

Project Description

Sudbury Valley Trustees

Pitch Pine – Scrub Oak Barrens Restoration

SVT proposes to conduct prescribed fire on up to 65 acres located on SVT's Memorial Forest (57 acres) and City of Marlborough's Desert Natural Area (8 acres). Implementation of the project will follow the Prescribed Fire Plan prepared for the Desert Natural Area prepared by Northeast Forest & Fire Management, LLC (NFFM), dated October 2019. (The full plan can be found on SVT's web site: www.svtweb.org/desertnaturalarea.)

This project is part of a long-term restoration and management plan to restore nationally imperiled pitch pine/scrub oak barrens and the rare species that rely on this habitat for survival. The rare species known to inhabit the site include whip-poor-will, Eastern box turtle, and several moth species. Additional species of birds and insects whose populations are declining in our region will benefit from this management. Pitch pine-scrub oak barrens are identified for high priority management in the Massachusetts State Wildlife Action Plan.

The burns will be conducted on two to three separate days, dependent upon weather conditions and personnel logistics. Preferred timing is early spring. The site is divided into eight burn units. Firebreaks between and around the units are located along existing trails where feasible. Additional firebreaks will be mowed, most likely along existing skid trails, in early March. No other site preparation is necessary.

The site is located within actual habitat of a rare species. The Division of Fish & Wildlife has issued an approval letter and special conditions on the project. These include:

1. All work associated with fire break maintenance shall occur between November 1 through April 15th of any year.
2. Applicant shall provide advance notice of a minimum of 30 days of the burn window in order to coordinate with ongoing wildlife telemetry studies.

The proposed activity is **exempt from MESA review** pursuant to 321 CMR 10.14 which states: "the following ...shall be exempt...: (15) The active management of State-listed Species habitat, including but not limited to mowing, cutting, burning, or pruning of vegetation... etc."

The Department of Environmental Protection has issued a burn permit, under Air Quality Control regulations. The proponent may not conduct prescribed burning from July 1 through September 15th. Burn days are only permitted under air quality conditions prescribed by the DEP as indicated in the permit letter.

Most of the area of the burn units is located outside of wetlands jurisdictional areas; however, approximately 3.5 acres are located within the 200 ft. riverfront zone located along Cranberry and Hop Brooks. The total area of riverfront on SVT's Memorial Forest is approximately 69 acres. Twenty five years of burn experience in New England demonstrates that no siltation or increased temperatures will result, especially given the flat topography and sandy soils.

Resource areas were delineated by Dave Burke, certified wetland scientist, in 2012. Wetland flags were field-located with a GPS unit and then uploaded into a GIS data layer.



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Bureau of Resource Protection - Wetlands

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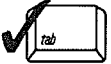
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

MassDEP File Number

Document Transaction Number

City/Town

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Note:
Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

A. General Information

1. Project Location (Note: electronic filers will click on button to locate project site):

<u>Access from 245 Dutton Road</u>	<u>Sudbury</u>	<u>01776</u>
a. Street Address	b. City/Town	c. Zip Code
<u>Latitude and Longitude:</u>	<u>42.3791</u>	<u>-71.4738</u>
	d. Latitude	e. Longitude
<u>f. Assessors Map/Plat Number</u>	<u>J-03-001</u>	<u>g. Parcel /Lot Number</u>

2. Applicant:

<u>Laura</u>	<u>Mattei</u>	
a. First Name	b. Last Name	
<u>Sudbury Valley Trustees</u>		
c. Organization		
<u>18 Wolbach Road</u>		
d. Street Address		
<u>MSudbury</u>	<u>MA</u>	<u>01776</u>
e. City/Town	f. State	g. Zip Code
<u>978-443-5588 x134</u>	<u>lmattei@svtweb.org</u>	
h. Phone Number	i. Fax Number	j. Email Address

3. Property owner (required if different from applicant): Check if more than one owner

<u>a. First Name</u>	<u>b. Last Name</u>	
<u>c. Organization</u>		
<u>d. Street Address</u>		
<u>e. City/Town</u>	<u>f. State</u>	<u>g. Zip Code</u>
<u>h. Phone Number</u>	<u>i. Fax Number</u>	<u>j. Email address</u>

4. Representative (if any):

<u>a. First Name</u>	<u>b. Last Name</u>	
<u>c. Company</u>		
<u>d. Street Address</u>		
<u>e. City/Town</u>	<u>f. State</u>	<u>g. Zip Code</u>
<u>h. Phone Number</u>	<u>i. Fax Number</u>	<u>j. Email address</u>

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

<u>\$ 165</u>	<u>\$ 70</u>	<u>\$ 95</u>
a. Total Fee Paid	b. State Fee Paid	c. City/Town Fee Paid



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A. General Information (continued)

6. General Project Description:

Conduct 2 to 3 separate days of prescribed burns, covering up to 65 acres, according to the Prescribed Fire Plan prepared for the Desert Natural Area by Northeast Forest and Fire Management, LLC, October 2019. The goal of this project is to restore Pitch Pine - Scrub Oak Barrens, a nationally imperiled habitat, for multiple rare species including the whip-poor-will.

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

- | | |
|---|---|
| 1. <input type="checkbox"/> Single Family Home | 2. <input type="checkbox"/> Residential Subdivision |
| 3. <input type="checkbox"/> Commercial/Industrial | 4. <input type="checkbox"/> Dock/Pier |
| 5. <input type="checkbox"/> Utilities | 6. <input type="checkbox"/> Coastal engineering Structure |
| 7. <input type="checkbox"/> Agriculture (e.g., cranberries, forestry) | 8. <input type="checkbox"/> Transportation |
| 9. <input checked="" type="checkbox"/> Other | |

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

1. Yes No If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

Section 310 CMR 10.53 (4) provides that the Issuing Authority may issue an Order of Conditions permitting an Ecological Restoration Project

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR 10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

Middlesex

a. County

30259

c. Book

b. Certificate # (if registered land)

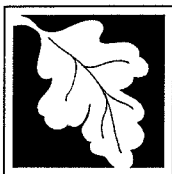
120

d. Page Number

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

1. Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
2. Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.



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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. <input type="checkbox"/> Bank	1. linear feet	2. linear feet
b. <input type="checkbox"/> Bordering Vegetated Wetland	1. square feet	2. square feet
c. <input type="checkbox"/> Land Under Waterbodies and Waterways	1. square feet	2. square feet
	3. cubic yards dredged	

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. <input type="checkbox"/> Bordering Land Subject to Flooding	1. square feet	2. square feet
	3. cubic feet of flood storage lost	4. cubic feet replaced
e. <input type="checkbox"/> Isolated Land Subject to Flooding	1. square feet	
	2. cubic feet of flood storage lost	3. cubic feet replaced
f. <input checked="" type="checkbox"/> Riverfront Area	<u>Cranberry Brook (inland)</u>	

1. Name of Waterway (if available) - **specify coastal or inland**

2. Width of Riverfront Area (check one):

- 25 ft. - Designated Densely Developed Areas only
- 100 ft. - New agricultural projects only
- 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: 3,011,790 (~ 69 Ac)
square feet

4. Proposed alteration of the Riverfront Area:

<u>151,305 (3.47 Ac)</u>	<u>14,541</u>	<u>136,764</u>
a. total square feet	b. square feet within 100 ft.	c. square feet between 100 ft. and 200 ft.

5. Has an alternatives analysis been done and is it attached to this NOI? Yes No

6. Was the lot where the activity is proposed created prior to August 1, 1996? Yes No

3. Coastal Resource Areas: (See 310 CMR 10.25-10.35)

Note: for coastal riverfront areas, please complete **Section B.2.f.** above.



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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users:
Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

<u>Resource Area</u>	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
a. <input type="checkbox"/> Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. <input type="checkbox"/> Land Under the Ocean	_____	
	1. square feet	

	2. cubic yards dredged	
c. <input type="checkbox"/> Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. <input type="checkbox"/> Coastal Beaches	_____	_____
	1. square feet	2. cubic yards beach nourishment
e. <input type="checkbox"/> Coastal Dunes	_____	_____
	1. square feet	2. cubic yards dune nourishment
	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
f. <input type="checkbox"/> Coastal Banks	_____	
	1. linear feet	
g. <input type="checkbox"/> Rocky Intertidal Shores	_____	
	1. square feet	
h. <input type="checkbox"/> Salt Marshes	_____	_____
	1. square feet	2. sq ft restoration, rehab., creation
i. <input type="checkbox"/> Land Under Salt Ponds	_____	
	1. square feet	

	2. cubic yards dredged	
j. <input type="checkbox"/> Land Containing Shellfish	_____	
	1. square feet	
k. <input type="checkbox"/> Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above	

	1. cubic yards dredged	
l. <input type="checkbox"/> Land Subject to Coastal Storm Flowage	_____	
	1. square feet	

4. Restoration/Enhancement

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.

a. square feet of BVW

b. square feet of Salt Marsh

5. Project Involves Stream Crossings

a. number of new stream crossings

b. number of replacement stream crossings



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C. Other Applicable Standards and Requirements

- This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Limited Project Checklists – Required Actions (310 CMR 10.11).

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm.

- a. Yes No

If yes, include proof of mailing or hand delivery of NOI to:

**Natural Heritage and Endangered Species Program
Division of Fisheries and Wildlife
1 Rabbit Hill Road
Westborough, MA 01581**

- b. Date of map _____

If yes, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.2.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

- c. Submit Supplemental Information for Endangered Species Review*

1. Percentage/acreage of property to be altered:

(a) within wetland Resource Area _____

percentage/acreage

(b) outside Resource Area _____

percentage/acreage

2. Assessor's Map or right-of-way plan of site

2. Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **

(a) Project description (including description of impacts outside of wetland resource area & buffer zone)

(b) Photographs representative of the site

* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/>). Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

** MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.



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C. Other Applicable Standards and Requirements (cont'd)

- (c) MESA filing fee (fee information available at http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_fee_schedule.htm). Make check payable to "Commonwealth of Massachusetts - NHESP" and **mail to NHESP** at above address

Projects altering 10 or more acres of land, also submit:

- (d) Vegetation cover type map of site
- (e) Project plans showing Priority & Estimated Habitat boundaries
- (f) OR Check One of the Following

1. Project is exempt from MESA review.
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_exemptions.htm; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2. Separate MESA review ongoing. a. NHESP Tracking # _____ b. Date submitted to NHESP _____

3. Separate MESA review completed.
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

- a. Not applicable – project is in inland resource area only b. Yes No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and the Cape & Islands:

Division of Marine Fisheries -
Southeast Marine Fisheries Station
Attn: Environmental Reviewer
836 South Rodney French Blvd.
New Bedford, MA 02744
Email: DMF.EnvReview-South@state.ma.us

North Shore - Hull to New Hampshire border:

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: DMF.EnvReview-North@state.ma.us

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.



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C. Other Applicable Standards and Requirements (cont'd)

Online Users:
Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?
- a. Yes No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.
- b. ACEC
5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?
- a. Yes No
6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?
- a. Yes No
7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?
- a. Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:
1. Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)
 2. A portion of the site constitutes redevelopment
 3. Proprietary BMPs are included in the Stormwater Management System.
- b. No. Check why the project is exempt:
1. Single-family house
 2. Emergency road repair
 3. Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

D. Additional Information

- This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

Online Users: Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1. USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)
2. Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.



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D. Additional Information (cont'd)

- 3. Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.
- 4. List the titles and dates for all plans and other materials submitted with this NOI.

a. Plan Title

b. Prepared By

c. Signed and Stamped by

d. Final Revision Date

e. Scale

f. Additional Plan or Document Title

g. Date

- 5. If there is more than one property owner, please attach a list of these property owners not listed on this form.
- 6. Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.
- 7. Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.
- 8. Attach NOI Wetland Fee Transmittal Form
- 9. Attach Stormwater Report, if needed.

E. Fees

- 1. Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

2649
 2. Municipal Check Number

2648
 4. State Check Number

Sudbury Valley Trustees
 6. Payor name on check: First Name

1/27/2020
 3. Check date

1/27/2020
 5. Check date

7. Payor name on check: Last Name



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F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant

1/28/2020

2. Date

3. Signature of Property Owner (if different)

4. Date

5. Signature of Representative (if any)

6. Date

For Conservation Commission:

Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:

One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:

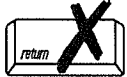
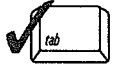
If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.



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 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A. Applicant Information

1. Location of Project:

Access via 245 Dutton Road Sudbury
 a. Street Address b. City/Town

 c. Check number d. Fee amount

2. Applicant Mailing Address:

Laura Mattei
 a. First Name b. Last Name
Sudbury Valley Trustees
 c. Organization
18 Wolbach Road
 d. Mailing Address
Sudbury MA 01776
 e. City/Town f. State g. Zip Code
978-443-5588 imattei@svtweb.org
 h. Phone Number i. Fax Number j. Email Address

3. Property Owner (if different):

 a. First Name b. Last Name

 c. Organization

 d. Mailing Address

 e. City/Town f. State g. Zip Code

 h. Phone Number i. Fax Number j. Email Address

B. Fees

Fee should be calculated using the following process & worksheet. **Please see Instructions before filling out worksheet.**

Step 1/Type of Activity: Describe each type of activity that will occur in wetland resource area and buffer zone.

Step 2/Number of Activities: Identify the number of each type of activity.

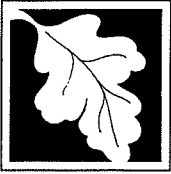
Step 3/Individual Activity Fee: Identify each activity fee from the six project categories listed in the instructions.

Step 4/Subtotal Activity Fee: Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5/Total Project Fee: Determine the total project fee by adding the subtotal amounts from Step 4.

Step 6/Fee Payments: To calculate the state share of the fee, divide the total fee in half and subtract \$12.50. To calculate the city/town share of the fee, divide the total fee in half and add \$12.50.

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).



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B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Habitat Restoration	1	\$ 110	\$ 110
Riverfront	1	\$ 50	\$ 50

Step 5/Total Project Fee: \$ 165

Step 6/Fee Payments:

Total Project Fee:	\$ 165
State share of filing Fee:	\$ 70
City/Town share of filing Fee:	\$ 95
	a. Total Fee from Step 5
	b. 1/2 Total Fee less \$12.50
	c. 1/2 Total Fee plus \$12.50

C. Submittal Requirements

- a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

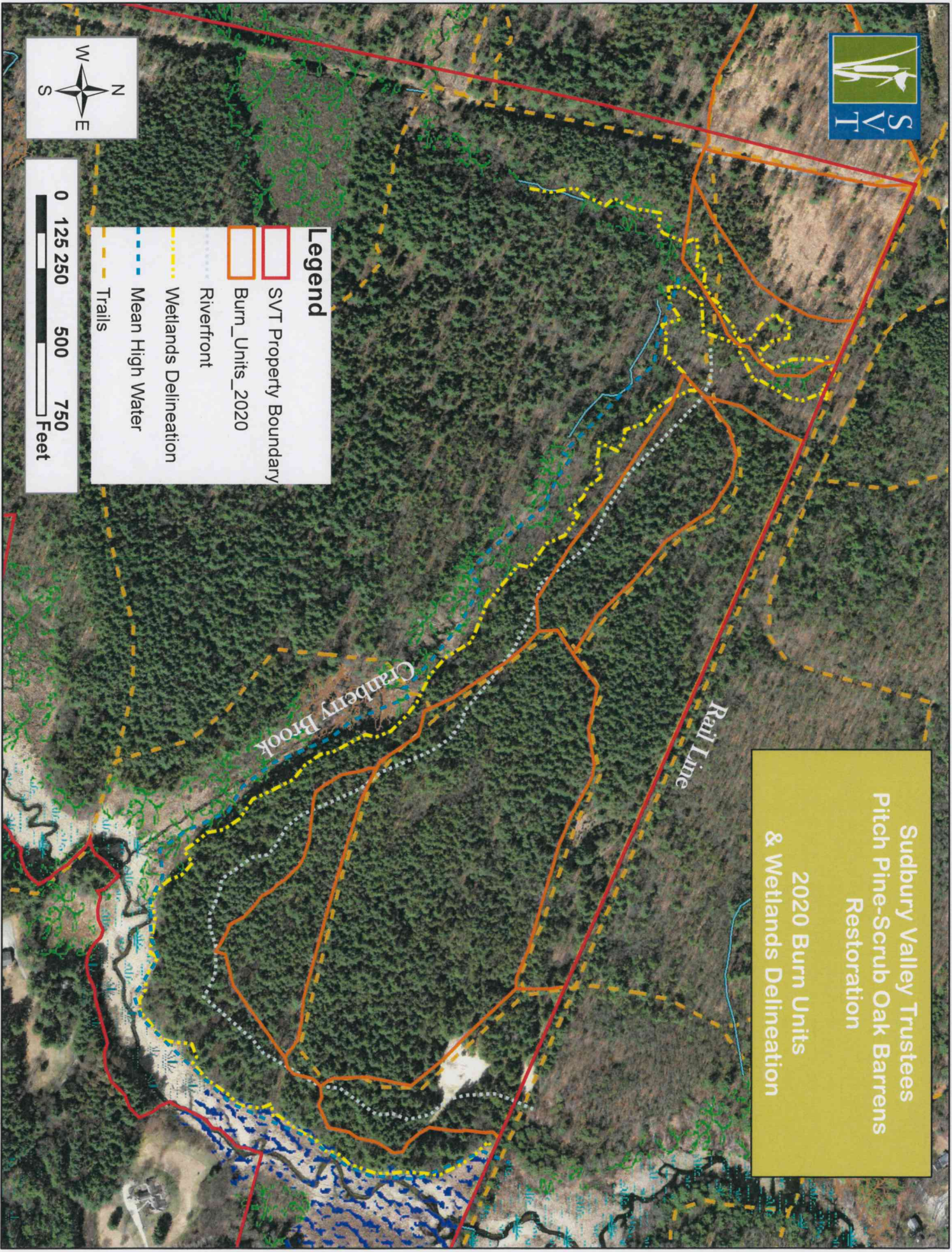
Department of Environmental Protection
 Box 4062
 Boston, MA 02211

- b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a copy of this form; and the city/town fee payment.

