DCR-BOFF Forest Management Proposal

Project Name: Stoddards Field Restoration
Property Name: Willard Brook State Forest
Acres: 69
Forestry District: Northeast
Forester: Mike Waterman and Amelia Zani
Date Proposed: February 2025

Town(s): Ashby
Landscape Designation: Parkland
Rec Complex/District: Willard Brook
FOTL/F&P Supervisor: Gallant/Amadon

GENERAL PROJECT DESCRIPTION

Acres	Overstory Forest Type	Understory Forest Type	Stand Description
40	Overstory: Hardwood/Pine	Understory: Mixed hardwood, mountain laurel	The stands in this area were high graded just prior to acquisition by the state with scattered large white pine and mixed hardwoods left behind.
19	Overstory: Red Pine/Norway Spruce/White Pine	Understory: Mixed hardwood, white pine	This stand is a plantation established by the Civilian Conservation Corps in the 1930. The plantation is in severe decline due to pests and overstocking.
10	Overstory: N/A	Understory: Native forbs and grasses	This is an open field area originally for agricultural use. Shrubs and small, low vigor trees have grown in to surround and encroach the original field edges.

Project Summary, Goals and Objectives:
The project area consists of both a forested portion (highgraded hardwood-pine and overstocked former Civilian Conservation Corps softwood plantations) and an open field portion. The goals for the project are to diversify age and structure within the forest area, restore the edges and native warm season grasses of the open field, and conduct invasive species treatment. To restore and revitalize the open field portion, managers will utilize prescribed fire in cooperation with MA DCR Forest Fire Control and State wildlife biologists. Highgraded stands and field edges have established some early successional species (e.g. paper birch, etc.), though the heavy snow and ice storms experienced in the past several years have extensively damaged these trees and they are of generally low quality. A greater diversity of age and structure will be created using multi-aged silviculture (shelterwood) and overstory removal of failing plantations (seed tree). This project proposal is in alignment with the following quoted Recommendations from the Climate Forestry Committee ("CFC") concerning (1) Resilience of Plantations as a function of their Structural Complexity and Susceptibility to Invasive Species and (2) Active Management Using Multi-Aged Silviculture: (1) "There was Committee consensus that plantations should be converted to more compositionally diverse forests via harvesting, and some also supported adaptive management of other stands with several risk factors, such as a dense stand of diseased trees that would represent a fire risk to nearby development." ("Report of the Climate Forestry Committee: Recommendations for Climate-Oriented Forest Management Guidelines" hereafter referred to as "CFC Report", page 38). "There was some agreement on the Committee that some current forest conditions, such as plantation monocultures, many compositionally and structurally simple second-growth stands, forests heavily infested with non-native invasive plants, or those lacking plants in the understory due to heavy deer browsing, may not exhibit the same level of resilience as forests with a higher degree of ecological integrity and absence of invasives." (CFC Report, page 38) "actions to diversify species composition can help reduce the impacts of an invasive pest or pathogen… Make efforts to maintain genetic pools and diversity of threatened species on the landscape." (CFC Report, page 39) "CFC recommendations related to the overall missions and land management of the Divisions of Drinking Water Supply Protection, Fisheries and Wildlife, and State Parks and Recreation…Prioritize for active management forest stands that have simplified structure and low species diversity, especially plantations that are in poor health. Seek to enhance structural complexity and propagate diverse species well-adapted to the site and predicted future conditions." (CFC Report, page 45-46) (2) CFC Recommendations Concerning Active Management: Multi-Aged Silviculture "When forests are actively managed, the Committee recommends adopting ecological principles, including…Retaining some trees on site, particularly large mature ones, while meeting species regeneration goals by using multi-aged silvicultural systems." (CFC Report, page 33) The current proposal builds on previous forest management and incorporates the following climate modifications: allow for greater percentage of retention with a focus on

species better suited to climate change (e.g. oaks), retain more dead trees to provide short term carbon storage and habitat improvements, and create conditions for a diverse suite of species, age classes and structural complexity to benefit both climate change resilience and wildlife habitat. This project proposal has also been assessed using the Northern Institute for Applied Climate Science (NIACS) Climate Adaptation Workbook: https://forestadaptation.org/adapt/stoddards-field-dcr

