDDB) Review of State Listed Species for the Breakneck Block, Nipmuck State Forest, Union & Woodstock, our records indicate the following extant populations of species on or within the vicinity of the site:

Ski-tailed emerald (*Somatochlora elongate*) Protection Status: Species of Special Concern

The ski-tailed emerald is a relatively large dragonfly with bright yellow lateral thoracic markings. Many of these species look similar and identification can be difficult. The ski-tailed emerald can be found in wetland habitats with slow shaded small streams. Ski-tailed emeralds are often difficult to find, therefore difficult to survey.

Recommendations: In 2005, a ski-tailed emerald was observed on the property. The most critical factors to protect this dragonfly are habitat preservation and water quality protection.

Whiteriver crayfish (*Procambarus acutus*) Protection Status: Species of Special Concern

Whiteriver crayfish inhabit permanent streams, lakes and ponds and have been documented in Mashapaug Pond. They burrow in the mud during the coldest part of the winter season but are active most other times of the year. This species can be negatively affected by activities that cause siltation or polluted run-off such as chemicals/fertilizers to be discharged into the water.

Recommendations: If any activity occurs in Mashapaug Pond, it should be conducted during the winter to avoid impact to whiteriver crayfish. If work cannot be conducted during the winter, then the project should incorporate the use of siltation controls such as silt fencing and hay bales to alleviate siltation.

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Also, according to our records, a sensitive State-listed plant species has been documented in the northern half of block 13-7 at Nipmuck State Forest. To prevent negative impacts to this species, avoid impacts to wetlands and wetland crossings during the course of forestry and road repair activities in this area. If alterations to road culverts are anticipated, please contact Nelson DeBarros (nelson.debarros@ct.gov) for further assistance.

The Natural Diversity Data Base includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available. If the project is not implemented within 12 months, then another Natural Diversity Data Base review should be requested for up-to-date information.

Please be advised a more detailed review may be conducted as part of any subsequent environmental permit applications submitted to the Department of Energy and Environmental Protection for the proposed site. Should state involvement occur in some other manner, specific restrictions or conditions relating to the species discussed above may apply.

Thank you for consulting the Natural Diversity Data Base. If you have further questions, I can be reached by email at Elaine.hinsch@ct.gov or by phone at (860) 424-3011.

Sincerely,
/s/
Elaine Hinsch
Program Specialist II
Wildlife Division

Appendix B: Comments

From: Vroman, William
Sent: Monday, June 01, 2015 2:30 PM
To: McGuire, Ed
Subject: RE: Nipmuck Breakneck Block Management Plan

Ed-I cannot make the meeting Friday as I have training but here are my comments.
I may have missed it, but I did not see anything about the eagle nest on the island at Breakneck Pond. We had a complaint last year about people camping on that island so it was posted to minimize disturbance of the eagles. Unknown if that should be in there but it leads to my second comment, there is a lot of illegal camping at Breakneck Pond. As you know the camping there is by permit only, but I find a lot of people camping there without a permit. Some of these people have come into conflict with the groups that have a camping permit who show up at the shelter to find someone is already camping there. I have found people camping at Corbin Marsh occasionally also. A lot of the illegal camping activity is people driving in(with trucks and jeeps, but sometimes also ATVs) to Breakneck from the Massachusetts side. I am all for blocking off access as much as possible with gates and boulders so once that is done that should help limit the illegal camping as well. I know some signs were posted at the shelters that say camping permit required but my thought is that if someone walks in there with all their camping gear by the time they get there and then read the sign that says camping permit required that at that point they probably are not going to turn around and head back out. My thought is to possibly post more signs at access points or get the word out(possibly a news release) that this area is closed to motor vehicles and camping is only allowed with a permit.
Also, would the proposed gate to be placed by the town of Sturbridge limit all access to the northern tip of Breakneck Pond that is in Massachusetts? That northern tip with the "beach" is a big party spot that would seem to draw more 4X4s and ATVs to drive the trails around Breakneck. I am not sure if Hull Forestry owns that section but if we could limit access to that area at the state line it would be helpful also.