To MassDEP Regional Office (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a copy of this form; and a copy of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)



Sudbury Valley Trustees
Pitch Pine-Scrub Oak Barrens
Restoration
2020 Burn Units
& Wetlands Delineation



Legend

- SVT Property Boundary
- Burn_Units_2020
- Riverfront
- Wetlands Delineation
- Mean High Water
- Trails

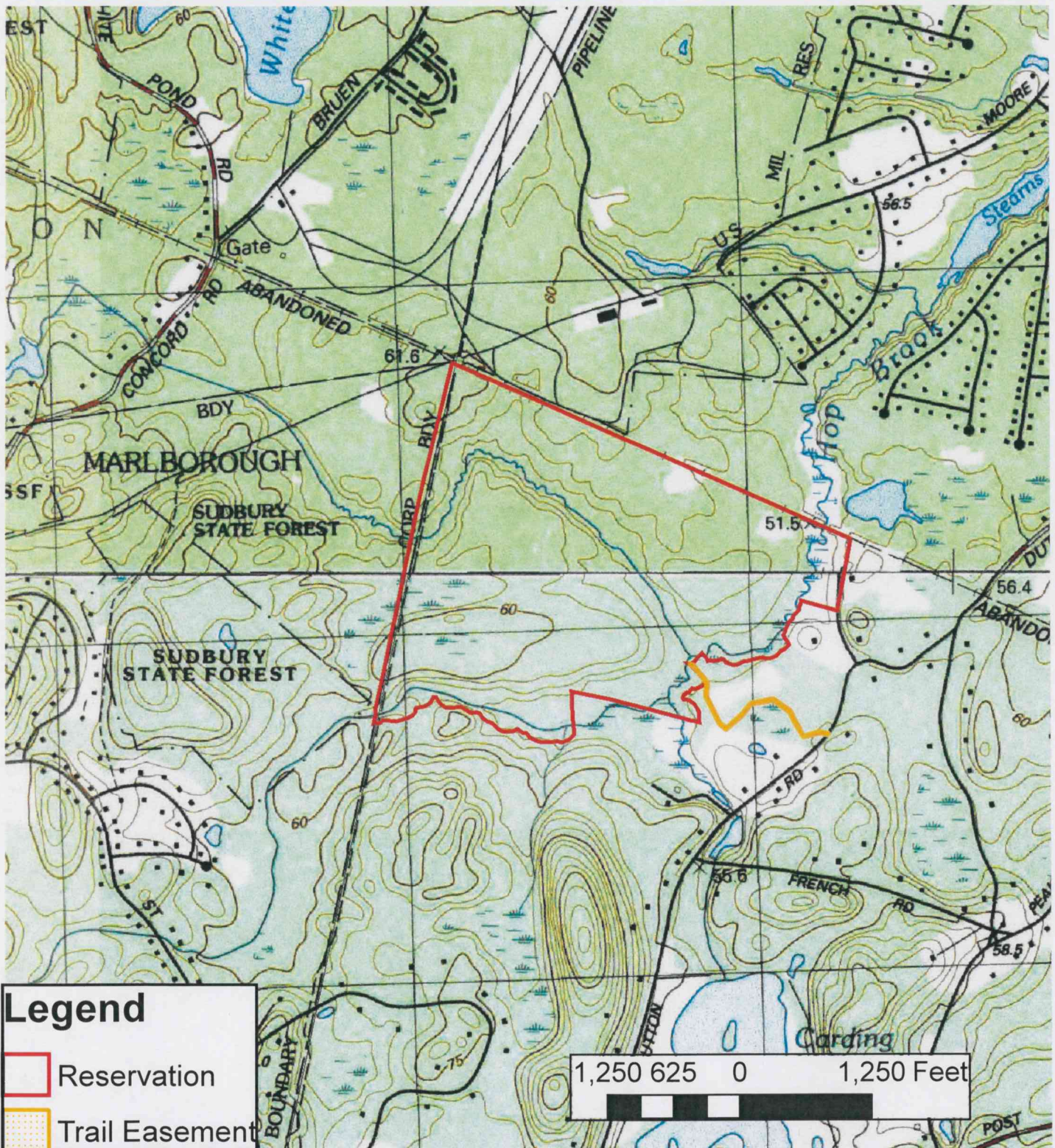


Memorial Forest USGS Locator Map

Off Dutton Road, Sudbury, MA



Sudbury Valley Trustees



Legend

- Reservation
- Trail Easement

Sudbury Valley Trustees - 18 Wolbach Road - Sudbury, MA - 978-443-5588 - web@svtweb.org - www.svtweb.org
Map produced by Sudbury Valley Trustees. Data Provided by Office of Geographic and Environmental Information (MassGIS),
Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs.
This Map should be used for reference only. Boundary lines are approximate.

PRESCRIBED FIRE PLAN

**Sudbury Valley Trustees &
City of Marlborough**

Desert Natural Area
(Units M1, D1, D2)



Sudbury Valley Trustees



Prepared by



October 2019

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ELEMENT 1:

SIGNATURE PAGE

ADMINISTRATIVE UNIT: Desert Natural Area
PRESCRIBED FIRE NAME: M1, D1, D2
COMPLEXITY RATING: Moderate

PLAN PREPARER:


SIGNATURE

10/28/19
DATE

Alex Entrup
PRINTED NAME

Northeast Forest & Fire Management, LLC
AGENCY

Prescribed Burn Boss Type 2 (RXB2)
QUALIFICATIONS

TECHNICAL REVIEW:


SIGNATURE

10/28/19
DATE

Joel R. Carlson
PRINTED NAME

Northeast Forest & Fire Management, LLC
AGENCY

Prescribed Burn Boss Type 2 (RXB2)
QUALIFICATIONS

APPROVED BY:
AGENCY ADMINISTRATOR


SIGNATURE

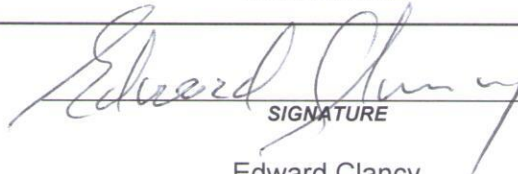
11/04/19
DATE

Lisa Vernegaard
PRINTED NAME

Sudbury Valley Trustees
AGENCY

Executive Director
POSITION TITLE

APPROVED BY:
AGENCY ADMINISTRATOR


SIGNATURE

11/13/19
DATE

Edward Clancy
PRINTED NAME

City of Marlborough
AGENCY

Conservation Commission Chair
POSITION TITLE

NOTE: For information on responsibilities of the "Plan Preparer", "Technical Reviewer", and "Agency Administrator"; see the "Interagency Prescribed Fire Planning and Implementation Procedures Guide" 2014 version, at <https://www.nwcg.gov/sites/default/files/products/pms484.pdf>.

ELEMENT 2:

AUTHORIZATION & GO/NO-GO CHECKLIST

A1: Agency Administrator Ignition Authorization Sudbury Valley Trustees

Instructions: The Agency Administrator Ignition Authorization must be completed before a prescribed fire can be implemented. If ignition of the prescribed fire is not initiated prior to the expiration date determined by the agency administrator, a new authorization will be required.

Prior to signature the agency administrator should discuss the following key items with the fire management officer (FMO) or burn boss. Any additional optional instructions or discussion documentation will be attached to this document.

For information on responsibilities of the "Plan Preparer", "Technical Reviewer", and "Agency Administrator"; see the "Interagency Prescribed Fire Planning and Implementation Procedures Guide" 2014 version, at www.nwccg.gov/sites/default/files/products/pms484.pdf.

Key Discussion Items

- A. Has anything changed since the Prescribed Fire Plan was approved or revalidated?
Such as drought or other climate indicators of increased risk, insect activity, new subdivisions/structures, smoke requirements, Complexity Analysis Rating.
- B. Have compliance requirements and pre-burn considerations been completed?
Such as preparation work, NEPA mitigation requirements, cultural, threatened and endangered species, smoke permits, state burn permits/authorizations.
- C. Can all of the elements and conditions specified in Prescribed Fire Plan be met?
Such as weather, scheduling, smoke management conditions, suitable prescription window, correct season, staffing and organization, safety considerations, etc.
- D. Are processes in place to ensure all internal and external notifications and media releases will be completed?
- E. Have key agency staffs been fully briefed about the implementation of this prescribed fire?
- F. Are there circumstances that could affect the successful implementation of the plan?
Such as preparedness level restrictions, resource availability, other prescribed fire or wildfire activity.
- G. Have you communicated your expectations to the Burn Boss and FMO regarding if and when you are to be notified that contingency actions are being taken?
- H. Have you communicated your expectations to the Burn Boss and FMO regarding decisions to declare the prescribed fire a wildfire?

**IMPLEMENTATION
RECOMMENDED BY:**

(FMO OR PRESCRIBED FIRE BURN BOSS)

Alex Entrup
SIGNATURE

10/28/19
DATE

Alex Entrup
PRINTED NAME

Senior Specialist/RxB2
POSITION TITLE

I am authorizing ignition of this prescribed fire between the dates of 11/04/19 and 11/04/29. It is my expectation that the project will be implemented within this time frame and as discussed and documented and attached to this plan. If the conditions we discussed change during this time frame, it is my expectation you will brief me on the circumstances and an updated authorization will be negotiated if necessary.

Additional Instructions or Discussion Documentation attached (Optional): Yes No

IGNITION AUTHORIZED BY:

(AGENCY ADMINISTRATOR)

Lisa Vernegaard
SIGNATURE

11.04.19
DATE

Lisa Vernegaard
PRINTED NAME

Sudbury Valley Trustees Executive Director
POSITION TITLE

A2: Agency Administrator Ignition Authorization City of Marlborough

Instructions: The Agency Administrator Ignition Authorization must be completed before a prescribed fire can be implemented. If ignition of the prescribed fire is not initiated prior to the expiration date determined by the agency administrator, a new authorization will be required.

Prior to signature the agency administrator should discuss the following key items with the fire management officer (FMO) or burn boss. Any additional optional instructions or discussion documentation will be attached to this document.

For information on responsibilities of the "Plan Preparer", "Technical Reviewer", and "Agency Administrator"; see the "Interagency Prescribed Fire Planning and Implementation Procedures Guide" 2014 version, at www.nwccg.gov/sites/default/files/products/pms484.pdf.

Key Discussion Items

- I. Has anything changed since the Prescribed Fire Plan was approved or revalidated?
Such as drought or other climate indicators of increased risk, insect activity, new subdivisions/structures, smoke requirements, Complexity Analysis Rating.
- J. Have compliance requirements and pre-burn considerations been completed?
Such as preparation work, NEPA mitigation requirements, cultural, threatened and endangered species, smoke permits, state burn permits/authorizations.
- K. Can all of the elements and conditions specified in Prescribed Fire Plan be met?
Such as weather, scheduling, smoke management conditions, suitable prescription window, correct season, staffing and organization, safety considerations, etc.
- L. Are processes in place to ensure all internal and external notifications and media releases will be completed?
- M. Have key agency staffs been fully briefed about the implementation of this prescribed fire?
- N. Are there circumstances that could affect the successful implementation of the plan?
Such as preparedness level restrictions, resource availability, other prescribed fire or wildfire activity.
- O. Have you communicated your expectations to the Burn Boss and FMO regarding if and when you are to be notified that contingency actions are being taken?
- P. Have you communicated your expectations to the Burn Boss and FMO regarding decisions to declare the prescribed fire a wildfire?

**IMPLEMENTATION
RECOMMENDED BY:**

(FMO OR PRESCRIBED FIRE BURN BOSS)

Alex Entrup

SIGNATURE

10/28/19

DATE

Alex Entrup

PRINTED NAME

Senior Specialist/RxB2

POSITION TITLE

I am authorizing ignition of this prescribed fire between the dates of ___ / ___ / ___ and ___ / ___ / ___. It is my expectation that the project will be implemented within this time frame and as discussed and documented and attached to this plan. If the conditions we discussed change during this time frame, it is my expectation you will brief me on the circumstances and an updated authorization will be negotiated if necessary.

Additional Instructions or Discussion Documentation attached (Optional): Yes No

IGNITION AUTHORIZED BY:

(AGENCY ADMINISTRATOR)

Edward Clancy

SIGNATURE

11/13/19

DATE

Edward Clancy

PRINTED NAME

City of Marlborough
Conservation Commission Chair

POSITION TITLE

B: Prescribed Fire Go/No-Go Checklist

Preliminary Questions	Circle YES or NO	
A. Have conditions in or adjacent to the ignition unit changed, (for example: drought conditions or fuel loadings), which were not considered in the prescription development? If NO proceed with the Go/NO-GO Checklist below, if YES go to item B.	YES	NO
B. Has the prescribed fire plan been reviewed and an amendment been approved; or has it been determined that no amendment is necessary? If YES , proceed with checklist below. If NO , STOP: Implementation is not allowed. An amendment is needed.	YES	NO

GO/NO-GO Checklist	Circle YES or NO	
Have ALL permits and clearances been obtained?	YES	NO
Have ALL the required notifications been made?	YES	NO
Have ALL the pre-burn considerations and preparation work identified in the prescribed fire plan been completed or addressed and checked?	YES	NO
Have ALL required current and projected fire weather forecast been obtained and are they favorable?	YES	NO
Are ALL prescription parameters met?	YES	NO
Are ALL smoke management specifications met?	YES	NO
Are ALL planned operations personnel and equipment on-site, available and operational?	YES	NO
Has the availability of contingency resources applicable to today's implementation been checked and are they available?	YES	NO
Have ALL personnel been briefed on the project objectives, their assignment, safety hazards, escape routes, and safety zones?	YES	NO

If all the questions were answered **"YES"** proceed with a test fire. Document the current conditions, location and results. If any questions were answered **"NO"**, **DO NOT** proceed with the test fire: Implementation is not allowed.

After evaluating the test fire, in your judgment can the prescribed fire be carried out according to the prescribed fire plan and will it meet the planned objective?

Circle YES or NO
YES NO

**PRESCRIBED FIRE
BURN BOSS:**

_____ *SIGNATURE* _____ *DATE*

_____ *PRINTED NAME*

_____ *AGENCY*

_____ *QUALIFICATIONS*

ELEMENT 3: FINAL COMPLEXITY ANALYSIS SUMMARY & JHA

PRESCRIBED FIRE PLAN COMPLEXITY ANALYSIS - SUMMARY & FINAL COMPLEXITY				
Prescribed Fire Plan Name:		SVT/Town of Marlborough Desert Natural Area		
V a l u e s	Category	Quantity	Significance	
	On-Site	Nominal	Low	
	Off-Site	Few	Low	
	Public/Political Interest	Multiple	Med	
Element	Preliminary Risk	Post-Plan Risk	Technical Difficulty	Calculated Rating
Safety	Med	Med	Low	Med
Fire Behavior	Med	Med	Low	Med
Resistance to Containment	Low	Low	Low	Low
Ignition Procedures and Methods	Med	Med	Med	Med
Prescribed Fire Duration	Low	Low	Low	Low
Smoke Management	Med	Med	Med	Med
Number and Dependence of Activities	Med	Med	Low	Med
Management Organization	Med	Med	Med	Med
Treatment/Resource Objectives	Low	Low	Low	Low
Constraints	Med	Med	Med	Med
Project Logistics	Med	Med	Med	Med
Calculated Summary Prescribed Fire Plan Complexity 				
Determination		Final Complexity Determination Rationale		
		<i>Overall complexity is moderate. The units lack any high complexity elements. Most moderate elements can be moderated or mitigated. Smoke concerns require mitigation. Coordination remains relatively high when burning in the wildland urban interface. Consequences for escape may be significant. The units are not high complexity because all high risk, and difficulty in the plan should be able to be reasonably mitigated with proper planning and training.</i>		
<small>Information on the responsibilities of the "Plan Preparer", "Technical Reviewer", and "Approved By (Agency Administrator)", see the "Interagency Prescribed Fire Planning and Implementation Procedures Guide" 2017 and for information on the complexity rating see the "Prescribed Fire Complexity Rating System Guide" 2017, found at www.nwccg.gov/publications.</small>				
S i g n a t u r e s	PLAN PREPARER:	 SIGNATURE Alex Entrup PRINTED NAME Northeast Forest and Fire Management, LLC AGENCY		10 / 28 / 19 DATE (MM/DD/YY) Prescribed Fire Burn Boss Type 2 (RXB2) QUALIFICATIONS
	TECHNICAL REVIEW:	 SIGNATURE Joel R. Carlson PRINTED NAME Northeast Forest and Fire Management, LLC AGENCY		10 / 28 / 19 DATE (MM/DD/YY) Prescribed Fire Burn Boss Type 2 (RXB2) QUALIFICATIONS
	APPROVED BY (Agency Administrator):	 SIGNATURE Lisa Vernegaard PRINTED NAME Sudbury Valley Trustees AGENCY		11 / 04 / 19 DATE (MM/DD/YY) Executive Director POSTION TITLE
	APPROVED BY (Agency Administrator):	 SIGNATURE Edward Clancy PRINTED NAME City of Marlborough AGENCY		11 / 13 / 19 DATE (MM/DD/YY) Conservation Commission Chair POSTION TITLE

NOTE: For more information on the "Prescribed Fire Complexity Analysis: PMS 424", "Final Complexity Analysis Summary", and "Agency Administrator" responsibilities, see the "Interagency Prescribed Fire Planning and Implementation Procedures Guide" 2008 version, at <http://www.nwccg.gov/pms/RxFire/rxfire.htm>.

PRESCRIBED FIRE PLAN JOB HAZARD ANALYSIS AND UTV/ATV RISK ASSESSMENT - SIGNATURE PAGE

Prescribed Fire Plan Name: SVT Desert Natural Area

PRESCRIBED FIRE PLAN JOB HAZARD ANALYSIS - SUMMARY





The Job Hazard Analysis is based on the Job Hazard Analysis methods and format in the "Principles of Hazard Tree Risk Management - Hazard Tree and Tree Felling (HTTF) Task Group - Working Paper" 2008, found at www.nwcc.gov/sites/default/files/htsc-risk-mgmt.pdf.

REMAINING RISK LEVEL AFTER CONTROL MEASURES ARE IMPLEMENTED (SELECT HIGHEST RESIDUAL RISK RATING): **LOW**

PRESCRIBED FIRE PLAN UTV/ATV RISK ASSESSMENT - SUMMARY

The "UTV/ATV Risk Assessment" is based on the U.S. National Park Services Section-6 "Motor Vehicle Safety" references found at www.nps.gov/policy/RM50Bdoclist.htm. See Table-2 and 3 and following sections of the "Motor Vehicle Safety" for requirements of ATV/UTV use.

List Rating:	A	B	C
Final Risk Assessment Rating:	MODERATE HAZARD	MODERATE HAZARD	N/A

S i g n a t u r e s	PLAN PREPARER:	 _____ SIGNATURE Alex Entrup _____ PRINTED NAME Northeast Forest and Fire Management, LLC _____ AGENCY	10 / 28 / 19 _____ DATE (MM/DD/YY) Prescribed Fire Burn Boss Type 2 (RXB2) _____ QUALIFICATIONS
	TECHNICAL REVIEW:	 _____ SIGNATURE Joel R. Carlson _____ PRINTED NAME Northeast Forest and Fire Management, LLC _____ AGENCY	10 / 28 / 19 _____ DATE (MM/DD/YY) Prescribed Fire Burn Boss Type 2 (RXB2) _____ QUALIFICATIONS
	APPROVED BY (Agency Administrator):	 _____ SIGNATURE Lisa Vernagaard _____ PRINTED NAME Sudbury Valley Trustees _____ AGENCY	11 / 04 / 19 _____ DATE (MM/DD/YY) Executive Director _____ POSTION TITLE
	APPROVED BY (Agency Administrator):	 _____ SIGNATURE Edward Clancy _____ PRINTED NAME City of Marlborough _____ AGENCY	11 / 13 / 19 _____ DATE (MM/DD/YY) Conservation Commission Chair _____ POSTION TITLE

ELEMENT 4: DESCRIPTION OF PRESCRIBED FIRE AREA

A: PHYSICAL DESCRIPTION

1: LOCATION

Administrative Unit: Desert Natural Area
 Ownership: Sudbury Valley Trustees; City of Marlborough
 Town: Town of Sudbury; City of Marlborough
 County: Middlesex County
 State: Massachusetts
 Prescribed Fire Name: M1, D1, D2
 Topo Map: Maynard Quadrangle USGS
 SW Corner Coordinates: D.D° Lat./Long. N 42.378° W 71.479°
Note: All Coordinates are in Datum WGS84
 Elevation: 165' to 210' above sea level

2: SIZE

SUBUNIT	M1	D1A	D1B	D2A	D2B	D2C	D2D	D2E	TOTAL
ACRES	9	6	3	12	5	6	22	4	67

3: TOPOGRAPHY

The site is relatively flat with slopes of mostly 0 to 2%. The site generally slopes to the south toward a small creek that flows east into Hop Brook.

4: PROJECT BOUNDARIES

The northern boundary is the property line, located roughly 40 feet south of the abandoned railway. The east boundary is the loop trail that runs parallel to Hop Brook. The southern boundary of D2 is the trails and skid trails that follow the edge of the cut area running parallel to Hop Brook and the tributary creek. The southern boundary of M1 and D1 is the edge of the cut area. The west boundary is the dirt road on the west side of M1.

B: VEGETATION & FUELS DESCRIPTION

Vegetation and fuel descriptions are based on field inspection and are classified using the Massachusetts Natural Heritage & Endangered Species Program Natural Communities Classification System. The primary on-site natural community is oak-pitch pine forest/woodland. The fuel model was assigned using the Scott and Burgan fire behavior prediction fuel model set:

Scott, J. H.; Burgan, R. E. 2005. Standard fire behavior fuel models: a comprehensive set for use with Rothermel's surface fire spread model. General Technical Report RMRS-GTR-153.

