



Forest Stewardship Plan

Forest Climate Resilience Pilot Program



For property in North Adams & Adams, MA belonging to:

City of North Adams

Notch Reservoir Property (1,088 Acres)

Prepared by:

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**New England
Forestry Consultants, Inc.**
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Forest Management Plan

Submitted to the Massachusetts Department of Conservation and Recreation for enrollment in CH61/61A/61B and/or Forest Stewardship Program



CHECK-OFFS

CH61	CH61A	CH61B	STEWARDSHIP	Cost Share
cert ☐	cert ☐	cert ☐	new ☒	EEA ☐
recert ☐	recert ☐	recert ☐	renew ☐	Other ☐
amend ☐	amend ☐	amend ☐	Climate ☒	Birds ☐
Plan Change ☐ to ☐			Conservation Rest. ☐	
			CR Holder ☐	

Administrative Box

Case No.	Orig. Case No.
Owner ID	Add. Case No.
Date Rec'd	Topo Name Williamstown
Plan Period	River Basin Hoosic
Rare Spp. Hab.	

OWNER, PROPERTY, and PREPARER INFORMATION

Property Owner(s) City of North Adams, C/o Tim Lescarbeau, Water Department
 Mailing Address 59 Hodges Cross Road, North Adams, MA 01247 Phone 413-662-3000
 Email Address tllescarbeau@northadams-ma.gov

Property Location Town(s) North Adams & Adams Road(s) Reservoir Road & West Mountain Road

Plan Preparer Gary H. Gouldrup, NEFCo Mass Forester License # 81
 Mailing Address 30 Jewell Hill Road, Ashburnham, MA 01430 Phone 508-397-9206

RECORDS

Assessor's Map No.	Lot/Parcel No.	Deed Book	Deed Page	Total Acres	Ch61/61A 61B Excluded Acres	Ch61/61A 61B Certified Acres	Stewshp Excluded Acres	Stewshp Acres
N. Adams								
10	2	NA	NA	776.00	NA	NA	15.85	760.15
14	7	526	484	86.62	NA	NA	0.00	86.62
Adams								
214	1	NA	NA	226.00	NA	NA	0.00	226.00
TOTALS				1,088.62	NA	NA	15.85	1,072.77

Excluded Area Description(s) (if additional space is needed, continue on separate paper)

The excluded area includes Notch Reservoir (11.75 acres) and the open area on the north side of the dam (4.10 acres). Please see the Boundary & Stand Type Maps for the location of the excluded areas.

HISTORY Year acquired 1883 Year Management began 1883

Are boundaries marked: Yes ☒ blazed/painted/flagged/signs posted (circle all that apply) No ☐ Partially ☒

What treatments have been prescribed, but not carried out (last 10 years if plan is a recert.)?

stand no. NA treatment NA reason NA

Previous Management Practices (last 10 years): *Please see Page 2 for previous management practices.*

Remarks: (if additional space is needed, continue on separate page)

This is the first Forest Stewardship Plan prepared for the Notch Reservoir property.

HISTORY (continued):

<u>Stand #</u>	<u>Acres</u>	<u>Management Practices</u>	<u>Yield</u>	<u>Year</u>
8 & 11	70+/-	Selection Harvest	94 MBF & 60 Cords	2017
8	100+/-	Selection Harvest	161 MBF & 100 Cords	2014



Property Overview, Regional Significance, and Management Summary

Property Description

The Notch Reservoir woodlands (1,088-acres) are situated within a watershed that supplies drinking water to the City of North Adams. Notch Reservoir (11.75-acres) is a feeder reservoir to the Mount Williams Reservoir located 1-mile north of the property. A water treatment facility is located at the Mount Williams Reservoir. The Notch Reservoir property is dominated by northern hardwood species which include white ash, sugar maple, red maple, American beech, yellow birch, paper birch, black birch, big tooth aspen, basswood, black cherry, and red oak. Softwood species include hemlock, white pine, red pine, and spruce. Softwood plantations still exist on the property that were planted during the 1930's during the CCC projects. The terrain can be very steep in the highest elevations and all overland water flow runs centrally on the property into Notch Brook. The property is situated between Ragged Mountain to the east, Mount Williams to the west, Mount Fitch to the southwest, and Mount Greylock to the south. Notch Brook flows north into Notch Reservoir. The property is in the Hoosic River Watershed. Water that flows through the property eventually empties into the Hoosic River located approximately 2.6-miles north of the property. The property is extremely important for the protection of water quality for the City of North Adams.

Regional Significance

The property is located within a corridor of protected land which includes the Mount Greylock State Reservation consisting of 12,455 acres in the towns of North Adams, Adams, Williamstown and New Ashford. The Clarksburg State Forest is just north of the property and consists of 3,668 acres of protected land. The Appalachian Trail is located just west of the property and enters a portion of the property in Adams. The Appalachian Trail extends from Georgia to Maine. It is estimated that approximately 3,000 people attempt to thru-hike the trail every year with about 1/3 completing the entire route. The Bellows Pipe Trail is located on the west side of Notch Brook with the trail-head being at the property parking area off of Reservoir Road. The Bellows Pipe Trail leads to Mount Greylock and Ragged Mountain. The property is also within the Mohawk Trail Woodland Partnership Region (MTWP) and was selected for implementing climate-informed forest resiliency practices.

History

The property was initially acquired by the Fire District in 1896, although a deed was never recorded. An 1883 state law was necessary to affirm the sale. The ownership of the system passed from the fire district to the City of North Adams in 1896. The property's main function has been to supply clean water to the residents of North Adams. The property has also been managed for forest products periodically over time. The most recent timber harvests occurred on the east side of Notch Brook. Softwood plantations were established on the property around the Notch Reservoir during the CCC projects initiated by President Franklin Roosevelt in the 1930's during the Great Depression.

Owner(s) City of North Adams – Notch Reservoir

Town(s) North Adams & Adams



Property Overview, Regional Significance, and Management Summary

Forest Health

Forest health concerns at this time include the presence of the hemlock wooly adelgid. The hemlock woolly adelgid is present within the hemlock stands but is not causing mortality at this time. The hemlock stands should be monitored to see if any changes in tree health occur during this ten-year management period. Salvage operations may become necessary if mortality increases due to the insect. The Emerald Ash Borer is known to be in the suburban valleys of the North Adams and Adams area, but no evidence of the insect was found on the property during the forest inventory. The white ash component is not currently suffering from the adverse effects of insects and disease. Some decline in the white ash was seen in the northwestern sections of the property on the west side of Bellows Pipe Trail. The greatest health concern on the property is the dense overstory stocking and the lack of desired regeneration in the understory found in most of the areas west of Notch Brook. The forest stands west of Notch Brook have not been managed for approximately 30 years. These mature woodlands have a closed canopy with very little desired regeneration in the understory due to a lack of sunlight reaching the forest floor. The areas east of Notch Brook have been recently harvested and are producing adequate and desired regeneration in the understory. Invasive species are not prolific, but are present in low to high density in isolated sections of the property. Periodic timber harvesting in the future will focus on increasing the health of the forest by improving tree species and age class diversity, promoting biological diversity, and taking the necessary conservation measures for a clean water supply to the watershed. Please see the *Climate Change Impacts & Vulnerabilities* section for a more in-depth description of forest health issues related to this property.

Soils & Terrain:

The soils on the property are situated on the rugged terrain and valleys between Ragged Mountain, Mount Williams, Mount Fitch, and Mount Greylock. The dominant soil type is the Lyman-Turnbridge Association and it represents 86% of the soil types on the property. This soil is a fine sandy loam and loam that is moderately well drained to well drained. The area can be very rocky in places. The highest elevations are shallow to bedrock and ledge. The Berkshire-Marlo Association can be found in the lower elevations along Notch Brook. These soils are typically loamy and very deep. The other soil types include Farmington loam and rock outcrop and Peru fine sandy loam. The soils are capable of producing high quality timber resources in the lower elevations of the property.

Invasive Species:

Invasive species are present in isolated and relatively small sections of the property. Low to moderate levels of honeysuckle, bittersweet, multiflora rose, and Japanese barberry were seen during the forest inventory. The highest concentrations of Japanese barberry were found growing in Stand 11 in an area that was recently harvested (2017) along West Mountain Road. Low to moderate levels of invasive species can also be found on the west side of Notch Reservoir in Stand 1 near the Williams Cemetery. Efforts to control invasive species on the property will be done through timber harvesting practices that scarify the soil and allow native regeneration to become established in the understory. The landowner may consider other mechanical control methods and herbicides applied by a licensed applicator.

Owner(s) City of North Adams – Notch Reservoir Town(s) North Adams & Adams



Property Overview, Regional Significance, and Management Summary

Wildlife Habitat:

The property provides a mature forest dominated by hardwood species (95%) with minor components of softwood species (5%). These well-stocked and mostly closed canopy forests provide habitat for wild turkey, white-tail deer, owls, black bear, moose, fox, coyote, fisher, bobcat, raptors, and a variety of forest dwelling song birds. Areas on the east side of Notch Brook that have been harvested most recently provide some openings in the canopy and a greater diversity of plants and shrubs in the understory for wildlife food and cover. The mature hemlock stands are also beneficial as wintering deer yards. These pockets will likely be unmanaged in order to provide deer wintering yards as long as the stands are not affected by the hemlock woolly adelgid or scale. The one habitat component that is lacking within the forested landscape is the early successional young forest. This habitat type provides forest openings of dense vegetation that provides feeding, nesting, and singing grounds for wildlife species in decline in Massachusetts. Forest bird species that would benefit directly from the creation of this valuable habitat include American woodcock, ruffed grouse, brown thrasher, chestnut-sided warbler, eastern towhee, mourning warbler, and white-throated sparrow. Management on this forest will consider the creation of young forest vegetation layers by creating small openings in the mature forest canopy through thinning, and by small patch cuts of 2-3 acres.

Natural Heritage Endangered Species:

The State's GIS OLIVER system indicates that there are NO areas of Natural Heritage Rare & Endangered Species Program (NHESP) *Estimated Habitats for Rare Wildlife*. There is an area on the west side of the property on the very steep slopes that is shown as being an area of *Priority Habitats of Rare Species*. The species is not known at this time but is listed as PH 2010 on the NHESP map. Any management on the property will follow the NHESP recommendations if a rare species or its habitat is known to exist in the future and a Chapter 132 Cutting Plan will be submitted to NHESP and approved prior to any commercial timber harvesting on the property of greater than 50 cords or 25 MBF at any one time.

Fire:

There is no evidence of past forest fires on this forest. No prescribed burning will be done on this forest. Maintaining access to the property along Bellows Pipe Trail and along West Mountain Road will serve as fire protection access.

Cultural Resources:

There are stone walls along some of the property lines and within the forest interior that are evidence to agricultural pursuits on the property in the past. Cellar holes can be found on the west side of Notch Brook along Bellows Pipe Trail. The Wilbur Cemetery is located on the west side of Bellows Pipe Trail and contains approximately 100 grave sites. The Cemetery is listed on the Massachusetts Historical Commission as NAM802. Please see the Boundary & Stand Type Map(s) for the locations of the cultural resources on the property.



Property Overview, Regional Significance, and Management Summary

Recreation:

The Bellows Pipe Trail is used daily by hikers and walkers on the property. The Bellows Pipe Trail provides access to Mount Greylock, Mount Williams, Ragged Mountain, and Mount Fitch. Trails are also located on the east side of the property. Many of these trails on the east side of the property are unmarked and were once used as skid trails for removing timber from the property. The property is closed to all unauthorized motor vehicle use. Hunting and fishing is prohibited by DEP for public water protection.

Biodiversity:

Biodiversity management on the property will be related to promoting a healthy forest ecosystem by promoting unevenaged forest management that creates layers of vegetation throughout the forest. Diversifying species types, size class, and habitat types will be done to accomplish this goal. Maintaining native vegetation and eliminating non-native invasive species will also be done as part of the management of this forest.

Boundaries:

Boundary lines have mostly been identified, blazed and painted. The Department of Conservation & Recreation has blazed and painted all boundary lines in common with the City of North Adams and placed property signs. The City of North Adams has blazed, painted and placed property signs along the northeastern boundary line. There are still a few unmarked sections that will be blazed and painted (Please see the Boundary & Stand Type Map for physical boundary features).

Forest Products:

The property is growing a variety of hardwood and softwood timber resources. White ash, sugar maple, red maple, American beech, yellow birch, paper birch, black birch, big tooth aspen, basswood, black cherry, red oak, white pine, hemlock, and spruce sawtimber resources are available for lumber. Softwood and hardwood pulp are available for paper products and firewood. Harvesting in the future will focus on removing the mature and low-quality timber resources in order to release the developing high-quality timber and establish seedlings and saplings of desired species in the understory. The desire is to develop and maintain an unevenaged forest structure where there will be several layers of forest vegetation. A forest that is growing high quality sawtimber and pole sized stems with desirable regeneration in the understory will be pursued by the landowner.