Thanks,
Bill

From: Vroman, William
Sent: Thursday, June 04, 2015 2:15 PM
To: McGuire, Ed
Subject: Nipmuck

Ed-Not to throw too much at you, but I have been thinking about how to address the ATV/four wheel drive vehicle problem at Nipmuck where your report mentions increased enforcement. I like doing enforcement/ATV patrols in the forest but have limited time to do so due to all our other responsibilities and calls. Usually the prime time to work the area for illegal activity is weekends in the summer which is when we are busy with other park and boating issues, in our area Bigelow Hollow, Scantic River and Quaddick keep us busy in the weekend. We are also operating with very limited manpower right now as well. Occasionally we set up a specific ATV detail to work problem areas, which we did one time a few years ago in Nipmuck in a joint effort with Mass. Environmental Police. My thought is if Forestry had any extra funds that could go towards overtime for an ATV/four wheel drive vehicle detail maybe at least one time in the summer we could have officers available to spend all day on the detail. Just a thought.
The other thought was to purchase a trail camera(s) to place at problem areas to try to use in our enforcement efforts. I had spoken to Vinny Messino about this before.
Just some thoughts I had.
Bill

From: Corcoran, Deb
Sent: Wednesday, June 17, 2015 7:29 AM
To: McGuire, Ed
Cc: Hochholzer, William
Subject: RE: Nipmuck Breakneck Plan Final Draft

Good morning Ed.
I have no additional comments on your 10 year plan. I look forward to assisting you in developing a project for your road system.
Thanks –Deb

Deb Corcoran
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Appendix C: References

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Appendix D: Definitions

This glossary contains a list of commonly used forestry terms.

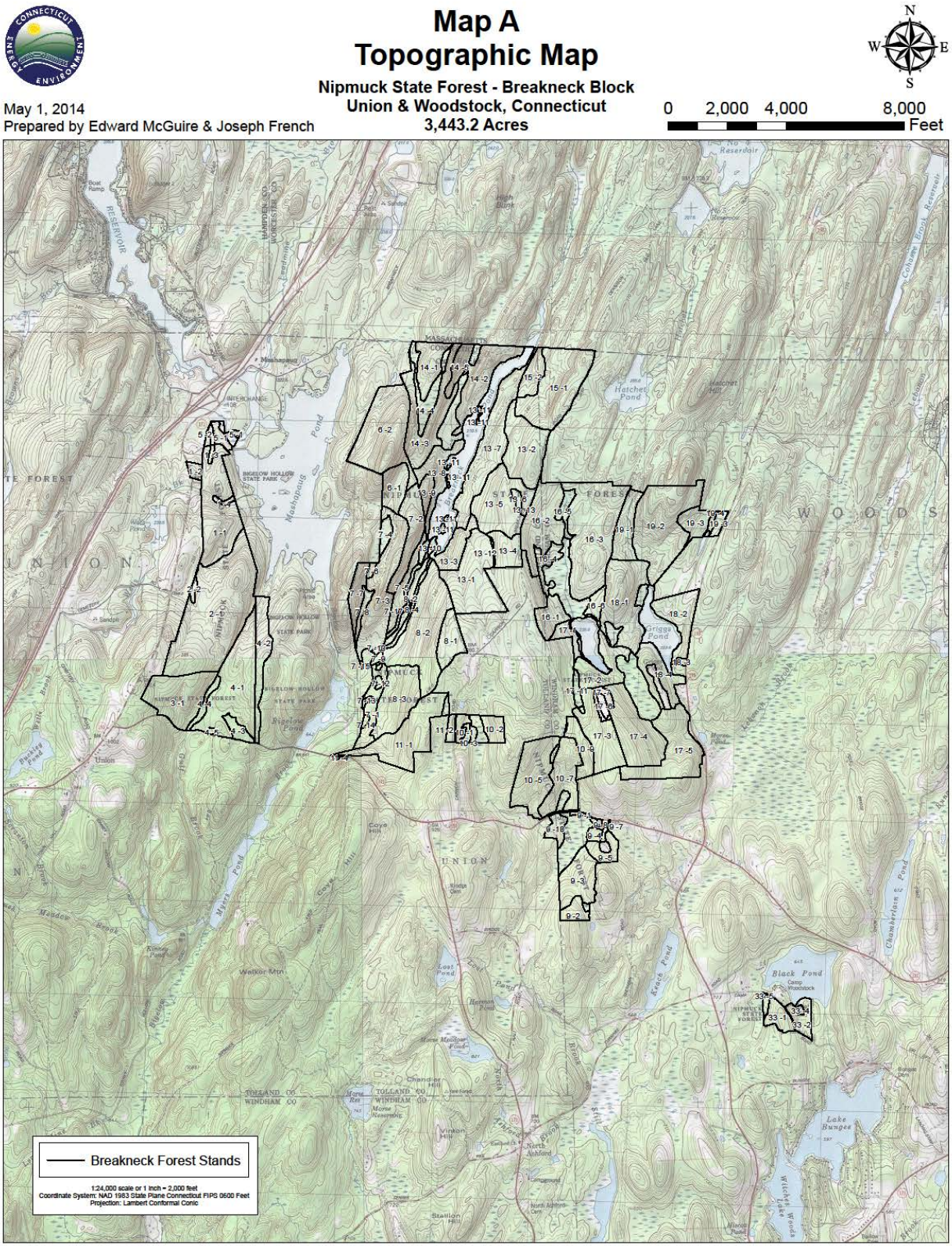
- acre A unit of measure describing surface area. One acre contains 43,560 square feet. A football field (without the end zones) is 45,000 square feet -- slightly larger than an acre. The inside of a professional baseball diamond is about 1/4 of an acre.
- advance regeneration Young trees that have become established naturally in a forest before regeneration methods are applied. In other words, the regeneration is present in advance of any treatment.
- age class The trees in a stand that became established at, or about, the same time. The range of tree ages in a single age class is usually less than 20 percent of the expected age of that class.