MASSACHUSETTS FOREST ACTION PLAN GOALS

The goals listed below are sourced from *DCR (Department of Conservation and Recreation) Bureau of Forest Fire Control and Forestry. 2020.* ***MASSACHUSETTS STATE FOREST ACTION PLAN 2020***

- **Increase resistance and resilience of trees and forests to mitigate and adapt to the effects of climate change**
- **Manage forest ecosystem health and biodiversity**
- **Support the role and use of prescribed fire in the landscape**

CLIMATE CHANGE ADAPTATION STRATEGIES AND APPROACHES

The strategies and approaches listed below are sourced from the Response to the Report of the Climate Change Committee, 2024 and the Report of the Climate Forestry Committee: Recommendations for Climate-Oriented Forest Management Guidelines, 2024.

- **1: Sustain fundamental ecological functions.**
- **2: Reduce the impact of biological stressors.**
- **5: Maintain and enhance species and structural diversity.**

CLIMATE ADAPTATION

Action Type	Identified Issue	Action Description
Resistance	Oak forest types	Silvicultural treatments that maintain and expand opportunities for oak recruitment across project area.
Resilience	Pine and Spruce Plantations	Silvicultural treatments that convert monotypic forest types to a diverse forest type of native plant species.
Resilience	Grassland	Silvicultural treatments using prescribed fire to restore natural communities and promote soil carbon storage.

Adaptive Management Strategies: Per the Response to the Report of the Climate Forestry Committee: "Focus active management for resilience on areas…most at risk and in need of ecological restoration/climate resilience such as plantation monocultures"; Promote a diversity of tree species and age classes across the project area to reduce impact of invasive pests and increase resiliency to climate change, facilitate natural regeneration of oak species resistant to effects of changing climate, provide carbon sequestration in young trees and carbon storage in legacy trees.

CLIMATE CHANGE CONSIDERATIONS

The Department of Conservation and Recreation, Division of State Parks and Recreation has determined that the decision to implement this project is consistent with EEA climate goals and guidelines and agency land management objectives.

Activities proposed	Carbon and climate change considerations
Full overstory removal, complete stand, final shelterwood cut/seed tree harvest. (see silvicultural objective of seed tree harvest in softwood (red pine/spruce) plantations to prevent spread of pests and diseases, to release and establish native regeneration, and increase age and structural diversity on proposal page 9 [SILVICULTURE])	Shelterwood systems (e.g. seed tree harvest) have been identified as a preferred method for regenerating a number of **species expected to be well-adapted to future climate conditions** in Massachusetts. The full overstory removal in a shelterwood follows decades of planning, monitoring, and preparatory treatments, often by multiple foresters. Unless rapid declines in stand health (pests, disease) are driving the initiation of a seed tree harvest, this phase occurs once the stand reaches the rotation age and understory conditions are determined to meet the goals and objectives of the landowner. • Works well in regenerating both **future climate adapted** species such as oak and hickory, as well as **climate vulnerable** species for which there is no substitute such as red spruce. • Shelterwoods (including seed tree harvests) can be designed to include **more residual structural diversity** than clearcuts, while allowing for much more sunlight than single tree selection or group selection regeneration methods. • Flexible and can be adapted to various site conditions, species mixes, and objectives. • **Higher residual stand densities** during each phase of the system and longer rotations result in **higher on-site carbon storage**. • **Carbon considerations** also include retention of **snags** and **downed woody material**.
Full overstory removal, complete stand, plantation conversion to native species. (see silvicultural objective of final shelterwood/seed tree removal cut to red pine plantation to prevent spread of pests and diseases, to release and establish native regeneration, and increase age and structural diversity on proposal page 9 [SILVICULTURE])	Long considered a critical practice on agency lands to improve biodiversity and forest resilience, the **conversion of single-species conifer plantations** to more diverse mixes of native species has recently been encouraged as a climate-smart practice by NIACS and other climate adaptation experts. Tree monocultures, intensively managed throughout the world to produce much of the wood we all use, are **highly vulnerable** to the kinds of **pest and disease** impacts that are likely to worsen as climate changes. Conversion of monoculture plantations aligns with many climate-smart forestry practices highlighted in the CFC report, including but not limited to: • Improving **resistance to pests and pathogens**. • Increasing resiliency by promoting **diversity of plant species**. • Providing age class/**structural diversity**. • Improving conditions for a wide variety of local wildlife through the creation of temporary **young forest** habitat.