Property Overview, Regional Significance, and Management Summary

Forest Resiliency:

Managing for climate change is another important aspect of biodiversity. Growing the tree species best suited to each site, maintaining or restoring stocking that fully occupies sites, growing and harvesting more of the wood our forests are capable of providing, achieving a diverse stand size class distribution from seedlings to large diameter trees in multi-storied stands, creating stand conditions that are well suited to the great majority of native wildlife species, employing Best Management Practice to protect water resources, soils, riparian habitats and aquatic habitats as well as aesthetics, protecting special habitats including wildlife trees, habitats of species identified as having special needs not entirely met by the management outlined above, and habitats which are critically important to more common species will be done.

Climate Change Impacts & Vulnerabilities:

All available climate models agree that temperatures will increase across all seasons in the Northeast region over the next century. The projected increase in annual temperature ranges from 3 to 10 degrees Fahrenheit by the end of the century. While it is difficult to predict how future precipitation will change, total annual precipitation is generally expected to increase over the next 100 years. The greatest precipitation increases are expected to occur during the winter, where warmer temperatures will result in more winter precipitation falling as rain instead of snow. There is more uncertainty as to whether precipitation will increase or decrease during the growing season. Even with moderate increases in rainfall, there may be more frequent droughts in the summer and/or fall because higher temperatures will lead to greater water loss from evaporation and transpiration.

Below is a list of anticipated impacts on Massachusetts forests, with consideration of how each may affect the Notch Reservoir property:

- Extreme precipitation and more frequent and intense weather events are expected in the Northeast region throughout the next century
- Soil moisture patterns will change, with greater risk of drier soil conditions or drought later in the growing season

The Notch Reservoir property is situated on moderate to steep slopes that are often associated with vulnerability to intense windstorms, but the Notch Reservoir is actually nestled between four mountain peaks that protect the property from severe winds from the east, west, and south.

The forest soils at the Notch Reservoir are dominated by loam and fine sandy loam soils that have a 15-60% slope (Lyman-Turnbridge). The terrain and heavy soils on the property present this property as moderate to high vulnerability to erosion and sedimentation associated with extreme precipitation events.



Property Overview, Regional Significance, and Management Summary

- Forest insect pest and pathogen outbreaks are expected to increase in occurrence and inflict more damage
- Low diversity systems are at a greater risk
- Many northern tree species will face increasing stress from climate change
- Conditions may become more favorable for some southern tree species
- Species and forest types that are more tolerant of disturbance have less risk of declining across the landscape

The Notch Reservoir property is dominated by northern hardwood and central hardwood species. Species diversity in the hardwood stands is generally moderate to high. White ash, sugar maple, red oak, yellow birch, white birch, black birch, red maple, American beech, basswood, big tooth aspen, black cherry, hophornbeam, and hickory can all be found. The white ash component is likely to have issues with insects and disease and is currently facing issues with the Emerald Ash Borer which is known to be in the North Adams region. The white ash component is high on the property, especially in areas west of Notch Brook. Currently, the white ash is healthy and not experiencing wide spread decline from insects or disease, but should be monitored closely over the next ten years for decline in health. The red oak and sugar maple that is dispersed within the hardwood stands will be good replacement species should the ash component decline in numbers over time.

Softwood species include white pine, hemlock, red pine and spruce. The softwood species can be found growing naturally within the forest landscape as well as in plantations that were established during the CCC planting projects in the 1930's. The plantations are low in diversity and are a high risk to insects and disease such as the hemlock woolly adelgid, hemlock scale, and red pine scale. Although white pine is projected to decline due to warming temperatures, the Berkshires may offer, on average, colder temperatures that may sustain the species over time as compared to lower elevations where white pine will likely decline.

Other species that are on the Notch Reservoir property that are projected to decline include white birch, hophornbeam, red pine, and spruce. The one southern species present on the property in low numbers is the pignut hickory that is believed to have been planted along the Bellows Pipe Trail and West Mountain Road. This species could also become a replacement tree for declining northern species.



Property Overview, Regional Significance, and Management Summary

- Populations of key herbivores will be affected

The white-tailed deer population at the Notch Reservoir property are below average across the State of Massachusetts. Deer populations in southern and eastern sections of Massachusetts are relatively high and are expected to increase from milder winters. It is likely the deer population at the Notch Reservoir will not increase as much as the southern and eastern sections of Massachusetts due to the higher elevations of the Berkshires and cooler annual temperatures. Deer browse impacts on forest regeneration are most evident within the areas that have been recently harvested on the east side of Notch Brook. Deer browse impacts are considered low to moderate at this time but could have an effect on regenerating climate tolerant species such as red oak, sugar maple, and hickory. Protecting desired regeneration from deer browse and tree plantings of desired regeneration will be done by fencing and tubing seedlings and saplings.

- Many non-native, invasive species will increase

Invasive and non-native plants are present at the Notch Reservoir property in low to moderate levels and are isolated to two areas on the property. Japanese barberry, multiflora rose, honeysuckle, and bittersweet are the problematic invasives on the property. The highest concentrations of invasive plants can be found in Stand 11 along West Mountain Road. A fairly dense layer of Japanese barberry is present in the areas that were recently harvested. Efforts to reduce the presence of invasive species will be done through timber harvesting practices that are well timed with good seed years and light soil scarification to prepare the problematic sites for regeneration of native trees, shrubs and plants. Chemical applications will also be considered by the landowner.

Climate Change Challenges and Opportunities for Management:

Promoting management that promotes “resilience” will be the preferred method of management when it comes to projected climate change conditions. This approach will allow for the forest on the property to experience some changes with the goal of retaining existing species and habitat characteristics as much as possible, while understanding that some characteristics will change. Promoting a secondary strategy of “transition” to future adapted species and plant communities will be pursued as the property is monitored for regeneration successes and failures. Another management consideration must be “resisting” climate change in vulnerable habitat along Notch Reservoir and Notch Brook for water quality protection. Hemlock stands will also be left for deer wintering yards as long as possible even though the hemlock is likely to decrease with time from hemlock woolly adelgid and scale. Regeneration protection is an important goal and objective at the Notch Reservoir property. Successful regeneration is a basic indicator of forest sustainability that refers to the ability of mature forest trees to produce seed that germinates into young trees that have the capability to grow into the canopy and ultimately replace the older trees as they decline or die. While species composition may shift over time, regeneration is essential to maintaining a healthy natural forest. Forest regeneration at the Notch Reservoir property faces some common threats or resource concerns, including forest insect pests, deer herbivory, and invasive plants. These are described in the paragraphs above, below, and in the more detailed stand descriptions.

Owner(s) City of North Adams – Notch Reservoir Town(s) North Adams & Adams



Property Overview, Regional Significance, and Management Summary

- Challenges

Managing the Notch Reservoir property will face many challenges with species that are projected to have poor climate adaptation capability. White ash will likely face decline from insects and disease in the near future. The emerald ash borer in particular is known to be in the area and will likely increase mortality in the white ash component. White ash within Stand 1 represents approximately 15% of the species stocking. Hemlock trees will likely be affected by the woolly adelgid and scale in the future. White pine, red pine and spruce plantations on the west side of Notch Reservoir are highly susceptible to climate change. Red pine scale in particular is affecting plantations on nearby North Adams lands at the Mount Williams reservoir property. Paper birch is a common species within Stand 9 and represents approximately 24% of the species present in the stand. These species are likely to decline and management will focus on reducing these species by percentage in order to favor climate resistant species such as red oak, sugar maple, and hickory. However, hemlock stands on the property provide a valuable wildlife habitat component for deer wintering yards and “resistance” management will likely keep these stands unmanaged for as long as possible for maintaining this valuable wildlife habitat. Resistance management will also be observed around the sensitive areas of Notch Reservoir and Notch Brook for water quality protection.

- Opportunity

Silviculture strategies aimed at increasing climate change tolerant species will be employed at the Notch Reservoir property. Red oak, sugar maple, and hickory are present on the property. Red oak and sugar maple represent approximately 38% of the stocking within the forest. Hickory represents less than 1% of the stocking.

Harvesting within the hardwood stands on the property will focus on reducing high risk species that are susceptible to insects and disease such white ash, white birch, and American beech in order to improve the growing conditions and potential natural regeneration of red oak and sugar maple by creating openings in the forest canopy that will encourage natural regeneration of preferred and resilient species. The softwood plantations will also be selected for more intensive management in order to create openings in the forest canopy that will prepare the understory for new regeneration or artificial regeneration of preferred species.

Artificial regeneration will focus on planting red oak and hickory in particular where there is no regeneration of these species. The plantings are recommended after harvesting is performed on the property to assure that enough sunlight reaches the forest floor for their survival rate to increase. The new saplings will be fenced provided funding is available for the project.

Another potential way to improve regeneration into the future will be to reduce the deer herd through controlled hunts. This policy will need to be approved by the City of North Adams and the Water Department. Invasive species management can be conducted by mechanical, and or, chemical control methods approved by the City and the Water Department in order to promote natural communities.

Owner(s) City of North Adams – Notch Reservoir

Town(s) North Adams & Adams



Property Overview, Regional Significance, and Management Summary

Carbon Storage & Sequestration Opportunities:

A forest that is adapted to climate change is an important part of climate mitigation through the sequestering and storing of carbon. The Notch Reservoir property currently stores an estimated 40,282 metric tons of carbon, an amount equivalent to the carbon emissions released from burning 15.83 million gallons of gasoline. This amount is not static, as living vegetation continually absorbs more carbon dioxide while decaying plants release it back into the atmosphere. The challenge is to increase forest carbon storage over the long-term while accounting for inevitable reductions resulting from different types of disturbances, both natural and those caused by humans. The forest stocking is adequate to overstocked with trees on a per acre basis. Basal areas are higher on the western side of Notch Brook as these areas have not been managed for over 30+/- years. Areas on the east side of Notch Brook have been harvested more recently, but the stocking on average is adequate. Areas where the soils are deep has a higher site index for growing trees than most forest stands throughout Massachusetts due to the very rich soils. These areas tend to grow trees that are taller on average and will store more carbon than basal area tables will indicate. The higher elevations where the soils are shallow and site index is much lower are likely to have less carbon than basal area tables indicate.

Considering current forest health issues and looking at the projections for the most common tree species on the property, the City of North Adams has an opportunity to increase long-term carbon storage and overall sequestration by continuing active management, which includes timber harvesting to achieve their watershed management goals. Without active management, declining vigor of hemlock, red pine, spruce, white birch and white ash due to pest and disease will lead to lower sequestration rates, and ultimately the loss of carbon stocks as trees succumb to mortality. While periodic harvests will lead to short-term carbon loss, this strategy will aim to regenerate species projected to grow well into the future and maintain an overstory of healthy trees needed to meet both storage and sequestration goals. Increased growth in remaining trees, as well as new seedlings that become established after harvests, will increase sequestration rates. Over the long-term, shifting composition towards a forest more dominated by oaks and other resilient hardwoods, while still maintaining white pine and as much hemlock as possible, will create a more complex forest structure that can store more carbon per acre. Small natural disturbances may help to increase sequestration rates. However, if disturbances are significant enough to lead to an undesirable decrease in carbon stocks, harvest schedules can be adjusted.

The soil carbon pool is one of the largest pools in the forest ecosystem. The soil carbon will be protected during timber harvesting by ensuring that the soil is in a stable condition, either frozen or dry, during operations. Where soils have higher soil moisture, these areas will be avoided or timber mats will be used to prevent impacts. The number of skid roads will be minimized through careful, advanced planning.

The planned enrichment planting in canopy openings after timber harvesting with the planned deer browse prevention tactics will increase carbon sequestration, while also improving resilience. Control of invasive species that compete with native regeneration will also improve sequestration rates and carbon stocks over the long-term.

Owner(s) City of North Adams – Notch Reservoir Town(s) North Adams & Adams



Property Overview, Regional Significance, and Management Summary

Management Summary:

The City of North Adams most important goal for the Notch Reservoir property is to assure that environmental conditions surrounding the Reservoir and Notch Brook produce high quality drinking water to the residents of North Adams. With this in mind, the importance of managing the property for climate change also becomes a high priority when considering the property as a whole. In general, management will focus on landscape scale objectives, including improving the forest resources, enhancing wildlife habitat, recreational opportunities, and mitigating climate change over time by:

- Growing the tree species best suited to each site;
- Maintaining or restoring stocking that fully occupies sites;
- Growing and harvesting more of the wood our forests are capable of providing;
- Achieving a diverse stand size class distribution from seedlings to large diameter trees in multi-storied stands;
- Creating stand conditions that are well suited to the great majority of native wildlife species;
- Employing Best Management Practice to protect water resources, soils, riparian habitats and aquatic habitats, as well as aesthetics;
- Protecting special habitats including wildlife trees, habitats of species identified as having special needs not entirely met by the management outlined above, and habitats which are critically important to more common species.