- basal area The area of the cross section of a tree's stem at 4 1/2 feet above ground, or breast height, in square feet. Basal area of a forest stand is the sum of the basal area's of the individual trees in the stand. It is usually reported in square feet of BA per acre and is used as a measure of stand stocking, stand density, and stand volume.
- board-foot volume The amount of wood products expressed as the number of boards 1 foot wide by 1 foot long and 1 inch thick that are sawn from logs.
- biological diversity The variety and abundance of species, their genetic composition, and the communities, ecosystems, and landscapes in which they occur. Also, the variety of ecological structures and functions at any one of these levels.
- best management practices Procedures and treatments that lessen soil erosion, sedimentation, stream warming, movement of nutrients, and visual quality during or following activities that alter the land.
- buffer strip An area of land that is left relatively undisturbed to lessen impacts of treatments next to it. Common examples include visual buffers used to screen the view from roads, and stream side buffers used to protect water quality.
- canopy The continuous cover of branches and foliage formed collectively by the crowns of trees.
- clearcutting An even-aged silvicultural technique involving the removal of all stems in the stand. Strip cutting is a form of clearcutting.
- crop tree Any tree selected to provide a specific benefit such as mast, dens, veneer, or sawtimber. Crop trees are usually selected when they are young.
- cutting cycle The planned interval between treatments in forest stands.
- damaging agent Any one of various factors that injure trees. They include some insects, diseases, wildlife, abiotic factors, and human activities.
- dbh Diameter at breast height; the diameter of the trunk of a tree measured at 41/2 feet above ground level. It is measured on the uphill side of the tree.
- den tree A living tree that has holes in the trunk, or stem, from broken branches and decay, or hollow trunks; a cavity tree.
- even-aged stand A stand containing trees in the main canopy that are within 20 years of being the same age. Even-aged stands sometimes are designated by age-class (10-year-old stand, 40-year-old stand) or broad size-class: seedling stand (most trees are <1 inch dbh); sapling stand (trees 1-4 inches dbh); poletimber stand (trees 5-10 inches dbh); and sawtimber stand (trees > 10 inches dbh).