	• Promoting **future-adapted tree species** in the regeneration mix.
Diffuse overstory removal, partial cut, late rotation regeneration related. (see silvicultural objective of establishing an irregular shelterwood harvest to release existing advance regeneration, create favorable regeneration conditions, and increase vigor and diameter increment on remaining trees through openings on proposal page 9 [SILVICULTURE])	Partial cutting via single trees or small groups in a mature stand can advance a variety of management objectives as well as **climate-smart practices**. Single tree or very small group removals, if used exclusively and repeatedly, will perpetuate an **uneven-aged stand condition** with a species mix shifted towards higher shade tolerance. However, this type of harvest can also serve within an even-aged system to establish regeneration of species of lower shade tolerance under a partial canopy for subsequent release using larger group or patch cuts (irregular shelterwood) or complete-stand overstory removals. Advantages of partial overstory removals include, but not limited to: • Partial cutting **retains carbon on the landscape** for extended periods while regeneration develops. • Reducing competition for resources improves growth and **carbon sequestration** rates on residual trees. • Promotion of a diversity of age classes enhances overall forest **resiliency**. • Maintenance of continuous forest corridors provides for wildlife habitat. As part of a regeneration system this method can be used to help guide species diversity towards more **future-adapted mixes**.
Habitat restoration and maintenance prescribed fires – grassland (see Habitat restoration and maintenance prescribed fires – grassland (see the prescribed burning of a field area to maintain a condition for the purpose of wildlife habitat in a fire-influenced natural community on proposal page 9 [SILVICULTURE].)	Prescribed Fire is the planned use of fire in a particular place and time, under established conditions and safety requirements to accomplish resource management goals. • Prescribed fire improves habitat for a **variety of wildlife and native plants** and **restores natural communities** dependent on fire. • In fire-influenced natural communities, fragmentation of the landscape and the suppression of fires (prescribed or natural) leads to accumulation of volatile hazardous fuels in the surface, mid-story, and canopy vegetation layers. • Excessive vegetation density **negatively impacts the habitat quality** of the natural community and may eventually lead to fuel buildup and unplanned, catastrophic wildfire. • Prescribed fires that reflect natural return intervals increase below-ground **carbon storage and sequestration.** The consequences of **catastrophic wildfires** include: • The release of large amounts of **carbon** including **soil carbon**. • Tree mortality.