Landowner Goals

Please **check** the column that best reflects the importance of the following goals:

(goals may change over time and this table may be updated to reflect any changes)

Goal	Importance to Me			
	HIGH	MED	LOW	N/A, Don't Know
Improve access for walking/skiing/recreation			X	
Improve hunting or fishing			X	
Maintain or enhance privacy				X
Preserve or improve scenic beauty			X	
Protect special features, including those of historical or person significance		X		
Enhance the quality and/or quantity of forest products*	X			
Practice agroforestry				X
Produce income from timber products, or other products and services	X			
Produce firewood for personal use				X
Enhance habitat for birds		X		
Enhance aquatic habitat in streams, ponds, and other wetlands				X
Enhance habitat for wildlife	X			
Promote diversity of plant species and habitat types	X			
Increase forest resiliency	X			
Minimize damage from forest pests	X			
Protect water quality	X			
Sequester and/or store carbon to mitigate climate change	X			
Suppress or eradicate invasive plants	X			
Lower property taxes				X
Protect land from development				X

*** This goal must be checked "HIGH" if you are interested in classifying your land under Chapter 61/61A.**

Owner(s) (print) ____ City of North Adams – Notch Reservoir ____ (This page will be included with the completed plan.)

In your own words please describe your goals for the property:

Maintaining or increasing water quality is our first priority.

Environmentally friendly timber harvesting practices.

Stewardship Purpose

By enrolling in the Forest Stewardship Program and following a Stewardship Plan, I understand that I will be joining with many other landowners across the state in a program that promotes ecologically responsible resource management through the following actions and values:

1. Managing for long-term forest health, productivity, diversity, and quality.
2. Conserving or enhancing water quality, wetlands, soil productivity, biodiversity, cultural, historical and aesthetic resources.
3. Following a strategy guided by well-founded silvicultural principles to improve timber quality and quantity when wood products are a goal.
4. Setting high standards for foresters, loggers and other operators as practices are implemented; and minimizing negative impacts.
5. Learning how woodlands benefit and affect surrounding communities, and cooperation with neighboring owners to accomplish mutual goals when practical.

Signature(s):_____

Date:_____

Owner(s) (print) City of North Adams

(This page will be included with the completed plan.)

Stand Summary

For the purposes of this report a forest stand is an easily defined area that is relatively uniform in composition and structure.

Summary of the Forest Stands on your property

Stand	Acres	Forest/Habitat Type	Important Observations regarding Bird Habitat, Climate Change, Carbon, Or Unique Features and Attributes	Climate Risk	Carbon/Acre*
1	268.73	BB Northern Hardwood	Northern hardwood stand with mostly a closed canopy. Red oak approximately 10% of the stocking. Regeneration is comprised of mostly beech, striped maple, spruce, and hemlock. To a lesser degree sugar maple, yellow birch, red maple, fir, and hobble bush and mountain laurel is also present. Regeneration is fairly abundant but suppressed and not comprised of desirable climate change tolerant species. No red oak regeneration present.	The climate risk is moderate with white ash, white birch, spruce, hemlock, and white pine being the species most susceptible to climate changes.	Live Tree 39.7 Tn/Ac Dead Trees 0.7 Tn/Ac
2	8.31	RP/SP Red pine & Spruce Plantation	Plantation of red pine & spruce. Stand is overstocked with very little regeneration that is suppressed under a closed canopy. Trees are growing too close and root systems are compromised. Narrow crowns in the canopy. Multiple dead snags.	Climate risk is high with red pine & spruce being the most susceptible to climate changes.	Live Tree 82.6 Tn/Ac Dead Trees 6.0 Tn/Ac
3	71.43	BB Northern Hardwoods	Northern hardwood stand with mostly a closed canopy. Red oak approximately 14% of the stocking. Regeneration is comprised of mostly beech, striped maple, spruce, and hemlock. To a lesser degree sugar maple, yellow birch, red maple, fir, and hobble bush is also present. Regeneration is fairly abundant but suppressed and not comprised of desirable climate change tolerant species. No red oak regeneration present.	The climate risk is moderate with white ash, white birch, spruce, hemlock, and white pine being the species most susceptible to climate changes.	Live Tree = 40.5 Tn/Ac Dead Trees = 1.4 Tn/Ac

Stand Summary

For the purposes of this report a forest stand is an easily defined area that is relatively uniform in composition and structure.

Summary of the Forest Stands on your property

Stand	Acres	Forest/Habitat Type	Important Observations regarding Bird Habitat, Climate Change, Carbon, Or Unique Features and Attributes	Climate Risk	Carbon/Acre*
4	1.51	WP White Pine	White pine plantation overstocked with a closed canopy. Very little regeneration in the understory. Some beech, sugar maple, striped maple, spruce, witch hazel, and ferns present.	The climate risk is high with white pine being the species most susceptible to climate changes.	Live Tree 104.0 Tn/Ac Dead Trees 0 Tn/Ac
5	11.98	HH Hemlock & Mixed Hardwoods	Well stocked hemlock & mixed hardwoods. Likely to have hemlock woolly adelgid & scale. Good deer wintering yards.	Climate risk is high with hemlock being the most susceptible to climate changes.	Live Tree 46.5 Tn/Ac Dead Trees 0.7 Tn/Ac
6	145.10	BB Northern Hardwoods	Northern hardwood stand on steep slopes and very rocky terrain with shallow soils in the highest elevations. Red oak approximately 4% of the stocking. Trees are typically much shorter and storm damage has broken the tops of trees in the canopy in the past. Regeneration is comprised of mostly beech, striped maple, spruce, and birch, and fir.	The climate risk is moderate with white birch & spruce being the species most susceptible to climate changes.	Live Tree = 38.2 Tn/Ac Dead Trees = 0.9 Tn/Ac
7	8.92	HH Hemlock & Mixed Hardwoods	Well stocked hemlock & mixed hardwoods. Likely to have hemlock woolly adelgid & scale. Good deer wintering yards.	Climate risk is high with hemlock being the most susceptible to climate changes.	Live Tree 48.6 Tn/Ac Dead Trees 0 Tn/Ac

Stand Summary

For the purposes of this report a forest stand is an easily defined area that is relatively uniform in composition and structure.

Summary of the Forest Stands on your property

Stand	Acres	Forest/Habitat Type	Important Observations regarding Bird Habitat, Climate Change, Carbon, Or Unique Features and Attributes	Climate Risk	Carbon/Acre*
8	242.28	OH Red Oak & Mixed Hardwoods	Red oak and mixed hardwoods dominate the overstory of this unevenaged forest due to harvesting over the last 15 years. The canopy is partially open. Red oak represents 23% of the stocking.	The climate risk is moderate with white birch, hemlock, and white pine being the species most susceptible to climate changes.	Live Tree 32.1 Tn/Ac Dead Trees 0.5 Tn/Ac
9	102.63	OH Red Oak & Mixed Hardwoods	Red oak and mixed hardwoods dominate the overstory of this steeply sloped and rocky stand. The canopy is mostly closed. Red oak represents 26% of the stocking. Pockets of hemlock are present.	Climate risk is moderate to high with hemlock and white birch being the most susceptible to climate changes.	Live Tree 34.0 Tn/Ac Dead Trees 0 Tn/Ac
10	27.73	OH Red Oak & Mixed Hardwoods	Red oak and mixed hardwoods dominate the overstory of this moderately to steeply sloped and rocky stand. The canopy is mostly closed. Red oak represents 60% of the stocking.	The climate risk is low with white ash being the species most susceptible to climate changes.	Live Tree 45.3 Tn/Ac Dead Trees = 0 Tn/Ac
11	8.26	OH Red Oak & Mixed Hardwoods	Red oak and mixed hardwoods dominate the overstory of this unevenaged forest due to recent harvesting. The canopy is fairly open. Japanese barberry is well established in the understory.	Climate risk is high with invasive species in the understory prohibiting natural regeneration growth.	Live Tree 19.4 Tn/Ac Dead Trees 1.4 Tn/Ac
12	175.89	BB Northern Hardwoods	Northern hardwood stand with mostly closed canopy. Regeneration is comprised of mostly beech, striped maple, spruce, and hemlock. To a lesser degree sugar maple, yellow birch, red maple. Regeneration is fairly abundant but suppressed and not comprised of desirable climate change tolerant species.	The climate risk is moderate with white ash, white birch, spruce being the species most susceptible to climate changes.	Live Tree 34.0 Tn/Ac Dead Trees 0.4 Tn/Ac

Owner(s) City of North Adams – Notch Reservoir

Towns(s) North Adams & Adams

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	1	BB	268.73	10.9" MSD Sawtimber-Pole	123 sqft	8,792 BF & 18.2 Cords	61(SM)

Northern hardwood species and red oak dominate the overstory of this slightly overstocked sawtimber sized stand with a mostly closed canopy. Species composition varies throughout the stand. The hardwood component includes sugar maple, white ash, American beech, red oak, red maple, yellow birch, black birch, white birch, black cherry, hophornbeam, basswood, hickory, and big tooth aspen sawtimber and pole sized stems with a frequency of occurrence as listed. Scattered hemlock and red spruce are present as well. The white ash component represents approximately 14% of the stand stocking. The white ash stems in general are healthy and do not show signs of wide-spread stress. Northern sections of the stand near the Wilbur Cemetery did have trees that were in decline or dead. The red oak and sugar maple are fair to good in form and timber quality. These two species together represent 34% of the stocking within the stand. They are both projected to be resilient climate change species and will be favored within this stand through silvicultural treatments that will help them grow and regenerate into the future. Forest regeneration is adequate but suppressed from a mostly closed canopy. Regeneration is comprised of mostly beech, striped maple, spruce, and hemlock. To a lesser degree sugar maple, yellow birch, red maple, and balsam fir. Hobble bush and mountain laurel are also present. The terrain is steep on the western sections of the stand and transitions to moderate and gentle slopes towards Notch Brook. Forest soils are loam and fine sandy loam (Lyman-Turnbridge Association) and capable of producing high quality timber resources. Some areas can be rocky. The terrain and soil types can be subject to erosion under wet conditions during timber harvesting. Management will focus on harvesting and silvicultural practices that will promote an unevenaged forest structure with many vegetation layers within the forest. An effort to promote red oak and sugar maple in particular will be encouraged for forest resiliency purposes related to climate change. The desired future condition is a stand that is unevenaged in structure with a forest comprised of climate resistant species for the main purpose of maintaining a watershed that provides high quality drinking water for the City of North Adams.

Habitat & Resilience Data - Stand 1

Overstory/Midstory	% Canopy Cover	0-10%	20-39%	40-59%	60-79%	80-100%
	Stocking Level	Inadequate	Adequate	Overstocked		
	Species Diversity	Low	Medium	High		
	Species Present	AS, BA, AB, BC, HK, HH, RM, RO, RS, SM, BB, WA, WB, YB				
Regeneration	Seed/Sapling Abundance	Closed Canopy	Inadequate	Adequate	Suppressed	
	Seedling/Sapling Diversity	Low	Medium	High		
	% at risk species	None	25%	50%	75%	100%
	Browse Impacts	None	Low	Medium	High	
	Species Present	BE, STM, RS, HK, SM, YB, RM, BF				
Invasive Species	% Cover	0-25%	26-49%	50-75%	76-100%	
	Species Present	None Observed				

OBJECTIVE CODE: CH61 = stands classified under CH61/61A/61B STEW= stands not classified under CH61/61A/61B
 STD= stand AC= acre MSD= mean stand diameter MBF= thousand board feet BA= basal area VOL= volume

Owner(s) City of North Adams – Notch Reservoir

Towns(s) North Adams & Adams

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	2	RP SP	8.31	9.6" MSD Sawtimber-Pole	255 sqft	19,616 BF & 58 Cords	60(SM)

This stand is a plantation of red pine, Norway spruce, and white spruce likely planted in the CCC projects in the 1930's. Scattered mixed hardwoods can also be found. The trees are in the small sawtimber class. Forest regeneration is inadequate and suppressed from a mostly closed canopy. Regeneration is comprised of striped maple, hobble bush, and scattered mixed hardwood saplings. The terrain is flat to gently sloping towards Notch Reservoir. Forest soils are loam and fine sandy loam (Peru-Marlo-Berkshire Association) and capable of producing high quality timber resources. The soil types can be subject to erosion under wet conditions during timber harvesting. Management will focus on patch-cutting and silvicultural practices that will promote a young forest structure. An effort to promote red oak and sugar maple regeneration in particular will be encouraged for forest resiliency purposes related to climate change. The desired future condition is to replace a monoculture of softwood that is in decline with a forest comprised of climate resistant species for the main purpose of maintaining a watershed that provides high quality drinking water for the City of North Adams. Indirectly, the new and young forest will provide excellent early successional habitat for wildlife.