- even-aged system A planned sequence of treatments designed to maintain and regenerate a stand with one age class.
- forest condition Generally, the current characteristics of forested land including but not limited to cover type, age arrangement, stand density, understory density, canopy density, and forest health.
- forest cover type A category of forests based on the kind of trees growing there, particularly the composition of tree species. Forest cover types are often referred to as forest types, cover types, stand types, or types.
- group selection An uneven-aged silvicultural technique involving the removal of trees in groups usually 1/10 to 2/3 acre in size, but sometimes up to 1 to 2 acres on large properties. Group selection can be applied in combination with single-tree selection between groups.
- horizontal diversity The degree of complexity of the arrangement of plant and animal communities, and other habitats across a large area of land.
- inactive forest Management category designated for forests on marginal growing sites often with dense mountain laurel in the understory. May be activated if beneficial to biodiversity.
- interior species Species found only or primarily away from the perimeter of a landscape element. Species commonly requiring or associated with interior habitat conditions.
- intermediate cuttings Silvicultural cuttings applied in the culture of even-aged stands are normally noncommercial (no products sold) or commercial thinnings (timber sold), designed to favor certain species, sizes, and qualities of trees by removal of competitors. Thinnings designed to grow quality timber commonly maintain a closed canopy; however, low-density thinning (50-70% residual crown cover) can be used to hasten diameter growth and stimulate understory development for wildlife purposes. At rotation age, the stand is considered mature and a regeneration cutting is applied to produce a new stand.
- intermediate treatment Any treatment or "tending" designed to enhance growth, quality, vigor, and composition of the stand after seedlings are established and before mature trees are regenerated. For example, thinning is an intermediate treatment.
- mast tree A tree that produces nutlike fruits such as acorns, beechnuts, hickory nuts, seeds of certain pines, cherries, apples, samaras. Hard mast includes acorns, beechnuts, and hickory nuts. Soft mast includes cherries, apples, and samaras (on maple and ash trees).
- matrix The matrix is the dominant landscape element on a landscape in which smaller differentiated elements (patches) are embedded. It is commonly highly connected throughout the landscape.
- native plant A species that naturally occurs in a given location where its requirement for light, warmth, moisture, shelter, and nutrients are met.
- non-commercial treatment Any activity that does not produce at least enough value to cover the direct costs of that treatments.
- overtopped A condition or position where a tree's crown is completely covered by the crowns of one or more of its neighboring trees. An overtopped tree's crown is entirely below the general level of the canopy and does not receive any direct sunlight either from above or from the sides.
- patch A patch is a relatively homogeneous area that differs in some way from its surroundings (e.g., woodlot in a corn field, conifer plantation in a mixed-deciduous forest).
- plantation A forest stand in which most trees are planted or established from seed sown by people. Typically, planted trees are in rows, with equal spacing between each tree in a row and between rows.
- pole A tree, usually young, that is larger than 4 inches dbh and smaller than 8 to 11 inches dbh.