	• Severe soil, duff, and below ground vegetation impacts. • Potential alteration of soil chemistry. • Threats to firefighter safety, human communities, and property damage. Threats to human health from severe smoke impacts both locally and potentially at long distances.
Invasive plant control, including pre- and/or post-harvest and follow up treatments. (as necessary to treat named species on page 8 [FOREST HEALTH / INVASIVE SPECIES] and throughout management activities on page 8 [INFRASTRUCTURE / RECREATION / AESTHETICS])	Strong consensus exists among land managers and climate science experts regarding the **threat to future forest health** posed by the introduction and spread of invasive plants. **Invasive plants** can: • aggressively **outcompete native plant species,** • dominate understory communities, and even climb, kill, and topple mature trees, • threaten overall **biodiversity,** • threaten **soil health** and long-term **carbon storage**. **Monitoring and controlling** invasive and interfering plant populations prior to and following operations is a critical practice for **minimizing the risk of further impacts** inadvertently (though not unexpectedly) spread by harvesting-related activities.
Access improvements (landing improvements, gravel, road grading, ditch maintenance, road widening, straightening, and alteration of intersections). (see prescription for explanation of use of and repair/enhancements to prior landing and skid trails on page 8 [INFRASTRUCTURE / RECREATION / AESTHETICS])	Roads, landings, and associated infrastructure are critical for access by both the public and natural resource managers. These infrastructure elements are also associated with both **vulnerabilities** and **opportunitie**s in terms of climate change **resiliency**. **Vulnerabilities:** • Roads occupy areas that would otherwise be a carbon rich forest. • Road edges can become avenues for the spread of invasive species. • Roads have the potential for sediment transport into surface water resources. **Opportunities:** • A well-designed and well-maintained access system makes all other land management and monitoring activities possible while minimizing impacts. • Roads provide public access including hiking, hunting, fishing, etc. • Roads are critical for both Emergency Response (Injuries, Accidents, etc.) and Incident Stabilization (fire, flood, storm damage, etc.) Given the predicted **increase in storm frequency and intensity**, improving and maintaining roads, road surfaces, and stormwater infrastructure is imperative.

	• Proper surfacing, grading, and ditching **minimize erosion** from stormwater and snowmelt. • Periodic maintenance is required to **avoid water channelizing** within compacted tire paths. • **Adding gravel** or other material to the road surface helps support the **heavy vehicle traffic** associated with forestry work, fire operations, and post-storm recovery efforts. Alterations (**widening, straightening**) are often needed to upgrade old, narrow farm lanes to meet modern vehicle access needs. • Ditching, cross culverts, and relief cuts will be designed with **future storm intensities** in mind and should minimize, to the greatest degree possible, impacts to surface water resources. Most log landings are **temporary** in nature. Permanent landings that are properly located and well-built can serve as permanent access infrastructure, concentrating activities and minimizing the non-forested footprint required to conduct agency management. Whether temporary or permanent, the use, maintenance, and stabilization of landings will include considerations of **future climate change impacts**. Landing BMPs include: • **Post-harvest stabilization** measures such as grading and smoothing to prevent erosion and sedimentation. • **Seeding** to provide cover and further stabilize the soil. • **Invasive plant survey and control** to minimize further infestation risks. Periodic mowing of permanent landings to allow herbaceous and shrubby vegetation to dominate the site between harvests, adding **diverse habitat opportunities** for local wildlife.

SOILS AND TOPOGRAPHIC FEATURES

Acres	Soil Type	Drainage Characteristic
10.5	Charlton-Hollis-Rock outcrop complex, 8 to 15 percent slopes	Well drained
1.0	Charlton-Hollis-Rock outcrop complex, 15 to 25 percent slopes	Well drained
10.2	Montauk fine sandy loam, 8 to 15 percent slopes, extremely stony	Well drained
16.0	Birchwood fine sandy loam, 3 to 8 percent slopes	Moderately well drained
0.7	Carver loamy coarse sand, 3 to 8 percent slopes	Excessively drained
13.9	Carver loamy coarse sand, 8 to 15 percent slopes	Excessively drained

0.1	Hinckley loamy sand, 3 to 8 percent slopes	Excessively drained
0.3	Hinckley loamy sand, 15 to 25 percent slopes	Excessively drained
9.3	Deerfield loamy fine sand, 0 to 3 percent slopes	Moderately well drained
0.1	Windsor loamy sand, 3 to 8 percent slopes	Excessively drained
4.4	Scarboro mucky fine sandy loam, 0 to 3 percent slopes	Very poorly drained
2.6	Paxton fine sandy loam, 15 to 25 percent slopes, extremely stony	Well drained

