

NORTHEAST UTILITIES SPECIFICATION FOR RIGHTS-OF-WAY VEGETATION MANAGEMENT

SECTION III TECHNICAL REQUIREMENTS

I. Scope

This specification covers the selective vegetation control of targeted undesirable tree, brush and vine species on Northeast Utilities transmission and distribution rights-of-way. Management of undesirable vegetation will be performed through the integrated use of manual, mechanical, chemical or other means as may be available to eliminate identified target species and remove potentially conflicting trees or tree parts from contact with the overhead conductors and/or electric facilities.

II. Objective

The primary purpose of rights-of-way vegetation control is to provide a clear and accessible area for the operation, review and maintenance of electric facilities located on the right-of-way. Reliability will be preserved through the removal of all potentially interfering tree, shrub and vine species that may, through normal growth, contact the overhead electric conductors or impede physical or visual access along the right-of-way. Vegetation species such as grasses, forbs, ferns and low growing shrubs are considered desirable and shall be preserved and encouraged to grow.

III. General

A. Maintenance Zones

The type of maintenance will be dictated by voltage of the conductors and the average width of the right-of-way on each project. There are two types of maintenance, a two zone system for higher voltage classes and wider rights-of-way and a one-zone system for lower voltages and narrow rights-of-way. The voltage class will be defaulted to the highest voltage on the right-of-way if the right-of-way is shared by more than one circuit or line.

The two maintenance systems are as follows:

Two Zone System: Voltage class 34 kV and higher and rights-of-way widths greater than 100 feet.

One Zone System: Voltage class less than 34 kV or rights-of-way less than 100 feet in width

1. Two-Zone Maintenance

Management of vegetation within right-of-way boundaries shall be performed in accordance with the two-zone maintenance concept for transmission voltage lines and rights-of-way in excess of 100 feet in width. A wire or conductor zone and a border or side zone shall be developed and maintained in accordance with these specifications.

Wire Zone: The wire zone shall include the area directly beneath the overhead conductors extending outward a distance of 15 feet from the outermost conductor(s).

Side Zone: The side zones shall include all areas from the 15-foot limit of the outermost conductor(s) to the edge of the right-of-way border or maintained area.

2. One-Zone Maintenance

Management of vegetation within right-of-way boundaries shall be performed in accordance with the one-zone maintenance concept for distribution voltage lines regardless of right-of-way widths and for

transmission voltage lines with right-of-way widths less than 100 feet. The entire width of the right-of-way is maintained as a Wire Zone in accordance with the management requirements listed under Section B.1..

B. General Areas

General areas will include all rights-of-way where the company owns the land encompassed by the rights-of-way in fee, where easement rights do not restrict the preferred maintenance method(s), or where physical features do not require a maintenance practice different than the preferred method(s).

1. Wire Zones: Normally, all tree species and selected undesirable shrub species (state-listed invasive shrub species) regardless of height at the time of maintenance will be controlled. Also, desirable shrub species that are greater than 8 feet in height at the time of maintenance may be controlled depending on location and physical conditions within the right-of-way or position relative to facilities (ie. terrain or large clearances due to heights of the overhead conductors). Selected invasive species such as multiflora rose, autumn olive and buckthorn will be eliminated on all areas of the right-of-way regardless of height. All hardwood tree species will be treated standing or cut and treated if stems exceed 12 feet in height. All conifers less than 4 feet in height may be treated standing or cut, and all conifers taller than 4 feet in height shall be cut and diced. Cedar trees in excess of 4 feet generally will not be managed under this maintenance specification and the proper course of action for any cedar tree work will be noted in the Special Conditions (Section II).

(See Appendix 1 for a listing of desirable shrubs)

2. Side Zones: Normally all tree species (except cedar trees) and selected invasive plant species will be controlled. All other shrub species regardless of height may remain where practical. (See Appendix 1 for a listing of the desirable species for side zones)

Requirements for control may be modified to take into consideration topographical features such as valleys, gorges and steep slopes that result in large clearances from the overhead conductors, or where certain target species may be retained to provide barriers to the right-of-way or where visual aspects may limit the use of herbicides. These locations and modifications will be listed in Section II.

C. Sensitive Areas

Sensitive areas are those areas where the preferred maintenance method used for general areas cannot be used and must be modified or altered to obtain the desired control. Sensitive areas shall include but are not limited to:

- Residential areas (yards)
- Public water supply watersheds
- Public or private well locations
- Stream or river crossings
- Wetlands (wet)
- No chemical areas

All target species identified in Section III. B. shall be controlled in these areas when possible. Herbicide applications may be performed unless the easement specifically restricts the use of chemicals. In areas where herbicide use is restricted or where herbicide use should be excluded, all target vegetation shall be cut and diced or chipped.

Within the sensitive areas, herbicide applications shall be restricted from the following areas:

CONNECTICUT

- Within 100 feet of a public water supply well
- Within 50 feet of a private well
- Within wet wetland areas (10 feet from standing water)
- Within 10 feet of a river, stream or other body of water

MASSACHUSETTS

- Within 400 feet of a public water supply well
- Within 100 feet of a public surface water supply
- Within 50 feet of a private well
- Within wet wetland areas (10 feet from standing water)
- Within 10 feet of a river, stream or other body of water
- Within 100 feet of habitated or agricultural land

NEW HAMPSHIRE

- Within public water supply watersheds without a state permit
- Within 50 feet of any public well
- Within 400 feet of a gravel packed well or 250 feet of a drilled well used for public water supply without a state permit
- Within 50 feet of a private well
- Within wet wetland areas (25 feet from standing water)
- Within 25 feet of a river, stream or other body of water

D. Access and Structures

Existing access roads along rights-of-way including existing access to structures shall be cleared of all woody vegetation and where practical, herbicide treated to a minimum width of 14 feet.