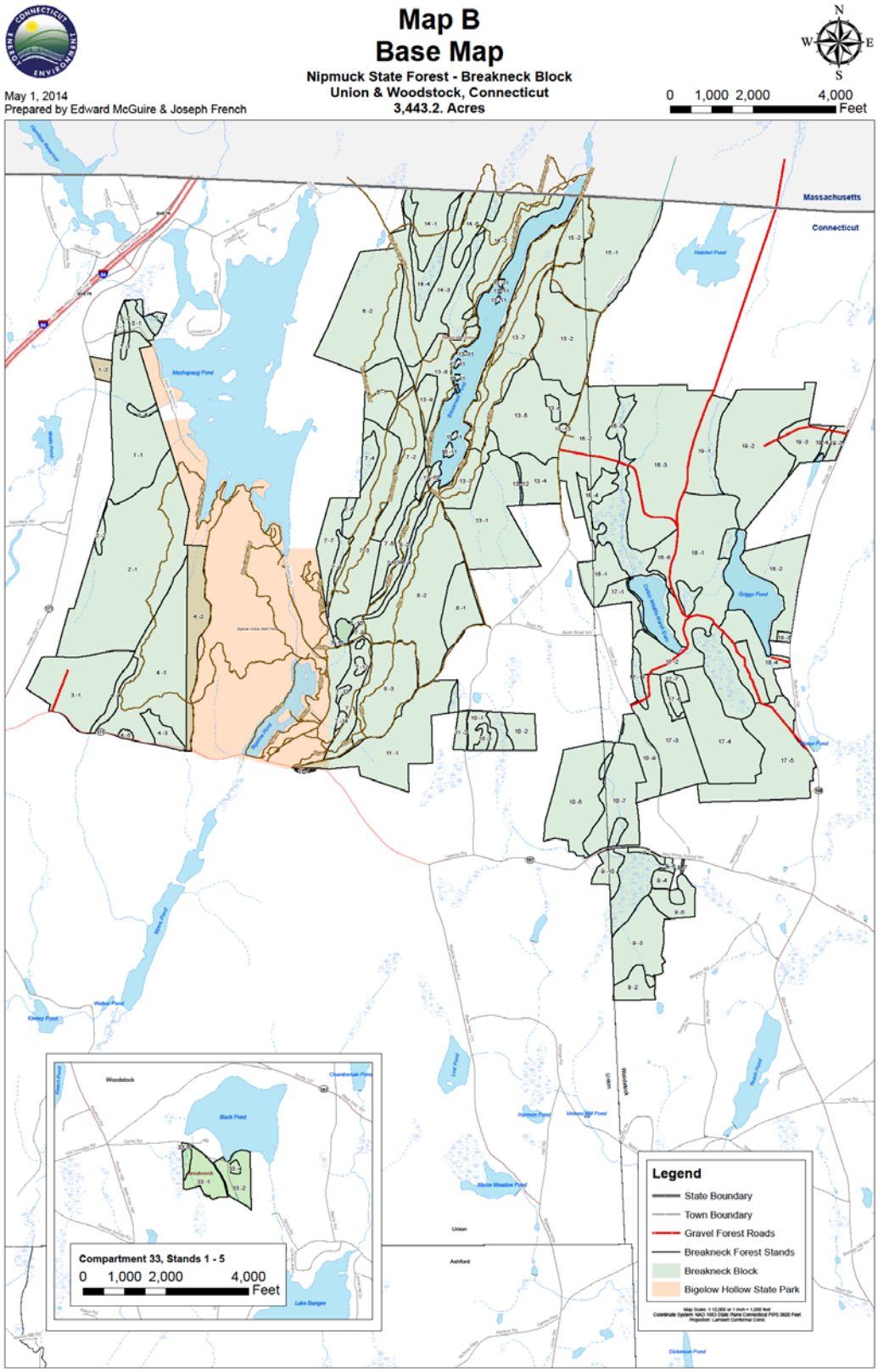
- prescribed burn The application of fire in forested or other areas, usually under specific conditions of weather and fuel moisture, to control vegetation for silvicultural purposes or to reduce hazards.
- regeneration The seedlings and/or saplings in a new forest stand or age class. Natural regeneration originated from seeds, sprouts, or root suckers.
- Regeneration method A cutting method by which a new age class is created. These methods include clearcutting, seed tree, shelterwood, single-tree selection, and group selection; also called reproduction method.
- Regeneration cuttings Silvicultural cuttings designed to naturally regenerate the stand by providing for seedling (or vegetative stems) establishment or development, or both. Two even-aged techniques; clearcutting and shelterwood, and two uneven-aged techniques; single-tree selection and group selection.
- residual spacing The distance between trees that remain in the forest after a silvicultural treatment.
- rotation The planned interval of time between treatments that regenerate a stand.
- runoff Surface streamflow leaving a watershed. Sources of runoff are precipitation falling in the channel, overland flow (rare in forested areas), and subsurface water exiting from soils and bedrock. In this Guide, runoff is synonymous with streamflow.
- sapling A tree, usually young, that is larger than a seedling but smaller than a pole-sized tree. Size varies by region, but a sapling is usually taller than 6 feet and between 1 and 4 inches in dbh.
- sawtimber Trees greater than 11” in diameter
- sedimentation The accumulation of organic and mineral soil particles and rocks in streams and water bodies due to erosion. Sedimentation often accompanies flooding. The application of Best Management Practices will usually protect against sedimentation during and after treatments.
- seed tree A tree that produces seed. Seed trees are usually mature and high in quality.
- seedling A tree grown from a seed. Usually the term is restricted to trees smaller than saplings, or less than 6 feet tall or smaller than 1 inch dbh.
- shade intolerance The relative inability of a plant to become established and grow in the shade.
- shade tolerance The relative capacity of a plant to become established and grow in the shade.
- shelterwood An even-aged silvicultural technique involving the removal of the understory and lower crown canopy trees to allow the new stand to regenerate under shade. Subsequent removal of the overstory in one or several cuts.
- silvicultural system A planned process whereby a stand is tended, and re-established. The system's name is based on the number of age classes (for example even-aged or two-aged), and/or the regeneration method used (for example, shelterwood, crop-tree, or selection).
- silvicultural treatment A process or action that can be applied in a controlled manor according to the requirements of a prescription or plan to a forest community to improve real or potential benefits.
- silviculture The art, science, and practice of establishing, tending, and reproducing forest stands with desired characteristics.
- single-tree selection An uneven-aged silvicultural technique involving the removal of trees singly or in groups of 2 or 3, which maintains a continuous canopy and an uneven-aged or uneven-sized mixture.
- site The combination of biotic, climatic, topographic, and soil conditions of an area; the environment at a location.