Average Slope Percent:**11-20%**
General Aspect: West
Terrain Consistency: Variable
Terrain Position: Mid Slope

Description of Soils and Topographic Features: The soils in the project area are of generally low to moderate productivity due to parent material and drainage characteristics. The terrain can be described as generally sloping to the west

WETLAND FEATURES

	Present	**Crossing**	**Work within Filter/Buffer**
Wetlands:	**Yes**	**Yes**	**Possible**
Regulated Streams:	**Yes**	**Yes**	**Possible**
Non-Regulated Streams:	**No**	**N/A**	**N/A**
Vernal Pools:	**Possible**	**Possible**	**Possible**
Seeps:	**Yes**	**Possible**	**Possible**

Description of Wetland Features: There is a small ± 4 acre wetland complex on the westerly side of the project which flows to the northwest before discharging into Willard Brook. Crossings are existing culverts.

CULTURAL RESOURCES

	Present	**At Risk**	**Work Within Buffer**
Stone Walls:	Yes	No	Yes
Foundation / Cellar Hole:	Yes	No	Yes
Well:	Possible	Possible	Possible
Structures:	No	No	No
Cemetery:	No	N/A	N/A
Other: N/A	No	N/A	N/A

Description of Cultural Resources: Stone walls are discontinuous with ample existing breaks to allow equipment access. No wells were noted but may be present

NATURAL HERITAGE / WILDLIFE-HABITAT MANAGEMENT / OTHER RESOURCES

Natural Heritage Polygon: No
Natural Heritage Restrictions: No
Restrictions on Harvest Description: No anticipated restrictions

Wildlife Specific Management: Yes
Targeted Species: Bats, field nesting birds, pollinators
Goals: Create, maintain and enhance habitat conditions for native wildlife dependent on this declining habitat type.

Additional Habitat Management: Yes
Habitat Type: Early successional
Goals: Create conditions favorable to wildlife dependent on this habitat type (e.g. bats, American Kestrel).

State Forest Action Plan: Possible
ACEC: Yes
BIO Map2: Possible
State Wildlife Action Plan: Yes
Public Water Supply: No
Current Resource Management Plan: No
Additional Detail: Project area is a transitional hardwood/pine forest type that is extremely valuable to wildlife. Grasslands and early successional habitat types are invaluable to many species in decline that depend on this forest type for part or most of their life cycle. Field edges have been reclaimed by trees reducing the size and quality of them. All applicable forestry guidelines for work within ACECs will be incorporated into final prescription.

FOREST HEALTH / INVASIVE SPECIES

Forest Health Concern: Yes
Species Affected: American Beech
Management Considerations: Visual inspection confirms presence of beech leaf disease, caused by nematode Litylenchus crenatae mccannii.

Plant Invasive Species Present: Yes
Species Present: Glossy buckthorn, bittersweet, knotweed
Management Considerations: Populations are small and concentrated mostly along the western side of the project area.

Insect Invasive Species Present: Yes
Species Present: Pine bast/Red Pine Scale
Management Considerations: Presence of pine bast/red pine scale (Matsucoccus matsumurae, formerly M. resinosae) heavy infestation confirmed by DCR Forest Health.

INFRASTRUCTURE / RECREATION/ AESTHETICS

Access Road: Hosmer Road, Fort Hill Road
Condition: Good
Existing Landing: Yes
Project Access and Landing Site: Off Fort Hill Road
Ownership: Town owned and maintained
Road Repair/Upgrade: No
Landing Repair/Upgrade: Yes

Existing Skid Trail Network: Yes
Pre-Harvest Repair/Upgrade: Yes
Skid Trail Network Description: Skid trails are pre-existing and will be reused.

Shared Infrastructure: No
Road/Trail Names: NA
Management Considerations: Repair existing roads within project area as needed for forestry, fire control,

and recreational users.