1: ON-SITE

- Masticated and Burned Pitch Pine – Scrub Oak Community – 14 Acres – 21%
[Low Load, Humid Climate Timber-Shrub SH4]
 Units M1 and D1A were previously masticated and burned. The burn was followed up with mowing in both units. The vegetation is primarily scrub oak with resprouting trees such as birch, oak, aspen, maple, etc. intermixed. The vegetation height is 2-3 feet tall in D1 and is 3-8 feet tall in M1. The surface fuels are a mix of leaf litter, masticated debris, and herbaceous plants. Fire behavior is expected to be moderate and rates of spread moderate to high. D1B is a lowland forest that has not been treated at all.
- Thinned Pitch Pine-Oak Woodland – 50 Acres – 79%
[Moderate Load, Humid Climate Timber-Shrub TU2]
 Tree oak/pitch pine woodlands occupy units D2A - D2E. The canopy is dominated by a mix of tree oak, pitch pine, and white pine. The understory is predominately a mix of ericaceous shrubs. Oak and white pine regeneration are abundant. Flame lengths are expected to be low to moderate and rates of spread moderate.

2: OFF-SITE

North: North of the unit is conservation land (USFWS and Town of Sudbury). The area is forested, and fuels are best described as Moderate Load Broadleaf Litter (TL6). Fire behavior is expected to be lower than inside the unit. Rates of spread are expected to be moderate and flame lengths low.

East: East of the unit is Hop Brook and associated wetlands. The wetlands are heavily invaded by Phragmites, best described as Very High Load, Humid Climate Grass (GR9), and could support extremely high fire behavior.

South: South of D1 and D2 is forested wetlands associated with a creek that drains to the east. If dry, the grasses and shrubs in the wetland could support fire. The fuel model that best describes the area is Moderate Load, Humid Climate Shrub (SH3). South of M1 is untreated pine-oak forest best described as Moderate Load Broadleaf Litter (TL6). Flame lengths are expected to be moderate with low rates of spread.

West: West of the unit is untreated pine-oak forest owned by the City of Marlborough. The fuel model is best described as Moderate Load Broadleaf Litter (TL6). Flame lengths are expected to be moderate with low rates of spread.

C: DESCRIPTION OF UNIQUE FEATURES AND RESOURCES

- The site is within NHESP Priority Habitat PH1440 and is Estimate Habitat of Rare Wildlife EH1040.
- A certified Vernal Pool is located in Unit D2E.
- A natural gas right-of-way runs between M1 and D1. Heavy equipment use may be limited on the ROW.
- Piles of woody debris are located within M1 and D1. If ignited, they could burn into the night causing smoke issues.
- An abandoned railway owned by Massachusetts Bay Transit Authority (MBTA) is directly north of SVT property. Equipment should not be put on the ROW. All firebreaks and ignitions should be on SVT property and not MBTA property.

ELEMENT 5:

GOALS & OBJECTIVES

A: GOALS

- Resource Management - ecological restoration of pitch pine-scrub oak barrens.
- Fuel hazard reduction of surface fuels and overstory/mid-story thermal thinning.
- Training - wildland fire training through practical application in wildland fire behavior, fire suppression principles, and prescribed fire techniques.

B: OBJECTIVES

1: RESOURCE OBJECTIVES

- Greater than 40% of the substrate layer burned in moderate or higher severity.
- Greater than 50% of the low-woody vegetation layer burned in low, moderate, or high severity.
- Greater than 40% of the high-woody vegetation layer burned in low or moderate severity.
- Less than 30% of the overstory trees with canopy scorch greater 50% of total canopy.
- Less than 10% of the white pine (over 40 feet tall) have canopy scorch of greater than 50% of canopy.

2: PRESCRIBED FIRE OPERATIONAL OBJECTIVES

- Complete each prescribed fire within one operational period.
- Have no escapes or injuries.
- Have no smoke impacts to sensitive smoke receptors. Prevent smoke impacts to off-site receptors from exceeding 2.5 ppm (Environmental Protection Agency standard for "Unhealthy for Sensitive Groups") and avoid creating prolonged periods of nuisance smoke generation.
- Complete operations without preventable damage to equipment.
- Have no smoke impacts on roadways.

ELEMENT 6:

FUNDING

A: SOURCE(S)

Funding for portions or all of the burn operations will be managed by the landowner or manager.

B: COST(S)

All resources for planned prescribed fires for this unit will be funded from the participating agencies budget centers.

ELEMENT 7:

PRESCRIPTION

Prescribed burn operations may continue at the discretion of the burn boss if an environmental or fire behavior parameter is outside of prescription limits, if the observed and expected fire behavior is still within and expected to remain within control capabilities of the on-site resources. Adjustments to parameters, resources, and/or tactics must be documented in the burn plan. The changed parameter, resources, and/or tactics cannot result in an increase in the complexity level of the burn.

A: ENVIRONMENTAL PRESCRIPTION

If burning with a KBDI greater than 199 or a period without appreciable (>0.2") precipitation of greater than 5 days; expect fires to burn deeply and persistently, mop-up to be difficult, a need to conduct mop-up over multiple days, and increased frequency of daily unit checks until significant precipitation occurs. An additional Type 6 or larger engine is required when the KBDI is greater than 199 (see Element 11.B).

Environmental Parameters	Min.	Max.	Environmental Parameters	Min.	Max.
Surface Wind Dir. (cardinal clockwise):	Any		EPA PM 2.5 Index:	0	75
20 Foot Wind Sp. (mph):	3	22	EPA Ozone Index:	0	50
Mid-flame Wind Sp. (mph):	0	8	1 Hour Fuel Moisture (%):	6	12
Mixing Height (ft):	1,200	None	10 Hour Fuel Moisture (%):	8	None
Transport Wind Dir. (cardinal):	Any		100 Hour Fuel Moisture (%):	10	None
Transport Wind Sp. (mph):	8	None	Live Herbaceous Fuel Moisture (%):	None	None
Keetch-Byram Drought Index (KBDI):	None	299	Live Woody Fuel Moisture (%):	None	None
Max. Nighttime LVORI (if smolder is expected)	None	6	Air Temperature (°F):	35	90*
			Relative Humidity (%):	30	80

Additional Environmental Parameters:

*No Burn will occur if heat index is over 105°F

** If the two following conditions are met, the weather will be considered out of prescription.

- Mid-flame wind speed greater than 6 mph
- RH less than 35%

B: FIRE BEHAVIOR PRESCRIPTION

Two or three days of drying would be acceptable to reach objectives. Following frost, two or more hours of drying may be needed before fuels are sufficiently cured.

Parameter	TU2	SH4	TL6	SH3	GR9
Max. Head ROS (ch/hr):	29	131	12	64	468
Min. Head ROS (ch/hr):	1	3	0	2	8
Max. Head FL (feet):	5	15	4	17	50
Min. Head FL (feet):	1	2	1	3	7
Max. Backing ROS (ch/hr):	1	4	1	2	14
Min. Backing ROS (ch/hr):	1	2	0	2	7
Max. Backing FL (feet):	1	3	1	4	10
Min. Backing FL (feet):	1	2	1	3	6

ELEMENT 8:

SCHEDULING

A: IGNITION TIME FRAME & SEASON(S)

Any season may be acceptable to reach objectives. Burning during different season will generate different vegetative responses. Spring fires can be used to favor warm season grasses, summer burns to reduce woody encroachment and fall burns to promote forbs. Growing season burns will reduce shrub vigor, while dormant season burns will likely increase stem density. Woodland burns in the first two weeks of May can cause high tree oak mortality. Recently cut or masticated areas with large amounts chipped fuel on the ground, or former logging decks, may create smolder and smoke issues if burned during the summer. Burning in late April to early May, low foliar moisture content in pitch pines may cause increased torching potential.

Other than the first two weeks of May, as tree oak buds break, any season could be good for achieving desirable results. Burning in the first two weeks of May would likely result in too much tree oak mortality.

Burning in the summer or fall may cause overnight smolder. Fuels should be checked by an experienced individual to ensure that fire will not burn deeply into the ground or into heavy downed fuels.

B: PROJECTED PROJECT DURATION

Based on smoke management, holding considerations, and common weather conditions, it is expected that 1 to 5 subunits will be burned in a day. To complete all subunits in the unit will likely take 2 to 6 burn days over the course of one or more years.

Duration for a single day is expected to be approximately 8 to 10 hours from arrival time to departure. Briefing and setup should be approximately 2 hours, ignition and holding will be approximately 3 to 5 hours, mop-up will be approximately 1 to 2 hours (assuming low KBDI – below 100), and de-briefing and breakdown will be approximately 1 hour.

C: CONSTRAINTS

- All ignitions must be conducted between the hours of 0900 and 1700, unless otherwise authorized (check DEP permit).
- From July 1 to September 15 no prescribed fire greater than 20 acres in a single operational period is permitted unless authorized by the Massachusetts Department of Environmental Protection.
- No prescribed fires are permitted during periods that ozone AQI is predicted to be greater than 50, PM 2.5 AQI is predicted to be greater than 75.

NOTE: Check most current Department of Environmental Protection permit for any changes.

ELEMENT 9:

PRE-BURN CONSIDERATIONS

A: CONSIDERATIONS

1: ON-SITE

- The burn plan should be reviewed and adjusted as needed based on changed objectives and conditions (Burn Boss/Technical Reviewer/Agency Administrator)
- Water resources will be identified prior to fire operations (Agency and/or Burn Boss)
 - Hydrant use will be coordinated through Sudbury Fire Department, Marlborough Fire Department, or MA-DCR. (Agency and/or Burn Boss)
 - A suitable draft site is located on the boardwalk over Cranberry Brook crossing south of Unit D2. The draft site may be used as a refill or in a contingency. The draft site should be verified prior to the burn to ensure adequate water depth. If insufficient water is available, Hop Brook should be scouted for a drafting site, likely east of the sand pit. (Agency and/or Burn Boss)
- The burn unit will be closed during fire operations (Agency will post signs and will coordinate with Burn Boss)
- Trails will be posted with signage indicating prescribed fire, as determined necessary by burn boss or agency personnel (Agency and Burn Boss)
- Downwind roads should be posted at the discretion of the Burn Boss. (Burn Boss)
- Gates should be opened in the burn unit and adjacent burn units. (Agency)
- Confirm staging area for prescribed fire and contingency resources (Burn Boss and/or Agency)

- Duff within targeted subunit(s) will be checked prior to ignition to evaluate potential for overnight smoldering. If any smoldering is expected, the unit *should not be burned with a maximum nighttime LVORI of 7 or higher.* (Burn Boss)
- **Pre-Burn Preparation** (All line prep is the responsibility of the Agency)
 - See Fire Line Map in Appendix A
 - Line Prep
 - Note: It is recommended that firebreaks are installed using a compact track loader with a mowing deck, or a large tractor with a mowing deck. Additional width (up to 15 feet wide) can facilitate faster ignitions.
 - The firebreaks to be prepared should be based on the target units to be burned. Only the target unit(s) need to be prepped. Prepping additional units may improve options, but are not necessary to conduct a burn.
 - Firebreaks may not be established on MBTA land and should be installed on SVT land.
 - Ensure access for 4x4 pickup truck to access to D2 from the gas line. (Agency)
 - Internal roads and trails that are used as fire breaks will mowed at least 8 feet wide and passable by a Type 6 engine (pickup truck).
 - Skid Trails to be used as breaks should be mowed 8 feet wide and passable by a Type 6 Engine (pickup truck).
 - Sides of the internal roads will be cut back at least three feet on both sides of road. All vegetation greater than two feet tall and less than three inches in diameter will be cut/mowed. The roads will be passable by a type 6 engine (pickup truck).
 - Skid Trails dead end in subunit D2E and D2C. The skid trails will be extended to join existing trails/breaks mowed at least 8 feet wide and passable by a Type 6 Engine in all target burn units (pickup truck).
 - The boundary between D1 and D2 is a wet drainage. Fire may be allowed to self-extinguish in the wet area if conditions are wet and smolder is not likely. If burned during dry conditions, the west line of D2A and D1B should be mowed four feet wide and passable on foot.

2: OFF-SITE

- Coordinate with participating agencies to arrange logistics concerning crew and equipment. (Burn Boss and Agency)
- Coordinate with USF&WS to stage and enter from Hudson Road through their gate and in on Fisher Loop. (Burn Boss and/or Agency)
- Contact Tenneco/Kinder-Morgan far in advance of burn to coordinate any prep required or restrictions needed for working on and around the gas line right-of-way. (Agency and Burn Boss)
- Confirm local fire departments, other appropriate town agencies, and sensitive receptors are made aware of planned prescribed fire activities. (Burn Boss and Agency)
- Ensure operations are compliant with MESA or submit plan to NHESP for MESA review as required (Agency)
- Obtain two permits from Massachusetts DEP. One permit from DEP Central Region and one from DEP Northeast Region. (Agency)
- Confirm that Town of Sudbury Conservation Commission permit is in place for burning into wetland buffers, if targeting wetland buffers. (Agency)

B: METHOD FOR OBTAINING WEATHER AND SMOKE MANAGEMENT FORECAST(S)

All weather sites and frequencies are recommendations; the burn boss will adjust frequency and source based on availability of forecasts, needs, and conditions.

- NWS Fire Weather (Fire Weather & Red Flag Warnings), Point Forecast, and Hourly Weather Graphs are available at <http://www.weather.gov/box/fire> (use MAZ005 – Central Middlesex MA), and will be checked the day prior to the burn and the morning of the burn.
- Upper air soundings can be accessed at the NWS web page at <http://www.spc.noaa.gov/exper/soundings/> to run model data in bufkit or a similar program upper air soundings can be accessed at http://www.meteo.psu.edu/bufkit/NEUS_HRRR_06.html (use station KBED), and run in the bufkit program (or similar program) to project winds, dispersion conditions, and other variables. If the NWS Fire Weather page is not operating, running this model can provide missing smoke management information.

- HYSPLIT Trajectory and Concentration Models can be accessed at http://www.arl.noaa.gov/HYSPLIT_info.php and can be used for day of burn smoke management considerations.
- VSmoke – Web can be accessed at <http://weather.gfc.state.ga.us/GoogleVsmoke/vsmoke-Good2.html> and is designed to model smoke dispersion.
- A spot weather forecast request may be made on the NWS Fire Weather Page at <https://www.weather.gov/spot/>. This forecast is not always available if so, note that spot weather forecast was not accessible. Some federal partner organizations require a SPOT forecast to assist.
- Massachusetts Department of Environmental Protection AQI conditions and forecasts can be accessed at <http://eeaonline.eea.state.ma.us/dep/massair/web/#/pollution/map/forecast> or the US Environmental Protection Agency's AIRNOW Air Quality Index for PM 2.5 and Ozone can be acquired at <https://airnow.gov/>.

C: NOTIFICATIONS

Notifications will be coordinated by Burn Boss and Agency.

Agency & Contact	Comments	Phone Number
Sudbury Valley Trustees Laura Mattei, Director of Stewardship	Will coordinate date and timing of prescribed burn. Notify prior to ignition	Office: (978) 443-5588 x 134
DEP Northeast Regional Office Susan Ruch Karen Golden-Smith	For D units only, email notification of window and prior to ignition not more than 48 hours prior to burning	NE Office: (978) 694-3275 Email: susan.ruch@mass.gov Email: karen.golden@mass.gov
DEP Central Regional Office Michelle Delemarre Giles Steele-Perkins	For Unit M only, email notification of window and prior to ignition not more than 48 hours prior to burning	Central Office: (508) 767-2777 Email: michelle.delemarre@mass.gov Email: Giles.Steele-Perkins@mass.gov .
DCR Forest Fire Control (Dist. 14) Tom Muise, Dist. Warden	Prior to ignition. May provide resources.	Office: (508) 497-0147 Cell: (508) 962-1402
U.S. Fish & Wildlife Service Tom Eagle, Deputy Wildlife Refuge Manager	Prior to ignition.	Office: (978) 443-4661
Tennessee Gas/Kinder Morgan Mitch Myer Operations Manager NE Area	Notify of burn window and burn day. Will coordinate necessary marking and/or prep of the pipeline.	Office: (413) 821-2022 Cell: (713) 205-7864 Email: Mitchell_Myer@kindermorgan.com
Sudbury Fire Department John Whalen, Fire Chief Timothy Choate Asst. Chief	Prior to ignition. Verbal permission for D units.	Main: (978) 440-5301 x 5311
Marlborough Fire Department Kevin Breen, Fire Chief	Prior to ignition. Need verbal permission for M Units. Can get permission from Chief or Duty Officer. May post notifications to FD social media.	Main: (508) 624-6984
Town of Hudson Fire Department Acting Fire Chief Bryan Johannes	Prior to ignition.	Office: (978) 562-5565 Dispatch: (978) 562-3434
Town of Marlborough Cons Comm Pricilla Ryder, Cons. Officer	Prior to ignition if on Town of Marlborough Land (Unit M)	Office: (508) 460-3768 Email: pryder@marlborough-ma.gov

ELEMENT 10:

BRIEFING

At the burn boss' discretion the checklist may be adjusted to meet specific needs, however a copy of the completed checklist must be included in the burn file and the basic components of the above checklist must be retained.

Briefing Checklist

- | | |
|-------------------------------------|-----------------------------|
| 1. Burn Organization | 6. Ignition Plan |
| 2. Burn Objectives | 7. Holding Plan |
| 3. Description of Burn Area | 8. Contingency Plan |
| 4. Expected Weather & Fire Behavior | 9. Wildfire Conversion Plan |
| 5. Communications | 10. Safety |

Alternative Briefing Checklist Used? Yes / No

BURN BOSS:

	/	/
<i>INITIALS</i>	<i>DATE</i>	

ELEMENT 11:

ORGANIZATION & EQUIPMENT

A: POSITIONS

Positions and number of staff are suggested for ease and efficiency of operations. The burn boss may adjust the listed positions and number of staff depending on site conditions, resources, expected fire behavior, and common crew experience levels. The minimum crew size is 8. Any adjustment must be of a type that will not affect the complexity of the burn and be documented in the burn plan or burn day log.

- | | |
|--|---|
| • 1 Burn Boss
<i>Prescribed Burn Boss Type 2</i> | • 4 Prescribed Burn Crew
<i>Firefighter Type 2</i> |
| • 2 Holding Specialists
<i>Firefighter Type 1</i> | • 1 Fire Weather Observer (may have other responsibilities)
<i>Fire Effects Monitor, or Firefighter Type 2</i> |
| • 1 Firing Specialist
<i>Firefighter Type 1</i> | |

B: EQUIPMENT

The burn boss may adjust the amount and type of equipment needed based on site conditions, resources, expected fire behavior, crew size, and crew experience. The adjustment must be of a type that will not affect the complexity of the burn and will be documented in the prescribed fire plan.

- | | | |
|--------------------|---------------------------|-----------------------------|
| • 5 Drip Torches | • 2 Prescribed Burn Signs | • 1 Type 6 Engine or larger |
| • 6 Backpack Pumps | • 8 Radios | • 1 Type 7 Engines or UTV |
| • 8 Hand Tools | • 1 First Aid Kit | • 1 Leaf Blower |
| • 1 Weather Kit | • 1 Set of PPE/ Person | |

C: SUPPLIES

The burn boss may adjust quantities and types of supplies based on season, conditions, and size of crew. The adjustment must be of a type that will not affect the complexity of the burn and will be documented in the prescribed fire plan.

- | | |
|---|---|
| • 20 Gallons Drip Torch Fuel
<i>NOTE: Drip torch amounts should be doubled for growing season burns.</i> | • 5 Gallons of Drinking Water
<i>NOTE: Drinking water amounts should be doubled if ambient air temperature is forecast to be greater than 80° F, if forecast to be greater than 85° F 5 gallons should be an electrolyte sports drink.</i> |
|---|---|

ELEMENT 12:

COMMUNICATIONS

A: RADIO FREQUENCIES

Frequencies will be identified, verified, and adjusted as needed prior to ignition and will be based on need and attending agencies. At a minimum, a tactical frequency will be identified for prescribed fire operations.

Supervisors and any crew that will be working independently of an immediate supervisor or out of visual and verbal communication distance with an immediate supervisor with a radio or adjacent resources should be issued a radio.