- snag A standing dead tree without branches, or the standing portion of a broken-off tree. Snags may provide feeding and/or nesting sites for wildlife.
- softwoods A term describing both the wood and the trees themselves that in most cases have needles or scale-like leaves (the conifers); gymnosperms.
- species composition The collection of plant species found in an area. Composition is expressed as a cover type, or a percentage of either the total number, the density, or volume of all species in that area.
- species diversity The number of different plants and animals, and other life forms, coexisting in a community.
- species richness The number of different species present in an area.
- stand An area of trees of a certain species composition (cover type), age class or size class distribution and condition (quality, vigor, risk), usually growing on a fairly homogeneous site. The trees are sufficiently uniform in spacing, condition, age arrangement and/or forest type to be distinguished from neighboring stands. The conditions of the site are relatively uniform, including soil properties, water drainage, slope, exposure to weather, and productivity. Stands of 5 acres and larger commonly are recognized, though minimum stand size depends upon size of ownership and intensity of management.
- stand composition The collection of plants, particularly trees, that are found in a stand.
- stand condition The number, size, species, quality, and vigor of trees in a forest stand.
- stand density A quantitative measure of the proportion of area in a stand actually occupied by trees. This is an absolute measure rather than a relative measure, or percentage.
- stand structure The arrangement of trees of different sizes and ages in a stand.
- succession A gradual and continuous replacement of one kind of plant and animal community by a more complex community. The environment is modified by the life activities of the plants and animals present thereby making it unfavorable for themselves. They are gradually replaced by a different group of plants and animals better adapted to the new environment.
- thinning The removal of some trees to improve and enhance the vigor and growth of other trees. Thinning enhances forest health and allows you to recover any excess of potential mortality.
- understory The small trees, shrubs, and other vegetation growing beneath the canopy of forest trees and above the herbaceous plants on the forest floor.
- uneven-aged stand A stand with trees in three or more distinct age classes, either intermixed or in small groups, growing on a uniform site; a stand containing trees of several 20-year age-classes. These stands generally contain trees of many sizes (seedling through sawtimber) due to the range in age as well as differences in growth rate among species.
- vertical diversity The extent to which plants are layered within an area. The degree of layering is determined by three factors: 1. the arrangement of different growth forms (trees, shrubs, vines, herbs, mosses and lichens); 2. the distribution of different tree and shrub species having different heights and crown characteristics; and 3. the number of trees of different ages.