Habitat & Resilience Data - Stand 2

Overstory/Midstory	% Canopy Cover	0-10%	20-39%	40-59%	60-79%	80-100%
	Stocking Level	Inadequate	Adequate	Overstocked		
	Species Diversity	Low	Medium	High		
	Species Present	RP, NSP, WSP, MH				
Regeneration	Seed/Sapling Abundance	Closed Canopy	Inadequate	Adequate	Suppressed	
	Seedling/Sapling Diversity	Low	Medium	High		
	% at risk species	None	25%	50%	75%	100%
	Browse Impacts	None	Low	Medium	High	
	Species Present	STM, MH				
Invasive Species	% Cover	0-25%	26-49%	50-75%	76-100%	
	Species Present	Japanese Barberry, Honeysuckle, Multiflora Rose, Bittersweet				

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Owner(s) City of North Adams – Notch Reservoir

Towns(s) North Adams & Adams

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	3	BB	71.43	10.5" MSD Sawtimber-Pole	124 sqft	8,402 BF & 18.5 Cords	60(SM)

Northern hardwood species and red oak dominate the overstory of this well-stocked sawtimber sized stand with a mostly closed canopy. Species composition varies throughout the stand. The hardwood component includes sugar maple, white ash, red oak, black cherry, red maple, big tooth aspen, hophornbeam, yellow birch, white birch, American beech, and hickory sawtimber and pole sized stems with a frequency of occurrence as listed. Scattered white pine, red pine, hemlock, and spruce are present as well. The white ash component represents approximately 15% of the stand stocking. The white ash stems in the northern sections of the stand are showing signs of health-related stress and dead trees and blow-downs can be found. The red oak and sugar maple are fair to good in form and timber quality. These two species together represent 35% of the stocking within the stand. They are both projected to be resilient climate change species and will be favored within this stand through silvicultural treatments that will help them grow and regenerate into the future. Forest regeneration is scattered and suppressed from a mostly closed canopy. Regeneration is comprised of mostly beech, striped maple, sugar maple, and spruce. To a lesser degree red maple, hemlock, and birch are present. Hobble bush and mountain laurel are also present. Invasive species are present in moderate amounts in the northern sections of the stand and include honeysuckle, multiflora rose, Japanese barberry, and bittersweet. The terrain is flat to gently sloped towards Notch Brook. Forest soils are loam and fine sandy loam (Lyman-Turnbridge Association) and capable of producing high quality timber resources. The terrain and soil types can be subject to erosion under wet conditions during timber harvesting. Several intermittent streams flow west to east into Notch Brook and Notch Reservoir. Management will focus on harvesting and silvicultural practices that will promote an unevenaged forest structure with many vegetation layers within the forest. An effort to promote red oak and sugar maple in particular will be encouraged for forest resiliency purposes related to climate change. The desired future condition is a stand that is unevenaged in structure with a forest comprised of climate resistant species for the main purpose of maintaining a watershed that provides high quality drinking water for the City of North Adams.

Habitat & Resilience Data - Stand 3

Overstory/Midstory	% Canopy Cover	0-10%	20-39%	40-59%	60-79%	80-100%
	Stocking Level	Inadequate	Adequate	Overstocked		
	Species Diversity	Low	Medium	High		
	Species Present	SM, WA, RO, BC, RM, BTA, HH, YB, WB, AB, HY, WP, RP, RS, HK				
Regeneration	Seed/Sapling Abundance	Closed Canopy	Inadequate	Adequate	Suppressed	
	Seedling/Sapling Diversity	Low	Medium	High		
	% at risk species	None	25%	50%	75%	100%
	Browse Impacts	None	Low	Medium	High	
	Species Present	BE, STM, RS, HK, SM, YB, RM, BF				
Invasive Species	% Cover	0-25%	26-49%	50-75%	76-100%	
	Species Present	Honeysuckle, Multiflora Rose, Japanese Barberry, Bittersweet				

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 STD= stand AC= acre MSD= mean stand diameter MBF= thousand board feet BA= basal area VOL= volume

Owner(s) City of North Adams – Notch Reservoir

Towns(s) North Adams & Adams

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	4	WP	1.51	14.7" MSD Sawtimber	315 sqft	40,337 BF & 36.6 Cords	68(WP)

This stand is a plantation of white pine likely planted in the CCC projects in the 1930's. Scattered mixed hardwoods can also be found. The mixed hardwoods include scattered black cherry and red maple. The trees are in the sawtimber class and timber quality is fair to good. Forest regeneration is inadequate and suppressed from a mostly closed canopy. Regeneration is comprised of beech, sugar maple, striped maple, and spruce. Witch hazel and ferns are present as well. The terrain is flat to gently sloping towards Notch Reservoir. Forest soils are loam and fine sandy loam (Berkshire-Marlo Association) and capable of producing high quality timber resources. The soil types can be subject to erosion under wet conditions during timber harvesting. Management will focus on silvicultural practices that will promote an unevenaged forest structure with desired and adequate regeneration in the understory. An effort to promote red oak and sugar maple regeneration in particular will be encouraged for forest resiliency purposes related to climate change. The desired future condition is to replace a monoculture of softwood that is overstocked with a forest comprised of climate resistant species for the main purpose of maintaining a watershed that provides high quality drinking water for the City of North Adams.

Habitat & Resilience Data - Stand 4

Overstory/Midstory	% Canopy Cover	0-10%	20-39%	40-59%	60-79%	80-100%
	Stocking Level	Inadequate	Adequate	Overstocked		
	Species Diversity	Low	Medium	High		
	Species Present	WP, BC, RM, RO, MH				
Regeneration	Seed/Sapling Abundance	Closed Canopy	Inadequate	Adequate	Suppressed	
	Seedling/Sapling Diversity	Low	Medium	High		
	% at risk species	None	25%	50%	75%	100%
	Browse Impacts	None	Low	Medium	High	
	Species Present	STM, MH				
Invasive Species	% Cover	0-25%	26-49%	50-75%	76-100%	
	Species Present	None Observed				

OBJECTIVE CODE: CH61 = stands classified under CH61/61A/61B STEW= stands not classified under CH61/61A/61B
 STD= stand AC= acre MSD= mean stand diameter MBF= thousand board feet BA= basal area VOL= volume

Owner(s) City of North Adams – Notch Reservoir

Towns(s) North Adams & Adams

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	5	HH	11.98	11.7" MSD Sawtimber	143 sqft	11,117 BF & 12.6 Cords	57(SM)

Hemlock and mixed hardwoods dominate the overstory of this sawtimber sized stand. The hemlock stems are poor to good in form and timber quality and are likely to have hemlock woolly adelgid and scale. The mixed hardwood component includes red oak, sugar maple, American beech, basswood, red maple, black birch, yellow birch, and white ash poles and sawtimber of poor to good timber quality. Forest regeneration is inadequate and suppressed from a mostly closed canopy. Regeneration is comprised of beech, yellow birch and hemlock. The terrain is gently to steeply sloping towards Notch Reservoir. Forest soils are loam and fine sandy loam (Lyman-Turnbridge Association) and capable of producing high quality timber resources. The soil types can be subject to erosion under wet conditions during timber harvesting. No timber management is recommended in this stand due to the value the stand provides as a softwood deer yard and habitat for wildlife. Salvage operations might become necessary if the hemlock component deteriorates in health from insect damage. The desired future condition is to resist climate change for as long as possible to maintain the current stocking of hemlock for wildlife habitat purposes.

Habitat & Resilience Data - Stand 5

Overstory/Midstory	% Canopy Cover	0-10%	20-39%	40-59%	60-79%	80-100%
	Stocking Level	Inadequate	Adequate	Overstocked		
	Species Diversity	Low	Medium	High		
	Species Present	HK, RO, SM, AB, BA, RM, BB, YB, WA				
Regeneration	Seed/Sapling Abundance	Closed Canopy	Inadequate	Adequate	Suppressed	
	Seedling/Sapling Diversity	Low	Medium	High		
	% at risk species	None	25%	50%	75%	100%
	Browse Impacts	None	Low	Medium	High	
	Species Present	AB, YB, HK				
Invasive Species	% Cover	0-25%	26-49%	50-75%	76-100%	
	Species Present	None Observed				

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Owner(s) City of North Adams – Notch Reservoir

Towns(s) North Adams & Adams

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	6	BB	145.10	10.1" MSD Sawtimber-Pole	108 sqft	5,760 BF & 12.3 Cords	50(SM)

Northern hardwood species dominate the overstory of this adequately-stocked sawtimber and pole sized stand situated on steep slopes along the eastern slopes of Mount Williams. Species composition varies throughout the stand. The hardwood component includes sugar maple, American beech, yellow birch, white birch, red maple, red oak, and white ash sawtimber and pole sized stems with a frequency of occurrence as listed. Ice and storm damage in the past is evident by the amount of broken tops in the canopy and dead snags. Approximately 9% of the basal area is in standing dead hardwoods. Forest regeneration is adequate but undesirable with beech being the dominant source. Regeneration is comprised of mostly beech with scattered sugar maple, birch, spruce, fir, and striped maple. The terrain is steep and rocky and for the most part inoperable with logging equipment. Forest soils are loam and fine sandy loam (Lyman-Turnbridge Association) and only capable of producing fair quality timber resources due to the shallow rocky soils. No management is recommended within this stand at this time. The area will be allowed to develop naturally. The desired future condition is a stand that can be a storage of carbon and be a filter for the Notch Reservoir watershed that provides high quality drinking water for the City of North Adams.

Habitat & Resilience Data - Stand 6

Overstory/Midstory	% Canopy Cover	0-10%	20-39%	40-59%	60-79%	80-100%
	Stocking Level	Inadequate	Adequate	Overstocked		
	Species Diversity	Low	Medium	High		
	Species Present	SM, AB, YB, WB, RM, RO, WA				
Regeneration	Seed/Sapling Abundance	Closed Canopy	Inadequate	Adequate	Suppressed	
	Seedling/Sapling Diversity	Low	Medium	High		
	% at risk species	None	25%	50%	75%	100%
	Browse Impacts	None	Low	Medium	High	
	Species Present	BE, STM, RS, HK, SM, YB, RM, BF				
Invasive Species	% Cover	0-25%	26-49%	50-75%	76-100%	
	Species Present	None Observed				

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Owner(s) City of North Adams – Notch Reservoir

Towns(s) North Adams & Adams

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	7	HH	8.92	10.9" MSD Sawtimber	150 sqft	12,240 BF & 10.2 Cords	57(SM)

Hemlock and mixed hardwoods dominate the overstory of this sawtimber sized stand. The hemlock stems are poor to good in form and timber quality and are likely to have hemlock woolly adelgid and scale. The mixed hardwood component includes red oak, sugar maple, American beech, red maple poles and sawtimber of poor to good timber quality. Forest regeneration is inadequate and suppressed from a mostly closed canopy. Regeneration is comprised of beech, yellow birch and hemlock. The terrain is gently to steeply sloping towards Notch Reservoir. Forest soils are loam and fine sandy loam (Lyman-Turnbridge Association) and capable of producing high quality timber resources. The soil types can be subject to erosion under wet conditions during timber harvesting. No timber management is recommended in this stand due to the value the stand provides as a softwood deer yard and habitat for wildlife and that it is situated on steep slopes. The desired future condition is to resist climate change for as long as possible to maintain the current stocking of hemlock for wildlife habitat purposes.

Habitat & Resilience Data - Stand 7

Overstory/Midstory	% Canopy Cover	0-10%	20-39%	40-59%	60-79%	80-100%
	Stocking Level	Inadequate	Adequate	Overstocked		
	Species Diversity	Low	Medium	High		
	Species Present	HK, RO, SM, AB, BA, RM, BB, YB, WA				
Regeneration	Seed/Sapling Abundance	Closed Canopy	Inadequate	Adequate	Suppressed	
	Seedling/Sapling Diversity	Low	Medium	High		
	% at risk species	None	25%	50%	75%	100%
	Browse Impacts	None	Low	Medium	High	
	Species Present	AB, YB, HK				
Invasive Species	% Cover	0-25%	26-49%	50-75%	76-100%	
	Species Present	None Observed				

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Owner(s) City of North Adams – Notch Reservoir

Towns(s) North Adams & Adams

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	8	OH	242.28	11.6" MSD Sawtimber-Pole	98 sqft	7,635 BF & 13.1 Cords	65(RO)

Northern hardwoods and red oak dominate the overstory of this adequately-stocked sawtimber and pole sized stand that was partially harvested in 2014. The hardwood component includes red oak, white birch, red maple, black birch, yellow birch, white ash, sugar maple, big tooth aspen, black cherry, hophornbeam, American beech, basswood and American elm sawtimber and pole sized stems with a frequency of occurrence as listed. Scattered white pine, hemlock, and spruce are present as well. The white birch and white ash component represent approximately 19% of the stand stocking and are expected to have trouble into the future due to insect and disease problems associated with climate change. The red oak and sugar maple are fair to good in form and timber quality. These two species together represent 28% of the stocking within the stand. They are both projected to be resilient climate change species and will be favored within this stand through silvicultural treatments that will help them grow and regenerate into the future. Forest regeneration is adequate as a result of harvesting conducted in many areas of this stand in the past. Regeneration is comprised of mostly beech, striped maple, sugar maple, and yellow birch and to a lesser degree red maple, spruce, hemlock, black cherry, and aspen. Hobble bush, hazelnut, witch hazel, and mountain laurel are also present in the understory. Invasive species are present in low to moderate amounts and include honeysuckle, Japanese barberry, and multi-flora rose. Deer browse is more evident on the east side of Notch Brook and the deer are likely to browse desired hardwood regeneration such as the red oak. The terrain is gently to steeply sloped and sloping west towards Notch Brook and Notch Reservoir. Forest soils are loam and fine sandy loam (Lyman-Turnbridge Association) and capable of producing high quality timber resources. The terrain and soil types can be subject to erosion under wet conditions during timber harvesting. Management will focus on silvicultural practices that will promote an unevenaged forest structure with many vegetation layers within the forest. An effort to promote red oak and sugar maple in particular will be encouraged for forest resiliency purposes related to climate change. The desired future condition is a stand that is unevenaged in structure with a forest comprised of climate resistant species for the main purpose of maintaining a watershed that provides high quality drinking water for the City of North Adams.