COMMAND FREQUENCY(S):

Channel	Receive freq./tone (PL)	Transmit freq./tone (PL)	Notes
DCR 16	159.285/-	159.285/-	If required (NFFPC)
DCR 13	151.235/71.9	151.235/71.9	Alternative command and reserve in the event of contingency (MA DCR Fire Control)

TACTICAL FREQUENCY(S):

Channel	Receive freq./tone(PL)	Transmit freq./tone(PL)	Notes

AIR OPERATIONS FREQUENCY(S):

Channel	Receive freq./tone(PL)	Transmit freq./tone(PL)	Notes
DCR 14	151.310/71.9	151.310/71.9	Air operations to be coordinated through MA DCR Fire Control

B: TELEPHONE NUMBERS

Agency	Contact & Comments	Phone Number
City of Marlborough Conservation Commission	Conservation Officer Pricilla Ryder	Office: (508) 460-3768 Email: pryder@marlborough-ma.gov
Town of Sudbury Conservation Commission	Chair Thomas Friedlander	Office: (978) 440-5471
DEP Northeast Regional Office	Email notification of window and prior to ignition not more than 48 hours prior to burning	NE Office: (978) 694-3275 Email: susan.ruch@mass.gov Email: karen.golden@mass.gov
DEP Central Regional Office Michelle Delemarre Giles Steele-Perkins	Email notification of window and prior to ignition not more than 48 hours prior to burning	Central Office: (508) 767-2777 Email: michelle.delemarre@mass.gov Email: Giles.Steele-Perkins@mass.gov
Massachusetts State Police, Concord Barracks, Main Number		Office: (978) 369-4100
State Police, Framingham Barracks, Main Number		Office: (508) 820-2250

Metrowest Daily News (newspaper)	30 day prior to the burn window but not greater than 120 days prior to a prescribed burn. (one option for public outreach)	Office: (508) 626-4122
Sudbury Pines Extended Care	Assisted living facility southeast of burn unit within the nighttime smoke buffer	Office: (978) 443-9000
Orchard Hill Assisted Living	Assisted living facility and daycare south of burn unit within nighttime smoke buffer	Office: (978) 443-0080
Marlborough Hospital 157 Union Street, Marlborough, MA 01752	Nearest Emergency Room	Office: (508) 481-5000
Framingham Union Hospital 115 Lincoln Street, Framingham, MA 01701		Office: (508) 383-1000
Brigham - Women's Hospital Burn Center 75 Francis St., Boston, MA		Office: (617) 732-7715
Sumner Redstone Burn Center, MA Gen. Hospital 55 Fruit Street, Boston, MA	Nearest Burn Center	Office: (617) 726-3354

ELEMENT 13:

SAFETY & MEDICAL

A: SAFETY HAZARDS

- Tick-Borne Diseases
- Fatigue, Heat Exhaustion, and Dehydration
- Rollover Potential
- Smoke Inhalation
- Smoke on Roadways
- Gas Line Damage from Excess Weight
- Fast-moving Fire
- Uneven Terrain Holes and Depression
- Overhead Dangers
- Entrapment
- Tripping Hazards
(Stumps, Branches, Vegetation, Barbed Wire, etc.)

B: HAZARD MITIGATION

- If wind direction makes smoke on roadways likely, burn boss will direct smoke signs to be posted as needed.
- All crew will be briefed on tick-borne disease prevention and associated safety measures.
- Gates in critical locations near the unit will be unlocked on the burn day and gates will be clearly identified to the crew.
- Supervisors will maintain accountability of crew.
- Crew experiencing excessive smoke inhalation will have responsibilities rotated to give relief from smoke.
- Extra drinking water will be made available to crew and crew will be briefed on symptoms and treatment of heat exhaustion, dehydration, and fatigue. Supervisors will be reminded to watch for symptoms of heat exhaustion, dehydration, and fatigue.
- First Aid/CPR, EMT, and Paramedic qualified personnel will be identified during crew briefing in addition to the location and type of medical gear onsite.
- At a minimum one fire resource, will be First Aid and CPR certified.
- Driving of UTV or engines on steep side-slope will be avoided.
- Crew will be instructed on proper driving over the gas line ROW.

C: EMERGENCY MEDICAL PROCEDURES

- Victim will be stabilized and moved only if directly under threat that cannot be mitigated.
- The burn boss will be notified of the situation, location of patient, and assign qualified medical personnel to the patient.
- The burn boss or designee will activate EMS and if possible put a qualified burn crew member in direct communications with EMS. Follow Medical Emergency Guidelines and Procedures as outlined in IRPG.
- Qualified individuals will provide immediate first aid until EMS personnel arrive and relieve the first responder.

- After the incident, an accident report will be filled out and a copy provided to the burn boss, property owner/manager, and the individuals home unit.
- Name of victim will not be used over radio.

D: EMERGENCY EVACUATION METHODS

- The burn boss and identified on-scene medical lead will implement the medical plan to initiate EMS response and transport to the nearest appropriate treatment facility. Call 911 and provided symptoms and location. Stabilize victim in safe, accessible location. EMS dispatch will notify an ambulance and direct them to the patient.
- In the event that an air evacuation is required for a patient the determination will be made by EMS staff and the ambulance service or fire department will facilitate the evacuation.

E: MEDICAL FACILITIES

Marlborough Hospital
 157 Union Street, Marlborough, MA 07152
 Distance Approximately 7.5 Miles
 Estimated Travel Time 18 Minutes
 (508) 481-5000

Mass General Hospital
 55 Fruit St., Boston, MA 02114
 Distance Approximately 24 miles
 Estimated Travel Time 50 minutes
 (617) 726-3712

Directions to Marlborough Hospital from the end of Moore Road, Sudbury, MA 01776

179 Moore Rd
 Sudbury, MA 01776

- Take Moore Rd and Firecut Ln to Hudson Rd** 4 min (1.1 mi)
1. Head northeast on Moore Rd toward Surrey Ln 0.4 mi
 2. Turn left onto Stearns Ln 0.2 mi
 3. Turn right onto Firecut Ln 0.3 mi
 4. Turn left onto Ronald Rd 0.2 mi
- Continue on Hudson Rd. Take Main St to Brook St in Hudson** 5 min (2.8 mi)
5. Turn left onto Hudson Rd 0.8 mi
 6. Continue onto Sudbury Rd 0.4 mi
 7. Slight left onto State Rd 0.2 mi
 8. Continue onto Main St 1.5 mi

- Take Murphy Rd to Hosmer St** 3 min (1.3 mi)
9. Slight left onto Brook St 0.3 mi
 10. Keep left to continue on Murphy Rd 0.2 mi
 11. Turn right to stay on Murphy Rd 0.8 mi

- Take Stevens St to Union St in Marlborough** 4 min (1.9 mi)
12. Turn left onto Hosmer St 0.4 mi
 13. Turn right onto Stevens St 1.5 mi

- Follow Union St to your destination** 2 min (0.4 mi)
14. Turn right onto Union St 0.4 mi
 15. Turn right at Highland St
 Destination will be on the left 30 ft

UMass Memorial - Marlborough Hospital
 157 Union St, Marlborough, MA 01752

ELEMENT 14:

TEST FIRE

A: PLANNED LOCATION

The test fire will be initiated in the unit on the downwind side unless otherwise determined by the burn boss. The test fire will be in representative fuels, with the burn not continuing beyond the test fire phase until the burn boss has determined that an accurate representation of expected fire behavior has been demonstrated. The burn will not continue unless objectives can be met and the burn can be conducted within prescription limits in a safe manner.

B: TEST FIRE DOCUMENTATION

Weather conditions during the test fire will be recorded and added to the prescribed fire report package. Upon completion of the test fire, an announcement will be made to the crew stating whether the burn will continue or be shut down. This announcement should be documented in the burn day event log or by some other means.

ELEMENT 15:

IGNITION PLAN

All elements in the Ignition Plan may be adjusted by the burn boss to meet given conditions. The adjustment must be of a type that will not affect the complexity of the burn and will be documented in the prescribed fire plan.

A: IGNITION STAFFING

- 1 Ignition Specialist
Firefighter Type 1
- 1 Prescribed Burn Crew
Firefighter Type 2

B: FIRING DEVICES

- Drip Torches
- Launched Flares
- Hand-thrown Flares
- Fusees
- Other Devices as Needed and Directed by the Firing or Burn Boss

C: FIRING METHODS

Firing will be executed in a manner that meets burn and resource management objectives while still ensuring effective and safe holding operations. Ignition methods should prevent crown fire and torching near the fire line. Firing methods should minimize re-burn potential, torching near holding lines, and spotting distance. Additionally, when using strip head firing, circular firing, and ring firing patterns, care should be taken so as to maximize the ability of wildlife to escape direct impact from flaming fronts. The ignition team will coordinate all actions with the holding resources and the burn boss so that operations do not negatively impact one another.

D: FIRING TECHNIQUES

- Backing and/or flanking fire on holding lines
- Head firing using single or multiple strip or dot fires
- Circular firing for completion of the unit after downwind portions have been burned out.

E: FIRING SEQUENCES

- Establish blackline on the downwind lines.
- As blackline is extended on the downwind lines, commence interior ignition.
- Continue creating blackline on the downwind lines and igniting the interior until the majority of the unit is complete.
- Ensure that the upwind line is not ignited until interior ignition crew is out and the downwind holding line is secure.
- Continue until the unit is completed.

F: FIRING PATTERNS

- On the downwind lines, establish black that is adequately wide to stop a head fire when used in combination with the hard breaks (fire breaks devoid of burnable material) or soft breaks (fire breaks that contain burnable material). Ensure that fire intensity near holding lines is sufficient to minimize the potential of re-burn.
- Extend fire into the unit from the black using appropriate firing techniques.
- Extend black along holding lines and continue igniting interior progressively as holding lines are completed.
- Ensure that interior ignition does not progress faster than the blacklining of the downwind holding lines.
- Complete the unit by ringing the final portion.
- Other techniques or strategies may be used to achieve objectives at the discretion of the burn boss or firing boss.

ELEMENT 16:

HOLDING PLAN

All elements in the Holding Plan may be adjusted by the burn boss to meet given conditions. The adjustment must be of a type that will not affect the complexity rating of the burn and will be documented in the prescribed fire plan.

A: HOLDING STAFFING

- 2 Holding Specialists (1 if burning into black)
Firefighter Type 1
- 2 or more Prescribed Burn Crew
Firefighter Type 2

B: HOLDING EQUIPMENT & WATER RESOURCES

Water sources will be identified on the day of the prescribed burn. At a minimum, the nearest operational water source and the travel time and route will be identified in the crew briefing.

- 1 Drip Torch per Holding Team
- 2 Backpack Pumps per Holding Team
- Miscellaneous Hand Tools
- 1 Type 6 Engine or larger
- 1 Type 7 Engine-UTV

C: HOLDING PROCEDURES

- The development of the downwind holding line will be the basis for the speed of the operation.
- Holding teams will coordinate with each other and the ignition team to avoid negative impact on adjacent resources.
- Spot fires and slop-overs will be suppressed using direct attack.
- The downwind holding line crew will be responsible for establishing black to improve the line.
- The upwind holding line crew will only ignite on their line when it will not negatively impact the other holding team or the ignition team. Careful coordination with the ignition team will be executed whenever igniting.
- Driving on the gas line should only be to cross at right angle or as otherwise authorized.

D: CRITICAL HOLDING POINTS & ACTIONS

- A downwind patrol for possible spot fires is required.
- When holding on soft breaks (fire breaks that contain burnable material), care should be given to ensure that fire on the line does not rekindle or creep across the line.
- Piles of woody debris in units M1 and D1 should be excluded. If they catch fire, they should be extinguished.

ELEMENT 17:**CONTINGENCY PLAN**

Trigger Point	Action Needed
Multiple Spot Fires	Adjust ignition and increase downwind patrolling or shut down.
Slop-over	Suppress slop-over and shutdown burn if necessary.
Minor Injury	Assign first aid first responder to victim, identify source of injury, and shutdown burn if required.
Significant Injury	Assign first aid first responder to victim, identify source of injury, activate EMS, and shutdown burn.
Report of Critical Smoke Sensitive Area Being Impacted	Adjust ignition and monitor results; shut down burn if required.
Smoke Impacting Roadway	Smoke signs will be deployed. Ignition patterns adjusted or burn will be shut down. Law enforcement contacted if needed.
Wind Shift	Determine if the burn should continue or be shut down. If the burn continues adjust holding and ignition tactics as needed.
Objectives Not Being Met	Adjust ignition or shut down burn.
Unit is No Longer Within Prescription	Prescribed fire operations will cease and the fire will be suppressed or managed to reduce and/or mitigate hazards.
Escape Fire	Notify the fire department, shutdown the prescribed burn, and suppress the escape.

A: WILDFIRE CRITERIA

The burn boss will consider the prescribed fire an escape when fire leaves the unit and one or both of the following conditions exist:

- The fire has exceeded or is expected to exceed on-site initial attack capabilities.
- The fire has, or is expected to leave SVT or town-owned property.

B: ESCAPED FIRE INCIDENT COMMAND

The senior Fire Department officer, or DCR Fire Control officer, or other mutual aid designee will serve as the Incident Commander (IC) in the event of an escape unless otherwise pre-arranged. If no Fire Department is present, the burn boss will serve as the IC until relieved. Upon the Fire Department assuming command the burn boss will immediately transition all command authority to the IC, provide as much pertinent information as possible, confirm accountability of all prescribed fire resources, and announce the transition to the prescribed burn crew. The burn boss will assign a liaison from the burn crew to the IC and designate a supervisor in charge of the prescribed burn crew to direct suppression actions by the prescribed burn crew in coordination and under the direction of the IC. The burn boss can serve in any one of these two capacities or may perform the tasks of both positions – as directed by the IC.

C: NOTIFICATIONS

Emergency 911
Sudbury Fire Department, Chief John Wahlen
Marlborough Fire Department, Chief Kevin Breen
DCR Forest Fire Control, Dist. 14, Tom Muise, Dist. Warden
Sudbury Valley Trustees, Laura Mattei Conservation Director

Emergency: 911
Office: (978) 440-5301 x 5311
Office: (508) 624-6984
Office: (508) 497-0147; Cell: (508) 962-1402
Office: (978) 443-5588 x 134

D: INITIAL ATTACK CONTINGENCY LINES

Fuels adjacent to the prescribed unit are generally similar to the unit. If fire has entered a neighboring burn unit, indirect attack may be used if deemed the best option by the burn boss.

North: North of the burn units is the abandoned railway. It is the primary contingency line. The rail line is a trail that is relatively free of fuels, but it is surrounded by trees and shrubs (TL6).

East: Hop Brook is east of the burn units. It is bordered in some areas by Phragmites (GR9), which could support high fire behavior. Hop Brook would likely be an adequate fire break, but fire could potentially cross in places.

South: South of Unit D is a creek/wetland complex that would serve as a contingency line. South of M1 is an area of lower fuels that could be suitable for direct attack. The creek/wetland that runs south of Unit D is roughly 700 feet south of the M1 line.

West: West of M1 is lower fuels suitable for direct attack (TL6). Beyond the forested area is a wetland that would serve as a fire break.

E: EXTENDED ATTACK ACTIONS

The Incident Commander will be in charge of all extended attack activities. The prescribed burn crew will assist and report to the IC through the chain of command established during the incident. If possible, a staffed staging area should be established. The following are general tactical recommendations that should be considered in the event of an escape:

North: A system of trails is in the protected areas to the north. USFWS and the Town of Sudbury own the land between the railroad bed and the neighborhoods to the north. The trails should be adequate fire breaks, held on foot.

East: East of Hop Brook are residential lots nested in mixed hardwood and white pine forests (TL6) accessed off of Dutton Rd.

South: South of the unit D is are two creeks/wetlands with trails between the two drainages. The trails and/or the drainages should be sufficient fall back lines. Three trails are on protected land and could serve as fall back lines.

West: West of the unit are a number of wetlands with cleared land between the wetlands. Fire should be accessed from the railway bed and stopped in the wetlands or cleared areas.

A: COMPLIANCE

- Marlborough or Sudbury Fire Department notification of intent to burn prior to ignition. (see notifications for contact information).
- Massachusetts Department of Environmental Protection (DEP) notification of intent to burn prior to ignition.
- No burning if ozone AQI is predicted to be greater than 50, PM 2.5 AQI is predicted to be greater than 75, and/or a Red Flag Warning has been posted.
- Residents and visitors shall be notified of the prescribed burn activities by means of posting of physical placards on significant roadways, access trails, and neighborhood areas adjacent to the burn zone(s) as well as notice(s) in newspaper(s) of local circulation or social media.
- All ignitions will be conducted between the hours of 9:00 am through 5:00 pm with all burns being in burn down mode between 5:00 pm and 9:00 am, unless otherwise authorized.
- The DEP permit is renewed every two years. The current permit should be reviewed for additional criteria and/or any changes to criteria from the time of the preparation of this prescribed burn plan.

B: PERMITS

Massachusetts Department of Environmental Protection (DEP) Northeast Regional Office – Air Quality Permit

- Email notification to DEP is to take place prior to ignition but not greater than 48 hours prior to ignition. The notification shall be emailed to Karen Golden-Smith at karen.golden-smith@mass.gov and susan.ruch@mass.gov.
- Fire Department Burn verbal or written permission to burn within 48 hours of ignition.
- Conservation Commission Permit to burn into wetlands.

C: SMOKE SENSITIVE AREAS

Smoke management methods from “Managing Smoke at the Wildland –Urban Interface” were used to identify the following Smoke Sensitive Areas. When using this method, the maximum burn size is 50 acres at any one time. Individual burns may be over 50 acres, but the Burn Boss should make smoke impact considerations. The 500’ and three ¼ distance buffers of the 0.75, 1.0 and 1.5-mile buffers are used for daytime burning and the three (0.75, 1.0 and 1.5-mile) full distance buffers are used to identify potential low visibility impact if the unit smolders during nighttime conditions. Fuel Category F (“Any other native understory fuel type under 3 feet high”) was used for smoke buffers. For 20-foot winds less than 5 mph, Smoke Sensitive Areas were identified with projections from the extreme edges of the burn units.

If subunits are burned with a wind direction where smoke is predicted to travel into subdivisions or across roads immediately adjacent, notifying downwind residences, posting signs, or using a detail for traffic control may be required. In particular, subdivisions within the 500’ buffer should be notified of any burns, particularly if the smoke column does not lift up and over developments.

Daytime Sensitive Areas

<u>500’ Buffer</u>	Smoke Sensitive Areas fall within the 500’ initial buffer. <ul style="list-style-type: none"> • None
<u>¼ of 0.75 Mile Buffer</u>	Smoke Sensitive Areas fall within the ¼ of 0.75-mile buffer for the 61 to 70 Dispersion Index buffer. <ul style="list-style-type: none"> • See 500-foot daytime buffer list
<u>¼ of 1.0 Mile Buffer</u>	Smoke Sensitive Areas fall within the ¼ of 1.0-mile buffer for the 51 to 60 Dispersion Index buffer. <ul style="list-style-type: none"> • See ¼ of 1.0 -mile daytime buffer list
<u>¼ of 1.5 Mile Buffer</u>	Smoke Sensitive Areas fall within the ¼ of 1.5-mile buffer for the 41 to 50 Dispersion Index buffer. <ul style="list-style-type: none"> • See ¼ of 1.5-mile daytime buffer list • Residences north of the unit on Moore Rd., Surrey Ln., Pondview Rd., and Partridge Ln. • Residences east of the unit on Dutton Rd.

Nighttime Sensitive Areas

<u>500’ Buffer</u>	Smoke Sensitive Areas fall within the 500’ initial buffer. <ul style="list-style-type: none"> • None
<u>0.75 Mile Buffer</u>	Smoke Sensitive Areas fall within the 0.75-mile buffer for the 61 to 70 Dispersion Index buffer. <ul style="list-style-type: none"> • See 500-foot nighttime buffer list • Residential areas primarily to the northeast and southwest.

1.0 Mile Buffer

Smoke Sensitive Areas fall within the 1.0-mile buffer for the 51 to 60 Dispersion Index buffer.