Infrastructure Present

Infrastructure	Present	Condition
Official Trail	Yes	Fair to poor
Illegal Trail	Yes	poor
Existing Trail Head	No	NA
Recreation Facility	No	NA

Recreation and Aesthetic Concerns/Opportunities: Use site enhancements to repair and improve existing infrastructure. Cut all dead trees along forest roads and trails for public safety.

SILVICULTURE

Acres	Silviculture Type	Silviculture Description
40	Irregular shelterwood	Openings up to 1 acre will be established across the project area to release existing advance regeneration, create conditions favorable for tree regeneration where currently lacking, and thin remaining trees to increase vigor and diameter increment. The number of retained trees post shelterwood harvest will meet or exceed legal standards [304 CMR 11.05(1)3].
19	Seed tree	Final removal cut of softwood overstory (red pine/spruce) releasing advanced regeneration while reserving oaks and large pines for wildlife benefits. The number of retained seed trees post-harvest will meet or exceed legal standards [304 CMR 11.05(1)3]. Several red pine per acre will be left to become snags for wildlife habitat.
10	Prescribed burning	Utilizing recurrent prescribed fire, field portion of the project will be restored and expanded as optimal foraging area. Burn(s) will reduce fuel load and provide an extension to a fire break between forested land and a public road. Burn(s) will be conducted in accordance with regulations and Fire Control Burn Plan

General Comments on Silviculture Proposed: Prescribed harvesting will meet or exceed legal seed tree retention standards. Per previous General Description & Climate Change Consideration sections of this document, all silvicultural management actions are aligned with Forests as Climate Solutions Climate Forestry Committee recommendations.