Habitat & Resilience Data - Stand 8

Overstory/Midstory	% Canopy Cover	0-10%	20-39%	40-59%	60-79%	80-100%
	Stocking Level	Inadequate	Adequate	Overstocked		
	Species Diversity	Low	Medium	High		
	Species Present	RO, WB, RM, BB, YB, WA, SM, BTA, BC, HH, AB, BA, AE				
Regeneration	Seed/Sapling Abundance	Closed Canopy	Inadequate	Adequate	Suppressed	
	Seedling/Sapling Diversity	Low	Medium	High		
	% at risk species	None	25%	50%	75%	100%
	Browse Impacts	None	Low	Medium	High	
	Species Present	AB, STM, SM, YBRM, RS, HK, BC, BTA				
Invasive Species	% Cover	0-25%	26-49%	50-75%	76-100%	
	Species Present	Honeysuckle, Multiflora Rose, Japanese Barberry				

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 STD= stand AC= acre MSD= mean stand diameter MBF= thousand board feet BA= basal area VOL= volume

Owner(s) City of North Adams – Notch Reservoir

Towns(s) North Adams & Adams

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	9	OH	102.63	10.8" MSD Sawtimber-Pole	100 sqft	6,366 BF & 11.5 Cords	50(SM)

Northern hardwoods and red oak dominate the overstory of this well-stocked sawtimber and pole sized stand situated on steep slopes. Species composition varies throughout the stand. The hardwood component includes red oak, white birch, sugar maple, black birch, white ash, black cherry, yellow birch, American beech, and basswood with a frequency of occurrence as listed. A pocket of hemlock and some red spruce can be found at the highest elevations of the stand. Forest regeneration is adequate but undesirable with beech being the dominant source. Regeneration is comprised of mostly beech with scattered hemlock, spruce, fir, sugar maple, and striped maple. The terrain is steep and rocky and for the most part inoperable with logging equipment. Forest soils are loam and fine sandy loam (Lyman-Turnbridge Association) and capable of producing fair to good quality timber resources. No management is recommended within this stand at this time. The area will be allowed to develop naturally. The desired future condition is a stand that can be a storage of carbon and be a filter for the Notch Reservoir watershed that provides high quality drinking water for the City of North Adams.

Habitat & Resilience Data - Stand 9

Overstory/Midstory	% Canopy Cover	0-10%	20-39%	40-59%	60-79%	80-100%
	Stocking Level	Inadequate	Adequate	Overstocked		
	Species Diversity	Low	Medium	High		
	Species Present	RO, WB, SM, BB, WA, BC, YB, AB, BA, HK, RS				
Regeneration	Seed/Sapling Abundance	Closed Canopy	Inadequate	Adequate	Suppressed	
	Seedling/Sapling Diversity	Low	Medium	High		
	% at risk species	None	25%	50%	75%	100%
	Browse Impacts	None	Low	Medium	High	
	Species Present	HK, RS, BF, SM, STM				
Invasive Species	% Cover	0-25%	26-49%	50-75%	76-100%	
	Species Present	None Observed				

OBJECTIVE CODE: CH61 = stands classified under CH61/61A/61B STEW= stands not classified under CH61/61A/61B
 STD= stand AC= acre MSD= mean stand diameter MBF= thousand board feet BA= basal area VOL= volume

Owner(s) City of North Adams – Notch Reservoir

Towns(s) North Adams & Adams

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	10	OH	27.73	12.2" MSD Sawtimber-Pole	140 sqft	11,589 BF & 19.2 Cords	65(RO)

Red oak is the dominant overstory species in this well-stocked sawtimber sized stand. The other hardwoods include red maple, white ash, American beech, black birch, and yellow birch sawtimber and pole sized stems with a frequency of occurrence as listed. The red oak stems are fair to good in form and timber quality and represents 61% of the stocking within the stand. Red oak is projected to be a resilient climate change species and will be favored within this stand through silvicultural treatments that will help them grow and regenerate into the future. Forest regeneration is comprised of mostly beech, striped maple, yellow birch, spruce, and black birch. Witch hazel is also present in the understory. The terrain is moderately to steeply sloped, rocky and ledge, and sloping east towards West Mountain Road. Forest soils are loam and fine sandy loam (Lyman-Turnbridge Association) and capable of producing high quality timber resources. The terrain and soil types can be subject to erosion under wet conditions during timber harvesting. Management will focus on silvicultural practices that will promote an unevenaged forest structure with many vegetation layers within the forest. An effort to promote red oak in particular will be encouraged for forest resiliency purposes related to climate change. The desired future condition is a stand that is unevenaged in structure with a forest comprised of climate resistant species for the main purpose of maintaining a watershed that provides high quality drinking water for the City of North Adams.

Habitat & Resilience Data - Stand 10

Overstory/Midstory	% Canopy Cover	0-10%	20-39%	40-59%	60-79%	80-100%
	Stocking Level	Inadequate	Adequate	Overstocked		
	Species Diversity	Low	Medium	High		
	Species Present	RO, RM, WA, AB, BB, YB				
Regeneration	Seed/Sapling Abundance	Closed Canopy	Inadequate	Adequate	Suppressed	
	Seedling/Sapling Diversity	Low	Medium	High		
	% at risk species	None	25%	50%	75%	100%
	Browse Impacts	None	Low	Medium	High	
	Species Present	AB, STM, YB, RS, BB				
Invasive Species	% Cover	0-25%	26-49%	50-75%	76-100%	
	Species Present	Japanese Barberry				

OBJECTIVE CODE: CH61 = stands classified under CH61/61A/61B STEW= stands not classified under CH61/61A/61B
 STD= stand AC= acre MSD= mean stand diameter MBF= thousand board feet BA= basal area VOL= volume

Owner(s) City of North Adams – Notch Reservoir

Towns(s) North Adams & Adams

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	11	OH	8.26	11.6" MSD Sawtimber-Pole	60 sqft	5,482 BF & 12.3 Cords	50(RO)

Northern hardwoods and red oak dominate the overstory of this unevenaged stand that was harvested in 2017. The hardwood component includes white ash, sugar maple, red maple, birch, and aspen poles. Scattered white pine sawtimber sized stems are present as well. The red oak and sugar maple are fair to good in form and timber quality. They are both projected to be resilient climate change species and will be favored within this stand through silvicultural treatments that will help them grow and regenerate into the future. Forest regeneration is adequate as a result of harvesting conducted in many areas of this stand in the past but being limited by a dense layer of Japanese barberry in the understory. Regeneration is comprised of mostly beech, striped maple, sugar maple, red maple, birch. Witch hazel, wild raspberry and ferns are also present in the understory. Deer browse is more evident on the east side of Notch Brook and the deer are likely to browse desired hardwood regeneration such as the red oak. The terrain is gently to moderately sloped and sloping east and south towards West Mountain Road. Forest soils are very rocky and consist of silt loam (Farmington) and capable of producing high quality timber resources. The terrain and soil types can be subject to erosion under wet conditions during timber harvesting. No timber management will be conducted here in the next ten years. Management will focus on reducing the invasives in the understory and enrichment plantings of red oak for forest resiliency purposes related to climate change. The desired future condition is a stand that is unevenaged in structure with a forest comprised of climate resistant species for the main purpose of maintaining a watershed that provides high quality drinking water for the City of North Adams.

Habitat & Resilience Data - Stand 11

Overstory/Midstory	% Canopy Cover	0-10%	20-39%	40-59%	60-79%	80-100%
	Stocking Level	Inadequate	Adequate	Overstocked		
	Species Diversity	Low	Medium	High		
	Species Present	RO, WA, SM, RM, BI, AS				
Regeneration	Seed/Sapling Abundance	Closed Canopy	Inadequate	Adequate	Suppressed	
	Seedling/Sapling Diversity	Low	Medium	High		
	% at risk species	None	25%	50%	75%	100%
	Browse Impacts	None	Low	Medium	High	
	Species Present	AB, STM, SM, RM, BI				
Invasive Species	% Cover	0-25%	26-49%	50-75%	76-100%	
	Species Present	Japanese Barberry				

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 STD= stand AC= acre MSD= mean stand diameter MBF= thousand board feet BA= basal area VOL= volume

Owner(s) City of North Adams – Notch Reservoir

Towns(s) North Adams & Adams

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	12	BB	175.89	12.4" MSD Sawtimber	104 sqft	7,821 BF & 13.5 Cords	60(SM)

Northern hardwood species dominate the overstory of this well-stocked sawtimber sized stand with a mostly closed canopy. Species composition varies throughout the stand. The hardwood component includes red maple, sugar maple, white ash, yellow birch, American beech, black cherry, red oak, big tooth aspen, and basswood sawtimber and pole sized stems with a frequency of occurrence as listed. Scattered red spruce is present as well. The white ash component represents approximately 15% of the stand stocking. The white ash stems in general are healthy and do not show signs of wide-spread stress. The red oak and sugar maple are fair to good in form and timber quality. These two species together represent 19% of the stocking within the stand. They are both projected to be resilient climate change species and will be favored within this stand through silvicultural treatments that will help them grow and regenerate into the future. Forest regeneration is adequate but suppressed from a mostly closed canopy. Regeneration is comprised of mostly beech, striped maple, spruce, and hemlock. To a lesser degree sugar maple, yellow birch, red maple, and spruce, and balsam fir. Hobble bush and mountain laurel are also present. The terrain is steep on the western sections of the stand and transitions to moderate and gentle slopes towards Notch Brook. Forest soils are loam and fine sandy loam (Lyman-Turnbridge Association) and capable of producing high quality timber resources. Some areas can be rocky. The terrain and soil types can be subject to erosion under wet conditions during timber harvesting. Management will focus on harvesting and silvicultural practices that will promote an unevenaged forest structure with many vegetation layers within the forest. An effort to promote red oak and sugar maple in particular will be encouraged for forest resiliency purposes related to climate change. The desired future condition is a stand that is unevenaged in structure with a forest comprised of climate resistant species for the main purpose of maintaining a watershed that provides high quality drinking water for the City of North Adams.

Habitat & Resilience Data - Stand 12

Overstory/Midstory	% Canopy Cover	0-10%	20-39%	40-59%	60-79%	80-100%
	Stocking Level	Inadequate	Adequate	Overstocked		
	Species Diversity	Low	Medium	High		
	Species Present	RM, SM, WA, YB, AB, BC, RO, BTA, BA,				
Regeneration	Seed/Sapling Abundance	Closed Canopy	Inadequate	Adequate	Suppressed	
	Seedling/Sapling Diversity	Low	Medium	High		
	% at risk species	None	25%	50%	75%	100%
	Browse Impacts	None	Low	Medium	High	
	Species Present	AB, STM, RS, HK				
Invasive Species	% Cover	0-25%	26-49%	50-75%	76-100%	
	Species Present	None Observed				

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Owner(s) City of North Adams – Notch Reservoir

Towns(s) North Adams & Adams

Management Recommendations

For the purposes of this report management practices with an object code of *CH61* are required to be accomplished as a commitment to the Massachusetts Current Use Program. Practices with object codes of *STEW* are voluntary and are provided as suggestions of activities that can help you achieve your woodland objectives.