- See 0.75-mile nighttime buffer list
- Massachusetts Department of Fire Services to the north
- Main St./Sudbury Rd./Hudson Rd. to the north

1.5 Mile Buffer

Smoke Sensitive Areas fall within the 1.5-mile buffer for the 41 to 50 Dispersion Index buffer.

- See 1.0-mile nighttime buffer list
- US Hwy. 20 (Old Post Rd.) to the south.
- Orchard Hill Assisted Living facility to the south.
- Sudbury Pines Extended Care facility to the southeast.

D: SMOKE MANAGEMENT & MITIGATION

General mitigation practices:

- A general area-wide notification should be made via a radio, print announcement, telephone calls, press release in local paper, or social media.
- Occasional smoke patrols will be in place for downwind roadways.
- Maintain communications with fire departments in expected smoke shed.
- Burn with conditions favorable to lift and dispersion.
- Create a strong convective column to lift smoke above surrounding receptors.
- Dilute smoke by burning only a portion of the unit if lift and dispersion are not favorable for the entire unit.
- Dispatch smoke patrols in areas that could be impacted and if impacted evaluate need to shutdown burn.
- Minimize overnight smoldering to avoid possible fog associated with burning near the coast.
- If overnight LVORI is predicted to be 7 or greater, overnight smoldering should be minimized to the greatest extent possible.
- If residual smoke is present at dusk, monitor throughout the night. All Smoke Sensitive Areas and be prepared to mitigate impacts.
- Do not burn under an Air Quality Action Alert day.
- If project fuels are in the subunit, residual smoke may be more significant than typical for a grass or shrub unit burn. If KBDI is 99 or greater, any piles of debris should be checked for dry fuel depth and residual smoldering potential prior to burn.

ELEMENT 20:

MONITORING

All monitoring outlined may be adjusted by the burn boss and agency representative to meet given conditions. The adjustment must be of a type that will not affect the complexity rating of the burn and will be documented in the prescribed fire plan.

A Fire Weather Observer or Fire Effects Monitor assigned to the burn will use a prescribed burn event/weather form will be used to document fuels, weather, fire behavior, smoke dispersal, and burn severity information for the prescribed fire.

A: FUELS INFORMATION

At a minimum, fine dead fuel moisture will be calculated. Downed dead fuel moistures for 1, 10, and 100-hour fuels may be measured using a protimeter (if available) periodically during the burn. The KBDI for the previous day will be calculated prior to ignition. Additionally, for the period of late April and May foliar moisture content for pitch pine for the previous day should be calculated if burning in a pitch pine unit.

B: WEATHER MONITORING

Weather will be recorded prior to the test fire. Fire weather will be recorded every 60 minutes or as directed by the burn boss. Before the test fire is ignited, probability of ignition should be calculated and should be re-calculated each time fire weather is recorded.

C: FIRE BEHAVIOR MONITORING

Flame length, rate of spread, and residence time should be estimated hourly and recorded by fuel type. Photos of fire behavior should be taken periodically with the approximate location and direction recorded. Representative before and after photos should be taken.

D: MEASURING OBJECTIVES

A burn summary will be completed by the burn boss using information compiled from burn day records. Burn severity index will be completed by designated crew members for interpretation and incorporation in the summary prepared by the burn boss. The summary will evaluate the success of each prescribed burn objective as related to prescribed fire operations.

E: SMOKE DISPERSAL

Communication should be maintained with the local fire departments and the Sudbury Fire Tower (if staffed) to ascertain if receptors are being impacted by smoke.

If concerns of negative smoke impacts arise, a smoke monitor will be dispatched to check potential problem areas and inform the burn boss and the fire effects monitor of conditions.

ELEMENT 21:

POST-BURN ACTIVITIES

All post-burn activities may be adjusted by the burn boss to meet given conditions. The adjustment must be of a type that will not affect the complexity of the burn and will be documented in the prescribed fire plan.

- An After Action Review should be conducted with the crew.
- The unit needs to be checked every day between 1100 and 1400 by a fire-trained person until an appreciable rain event and/or the burn boss declares the unit is 100% out. If KBDI is greater than 200 or dry conditions occur immediately following the burn, the frequency of checks should be increased.
- The burn day summary (Fire Summary Report) should be completed within 30 days by the Burn Boss.
- The burn file should be assembled and filed by SVT staff.

APPENDIX A:

MAPS & PHOTOS



Abandoned railway north of unit



Typical skid trail and fuels in D2



Aspen clonal regeneration D2C



Phragmites invaded wetland east of D2



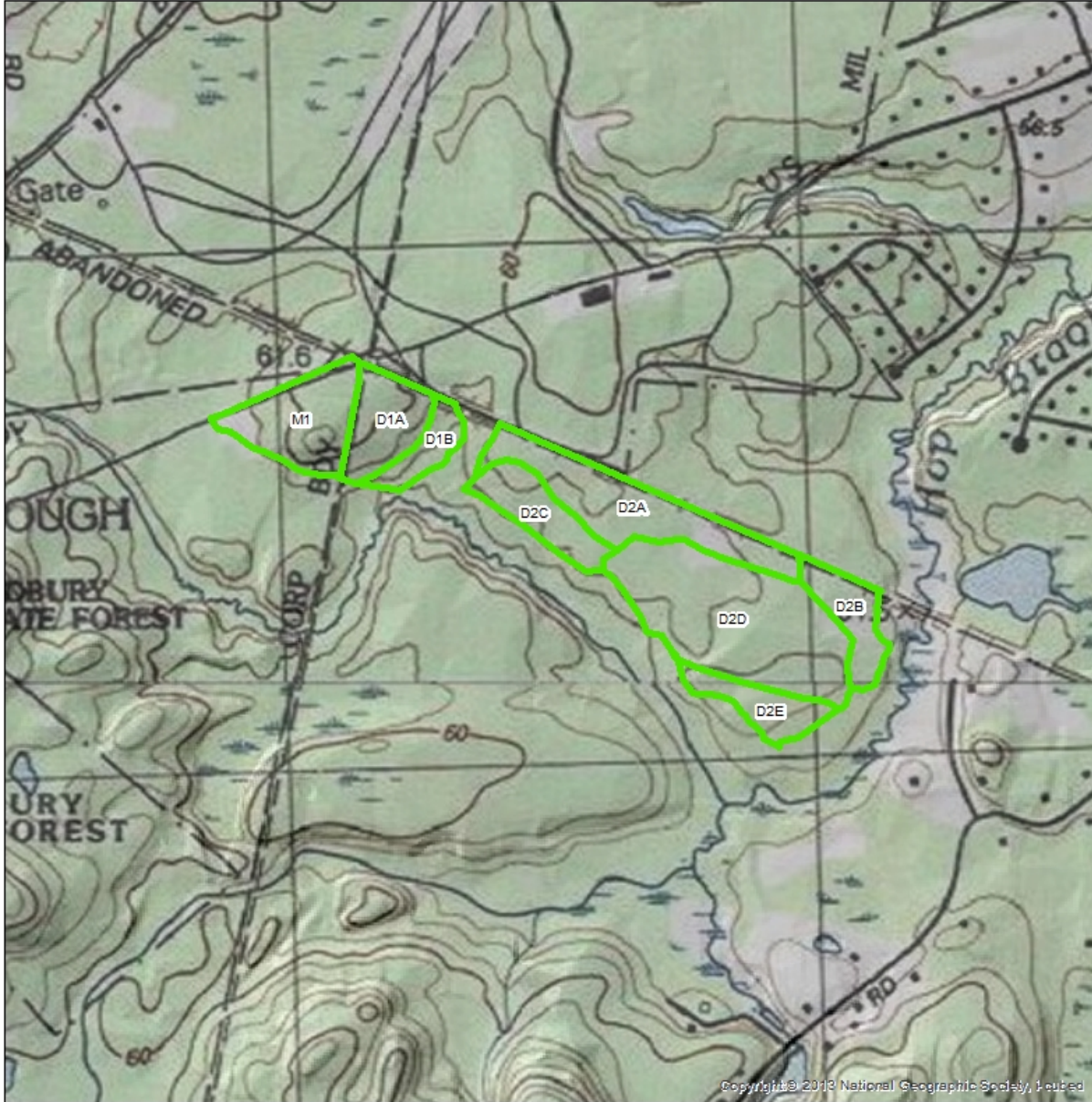
Typical fuels in M1 (notice snags)



Typical fuels in D1 (notice piles of heavy fuels)

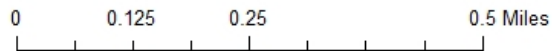


Sudbury Valley Trustees Desert Natural Area Conservation Land Prescribed Burn Plan Burn Units Topographic Map



Legend

 Burn Units



Produced By:  Northeast
Planning, Inc.

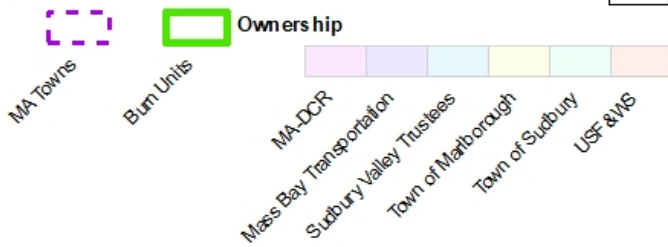
Sources: Google, MassGIS, NE FFM, Sudbury Valley Trustees, MA-DEP, MassDOT, USGS
Map to be used for planning purposes only; not for legal boundary definitions



Sudbury Valley Trustees Desert Natural Area Conservation Land Prescribed Burn Plan Town Boundaries and Ownership



Legend



Produced By  Northeast
Planning, Inc.

Sources: Google, MassGIS, NE FFM, Sudbury Valley Trustees, MA-DCR, MassDOT, USGS
Map to be used for planning purposes only; not for legal boundary definitions



Sudbury Valley Trustees Desert Natural Area Conservation Land Prescribed Burn Plan Burn Units and Firebreak Type



Legend

- Burn Units
- ▲ Ephemeral Ponds
- Staging Areas
- Wetlands
- ▲ Draft Site
- Wetland Drains
- 🚒 Hydrant

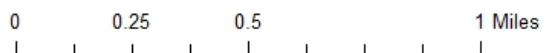
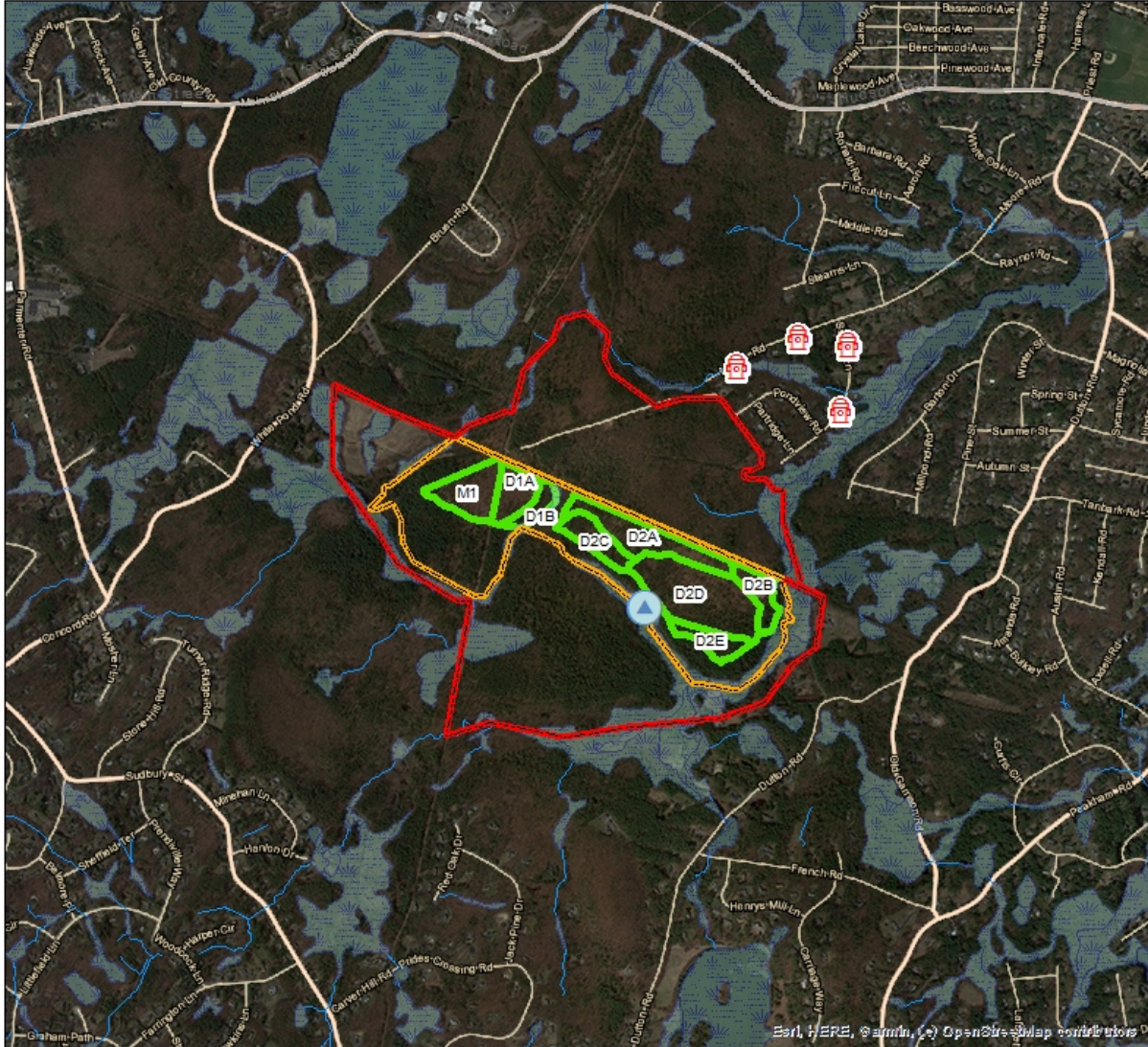
- Abandoned Rail Bed
- Dirt Road
- Mowed Firebreak
- ROW
- Skid Trail
- Trail

Produced By **Northeast** Planning, Inc.

Sources: Google, MassGIS, NE FFM, Sudbury Valley Trustees, MA-DEP, MassDOT, USGS
Map to be used for planning purposes only; not for legal boundary definitions



Sudbury Valley Trustees Desert Natural Area Conservation Land Prescribed Burn Plan Contingency Map



Legend

 Burn Units

Contingency Line Type

Contingency

Extended

Water Resources

Draft

Hydrant

Wetlands

Wetland Drains

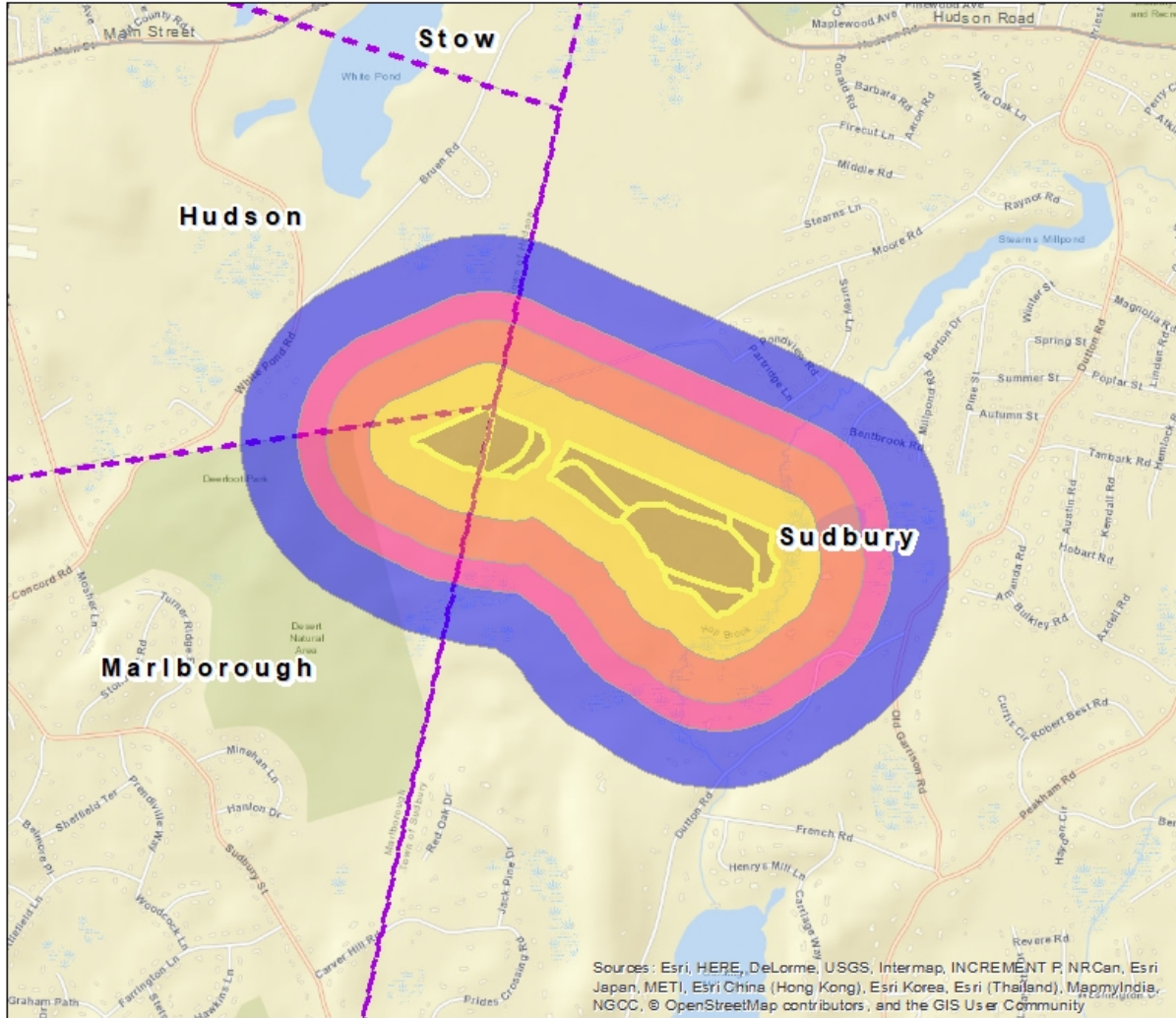
Note: Only hydrants near staging location shown on map. Other hydrants are located near the burn unit but are not displayed on this map.

Produced By: Northeast Forest Management LLC
Sources: Google, MassGIS, NE-FRM, Sudbury Valley Trustees, MA-DEP, MassDOT, USGS
Map to be used for planning purposes only; not for legal boundary definitions



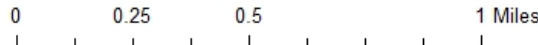
Sudbury Valley Trustees

Sudbury Valley Trustees Desert Natural Area Conservation Land Prescribed Burn Plan Daytime Smoke Buffers



Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Legend



Town Boundaries

Daytime Smoke Buffers

- Unit
- 500-Foot Buffer
- 1/4 of 0.75-Mile Buffer
- 1/4 of 1.0-Mile Buffer
- 1/4 of 1.5-Mile Buffer

Smoke Sensitive Receptors

- Hospitals
- Community Health Centers
- Longterm Care Facilities
- Schools
- Colleges
- Airports

Smoke methods from "Managing Smoke at the Wildland-Urban Interface" were used to identify the following Smoke Sensitive Areas.

When using this method, the maximum burn size is 50 acres at any one time. Fuel Category F (native vegetation under 3 feet in height) was used. The 500' and three 1/4 distance buffers of the 1.5, 1.0 and 0.75-mile buffers are used for daytime burning and the three (1.5, 1.0 and 0.75-mile) full distance buffers are used to identify potential low visibility impact if the unit smolders during nighttime conditions.