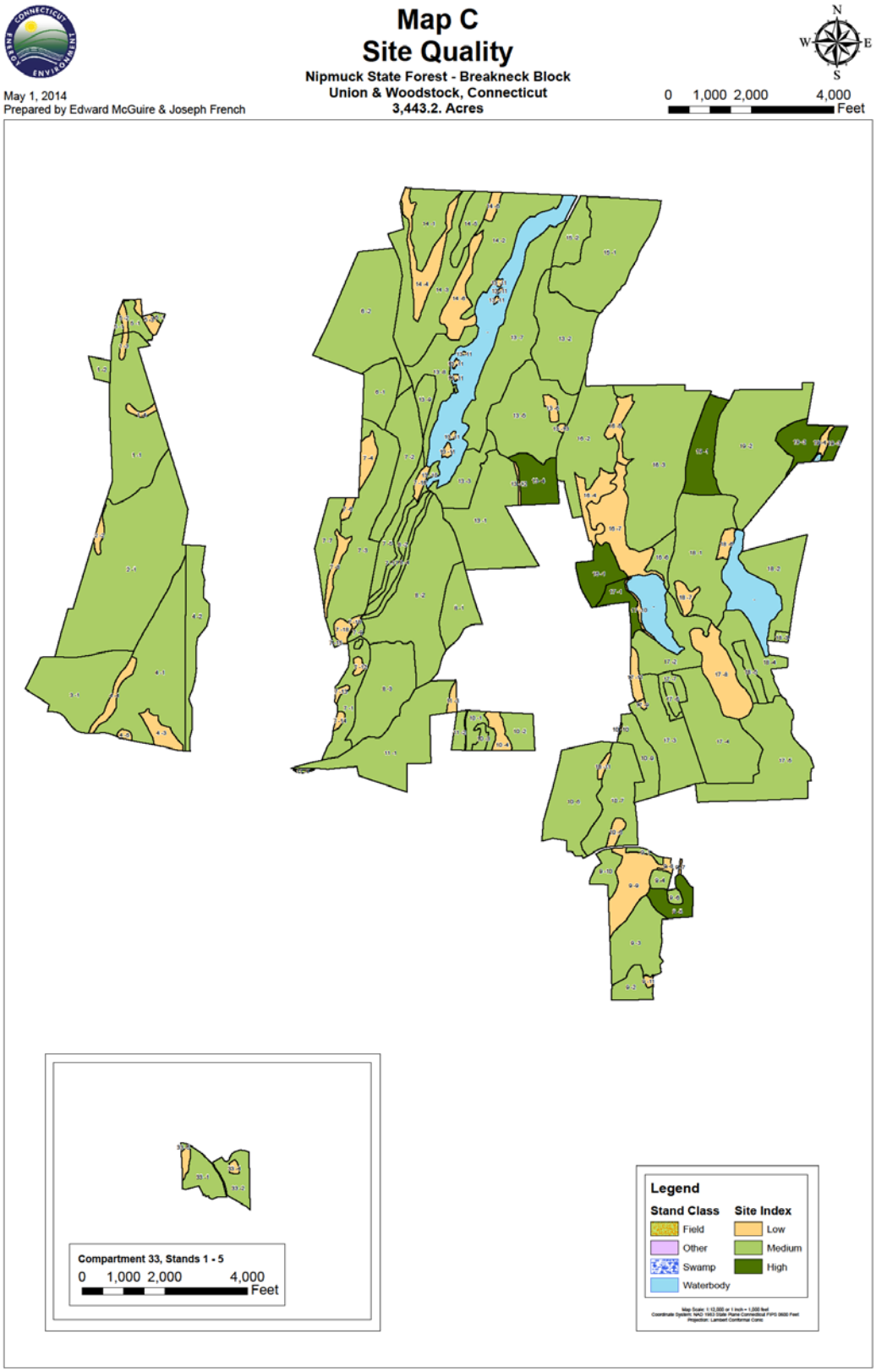
Map A: Topographic Map



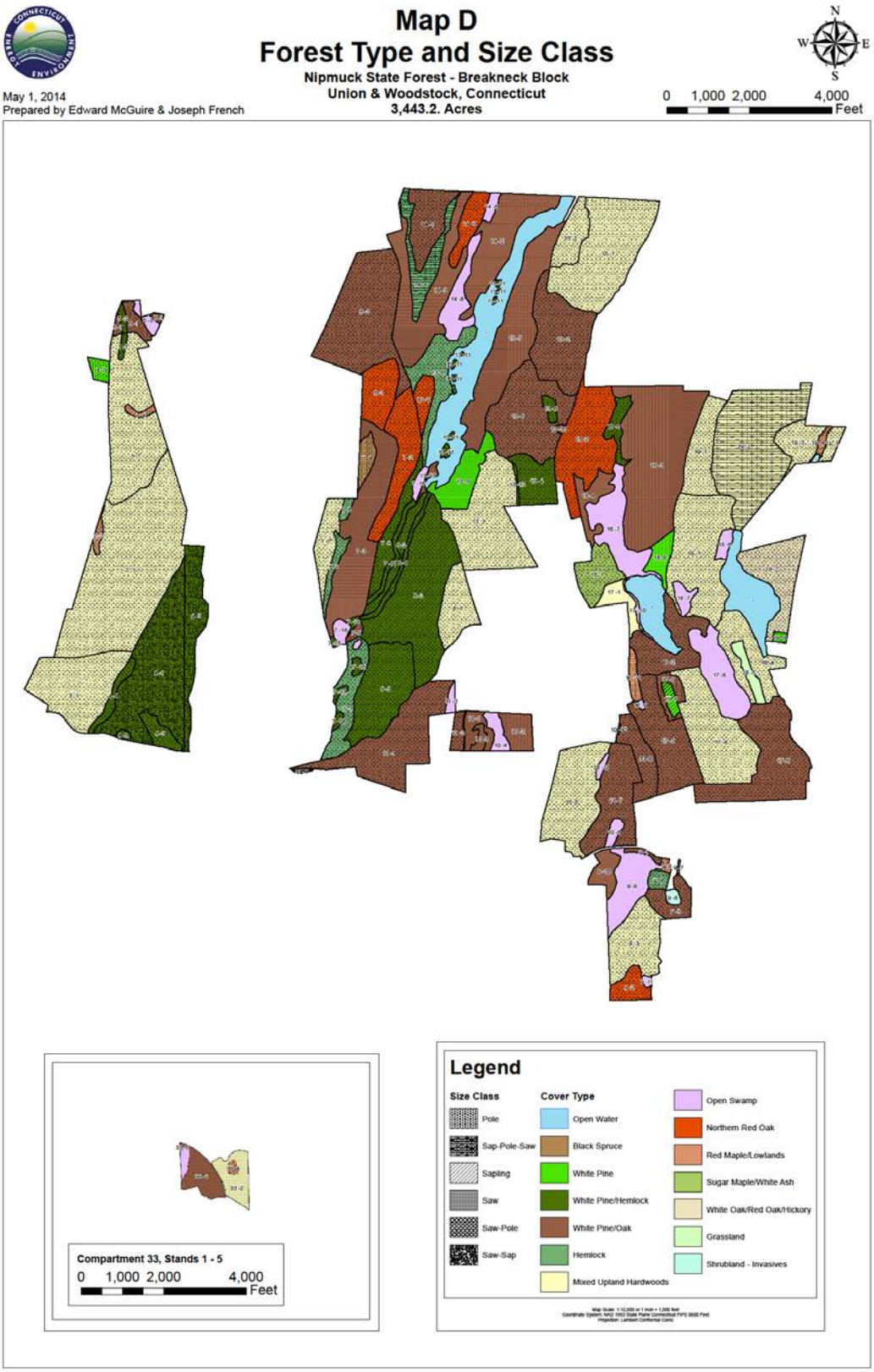
Map B: Base Map