Summary of the Management Recommendations for your property

Stand	Obj Code	Desired Condition	Management Action	Benefits			Value/Cost/ Cost Sharing Opportunity
				Bird Habitat & Focal Birds	Climate Change Adaptation	Forest Carbon	
1	STEW	Unevenaged Promote growth & regeneration of red oak & sugar maple	Selection Harvest Individual & Group Keep stocking above the B-Line	Create gaps in the canopy increase midstory & understory vegetation	Promote the health & vigor of red oak & sugar maple component in the overstory & understory	Improve Sequestration Short term reduction; long term gain	Revenue Producing
2	STEW	Young forest conditions	Patch Clearcut Remove red pine and spruce plantation; Prep for Reforestation Planting of red oak & hickory	Create open early succession habitat	Remove climate risk species in favor of resilient species	Improve Sequestration Short term reduction; long term gain	Revenue Producing
2	STEW	Adequately stocked red oak & Hickory sapling stand	Reforest softwood plantation w/ resilient species; red oak & hickory	Create young hardwood stand for bird habitat	Reforest site with climate resistant species	Improve Sequestration	Cost Share-Grant Opportunity
3	STEW	Pockets of young forest habitat w/ enrichment plantings	Patch Clearcut approximately 2-5 acres for site prep for enrichment plantings of red oak & hickory	Create young hardwood stand for bird habitat	Reforest 2-5 acres with climate resistant species	Improve Sequestration Short term reduction; long term gain	Cost Share Grant Opportunity
3	STEW	Pockets of young forest habitat w/ enrichment plantings	Enrichment Plantings w/ resilient species; red oak & hickory	Create young hardwood stand for bird habitat	Enrichment Plantings w/ resilient species; red oak & hickory	Improve Sequestration	Cost Share Grant Opportunity
4	STEW	Unevenaged Promote growth and regeneration of red oak & sugar maple	Shelterwood Seed Tree ; Prep site for Enrichment Planting of red oak & hickory	Create a two-aged stand with desired regeneration for birds	Reduce the white pine overstory and encourage resilient species regeneration in the understory	Improve Sequestration	Revenue Producing

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Owner(s) City of North Adams – Notch Reservoir Towns(s) North Adams & Adams

Management Recommendations

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Summary of the Management Recommendations for your property

Stand	Obj Code	Desired Condition	Management Action	Benefits			Value/Cost/ Cost Sharing Opportunity
				Bird Habitat & Focal Birds	Climate Change Adaptation	Forest Carbon	
4	STEW	Adequate regeneration of resilient climate change species; red oak & hickory	Reforest softwood plantation w/ resilient species; red oak & hickory	Create gaps in the canopy increase midstory & understory vegetation	Reforest softwood plantation with climate resistant species	Improve Sequestration	Cost Share-Grant Opportunity
3 11	STEW	Reduce levels of invasive plants and associated impacts on native plant regeneration	Invasive Plant Monitoring & Control Brush Management	Increase abundance of native trees and plants providing food and habitat for birds & wildlife	Successful regeneration & growth of native trees & plants, especially those with good adaption capacity	Long term gain	Cost Share-Grant Opportunity
2 3 4	STEW	Protected Saplings from deer browse	Deer Browse Protection - Protective tubes around planted saplings	NA	Protect newly planted red oak & Hickory saplings for long term climate resilience	Improve Sequestration of desired tree species	Cost Share-Grant Opportunity
1- 12	STEW	Climate Informed Access & Forestry Practices Improvements	Climate Smart Forestry Practices Improvements – Bridge, culvert, drainage, access road, & skid trail upgrades	NA	Protect soil & water resources through BMP's with considering climate change impacts on the land	Protect carbon stored in forest soils	Cost Share Grant Opportunity
5 6 7 9	STEW	Forest Reserves	Preserve special wildlife habitat in Stands 5 & 7, steep slopes in Stands 6 & 9, and along Notch Brook & Reservoir	Undisturbed habitat for birds and wildlife	Climate change resistance	Maintain Carbon Reserves	No Cost No Revenue

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Owner(s) City of North Adams – Notch Reservoir Towns(s) North Adams & Adams

Management Recommendations

For the purposes of this report management practices with an object code of *CH61* are required to be accomplished as a commitment to the Massachusetts Current Use Program. Practices with object codes of *STEW* are voluntary and are provided as suggestions of activities that can help you achieve your woodland objectives.

Summary of the Management Recommendations for your property

Stand	Obj Code	Desired Condition	Management Action	Benefits			Value/Cost/ Cost Sharing Opportunity
				Bird Habitat & Focal Birds	Climate Change Adaptation	Forest Carbon	
1 3 12	STEW	Improved resilience within the Northern Hardwood Stands	<i>Enhance Adaptive Capacity in Northern Hardwood Forests</i>	Create gaps in the canopy increase midstory & understory vegetation	Perform silviculture that will favor the growth, development, & regeneration of climate resilient species	Short term loss for long term gains	Revenue Producing & Cost Share-Grant Opportunity
All	STEW	Property lines identified, blazed & painted	<i>Boundary Line Identification, Blazing & Painting, Signs</i>	NA	NA	NA	Cost

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Owner(s) City of North Adams – Notch Reservoir Towns(s) North Adams & Adams

MANAGEMENT PRACTICES
to be done within next 10 years

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	

Enhance Adaptive Capacity in Northern Hardwood Forests

STEW	1	BB	Selection Harvest Individual & Group	100+/-	35 sqft	250 MBF & 250 Cords	2023-2032
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Management will focus on individual and group selection harvesting techniques that will promote an unevenaged and climate resistant forest into the future. The target is to harvest approximately 25-33% of the overstory volume while keeping the stand stocking for northern hardwoods above the B-Line. The emphasis will be to harvest species that are projected to be high risk for climate change. These species within the stand include white birch, hemlock, red spruce, and white ash. White ash is not projected to be a highly vulnerable climate change species, but insects and disease are causing severe white ash decline throughout the State at this time. These high-risk species represent approximately 21% of the stands stocking. Efforts will be made to thin around the healthy and well-formed sugar maple and red oak within the stand for the purpose of increasing their health, growth and regeneration potential within the stand. Biological legacy trees (25" DBH+) will also be retained for the purpose of maintaining forest carbon stocks. The selection harvesting will be individual sawtimber and small groups of sawtimber sized trees (18" DBH+) to create openings in the canopy. Poorly formed and low-quality trees of all sizes will be harvested as well. Red oak and sugar maple will also be harvested where applicable to the stocking within the stand. Thinning within this stand will release the advanced regeneration that is being suppressed and prepare the stand for new desired regeneration such as red oak, sugar maple, hickory, yellow and black birch, basswood, black cherry, red maple, big tooth aspen. High value sawtimber will be sold as sawlogs, while the low-quality trees and portions of trees will be utilized as firewood and pulp. This harvest will produce a forest that is growing high quality timber resources in several size and age classes that will be beneficial to a variety of wildlife species as the stand changes to a multi-layered and unevenaged forest. The harvest will create gaps in the canopy and increase the amount of vegetation in the understory and midstory for wildlife habitat.

Management Considerations:

Course woody debris will be retained after management activities for soil stabilization on slopes, wildlife habitat, carbon storage, and nutrient retention. Skid trails and landing sites will be laid out in advance in order to take into account the landowner's number one goal of protecting water quality on the Notch Reservoir watershed and the recreational use of Bellows Pipe Trail. Best management practices will be strictly adhered to during timber harvesting activities. Properly located water bars will be important to protecting soils and water quality due to changing weather conditions. It is important that management be flexible and adaptive. Practices may take longer to complete than in the past due to wetter soil conditions in the winter, spring, and fall seasons.

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Owner(s) City of North Adams – Notch Reservoir Towns(s) North Adams & Adams

MANAGEMENT PRACTICES
to be done within next 10 years

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	

Reforestation

STEW	2	RP SP	Patch Clearcut Site Prep for Planting	5+/-	255 sqft	95 MBF & 290 Cords	2023-2032
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Management will focus on patch clearcutting this overstocked and high-risk climate change red pine and spruce plantation in order to prepare the site for planting climate resistant species. The target is to harvest approximately 5+/- acres of the stand. Any climate change resistant species over 16" DBH will be retained. The red pine is in decline and mortality is increasing within the stand. Harvesting this stand is a priority for forest and watershed health concerns both short and long term. High value sawtimber will be sold as sawlogs, while the low-quality trees and portions of trees will be utilized as firewood and pulp. Since this stand will be artificially regenerated, it will be important to remove as much of the harvested tree as possible from the site. Markets for softwood pulp are essential for the success of this harvest.

Management Considerations:

Filter strips will need to be observed near the seasonal stream that flows into Notch Reservoir. Haul roads and landing sites will be laid out in advance in order to take into account the landowner's number one goal of protecting water quality on the Notch Reservoir watershed and the recreational use of Bellows Pipe Trail. Best management practices will be strictly adhered to during timber harvesting activities. Properly located water bars will be important for protecting soils and water quality due to changing weather conditions. The preferred harvesting system for this harvest is a cut-to-length operation where no skidding of trees is done and where soil disturbances are minimal near the Notch Reservoir. It is important that management be flexible and adaptive. Practices may take longer to complete than in the past due to wetter soil conditions in the winter, spring, and fall seasons.

STEW	2	RP SP	Artificial Regeneration Resilient Tree Species Planting	5+/-	-- sqft	-- MBF & -- Cords	2023-2032
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Tree planting of climate resistant species will be performed within the patch clearcut conducted in Stand 2. The recommendation is to plant red oak and hickory sapling stock that is roughly 3-8 feet tall at 15 x 15 foot spacing. These saplings should then be protected from potential deer browsing by placing tubing or fencing around the saplings.

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Owner(s) City of North Adams – Notch Reservoir Towns(s) North Adams & Adams

MANAGEMENT PRACTICES
to be done within next 10 years

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	

STEW	3	BB	Patch Clearcut Site Prep for Planting	5+/-	124 sqft	40 MBF & 90 Cords	2023-2032
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Management will focus on selecting approximately 5-acres for patch clearcutting in order to prepare the site for planting climate resistant species. The area(s) selected for patch cutting within this stand will be selected where currently the overstory and understory have a higher percentage of high-risk climate change species. The harvested areas will be planted with red oak and hickory saplings. High value sawtimber will be sold as sawlogs, while the low-quality trees and portions of trees will be utilized as firewood and pulp. Since this stand will be artificially regenerated, it will be important to remove as much of the harvested tree as possible from the site, although leaving some hardwood tops scattered throughout the patch could be helpful for protecting trees that are planted from deer herbivory (See tree planting practice below). Markets for softwood and hardwood pulp are essential for the success of this harvest.

Management Considerations:

Patch cuts will be placed in areas that avoid impacts to the seasonal streams that flows into Notch Reservoir. Haul roads and landing sites will be laid out in advance in order to take into account the landowner's number one goal of protecting water quality on the Notch Reservoir watershed and the recreational use of Bellows Pipe Trail. Best management practices will be strictly adhered to during timber harvesting activities. Properly located water bars will be important for protecting soils and water quality due to changing weather conditions. The preferred harvesting system for this harvest is a cut-to-length operation where no skidding of trees is done and where soil disturbances are minimal. It is important that management be flexible and adaptive. Practices may take longer to complete than in the past due to wetter soil conditions in the winter, spring, and fall seasons.

STEW	3	BB	FCRP Practice Plant Trees to Increase Forest Stocking Protect Saplings from Deer Browse	5+/-	-- sqft	-- MBF & -- Cords	2023-2032
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Tree planting of climate resistant species will be performed within the patch clearcut(s) conducted in Stand 3. The recommendation is to plant red oak and hickory sapling stock that is roughly 3-8 feet tall at 15 x 15 foot spacing. These saplings should then be protected from potential deer browsing by placing tubing or fencing around the saplings.

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Owner(s) City of North Adams – Notch Reservoir Towns(s) North Adams & Adams

MANAGEMENT PRACTICES
to be done within next 10 years

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	

Shelterwood Harvest

STEW	4	WP	Shelterwood Harvest Seed Tree - Site Prep	1+/-	200 sqft	25 MBF & 25 Cords	2023-2032
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Management within this overstocked white pine plantation will be an unconventional shelterwood seed tree harvest with the intention of planting the understory with climate change resistant species such as red oak and hickory. The target is to harvest approximately 65% of the overstory volume in order to allow enough sunlight to hit the forest floor for the purpose of allowing enrichment plantings to flourish in the understory. High value sawtimber will be sold as sawlogs, while the low-quality trees and portions of trees will be utilized as firewood and pulp. Since this stand will be artificially regenerated, it will be important to remove as much of the harvested tree as possible from the site. Markets for softwood and hardwood pulp are essential for the success of this harvest. This harvest will produce a forest that is two-aged in structure and will provide excellent habitat for high canopy and understory bird species.

Management Considerations:

Haul roads and landing sites will be laid out in advance in order to take into account the landowner's number one goal of protecting water quality on the Notch Reservoir watershed and the recreational use of Bellows Pipe Trail. Best management practices will be strictly adhered to during timber harvesting activities. Properly located water bars will be important for protecting soils and water quality due to changing weather conditions. The seasonal streams near this stand will be protected by observing filter strip management. The preferred harvesting system for this harvest is a cut-to-length operation where no skidding of trees is done and where soil disturbances are minimal. It is important that management be flexible and adaptive. Practices may take longer to complete than in the past due to wetter soil conditions in the winter, spring, and fall seasons.

STEW	4	WP	FCRP Practice Plant Trees to Increase Forest Stocking Protect Saplings from Deer Browse	1+/-	-- sqft	-- MBF & -- Cords	2023-2032
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Tree planting of climate resistant species will be performed within the understory of the shelterwood harvest conducted in Stand 4. The recommendation is to plant red oak and hickory sapling stock that is roughly 3-8 feet tall at 15 x 15 foot spacing. These saplings should then be protected from potential deer browsing by placing tubing or fencing around the saplings.

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Owner(s) City of North Adams – Notch Reservoir Towns(s) North Adams & Adams

MANAGEMENT PRACTICES
to be done within next 10 years

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	

Biological Diversity

STEW	3	BB	FCRP Practice	10+/-		2023-2032
	11	OH	Remove Invasive Vegetation			

Invasive species management will be conducted within areas of the property that are growing moderate to high amounts of invasive plants. Currently, stands 3 and 11 have the greatest concentrations of invasive species. Stand 3 has honeysuckle, bittersweet, multiflora rose, and Japanese barberry in the northern sections of the stand near the Wilbur Cemetery. Stand 11 has a very high concentration of Japanese barberry. There are options that the landowner can take to reducing the presence of invasive species. Mechanical cutting, root pulling, and chemical herbicide treatments are all viable options. Ultimately, expenses will play an important role in the decision making for treatments. The removal of invasive species will promote native vegetation that will protect the watershed environment and help with climate change issues related to forest regeneration.