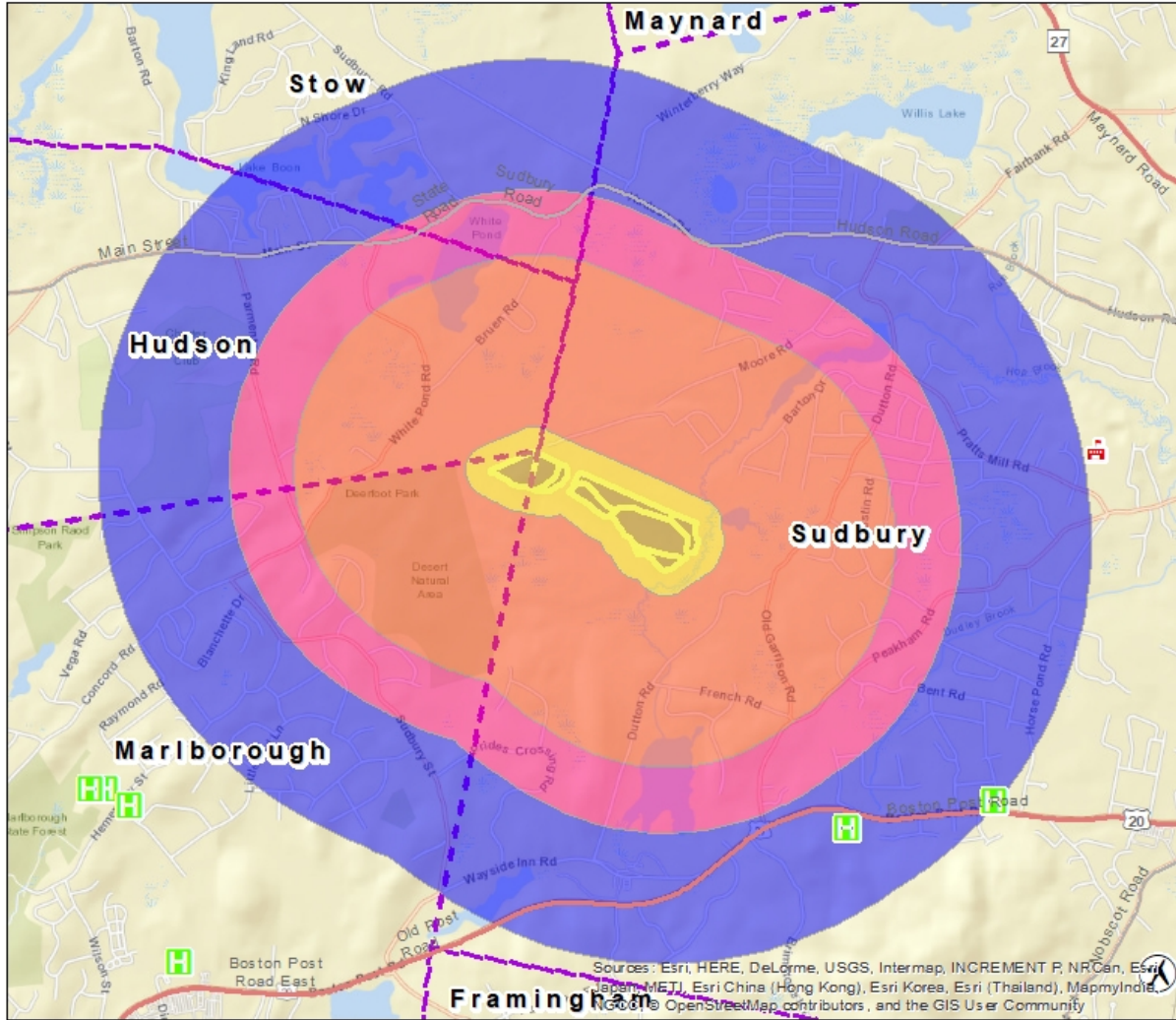
Produced By: Northeast Forest Management LLC

Sources: Google, MassGIS, NE-FRM, Sudbury Valley Trustees, MA-DEP, MassDOT, USGS
Map to be used for planning purposes only; not for legal boundary definitions



Sudbury Valley Trustees

Sudbury Valley Trustees Desert Natural Area Conservation Land Prescribed Burn Plan Nighttime Smoke Buffers



Legend 0 0.5 1 2 Miles

- | | |
|--------------------------------|----------------------------------|
| Town Boundaries | Smoke Sensitive Receptors |
| Nighttime Smoke Buffers | Hospitals |
| Unit | Community Health Centers |
| 500-Foot Buffer | Longterm Care Facilities |
| 0.75-Mile Buffer | Schools |
| 1.0-Mile Buffer | Colleges |
| 1.5-Mile Buffer | Airports |

Smoke methods from "Managing Smoke at the Wildland-Urban Interface" were used to identify the following Smoke Sensitive Areas. When using this method, the maximum burn size is 50 acres at any one time. Fuel Category F (native vegetation under 3 feet in height) was used. The 500' and three 1/4 distance buffers of the 1.5, 1.0 and 0.75-mile buffers are used for daytime burning and the three (1.5, 1.0 and 0.75-mile) full distance buffers are used to identify potential low visibility impact if the unit smolders during nighttime conditions.

Produced By: Northeast Forest Fire Management LLC
Sources: Google, MassGIS, NE-FRM, Sudbury Valley Trustees, MA-DEP, MassDOT, USGS
Map to be used for planning purposes only; not for legal boundary definitions

APPENDIX B:

FIRE BEHAVIOR & SMOKE MODELING DOCUMENTATION

1: FIRE BEHAVIOR (ROS & FL)

Fire Behavior: Moderate Load Humid Climate Shrub (S) SH3 (143)

Held Constant: 10H Fuels at 10%, 100H Fuels at 12%, 30% Live Fuel Moisture (Herbaceous & Woody) and 0% Slope [Run in BEHAVEPLUS v. 5.0.4]

Surface Rate of Spread (ch/hr) - Head Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	2	7	14	21	29	38	47	56	66	76	86	97	108
5	2	7	13	21	29	37	46	55	65	75	85	95	106
6	2	7	13	20	28	36	45	54	64	73	83	94	104
7	2	7	13	20	28	36	44	53	63	72	82	92	102
8	2	7	13	20	27	35	43	52	61	71	80	90	100
9	2	6	12	19	27	34	43	51	60	69	79	88	98
10	2	6	12	19	26	34	42	50	59	68	77	86	96
11	2	6	12	18	25	33	41	49	58	66	75	85	94
12	2	6	12	18	25	33	41	49	57	66	75	84	94
13	2	6	12	18	25	33	40	49	57	66	75	84	93
14	2	6	12	18	25	32	40	48	57	66	74	84	93

Flame Length (ft) - Head Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	4	6	8	10	12	13	15	16	17	18	19	20	21
5	4	6	8	10	12	13	14	16	17	18	19	20	21
6	4	6	8	10	11	13	14	15	17	18	19	20	21
7	4	6	8	10	11	13	14	15	16	17	19	20	21
8	3	6	8	10	11	12	14	15	16	17	18	19	20
9	3	6	8	9	11	12	13	15	16	17	18	19	20
10	3	6	8	9	11	12	13	14	15	17	18	18	19
11	3	5	7	9	10	12	13	14	15	16	17	18	19
12	3	5	7	9	10	12	13	14	15	16	17	18	19
13	3	5	7	9	10	12	13	14	15	16	17	18	19
14	3	5	7	9	10	12	13	14	15	16	17	18	19

Surface Rate of Spread (ch/hr) - Backing Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	2	2	2	2	2	2	2	2	2	2	2	2	2
5	2	2	2	2	2	2	2	2	2	2	2	2	2
6	2	2	2	2	2	2	2	2	2	2	2	2	2
7	2	2	2	2	2	2	2	2	2	2	2	2	2
8	2	2	2	2	2	2	2	2	2	2	2	2	2
9	2	2	2	2	2	2	2	2	2	2	2	2	2
10	2	2	2	2	2	2	2	2	2	2	2	2	2
11	2	2	2	2	2	2	2	2	2	2	2	2	2
12	2	2	2	2	2	2	2	2	2	2	2	2	2
13	2	2	2	2	2	2	2	2	2	2	2	2	2
14	2	2	2	2	2	2	2	2	2	2	2	2	2

Flame Length (ft) - Backing Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	4	3	3	4	4	4	4	3	3	3	3	3	3
5	4	3	3	3	3	3	3	3	3	3	3	3	3
6	4	3	3	3	3	3	3	3	3	3	3	3	3
7	4	3	3	3	3	3	3	3	3	3	3	3	3
8	3	3	3	3	3	3	3	3	3	3	3	3	3
9	3	3	3	3	3	3	3	3	3	3	3	3	3
10	3	3	3	3	3	3	3	3	3	3	3	3	3
11	3	3	3	3	3	3	3	3	3	3	3	3	3
12	3	3	3	3	3	3	3	3	3	3	3	3	3
13	3	3	3	3	3	3	3	3	3	3	3	3	3
14	3	3	3	3	3	3	3	3	3	3	3	3	3

Fire Behavior: Low Load Humid Climate Shrub (S) SH4 (144)

Held Constant: 10H Fuels at 10%, 100H Fuels at 12%, 30% Live Fuel Moisture (Herbaceous & Woody) and 0% Slope [Run in BEHAVEPLUS v. 5.0.4]

Surface Rate of Spread (ch/hr) - Head Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	3	11	23	38	55	73	94	115	138	162	188	214	241
5	3	10	22	37	53	71	91	112	134	158	182	208	234
6	3	10	22	36	52	69	89	109	131	154	178	202	228
7	3	10	21	35	51	68	87	107	128	150	173	197	223
8	3	10	21	34	49	66	85	104	125	147	169	193	218
9	3	10	20	33	48	65	83	102	122	144	166	189	213
10	3	9	20	33	47	64	81	100	120	141	163	185	209
11	3	9	19	32	47	63	80	98	118	138	160	182	205
12	3	9	19	32	46	62	79	97	116	136	157	179	202
13	3	9	19	31	45	61	77	95	114	134	155	176	199
14	3	9	19	31	45	60	76	94	113	132	153	174	196

Flame Length (ft) - Head Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	3	5	7	9	10	12	13	15	16	17	18	19	20
5	3	5	7	9	10	12	13	14	15	17	18	19	20
6	3	5	7	8	10	11	13	14	15	16	17	18	20
7	3	5	7	8	10	11	12	14	15	16	17	18	19
8	3	5	6	8	10	11	12	13	15	16	17	18	19
9	3	4	6	8	9	11	12	13	14	15	16	18	18
10	3	4	6	8	9	11	12	13	14	15	16	17	18
11	3	4	6	8	9	10	12	13	14	15	16	17	18
12	3	4	6	8	9	10	12	13	14	15	16	17	18
13	2	4	6	8	9	10	11	13	14	15	16	17	18
14	2	4	6	7	9	10	11	12	13	15	16	16	17

Surface Rate of Spread (ch/hr) - Backing Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	3	3	3	4	4	4	4	4	4	4	4	4	4
5	3	3	3	4	4	4	4	4	4	4	4	4	4
6	3	3	3	4	4	4	4	4	4	4	4	4	4
7	3	3	3	3	4	4	4	4	4	4	4	4	4
8	3	2	3	3	4	4	4	4	4	4	4	4	4
9	3	2	3	3	4	4	4	4	4	4	4	4	3
10	3	2	3	3	3	4	4	4	4	4	4	3	3
11	3	2	3	3	3	3	4	4	4	3	3	3	3
12	3	2	3	3	3	3	3	3	3	3	3	3	3
13	3	2	3	3	3	3	3	3	3	3	3	3	3
14	3	2	3	3	3	3	3	3	3	3	3	3	3

Flame Length (ft) - Backing Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	3	3	3	3	3	3	3	3	3	3	3	3	3
5	3	3	3	3	3	3	3	3	3	3	3	3	3
6	3	3	3	3	3	3	3	3	3	3	3	3	3
7	3	2	3	3	3	3	3	3	3	3	3	3	3
8	3	2	3	3	3	3	3	3	3	3	3	3	3
9	3	2	3	3	3	3	3	3	3	3	3	3	3
10	3	2	3	3	3	3	3	3	3	3	3	3	3
11	3	2	3	3	3	3	3	3	3	3	3	3	3
12	3	2	3	3	3	3	3	3	3	3	3	3	3
13	2	2	2	3	3	3	3	3	3	3	3	3	3
14	2	2	2	3	3	3	3	3	3	3	3	3	3

Fire Behavior: Moderate Load, Humid Climate Timber-Shrub TU2 (162)

Held Constant: 10H Fuels at 10%, 100H Fuels at 12%, 30% Live Fuel Moisture (Herbaceous & Woody) and 0% Slope [Run in BEHAVEPLUS v. 5.0.5]

Surface Rate of Spread (ch/hr) - Head Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	1	3	6	9	13	18	23	28	33	39	46	52	59
5	1	3	5	9	12	17	21	26	31	37	43	49	55
6	1	2	5	8	12	16	20	25	29	35	40	46	52
7	1	2	5	8	11	15	19	23	28	33	38	43	49
8	1	2	4	7	10	14	18	22	27	31	36	41	47
9	1	2	4	7	10	13	17	21	25	30	35	40	45
10	1	2	4	7	10	13	16	20	24	29	33	38	43
11	1	2	4	6	9	12	16	20	24	28	32	37	41
12	1	2	4	6	9	12	15	19	23	27	31	35	40
13	1	2	4	6	9	12	15	18	22	26	30	34	39
14	1	2	4	6	8	11	14	18	21	25	29	33	38

Flame Length (ft) - Head Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	1	2	3	3	4	4	5	5	6	6	7	7	8
5	1	2	3	3	4	4	5	5	6	6	7	7	7
6	1	2	2	3	4	4	5	5	5	6	6	7	7
7	1	2	2	3	3	4	4	5	5	6	6	6	7
8	1	2	2	3	3	4	4	5	5	5	6	6	7
9	1	2	2	3	3	4	4	5	5	5	6	6	6
10	1	2	2	3	3	4	4	4	5	5	5	6	6
11	1	2	2	3	3	3	4	4	5	5	5	6	6
12	1	1	2	3	3	3	4	4	5	5	5	6	6
13	1	1	2	2	3	3	4	4	5	5	5	6	6
14	1	1	2	2	3	3	4	4	4	5	5	5	6

Surface Rate of Spread (ch/hr) - Backing Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1	1	1	1
14	1	0	1	1	1	1	1	1	1	1	1	1	1

Flame Length (ft) - Backing Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1	1	1	1

Fire Behavior: Moderate Load Broadleaf Litter TL6 (186)

Held Constant: 10H Fuels at 10%, 100H Fuels at 12%, 30% Live Fuel Moisture (Herbaceous & Woody) and 0% Slope [Run in BEHAVEPLUS v. 5.0.5]

Surface Rate of Spread (ch/hr) - Head Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	1	1	2	4	5	7	9	11	14	16	19	22	25
5	1	1	2	3	5	7	8	10	13	15	17	20	22
6	1	1	2	3	4	6	8	10	12	14	16	18	21
7	1	1	2	3	4	6	7	9	11	13	15	17	19
8	1	1	2	3	4	5	7	8	10	12	14	16	18
9	1	1	2	3	4	5	6	8	10	11	13	15	17
10	1	1	2	2	4	5	6	8	9	11	12	14	16
11	1	1	2	2	3	5	6	7	9	10	12	14	16
12	0	1	1	2	3	4	6	7	8	10	12	13	15
13	0	1	1	2	3	4	5	7	8	10	11	13	14
14	0	1	1	2	3	4	5	6	8	9	11	12	14

Flame Length (ft) - Head Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	1	1	2	2	3	3	3	4	4	5	5	5	5
5	1	1	2	2	3	3	3	4	4	4	4	5	5
6	1	1	2	2	2	3	3	3	4	4	4	4	5
7	1	1	2	2	2	3	3	3	3	4	4	4	5
8	1	1	1	2	2	2	3	3	3	4	4	4	4
9	1	1	1	2	2	2	3	3	3	3	4	4	4
10	1	1	1	2	2	2	3	3	3	3	4	4	4
11	1	1	1	2	2	2	3	3	3	3	4	4	4
12	1	1	1	2	2	2	2	3	3	3	3	4	4
13	1	1	1	2	2	2	2	3	3	3	3	4	4
14	1	1	1	2	2	2	2	3	3	3	3	4	4

Surface Rate of Spread (ch/hr) - Backing Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	1	0	0	0	0	0	0	0	0	0	0	0	0
5	1	0	0	0	0	0	0	0	0	0	0	0	0
6	1	0	0	0	0	0	0	0	0	0	0	0	0
7	1	0	0	0	0	0	0	0	0	0	0	0	0
8	1	0	0	0	0	0	0	0	0	0	0	0	0
9	1	0	0	0	0	0	0	0	0	0	0	0	0
10	1	0	0	0	0	0	0	0	0	0	0	0	0
11	1	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0

Flame Length (ft) - Backing Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1	1	1	1

Fire Behavior: Very High Load, Humid Climate Grass (D) GR9 (109)

Held Constant: 10H Fuels at 10%, 100H Fuels at 12%, 30% Live Fuel Moisture (Herbaceous & Woody) and 0% Slope [Run in BEHAVEPLUS v. 5.0.5]

Surface Rate of Spread (ch/hr) - Head Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	15	47	97	157	225	299	379	465	554	648	746	848	952
5	14	43	88	144	206	274	348	426	508	594	683	776	872
6	13	39	81	132	190	252	320	392	468	547	629	715	803
7	12	36	75	122	175	234	296	363	433	506	582	662	743
8	11	34	70	114	163	217	276	338	403	471	542	616	692
9	10	32	66	106	153	203	258	316	377	441	507	576	647
10	10	30	62	100	144	191	243	297	354	414	477	542	609
11	9	28	58	95	136	181	229	281	335	392	451	512	575
12	9	27	55	90	129	172	218	267	318	372	428	486	547
13	8	26	53	86	123	164	208	254	304	355	409	464	521
14	8	25	51	82	118	157	199	244	291	340	391	445	500

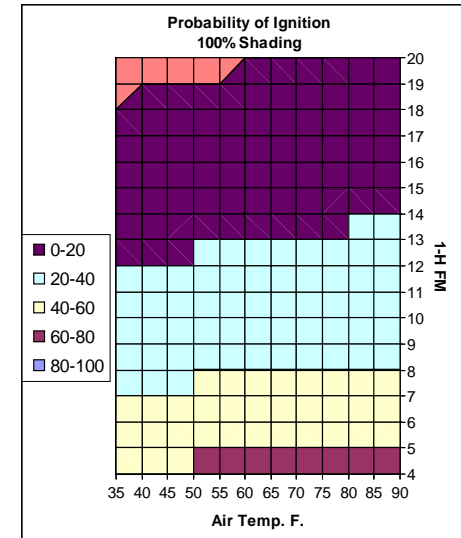
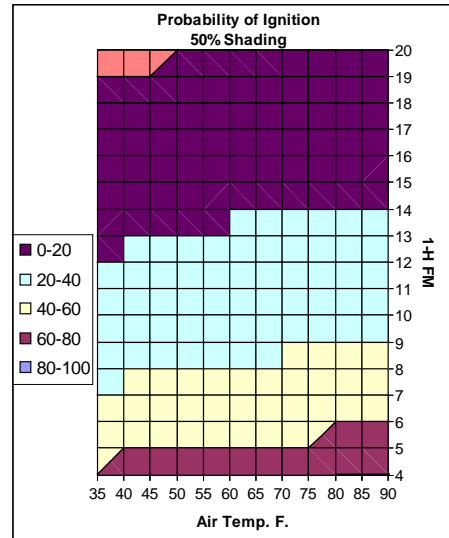
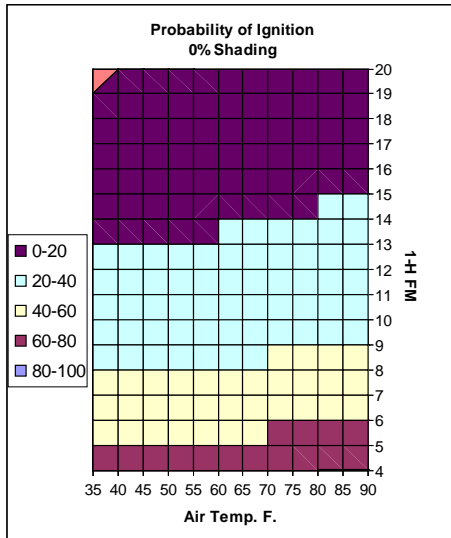
Flame Length (ft) - Head Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	11	18	25	31	37	42	47	52	56	60	65	68	72
5	10	17	24	30	35	40	44	49	53	57	61	64	68
6	9	16	22	28	33	37	42	46	50	53	57	60	64
7	9	15	21	26	31	35	40	43	47	51	54	57	60
8	9	14	20	25	30	34	38	41	45	48	51	54	57
9	8	14	19	24	28	32	36	39	43	46	49	52	55
10	8	13	18	23	27	31	34	38	41	44	47	50	53
11	8	13	18	22	26	30	33	36	39	42	45	48	51
12	7	12	17	21	25	29	32	35	38	41	44	46	49
13	7	12	17	21	24	28	31	34	37	40	42	45	47
14	7	12	16	20	24	27	30	33	36	39	41	44	46

Surface Rate of Spread (ch/hr) - Backing Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	15	12	14	15	16	16	17	17	16	16	16	16	15
5	14	11	13	14	15	15	15	15	15	15	15	14	14
6	13	10	12	13	14	14	14	14	14	14	13	13	13
7	12	9	11	12	13	13	13	13	13	13	12	12	12
8	11	9	10	11	12	12	12	12	12	12	12	11	11
9	10	8	10	11	11	11	11	11	11	11	11	11	10
10	10	7	9	10	10	11	11	11	10	10	10	10	10
11	9	7	9	9	10	10	10	10	10	10	10	9	9
12	9	7	8	9	9	9	10	9	9	9	9	9	9
13	8	6	8	8	9	9	9	9	9	9	9	9	8
14	8	6	7	8	9	9	9	9	9	9	8	8	8

Flame Length (ft) - Backing Fire													
1-hr Moisture	Midflame Wind Speed (mph)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
4	11	10	10	11	11	11	11	11	11	11	11	11	11
5	10	9	10	10	10	11	11	11	10	10	10	10	10
6	9	8	9	10	10	10	10	10	10	10	10	10	10
7	9	8	9	9	9	9	9	9	9	9	9	9	9
8	9	8	8	9	9	9	9	9	9	9	9	9	9
9	8	7	8	8	8	9	9	9	8	8	8	8	8
10	8	7	8	8	8	8	8	8	8	8	8	8	8
11	8	7	7	8	8	8	8	8	8	8	8	8	8
12	7	6	7	7	8	8	8	8	8	8	7	7	7
13	7	6	7	7	7	7	7	7	7	7	7	7	7
14	7	6	7	7	7	7	7	7	7	7	7	7	7

2: PROBABILITY OF IGNITION

[Run in BEHAVE by Remsoft Professional v. 5.0]



APPENDIX C:

COMPLEXITY ANALYSIS

Note: The top boxes in “Risk Rating Descriptors” are examples provided by NWCG of conditions that would meet the assigned risk level. They are not necessarily descriptive of the site and should only be used as a reference to determine if the appropriate rating was assigned. Some boxes may contain incomplete bullets because not all examples from the worksheet are listed in the prescribed burn plan.