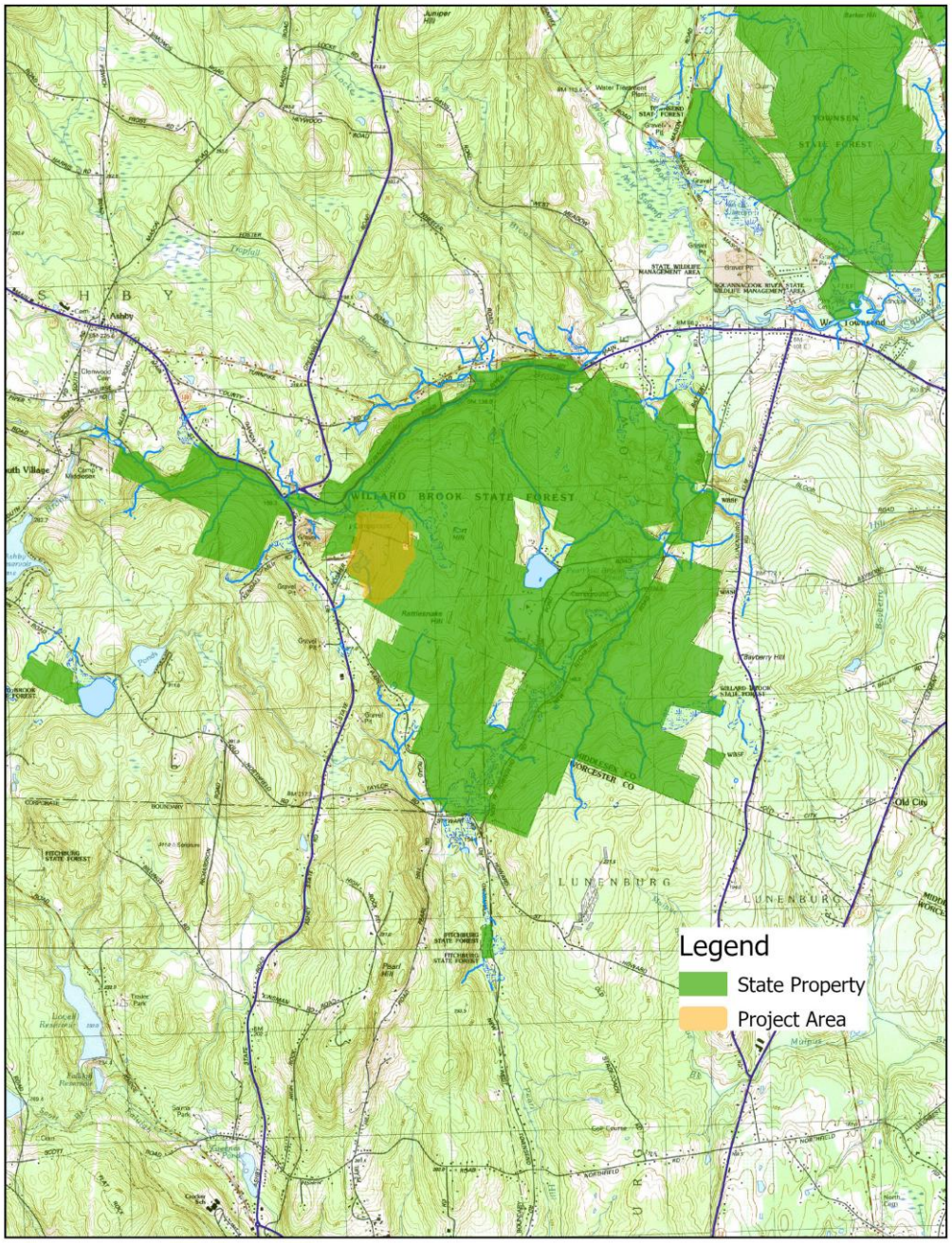
PERMIT REQUIREMENTS / OPPORTUNITIES

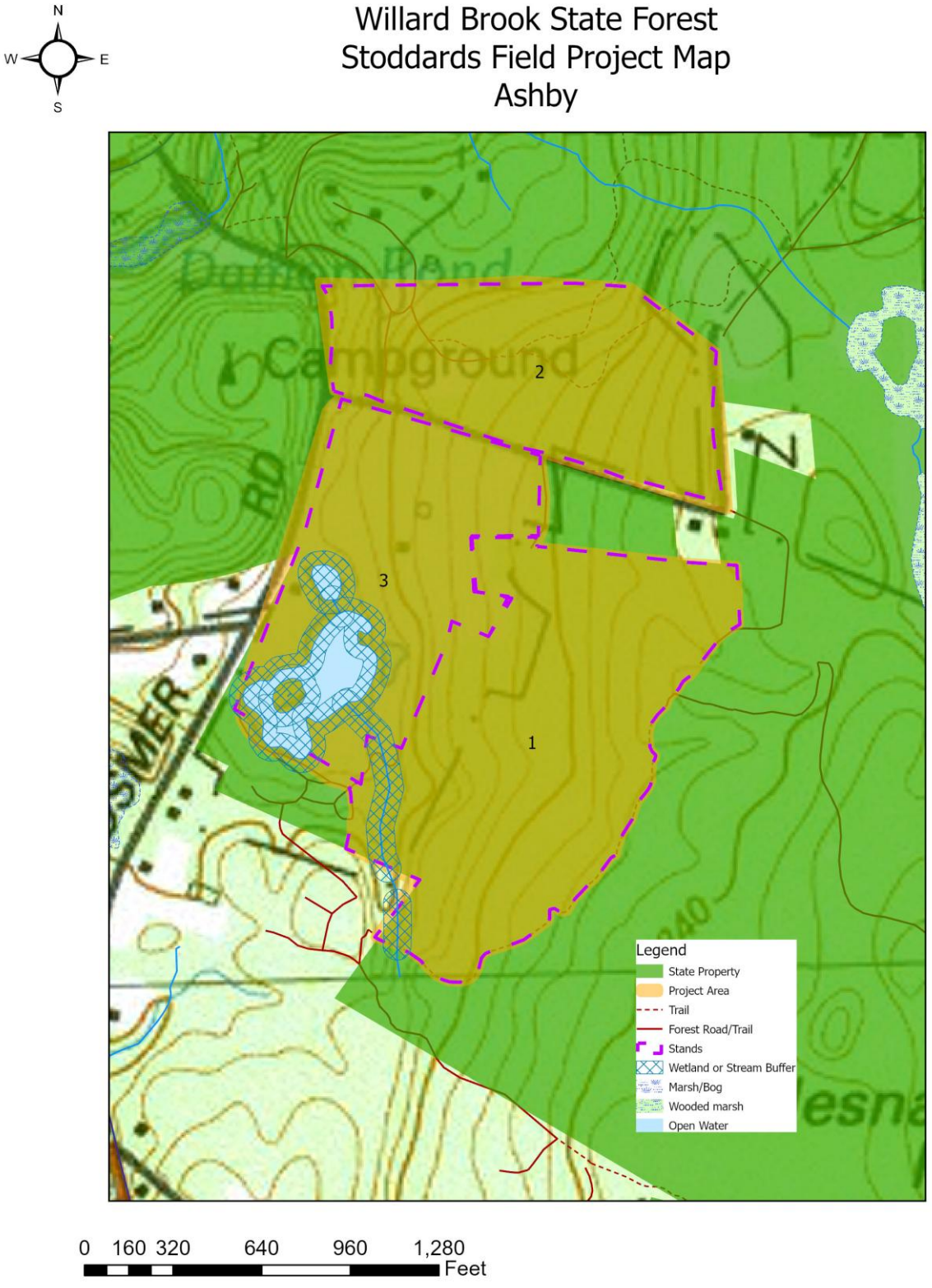
Restrictions	Description
Seasonal Restrictions: Yes	Part of the work is within the Damon Pond recreational complex and work will be scheduled during the off season.
Equipment Restrictions: No	None anticipated at this time.
Recreation Restrictions: Possible	Close trails during operational hours.
Green Docket: No	No requirements other than standard Ch 132 Forest Cutting Plan
In-kind Services: Possible	Typical stone and gravel installation for staging areas.