Forest Reserves

STEW	5,7	HH	Establish Forest Reserves	268+/-		2023-2032
	6,9	OH				

Forest reserves are considered areas where rare or sensitive habitat and sites should likely be protected. There are two hemlock stands on the west side of Notch Brook (Stand 5 & 7) that provide wintering deer yards and unique bird habitat that is not abundantly found elsewhere on the property. Although the woolly adelgid and scale are likely to be in the stands, it is recommended that “resistance” management in regards to climate change be considered here as long as possible by leaving them unmanaged for habitat value. Stand 6 and 9 provide carbon storage sites on very steep and rocky slopes for the most part. Many of the areas within these stands are inoperable with logging equipment anyway and are recommended to remain unmanaged during this management planning period. Another potential reserve area is along Notch Brook and Notch Reservoir for water quality protection purposes. However, catastrophic weather events as well as insect and disease issues may require some salvage management in the future.

Boundary Maintenance

STEW	All		Identify, Blaze & Paint	1,072+/-		2023-2032
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Boundary lines have mostly been identified, blazed and painted. The Department of Conservation & Recreation has blazed and painted all boundary lines in common with the City of North Adams and placed property signs. The City of North Adams has blazed, painted and placed property signs along the northeastern boundary line. There are still a few unmarked sections that will be blazed and painted. (Please see the Boundary & Stand Type Map for physical boundary features)

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Owner(s) City of North Adams – Notch Reservoir Towns(s) North Adams & Adams

MANAGEMENT PRACTICES
to be done within next 10 years

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	

Climate Informed Forest Access & Forestry Operations

STEW All Forestry Best Management Practices 1072+/- 2023-2032
For Climate Change

Management that reduces impacts to hydrology, soils, and nutrient cycle associated with shorter winters, extreme precipitation events, and other climate changes will be pursued by following best management practices updated for dealing with these conditions. Examples of this include the following:

- Increased sizing of culverts on forest access roads.
- Placement of additional water bars and erosion control measures during and after forestry operations.
- Use of timber mats or temporary bridges to reduce impacts from harvest activities that take place when ground is not frozen.
- Assess soil characteristics and consider data on frost depth to determine when soils are likely to be frozen.
- Designing the layout of logging roads, skid/haul roads, and landings in a way that further minimizes potential impacts to soil and waterways, as a consequence of climate change impacts. Restoration of landing sites, temporary roads, and skid/haul roads. This may include actions such as ripping to reduce compaction and seeding to stabilize soils and prevent erosion.
- Retain adequate amounts of slash in the woods after logging.

Adaptive Management Monitoring

STEW All Monitoring Guidance 1072+/- 2023-2032

The Forest Climate Resilience Program (FCRP) aims to assure that practice implementation as well as long-term outcomes can be successfully measured. Monitoring of “Practice Implementation” is meant to ensure treatments were implemented as intended and to understand if practice design can be improved for easier and more effective implementation in the future. “Adaptive Management Monitoring” is to identify the need for follow-up treatments and assure future treatments are properly targeted. “Practice Outcome Monitoring” will help will help gauge project success and improve future implementation efforts. For more details on the Forest Climate Resilience Pilot Program monitoring standards please see the FCRPP 2022 Forester Manual.

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Owner(s) City of North Adams – Notch Reservoir Towns(s) North Adams & Adams

Signature Page Please check each box that applies.

☐ **CH. 61/61A/61B Management Plan** I attest that I am familiar with and will be bound by all applicable Federal, State, and Local environmental laws and /or rules and regulations of the Department of Conservation and Recreation. I further understand that in the event that I convey all or any portion of this land during the period of classification, I am under obligation to notify the grantee(s) of all obligations of this plan which become his/hers to perform and will notify the Department of Conservation and Recreation of said change of ownership.

☒ **Forest Stewardship Plan.** When undertaking management activities, I pledge to abide by the management provisions of this Stewardship Management Plan during the ten year period following approval. I understand that in the event that I convey all or a portion of the land described in this plan during the period of the plan, I will notify the Department of Conservation and Recreation of this change in ownership.

Signed under the pains of perjury:

Owner(s) _____ Date _____

Owner(s) _____ Date _____

I attest that I have prepared this plan in good faith to reflect the landowner's interest.

Plan Preparer _____ Date 3/16/2022

I attest that the plan satisfactorily meets the requirements of CH61/61A/61B and/or the Forest Stewardship Program.

Approved, Service Forester _____ Date _____

Approved, Regional Supervisor _____ Date _____

In the event of a change of ownership of all or part of the property, the new owner must file an amended Ch. 61/61A/61B plan within 90 days from the transfer of title to insure continuation of Ch. 61/61A/61B classification.

☐ Amendment

Signed under the pains of perjury:

Owner(s) _____ Date _____

Plan Preparer _____ Date _____

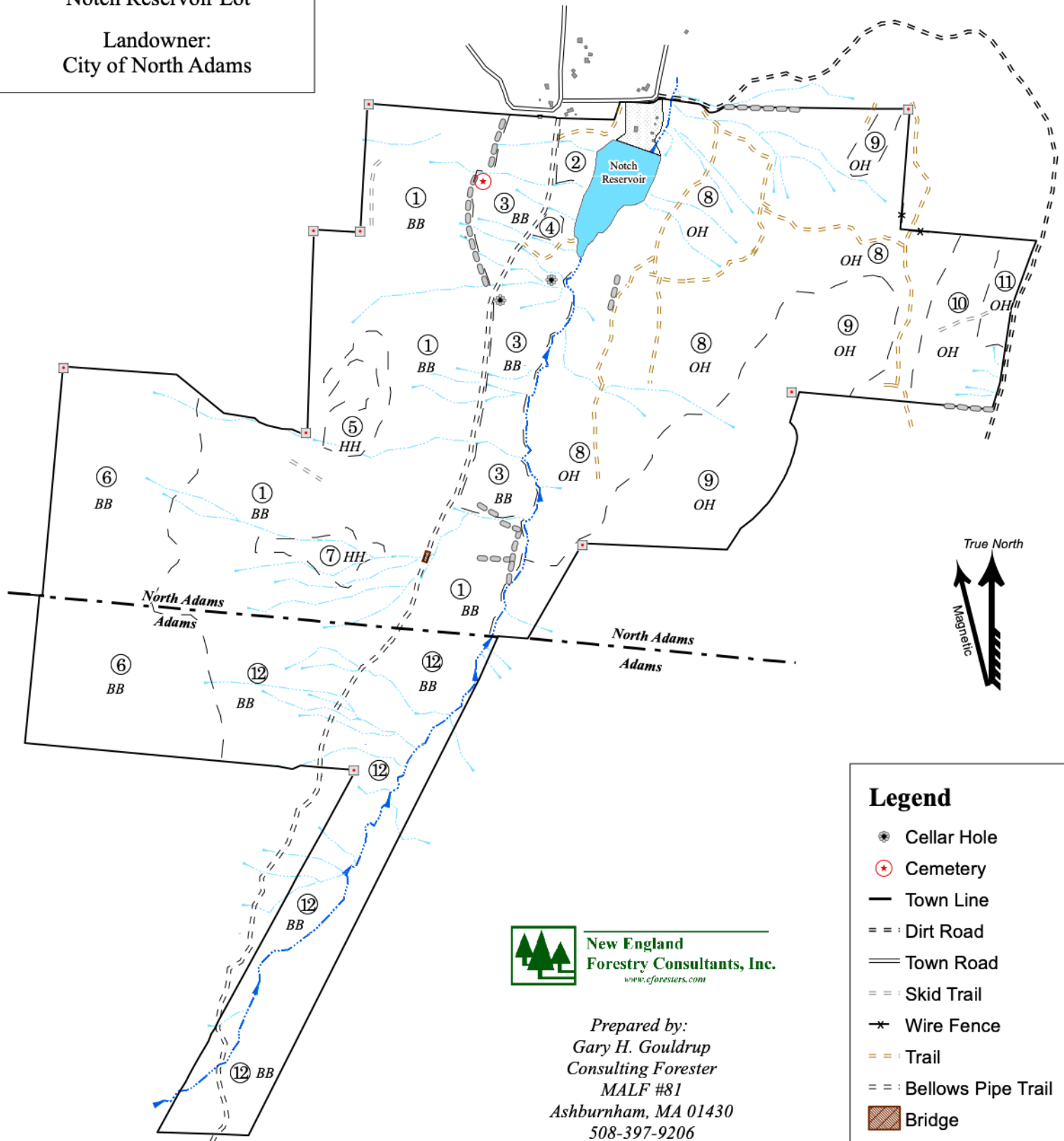
Description of Amendment: _____

Approved, Service Forester _____ Date _____

COMPARTMENT MAP

Land in North Adams, MA
Notch Reservoir Lot

Landowner:
City of North Adams



New England
Forestry Consultants, Inc.
www.eforesters.com

Prepared by:
Gary H. Gouldrup
Consulting Forester
MALF #81
Ashburnham, MA 01430
508-397-9206
March 24, 2022

Legend

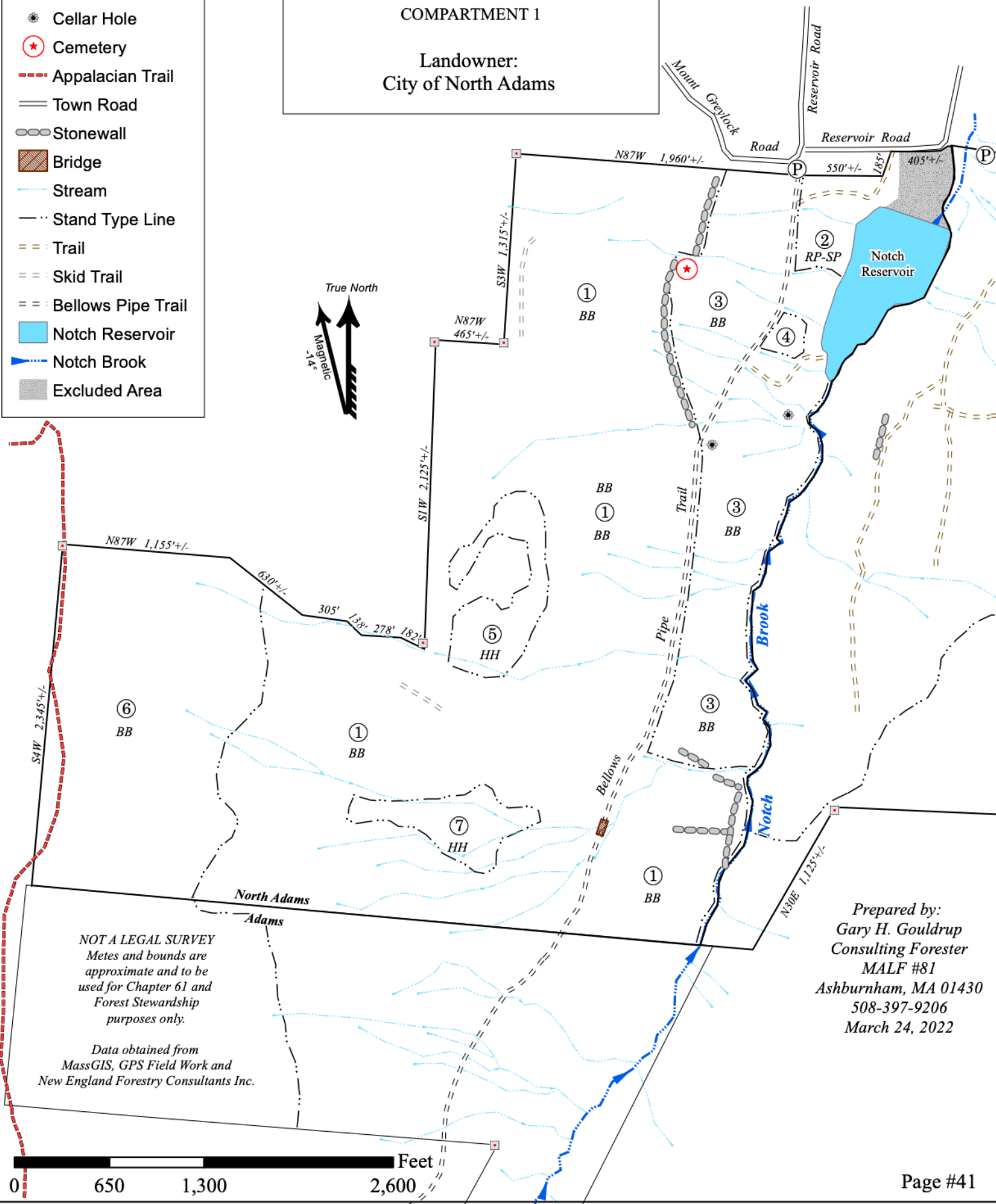
- Cellar Hole
- Cemetery
- Town Line
- Dirt Road
- Town Road
- Skid Trail
- Wire Fence
- Trail
- Bellows Pipe Trail
- Bridge
- Stream
- Excluded Area
- Notch Reservoir
- Notch Brook

0 1,125 2,250 4,500 Feet

**New England
Forestry Consultants, Inc.**
www.cforesters.com

Landowner:
City of North Adams

- Stone Bound
- Stand 1
- Cellar Hole
- Cemetery
- Appalachian Trail
- Town Road
- Stonewall
- Bridge
- Stream
- Stand Type Line
- Trail
- Skid Trail
- Bellows Pipe Trail
- Notch Reservoir
- Notch Brook
- Excluded Area