PRESCRIBED FIRE PLAN COMPLEXITY ANALYSIS - VALUES				
Prescribed Fire Plan Name:		SVT/City of Marlborough Desert Natural Area		
Category	Quantity	Significance	Description	
V a l u e s	On-Site	Nominal	Low	<ul style="list-style-type: none"> Desirable trees should not be killed Buried gas line is on site.
	Off-Site	Few	Low	<ul style="list-style-type: none"> Roadways and neighborhoods are near the unit.
	Public/Political Interest	Multiple	Mod	<ul style="list-style-type: none"> The property is visited by the public The property is near residential areas There are two ownerships in two towns, two DEP regions, bordered by federal, state, private, and town lands.

PRESCRIBED FIRE PLAN COMPLEXITY ANALYSIS - PRELIMINARY RISK

Prescribed Fire Plan Name: SVT/City of Marlborough Desert Natural Area

Element	Preliminary Risk	Risk Rating Descriptors
Safety	Mod	<ul style="list-style-type: none"> • Safety issues are pronounced and require detailed briefings, with certain hazards requiring special caution. • A small organization with a single branch results in modest exposure of personnel to hazards. • Adverse impacts to public health and safety are possible. • At least one activity is low frequency/high risk. • Fatigue and extended exposure to hazards are anticipated. <hr/> <ul style="list-style-type: none"> • <i>Units are relatively small, so they may be cut off easily</i> • <i>Terrain is moderate</i> • <i>Safety issues can be addressed by conducting a detailed briefing and maintaining appropriate command and control of operations including identifying which areas of the property are vehicle accessible.</i>
Fire Behavior	Mod	<ul style="list-style-type: none"> • Fuels vary within the unit, both in loading and arrangement. • Fire behavior may present control challenges that are easily mitigated. • Medium fuel loadings with some high concentrations are present. • Variable terrain features may significantly affect fire behavior and present moderate ignition and control problems. • Local winds and burning conditions may vary enough to cause shifts in fire behavior that briefly exceed modeled fire behavior and threaten controllability. • Periodic torching can be expected either as isolated points or in limited areas. <hr/> <ul style="list-style-type: none"> • <i>Expected fire behavior will be moderate</i> • <i>Fuel jackpots are present near holding lines.</i>

PRESCRIBED FIRE PLAN COMPLEXITY ANALYSIS - PRELIMINARY RISK

Prescribed Fire Plan Name:		SVT/City of Marlborough Desert Natural Area
Element	Preliminary Risk	Risk Rating Descriptors
Resistance to Containment	Low	<ul style="list-style-type: none"> • Ranges from no potential to a likelihood of few mechanisms such as spot fires, slopovers or fire creeping, each comprising small areas that are readily detected, accessed, and controlled by holding resources available on the prescribed fire. • No ladder fuels or concentrations are near critical holding points. • Ignition procedures do not create intense fire behavior. • Probability of ignition in fuels outside the unit is low. • Local drought and or fire danger indices are expected to be low to moderate.
		<ul style="list-style-type: none"> • <i>Fuels are prone to short distance spotting.</i> • <i>Fuels outside of the unit generally support lower fire behavior than inside the unit.</i> • <i>External fire breaks are wide and easily patrolled.</i>
Ignition Procedures and Methods	Mod	<ul style="list-style-type: none"> • Multiple firing sequences patterns and timing must be coordinated to meet project objectives and reduce the risk of an unexpected or adverse event. • Specific fire intensities or ROS are somewhat critical for meeting resource objectives but are readily attained by placing local skill sets in firing boss positions.
		<ul style="list-style-type: none"> • <i>Unit size makes coordination relatively simple.</i> • <i>Terrain could make ignition difficult.</i>

PRESCRIBED FIRE PLAN COMPLEXITY ANALYSIS - PRELIMINARY RISK

Prescribed Fire Plan Name:		SVT/City of Marlborough Desert Natural Area
Element	Preliminary Risk	Risk Rating Descriptors
Prescribed Fire Duration	Low	<ul style="list-style-type: none"> • Ignition operations should be accomplished within one operational period. • Burn unit is small in size and residual burning is not expected after primary burn out of the unit. • Decrease in seasonal severity is expected. • Short time frame does not require special logistical support. • Mop-up is minimal or none is anticipated/planned.
		<ul style="list-style-type: none"> • <i>All fire operations should be accomplished within one operating period.</i> • <i>Unit size is small.</i> • <i>Smoldering should be manageable if burning under moderate KBDI.</i>
Smoke Management	Mod	<ul style="list-style-type: none"> • Noticeable smoke will be produced creating at least some public concern. • Short-term health or safety concerns related to smoke exposure may occur if actual weather deviates from forecasted. • Nearby communities are highly conscious of smoke from wildland fire. • Some possibility for a NAAQS exceedance violation. • The prescription or ignition portions of the plan need to consider smoke management.
		<ul style="list-style-type: none"> • <i>Multiple smoke sensitive receptors are near the unit.</i> • <i>Roadways border unit 2.</i> • <i>Coastal atmospheric conditions make column collapse possible.</i> • <i>Highway interchanges are located to the northeast and northwest</i>

PRESCRIBED FIRE PLAN COMPLEXITY ANALYSIS - PRELIMINARY RISK

Prescribed Fire Plan Name:		SVT/City of Marlborough Desert Natural Area
Element	Preliminary Risk	Risk Rating Descriptors
Number and Dependence of Activities	<u>Mod</u>	<ul style="list-style-type: none"> • Several activities depend on achievement of previous or concurrent actions. • Several activities are interactive. • Communication is routine for coordination of activities and project success. • The project involves another land management agency, ownership or jurisdiction but project completion is not dependent on coordinated implementation. • Adjacent ownership supports the implementation of the prescribed fire.
		<ul style="list-style-type: none"> • <i>When burning multiple subunits, moderate coordination is required.</i> • <i>Communication with nearby suppression resources is required.</i> • <i>Pre-burn coordination is required for notifications</i> • <i>Line prep is required prior to ignition.</i>
Management Organization	<u>Mod</u>	<ul style="list-style-type: none"> • Two levels of supervision are needed (i.e. Burn Boss, Ignition Specialist, and/or Holding Specialist, plus lighters and holders). • Special skills or supervision required for one function (RXB2 is suggested).
		<ul style="list-style-type: none"> • <i>Multiple agencies with multiple chains of command are usually required for fire operations.</i> • <i>Two or more levels of supervision are needed.</i>
Treatment/Resource Objectives	<u>Low</u>	<ul style="list-style-type: none"> • Few if any issues are present that hamper meeting treatment resource objectives. • Few or no adverse impacts are expected if resource objectives are not met. • No critical holding points.
		<ul style="list-style-type: none"> • <i>Excess fire severity could damage leave trees.</i> • <i>Too little fire severity could fail to reach desired effects.</i> • <i>If fire effects are too minimal, mowing may serve as a short-term surrogate, or the unit could be burned sooner than would otherwise.</i>

PRESCRIBED FIRE PLAN COMPLEXITY ANALYSIS - PRELIMINARY RISK

Prescribed Fire Plan Name:		SVT/City of Marlborough Desert Natural Area
Element	Preliminary Risk	Risk Rating Descriptors
Constraints	Mod	<ul style="list-style-type: none"> • Constraints exist with some constraints imposing limits on implementing the prescribed fire or achieving objectives.
		<ul style="list-style-type: none"> • <i>Limits on fire implementation are primarily related to air quality and weather prescription.</i> • <i>Wide range of wind directions are allowed</i>
Project Logistics	Mod	<ul style="list-style-type: none"> • Some phases of the prescribed fire may require logistical support in order to safely meet project objectives. • Limited amount of special equipment or communication equipment requiring more intensive logistical support may be needed to complete the project.
		<ul style="list-style-type: none"> • <i>Pre-burn coordination is required with local fire departments and DCR</i> • <i>Water supply is moderate distance from unit</i> • <i>Notifications will be required.</i>

PRESCRIBED FIRE PLAN COMPLEXITY ANALYSIS - POST-PLAN RISK

Prescribed Fire Plan Name:		SVT/City of Marlborough Desert Natural Area		
Element	Preliminary Risk	Post-Plan Risk	Risk Rating Descriptors	Elements/Actions in RX Fire Plan Addressing Risk Mitigation
Safety	Mod	<u>Mod</u>	<ul style="list-style-type: none"> • Safety issues are pronounced and require detailed briefings, with certain hazards requiring special caution. • A small organization with a single branch results in modest exposure of personnel to hazards. • Adverse impacts to public health and safety are possible. • At least one activity is low frequency/high risk. • Fatigue and extended exposure to hazards are anticipated. 	<ul style="list-style-type: none"> • <i>Closing areas near fire to the public.</i>
			<ul style="list-style-type: none"> • <i>No additions or modifications.</i> 	
Fire Behavior	Mod	<u>Mod</u>	<ul style="list-style-type: none"> • Fuels vary within the unit, both in loading and arrangement. • Fire behavior may present control challenges that are easily mitigated. • Medium fuel loadings with some high concentrations are present. • Variable terrain features may significantly affect fire behavior and present moderate ignition and control problems. • Local winds and burning conditions may vary enough to cause shifts in fire behavior that briefly exceed modeled fire behavior and threaten controllability. 	<ul style="list-style-type: none"> •
			<ul style="list-style-type: none"> • <i>No additions or modifications.</i> 	
Resistance to Containment	Low	<u>Low</u>	<ul style="list-style-type: none"> • Ranges from no potential to a likelihood of few mechanisms such as spot fires, slopovers or fire creeping, each comprising small areas that are readily detected, accessed, and controlled by holding resources available on the prescribed fire. • No ladder fuels or concentrations are near critical holding points. • Ignition procedures do not create intense fire behavior. • Probability of ignition in fuels outside the unit is low. 	<ul style="list-style-type: none"> • <i>Prepping around fuel jackpots</i> • <i>Wide fire breaks around perimeter.</i>
			<ul style="list-style-type: none"> • <i>No additions or modifications.</i> 	

PRESCRIBED FIRE PLAN COMPLEXITY ANALYSIS - POST-PLAN RISK

Prescribed Fire Plan Name:		SVT/City of Marlborough Desert Natural Area		
Element	Preliminary Risk	Post-Plan Risk	Risk Rating Descriptors	Elements/Actions in RX Fire Plan Addressing Risk Mitigation
Ignition Procedures and Methods	Mod	Mod	<ul style="list-style-type: none"> Multiple firing sequences patterns and timing must be coordinated to meet project objectives and reduce the risk of an unexpected or adverse event. Specific fire intensities or ROS are somewhat critical for meeting resource objectives but are readily attained by placing local skill sets in firing boss positions. 	•
			<ul style="list-style-type: none"> No additions or modifications. 	
Prescribed Fire Duration	Low	Low	<ul style="list-style-type: none"> Ignition operations should be accomplished within one operational period. Burn unit is small in size and residual burning is not expected after primary burn out of the unit. Decrease in seasonal severity is expected. Short time frame does not require special logistical support. Mop-up is minimal or none is anticipated/planned. 	•
			<ul style="list-style-type: none"> No additions or modifications. 	
Smoke Management	Mod	Mod	<ul style="list-style-type: none"> Noticeable smoke will be produced creating at least some public concern. Short-term health or safety concerns related to smoke exposure may occur if actual weather deviates from forecasted. Nearby communities are highly conscious of smoke from wildland fire. Some possibility for a NAAQS exceedance violation. The prescription or ignition portions of the plan need to consider smoke management. 	•
			<ul style="list-style-type: none"> No additions or modifications. 	

PRESCRIBED FIRE PLAN COMPLEXITY ANALYSIS - POST-PLAN RISK

Prescribed Fire Plan Name:		SVT/City of Marlborough Desert Natural Area		
Element	Preliminary Risk	Post-Plan Risk	Risk Rating Descriptors	Elements/Actions in RX Fire Plan Addressing Risk Mitigation
Number and Dependence of Activities	Mod	Mod	<ul style="list-style-type: none"> • Several activities depend on achievement of previous or concurrent actions. • Several activities are interactive. • Communication is routine for coordination of activities and project success. • The project involves another land management agency, ownership or jurisdiction but project completion is not dependent on coordinated implementation. • Adjacent ownership supports the implementation of the prescribed fire. 	•
			<ul style="list-style-type: none"> • <i>No additions or modifications.</i> 	
Management Organization	Mod	Mod	<ul style="list-style-type: none"> • Two levels of supervision are needed (i.e. Burn Boss, Ignition Specialist, and/or Holding Specialist, plus lighters and holders). • Special skills or supervision required for one function (RXB2 is suggested). 	•
			<ul style="list-style-type: none"> • <i>No additions or modifications.</i> 	
Treatment/Resource Objectives	Low	Low	<ul style="list-style-type: none"> • Few if any issues are present that hamper meeting treatment resource objectives. • Few or no adverse impacts are expected if resource objectives are not met. • No critical holding points. 	•
			<ul style="list-style-type: none"> • <i>No additions or modifications.</i> 	

PRESCRIBED FIRE PLAN COMPLEXITY ANALYSIS - POST-PLAN RISK

Prescribed Fire Plan Name:		SVT/City of Marlborough Desert Natural Area		
Element	Preliminary Risk	Post-Plan Risk	Risk Rating Descriptors	Elements/Actions in RX Fire Plan Addressing Risk Mitigation
Constraints	Mod	Mod	<ul style="list-style-type: none"> • Constraints exist with some constraints imposing limits on implementing the prescribed fire or achieving objectives. 	•
			<ul style="list-style-type: none"> • <i>No additions or modifications.</i> 	
Project Logistics	Mod	Mod	<ul style="list-style-type: none"> • Some phases of the prescribed fire may require logistical support in order to safely meet project objectives. • Limited amount of special equipment or communication equipment requiring more intensive logistical support may be needed to complete the project. 	•
			<ul style="list-style-type: none"> • <i>No additions or modifications.</i> 	

PRESCRIBED FIRE PLAN COMPLEXITY ANALYSIS - POST-PLAN TECHNICAL DIFFICULTY

Prescribed Fire Plan Name:		SVT/City of Marlborough Desert Natural Area	
Element	Post-Plan Risk	Technical Difficulty	Rating Descriptors
Safety	Mod	Low	<ul style="list-style-type: none"> • No special actions are required to mitigate potential minor accidents or injuries identified in the risk assessment/Job Hazard Analysis (JHA). • Safety concerns can be easily mitigated through LCES. • No preparation work or special project design features are required.
			<ul style="list-style-type: none"> • <i>Detailed briefings help mitigate safety concerns</i>
Fire Behavior	Mod	Low	<ul style="list-style-type: none"> • Standard fire safety precautions are adequate to ensure personnel safety. • No fire behavior variations are expected and numerous barriers to fire spread exist. • The number, size or likelihood of spot fires and slopovers is minimal and do not require additional suppression resources. • Fire behavior is such that holding forces can easily control possible spot fires and slopovers using direct attack tactics. • No on-site operational fire behavior specialists are required.
			<ul style="list-style-type: none"> • <i>Ignition strategies should mitigate fire behavior concerns.</i>

PRESCRIBED FIRE PLAN COMPLEXITY ANALYSIS - POST-PLAN TECHNICAL DIFFICULTY

Prescribed Fire Plan Name:		SVT/City of Marlborough Desert Natural Area	
Element	Post-Plan Risk	Technical Difficulty	Rating Descriptors
Resistance to Containment	Low	<u>Low</u>	<ul style="list-style-type: none"> Minimal holding resources are involved in the holding operation. The burn unit and project area is easily accessible to the holding resources identified in the plan. Minimal line width required to contain expected fire spread. Minimal site prep is required.
			<ul style="list-style-type: none"> <i>No additions or modifications.</i>
Ignition Procedures and Methods	Mod	<u>Mod</u>	<ul style="list-style-type: none"> The need for multiple firing devices, sequences, techniques, or patterns has been identified. Firing procedures are somewhat complex in at least some portions of the project area and a single Firing Boss (FIRB) is used. Two different types of ignition devices are planned. The ignition pattern requires direct control of the lighters to achieve project objectives and manage safety concerns. Communications may require the use of a command (repeater) and at least two tactical frequencies will be used. The project area is large but can be observed from high points and terrain and/or distance does not contribute to sequence and timing problems.
			<ul style="list-style-type: none"> <i>Different ignition strategies will likely be required.</i>

PRESCRIBED FIRE PLAN COMPLEXITY ANALYSIS - POST-PLAN TECHNICAL DIFFICULTY

Prescribed Fire Plan Name:		SVT/City of Marlborough Desert Natural Area	
Element	Post-Plan Risk	Technical Difficulty	Rating Descriptors
Prescribed Fire Duration	Low	Low	<ul style="list-style-type: none"> • Ignition and mop-up operations are usually completed in 1 to 2 operational periods. • Mop-up and patrol is typical with minimal resource and equipment needs. • Standard press release is sufficient for public notification.
			<ul style="list-style-type: none"> • <i>No additions or modifications.</i>
Smoke Management	Mod	Mod	<ul style="list-style-type: none"> • ERTs and SMTs require skilled application of the prescribed fire prescription. • Some considerations are needed in the prescription or ignition portions of the plan to employ ERTs, and SMTs. • Wind parameters are constrained but easy to achieve. • Sensitive receptors exist. • Burn window/opportunities are reduced by the required weather/dispersion conditions. • Normal coordination with air quality officials is required. • Some mitigation measures or additional smoke modeling may be needed to address potential concerns with smoke impacts. • Specific smoke monitoring may be required to determine smoke plume heights and directions. • Rotating project personnel out of dense smoke may be necessary but easy to accomplish. • Daily smoke management forecasts are adequate.
			<ul style="list-style-type: none"> • <i>Smoke sensitive receptors are in multiple directions.</i> • <i>Air quality is a concern.</i>