Potential Local Economic Benefits: There are good local markets for log grade hardwood for home fuel use. Previous projects have seen all this type of material being processed and sold within 10 miles of project area.

Attachments:
Locus Map
Project Map

Willard Brook State Forest
Stoddards Field Locus Map
Ashby

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W
E
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Willard Brook State Forest
Stoddards Field Project Map
Ashby
Campground
RD
2
3
1
Legend
State Property
Project Area
Trail
Forest Road/Trail
Stands
Wetland or Stream Buffer
Marsh/Bog
Wooded marsh
Open Water
0 160 320 640 960 1,280
Feet

Photos

1 Stoddard's old homestead and open field

2 Baffles installed between roof rafters of "bat shed" to encourage roosting; structure to replace house scheduled for demolition, baffles crafted in accordance with recommendations by MassWildlife

3 Physical and chemical treatment to be implemented for control and mitigation of invasive vegetative species, including Asiatic Bittersweet (*Celastrus orbiculatus*) affecting trees on edge of Stoddard's field

4 Openings less than or equal to 1/3 acre will re-initiate succession, encourage regeneration, and mitigate spread of disease; white pine (*Pinus strobus*) affected by calipsiopsis canker - stereotypical of congested stands

5 Large diameter trees such as the red oak (*Quercus rubra*) in the foreground will be favored as legacy trees in thinning

6 Oak regeneration present at open edge of access trail; gaps in forest interior will allow for similar regeneration opportunities

7 Red pine (*Pinus resinosa*) plantation infested with pine bast/red pine scale

8 American beech (*Fagus grandifolia*) trees affected by beech leaf disease under canopy of red pine (*Pinus resinosa*) infested with pine bast/red pine scale

9 Beech affected by beech leaf disease

10 Red pine trees infested with scale near Yurt structure at Willard Brook State Forest's Damon Pond Campground

11 Spruce nursery, including non-native Norway spruce (*Picea abies*) on site

12 Existing parking area for potential use as landing

13 Existing break in stone wall as potential equipment entry point