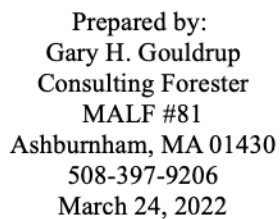


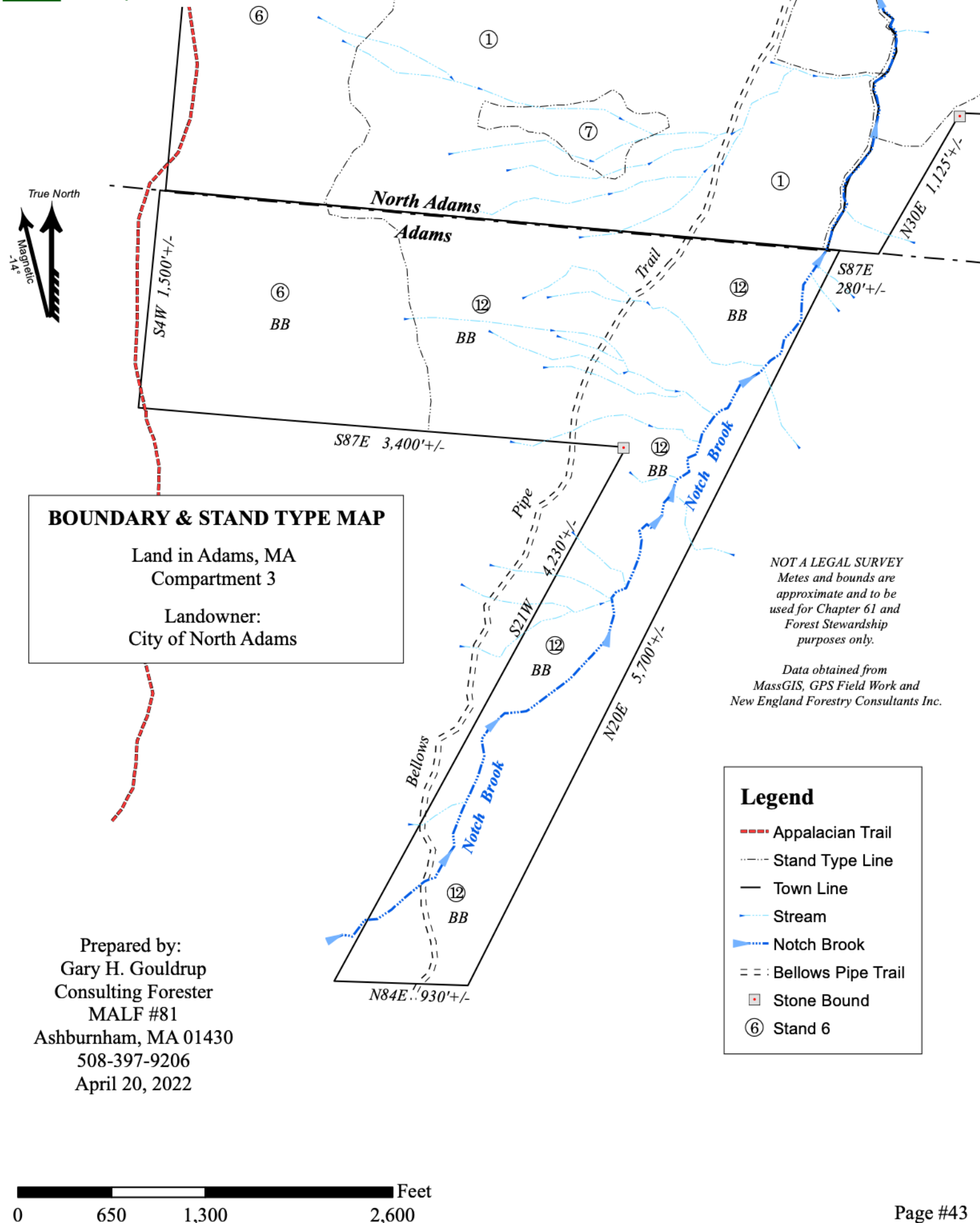
Prepared by:
Gary H. Gouldrup
Consulting Forester
MALF #81
Ashburnham, MA 01430
508-397-9206
March 24, 2022



Land in North Adams, MA
Notch Reservoir

Landowner:
City of North Adams





ORTHOGRAPHIC MAP

Land in North Adams & Adams, MA
Notch Reservoir

Landowner:
City of North Adams



New England
Forestry Consultants, Inc.
www.nforesters.com



Data obtained from
MassGIS, GPS field work and
New England Forestry Consultants Inc.

Prepared by:
Gary H. Gouldrup
Consulting Forester
MALF #81
Ashburnham, MA
508-397-9206
March 24, 2022

0 1,650 3,300 6,600 Feet

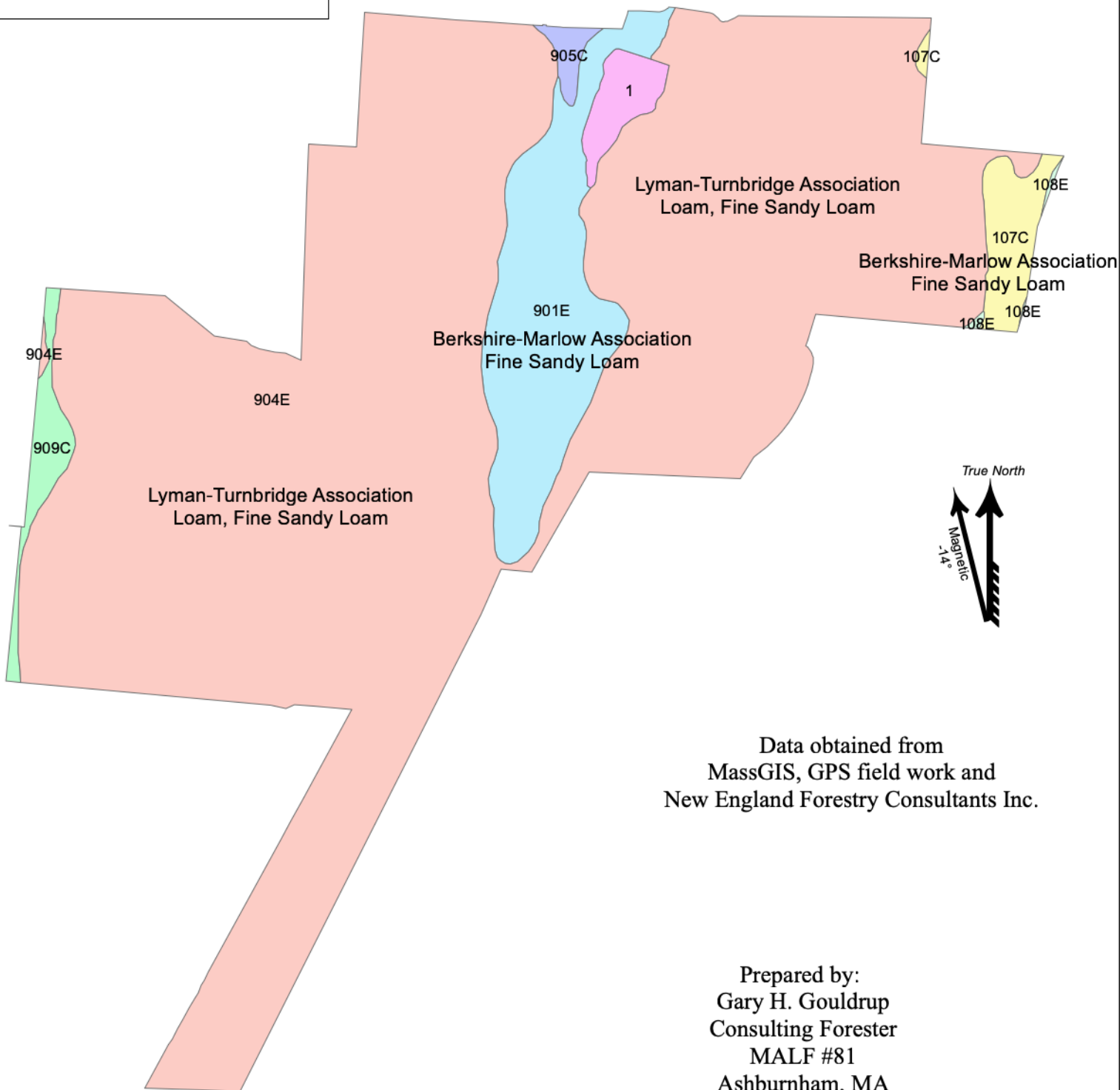
SOILS MAP

Land in North Adams & Adams, MA
Notch Reservoir Lot

Landowner:
City of North Adams



New England
Forestry Consultants, Inc.
www.nforesters.com



Data obtained from
MassGIS, GPS field work and
New England Forestry Consultants Inc.

Prepared by:
Gary H. Gouldrup
Consulting Forester
MALF #81
Ashburnham, MA
508-397-9206
June 1, 2022

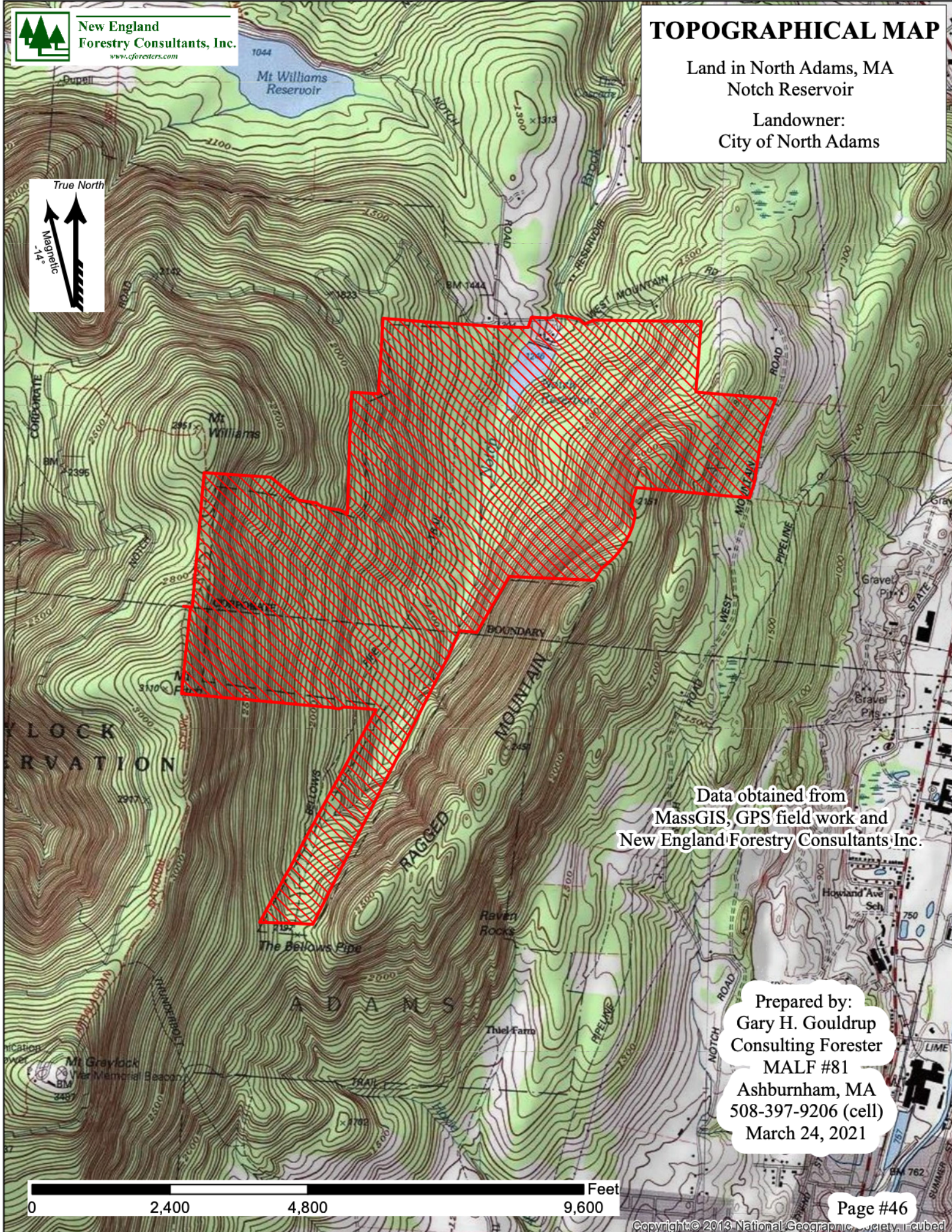


New England
Forestry Consultants, Inc.
www.cforesters.com

TOPOGRAPHICAL MAP

Land in North Adams, MA
Notch Reservoir

Landowner:
City of North Adams



Data obtained from
MassGIS, GPS field work and
New England Forestry Consultants, Inc.

Prepared by:
Gary H. Gouldrup
Consulting Forester
MALF #81
Ashburnham, MA
508-397-9206 (cell)
March 24, 2021

0 2,400 4,800 9,600 Feet