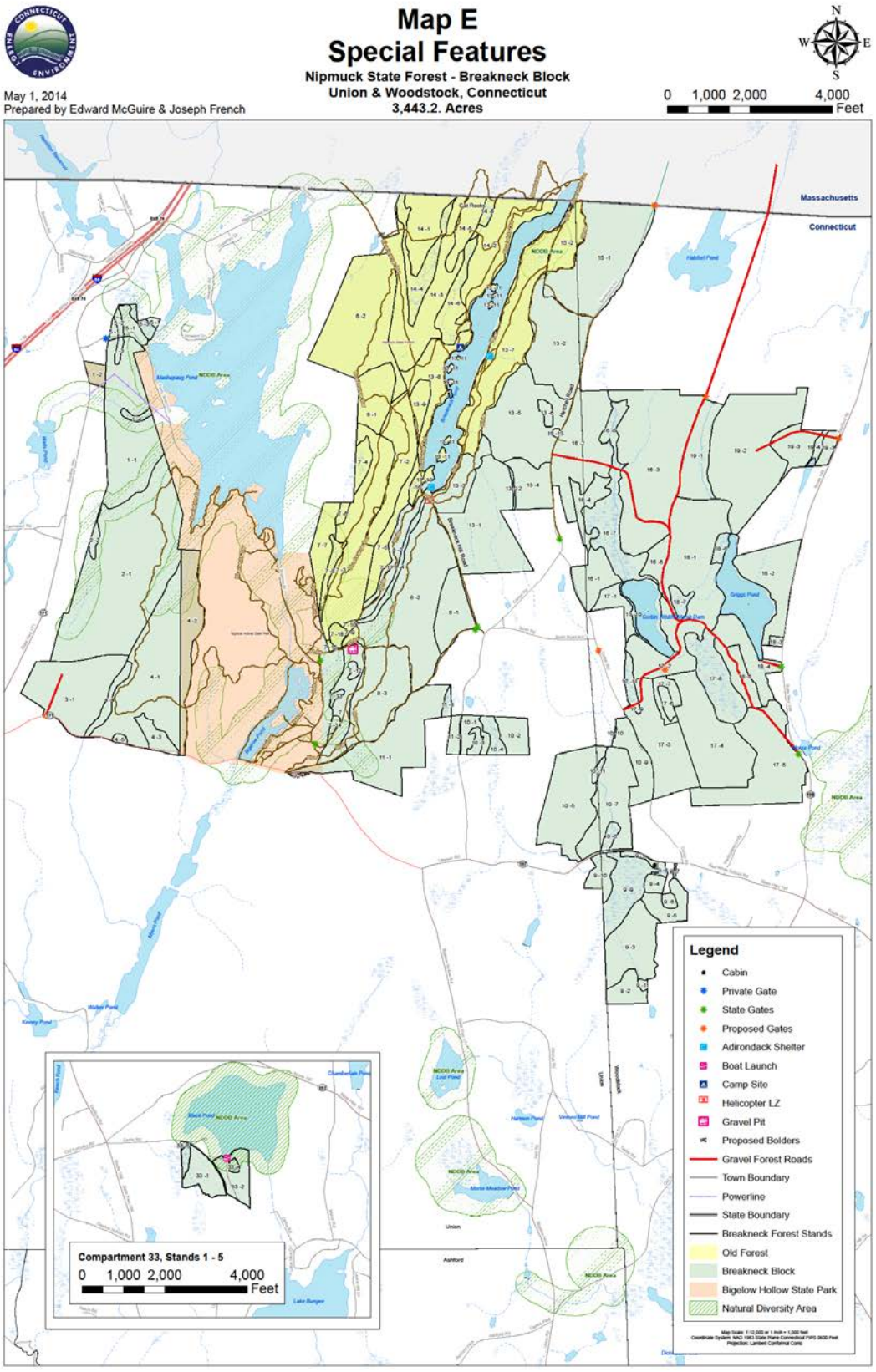
Map C: Site Quality



Map D: Forest Type and Size Class



Map E: Special Features



Map F: Work Plan