PRESCRIBED FIRE PLAN COMPLEXITY ANALYSIS - POST-PLAN TECHNICAL DIFFICULTY

Prescribed Fire Plan Name:		SVT/City of Marlborough Desert Natural Area	
Element	Post-Plan Risk	Technical Difficulty	Rating Descriptors
Number and Dependence of Activities	Mod	Low	<ul style="list-style-type: none"> Minimal difficulty in coordinating the required activities. Holding and lighting are loosely dependent on each other. Coordination problems or communication failures or issues will not affect the completion of the project. No to very few pre-burn considerations are required.
			<ul style="list-style-type: none"> <i>No additions or modifications.</i>
Management Organization	Mod	Mod	<ul style="list-style-type: none"> At least one primary team member may need to come from outside of the local unit and may not be familiar with local factors. The numbers of qualified personnel available on the local unit are limited. Special skills or supervision required for one function (RXB2 suggested). Some pre-burn preparation work may require special organizational planning and/or coordination. Protection of resource values requires extra considerations when developing certain elements of the prescribed fire plan. Few resources are required for mop-up and patrol.
			<ul style="list-style-type: none"> <i>Prescribed fires usually require multiple agencies with different chains of command and suppression responsibilities.</i>

PRESCRIBED FIRE PLAN COMPLEXITY ANALYSIS - POST-PLAN TECHNICAL DIFFICULTY

Prescribed Fire Plan Name:		SVT/City of Marlborough Desert Natural Area	
Element	Post-Plan Risk	Technical Difficulty	Rating Descriptors
Treatment/Resource Objectives	Low	Low	<ul style="list-style-type: none"> • There are few resource objectives to meet. • Measures to achieve the objectives are easy to complete and there are few or no restrictions on techniques. • There are few or no restrictions on techniques and prescription parameters. • Basic monitoring of fire behavior and weather is needed to determine if prescribed fire objectives are being met. • Many other opportunities will exist to meet objectives in a given year. • Pre-burn site preparation is not required to meet resource objectives.
			<ul style="list-style-type: none"> • <i>No additions or modifications.</i>
Constraints	Mod	Mod	<ul style="list-style-type: none"> • Some constraints are not easily accommodated and increase the difficulty of completing the project or achieving objectives. • Some prescribed fire parameters are dependent upon marginal environmental conditions. • The length of time to complete the project and the size of the organization may need to be increased.
			<ul style="list-style-type: none"> • <i>Monitoring weather and atmospheric conditions throughout day is necessary because sea breeze and column collapse are possible.</i>

PRESCRIBED FIRE PLAN COMPLEXITY ANALYSIS - POST-PLAN TECHNICAL DIFFICULTY

Prescribed Fire Plan Name:		SVT/City of Marlborough Desert Natural Area	
Element	Post-Plan Risk	Technical Difficulty	Rating Descriptors
Project Logistics	Mod	Mod	<ul style="list-style-type: none"> • Project implementation requires a small logistical support operation. • Logistical support may be combined with other functions. • Obtaining some personnel may require additional contacts and advanced scheduling. • Additional support may be needed for out-of-area personnel. • Project duration may require a resupply to ensure successful remote prescribed fire implementation. • Support for meals, sanitation and camping sites may be required to complete the project. • Project is remote with long travel periods.
			<ul style="list-style-type: none"> • <i>Burning in MA generally requires coordination between multiple agencies.</i> • <i>Line prep, permitting, and notifications are required prior to burning.</i>

PRESCRIBED FIRE PLAN JOB HAZARD ANALYSIS

Prescribed Fire Plan Name: SVT/City of Marlborough Desert Natural Area

Activity(s) and Potential Hazard	Initial Risk Rating			Hazard Controls and Assignments	Residual Risk Rating			Residual Risk Tolerance
	Severity	Probability	Hazard		Severity	Probability	Hazard	
<ul style="list-style-type: none"> Travel to Burn Project Site Travel to Home Unit/Residence <p>Motor Vehicle Accident (Other Vehicles, Hazardous Road Conditions, Poor Visibility, and Fatigue/Sleepiness)</p>	Major	Seldom	Medium	The Burn Boss and project/site manager will communicate motor vehicle accident controls to agency contacts/chief of parties/supervisors and drivers. <ul style="list-style-type: none"> Adequate rest before travel Practice defensive driving Obey posted speed limits 	Major	Unlikely	Low	ACCEPTABLE: Negligible given common safe job procedures are applied. Continual vigilance necessary to maintain assurance that risk remains at this level.
<ul style="list-style-type: none"> Burn Setup Burn Operations Mop-Up Burn Breakdown <p>Motor Vehicle Accident (Other Vehicles, Hazardous Road Conditions, Poor Visibility, and Fatigue/Sleepiness)</p>	Major	Seldom	Medium	The Burn Boss, Holding Specialist(s), Ignition Specialist will communicate motor vehicle accident controls to agency contacts/chief of parties/supervisors and drivers. <ul style="list-style-type: none"> Defensive driving Obey posted speed limits Use backup spotters Use chock blocks and/or emergency brakes when parked 	Moderate	Unlikely	Low	ACCEPTABLE: Negligible given common safe job procedures are applied. Continual vigilance necessary to maintain assurance that risk remains at this level.
<ul style="list-style-type: none"> Burn Setup Burn Operations Mop-Up Burn Breakdown <p>General Accidents (cuts, abrasions, back/lifting injury, hearing damage, & eye injuries)</p>	Moderate	Seldom	Low	The Burn Boss, Holding Specialist(s), Ignition Specialist will communicate general accident controls to supervisors and crew. <ul style="list-style-type: none"> Appropriate PPE (gloves, eye protections, and foot protection) Practice appropriate lifting techniques Location of first aid kits known to supervisors and crew 	Minor	Seldom	Low	ACCEPTABLE: Negligible given common safe job procedures are applied. Continual vigilance necessary to maintain assurance that risk remains at this level.

PRESCRIBED FIRE PLAN JOB HAZARD ANALYSIS

Prescribed Fire Plan Name: SVT/City of Marlborough Desert Natural Area

Activity(s) and Potential Hazard	Initial Risk Rating			Hazard Controls and Assignments	Residual Risk Rating			Residual Risk Tolerance
	Severity	Probability	Hazard		Severity	Probability	Hazard	
<ul style="list-style-type: none"> • Burn Setup • Burn Operations • Mop-Up • Burn Breakdown Fuel Mixing and Refueling	Moderate	Possible	Medium	The Burn Boss, Holding Specialist(s), Ignition Specialist will communicate fuel mixing and refueling controls to supervisors and crew. <ul style="list-style-type: none"> • Eye protection and gloves • Fill with funnels and secondary containment • Use appropriate fuel mixes • Mark all containers using tags with mix, date, and mixers initials 	Moderate	Seldom	Low	ACCEPTABLE: Negligible given common safe job procedures are applied. Continual vigilance necessary to maintain assurance that risk remains at this level.
<ul style="list-style-type: none"> • Burn Operations • Mop-Up UTV Accident (Uneven Terrain/Rolling, Excessive Speed, & Unfamiliarity With UTV Operation)	Severity	Probability	Hazard	The Burn Boss, Holding Specialist(s), Ignition Specialist will communicate motor vehicle accident controls to drivers. <ul style="list-style-type: none"> • Drivers will be familiar with safe operation of UTV • Driver and passenger will wear seat belts when UTV is in motion • Fireline PPE will be worn and fireline helmets will be worn with chinstrap – goggles will be worn in the absence of a windshield • UTV will be operated off-highway only, at safe speeds, and cautiously when on slopes • Backup spotters will be used • Chock blocks and/or emergency brakes will be used when parked 	Severity	Probability	Hazard	See UTV-ATV Assessment
<ul style="list-style-type: none"> • Burn Operations • Mop-Up ATV Accident (Uneven Terrain/Rolling, Excessive Speed, & Unfamiliarity With ATV Operation)	Severity	Probability	Hazard	The Burn Boss, Holding Specialist(s), Ignition Specialist will communicate motor vehicle accident controls to drivers. <ul style="list-style-type: none"> • Drivers will be familiar with safe operation of ATV • Fireline PPE will be worn and fireline helmets will be worn with chinstrap – goggles will be worn • UTV will be operated off-highway only, at safe speeds, and cautiously when on slopes • Emergency brakes will be used when parked • Tanks no larger than 15 gallons will be used on ATV 	Severity	Probability	Hazard	See UTV-ATV Assessment

PRESCRIBED FIRE PLAN JOB HAZARD ANALYSIS

Prescribed Fire Plan Name: SVT/City of Marlborough Desert Natural Area

Activity(s) and Potential Hazard	Initial Risk Rating			Hazard Controls and Assignments	Residual Risk Rating			Residual Risk Tolerance
	Major	Severity	Probability		Major	Severity	Probability	
<ul style="list-style-type: none"> • Burn Operations • Mop-Up <p>Operating near busy roads (Burn personnel and other vehicles on main roads, smoke on road, poor visibility)</p>	Major	Severity	Probability	<p>The Burn Boss, Holding Specialist(s), and Ignition Specialist will communicate hazards of walking or driving near or on busy roads to all crew. The following will help mitigate potential accidents.</p> <ul style="list-style-type: none"> • Defensive driving • Use of emergency lights and headlights • Evaluate need of traffic detail to slow/direct traffic on main roads • Post "Smoke Ahead" and "Prescribed Burn" signs as needed • Crossing of road only to be at direction of supervisor 	Major	Severity	Probability	<p>ACCEPTABLE: Negligible given common safe job procedures are applied. Continual vigilance necessary to maintain assurance that risk remains at this level.</p>
<ul style="list-style-type: none"> • Burn Operations <p>Extreme Fire Behavior</p>	Major	Severity	Probability	<p>The Burn Boss, Holding Specialist(s), Ignition Specialist will communicate extreme Fire behavior controls to supervisors and crew.</p> <ul style="list-style-type: none"> • Escape routes and safety zones • Crew will wear full wildland fire PPE, to include fire shelters 	Minor	Severity	Probability	<p>ACCEPTABLE: Negligible given common safe job procedures are applied. Continual vigilance necessary to maintain assurance that risk remains at this level.</p>
<ul style="list-style-type: none"> • Burn Operations • Mop-Up <p>Power Line Hazard</p>	Catastrophic	Severity	Probability	<p>The Burn Boss, Holding Specialist(s), Ignition Specialist will communicate power line hazard controls to supervisors and crew.</p> <ul style="list-style-type: none"> • Avoid working under power lines • Do not spray water on or near power lines • Minimize heat, direct flame contact, and heavy smoke impacts on power lines 	Major	Severity	Probability	<p>ACCEPTABLE: Negligible given common safe job procedures are applied. Continual vigilance necessary to maintain assurance that risk remains at this level.</p>

PRESCRIBED FIRE PLAN JOB HAZARD ANALYSIS

Prescribed Fire Plan Name: SVT/City of Marlborough Desert Natural Area

Activity(s) and Potential Hazard	Initial Risk Rating			Hazard Controls and Assignments	Residual Risk Rating			Residual Risk Tolerance
	Severity	Probability	Hazard		Severity	Probability	Hazard	
<ul style="list-style-type: none"> Burn Operations Mop-Up <p>Chain Saw Operation</p>	Major	Possible	High	The Burn Boss, Holding Specialist(s), Ignition Specialist will communicate Chain Saw controls to supervisors and crew. <ul style="list-style-type: none"> PPE should be worn (eye protection, ear protection, hard hat, chaps, boots, and appropriate clothing) Only qualified saw operators will be authorized to operate chain saws Spotters will be provided for sawyers Make location of first aid kits known to supervisors and crew 	Moderate	Unlikely	Low	ACCEPTABLE: Negligible given common safe job procedures are applied. Continual vigilance necessary to maintain assurance that risk remains at this level.
<ul style="list-style-type: none"> Burn Operations Mop-Up <p>Environmental Hazards (Burns, Poison Ivy, Bees, Tick-borne Illness, Tripping/Falling, Snags, Smoke/CO Exposure, Dehydration, Heat Injury, and Cold Injury)</p>	Moderate	Possible	Medium	The Burn Boss, Holding Specialist(s) and ignition specialist will communicate environmental hazards controls to supervisors and crew. <ul style="list-style-type: none"> Identify First Aid CPR trained crew and first aid kit locations Lyme Disease prevention Importance of proper hydration Other Environmental/Environment Hazards based on potential exposure 	Moderate	Seldom	Low	ACCEPTABLE: Negligible given common safe job procedures are applied. Continual vigilance necessary to maintain assurance that risk remains at this level.
<ul style="list-style-type: none"> Burn Operations <p>Ignition</p>	Moderate	Possible	Medium	The Burn Boss, Holding Specialist(s), Ignition Specialist will communicate ignition controls to supervisors and crew. <ul style="list-style-type: none"> Wear appropriate PPE (gloves, eye protection, boots, and Armid clothing with sleeves down) Use proper fuel mix 	Moderate	Unlikely	Low	ACCEPTABLE: Negligible given common safe job procedures are applied. Continual vigilance necessary to maintain assurance that risk remains at this level.

PRESCRIBED FIRE PLAN JOB HAZARD ANALYSIS

Prescribed Fire Plan Name: SVT/City of Marlborough Desert Natural Area

Activity(s) and Potential Hazard	Initial Risk Rating			Hazard Controls and Assignments	Residual Risk Rating			Residual Risk Tolerance
	Severity	Probability	Hazard		Severity	Probability	Hazard	
<ul style="list-style-type: none"> • Burn Operations • Mop-Up <p>Tool Use</p>	Moderate	Possible	Medium	The Burn Boss, Holding Specialist(s), Ignition Specialist will communicate tool use controls to supervisors and crew. <ul style="list-style-type: none"> • Appropriate PPE (gloves, boots, clothing, and eye protection) • Proper spacing should be maintained • Proper tool use and foot should be used 	Minor	Unlikely	Low	<p style="color: green;">ACCEPTABLE: Negligible given common safe job procedures are applied. Continual vigilance necessary to maintain assurance that risk remains at this level.</p>
<ul style="list-style-type: none"> • Burn Operations • Mop-Up <p>Pump Operation</p>	Moderate	Seldom	Low	The Burn Boss, Holding Specialist(s), Ignition Specialist will communicate pump operation controls to supervisors and crew. <ul style="list-style-type: none"> • Wear eye and ear protection • Pressurized water operations wear eye protection and gloves 	Minor	Unlikely	Low	<p style="color: green;">ACCEPTABLE: Negligible given common safe job procedures are applied. Continual vigilance necessary to maintain assurance that risk remains at this level.</p>

PRESCRIBED FIRE PLAN UTV/ATV RISK ASSESSMENT

Prescribed Fire Plan Name: SVT/City of Marlborough Desert Natural Area

OHV List-A --- ATV/UTV Make/Model/Configuration Covered

- NE-FFM - Kubota RTV900xt with Baffled CFE 75 Gallon Slip-on

Rating Category	Rating Description	Rating
Speed of Operation	<u>Under 10 mph</u>	1
Maximum Slope in Any Direction	<u>Moderate (> 26% & < 75% of mfg'r's maximum)</u>	20
Surface Type	<u>Soil</u>	9
Surface Condition	<u>Firm</u>	1
Surface Configuration	<u>Ruts/Bumps/Irregularities (< 6")</u>	1
Load Weight	<u>≥ 76% & ≤ 100% of mfg'r's Recommended Max.</u>	16
Load Type	<u>Liquid in a Baffled Container</u>	4
Accessibility of Use Area for Emergency Response	<u>Very Accessible</u>	1
Time Operating Vehicle by Same Rider in a Single Workday	<u>≥ 4 Hour & ≥ 8 Hours</u>	9
Distraction of Other Tasks While Operating Vehicle	<u>Moderate Distractions</u>	4
TOTAL RATING LIST-A:		66
FINAL RISK ASSESSMENT RATING LIST-A:		MODERATE HAZARD

OHV List-B --- ATV/UTV Make/Model/Configuration Covered

- DCR - Kubota RTV900xt with Unbaffled 25 Gallon Tank and Wand

Rating Category	Rating Description	Rating
Speed of Operation	<u>Under 10 mph</u>	1
Maximum Slope in Any Direction	<u>Moderate (> 26% & < 75% of mfg'r's maximum)</u>	20
Surface Type	<u>Soil</u>	9
Surface Condition	<u>Firm</u>	1
Surface Configuration	<u>Ruts/Bumps/Irregularities (< 6")</u>	1
Load Weight	<u>≥ 51% & ≤ 75% of mfg'r's Recommended Max.</u>	9
Load Type	<u>Liquid in a Unbaffled Container</u>	9
Accessibility of Use Area for Emergency Response	<u>Very Accessible</u>	1
Time Operating Vehicle by Same Rider in a Single Workday	<u>≥ 4 Hour & ≥ 8 Hours</u>	9
Distraction of Other Tasks While Operating Vehicle	<u>Moderate Distractions</u>	4
TOTAL RATING LIST-B:		64
FINAL RISK ASSESSMENT RATING LIST-B:		MODERATE HAZARD

APPENDIX D:

TECHNICAL REVIEWER CHECKLIST

PRESCRIBED FIRE PLAN ELEMENTS	S/U	COMMENTS
1. Signature Page	S	All comments were addressed during the review of the plan.
2. Go/No-Go Checklists	S	All comments were addressed during the review of the plan.
3. Complexity Analysis Summary	S	All comments were addressed during the review of the plan.
4. Description of Prescribed Fire Area	S	All comments were addressed during the review of the plan.
5. Goals and Objectives	S	All comments were addressed during the review of the plan.
6. Funding	S	All comments were addressed during the review of the plan.
7. Prescription	S	All comments were addressed during the review of the plan.
8. Scheduling	S	All comments were addressed during the review of the plan.
9. Pre-Burn Considerations	S	All comments were addressed during the review of the plan.
10. Briefing	S	All comments were addressed during the review of the plan.
11. Organization and Equipment	S	All comments were addressed during the review of the plan.
12. Communications	S	All comments were addressed during the review of the plan.
13. Safety and Medical	S	All comments were addressed during the review of the plan.
14. Test Fire	S	All comments were addressed during the review of the plan.
15. Ignition Plan	S	All comments were addressed during the review of the plan.
16. Holding Plan	S	All comments were addressed during the review of the plan.
17. Contingency Plan	S	All comments were addressed during the review of the plan.
18. Wildfire Conversion	S	All comments were addressed during the review of the plan.
19. Smoke and Air Quality Management	S	All comments were addressed during the review of the plan.
20. Monitoring	S	All comments were addressed during the review of the plan.
21. Post-burn Activities	S	All comments were addressed during the review of the plan.
Appendix A: Maps	S	All comments were addressed during the review of the plan.
Appendix B: Fire Behavior Modeling	S	All comments were addressed during the review of the plan.
Appendix C: Complexity Analysis	S	All comments were addressed during the review of the plan.
Appendix D: Job Hazard Analysis	S	All comments were addressed during the review of the plan.
Appendix E: Technical Reviewer Checklist	S	All comments were addressed during the review of the plan.
Other	S	All comments were addressed during the review of the plan.

S = Satisfactory, U = Unsatisfactory

Recommended for Approval:

Not Recommended for Approval:

TECHNICAL REVIEW:


SIGNATURE

10/28/14
DATE

Joel R. Carlson
PRINTED NAME

Northeast Forest & Fire Management, LLC
AGENCY

Prescribed Burn Boss Type 2 (RXB2)
QUALIFICATIONS