Structures shall be cleared of all woody vegetation (including vines) and where practical, herbicide treated to a radius of 15 feet around each structure.

Guys shall be cleared of all woody vegetation (including vines) and where practical, herbicide treated to a radius of 5 feet at the anchor location. All vegetation in contact with the guy wire shall be herbicide treated or cut and removed.

All stumps resulting from the cutting or mowing of standing vegetation shall be as low as practical around structures, guys and access areas and shall not exceed 3 inches in height.

IV. Maintenance Methods

A. Herbicide Applications

All target vegetation may be chemically treated using one or more of the following methods:

- High Volume Foliar (Must be specifically listed in bid proposal and locations noted)
- Low Volume Foliar
- Ultra-low Volume Foliar
- Low Volume Basal
- Cut & Stump Treatments

Applications directly to soil or the ground as well as non-selective broadcast applications or high volume basal applications shall not be used on the Northeast Utilities system.

The following herbicide materials are approved for use on the Northeast Utilities system:

FOLIAR APPLICATIONS

- | | |
|---------------|---------------------|
| • ESCORT* | High and low volume |
| • ARSENAL* | High and low volume |
| • VANQUISH | High and low volume |
| • ACCORD* | High and low volume |
| • KRENITE S* | High and low volume |
| • GLYPRO Plus | High and low volume |

BASAL APPLICATIONS

- GARLON 4 Low volume basal
- STALKER Low volume basal

CUT SURFACE APPLICATIONS

- ACCORD* (50/50 with water)
- GLYPRO Plus (50/50 with water)
- STALKER (with water - use labeled rates)
- ARSENAL* (with water - use labeled rates)
- KRENITE S* (50/50 with water)
- PATHWAY
- GARLON 4# (in basal oil - use labeled rates)
- PATHFINDER

* Sensitive area approved herbicide for Massachusetts

Sensitive area approved herbicide for Massachusetts - application by sponge only

Foliar applications may employ a mixture containing two or more of the approved materials listed above. Basal applications shall employ a diluent labeled and approved for basal oil applications.

B. Manual Cutting

Manual cutting shall be employed when target stems exceed 12 feet in height or in sensitive areas where foliar or basal applications are not acceptable. All stumps resulting from the cutting of hardwood trees and shrub species including pitch pine shall be treated with an approved cut-surface herbicide where allowed. All stumps shall be less than 3 inches in height and all slash shall be wind-rowed along the right-of-way edge or diced in general areas. In sensitive areas, slash shall be diced, chipped or removed from the right-of-way depending on the physical locations.

Cut cherry trees in active pasture areas will be removed from the pasture immediately after cutting during the growing season and diced in an appropriate area of the right-of-way outside of the active pastures. NOTE: wilted cherry leaves are highly toxic to most livestock.

Diced or piled slash shall not be left within access areas or within the cleared areas around structures and guys. Slash and debris shall also be kept out of water courses, stream and river banks and bodies of water including standing water in wetland areas.

Trees or tree branches that are in close proximity to the conductors or are visibly damaged, dead or diseased and pose a threat to the conductors will be identified as "danger trees" and will be cut and/or removed when required by the Owner's Representative.

C. Mechanical Mowing

Mowing may be performed when necessary to reduce the heights of large dense stands of undesirable vegetation in preparation for an herbicide application or where herbicide applications are restricted. Mowing shall be selective in that large patches of low-growing desirable vegetation shall be retained where practical. Mowing shall be limited to wire zone areas, for access roads along the rights-of-way, or around structures and guys. However, limited mowing of side zones may be allowed to reduce dense stands of target vegetation. Mowing may only be performed after the review and approval of the Owner's Representative. Except in non-chemical areas, mowing shall be followed up with an herbicide application to the target stumps or resprouts.

The resulting stubble from mowing operations shall be as low as practical depending on the densities and terrain.

For Connecticut projects, mowing shall be restricted to the dormant season only from September 1st to March 31st.

D. Tree Trimming

When required, trimming alongside the conductors shall be performed so that all branches to be removed are cut back to the edge of the right-of-way or main trunk depending on easement restrictions and property owner consent to trim beyond the right-of-way edge.

All trimming shall be performed to allow for the following clearances between the vegetation and the conductors:

Voltage Class	Minimum Side Clearance	Minimum Under-Clearance
<230kV	20 feet	11 feet
230kV	30 feet	15 feet
345kV	30 feet	15 feet

All trimming shall be performed in accordance with proper arboricultural practices (i.e. ANSI A-300).

V. Skilled Contractor Personnel

The contractor shall employ supervisory and field personnel who are thoroughly trained in selective woody vegetation control techniques including all methods and materials to perform the work as specified. **The ability to recognize and identify desirable and undesirable species is mandatory for all vegetation control personnel.** All persons applying herbicides shall possess a valid applicator's license or supervisory certification for the state in which herbicides are being applied. All contract employees shall perform work in accordance with regulations listed under

OSHA 29 CFR 1910.269. Trimming shall be performed by personnel certified to perform this work and in accordance with ANSI Z-133.1.1994. Trimming shall comply with standards listed under ANSI A-300.

The contractor is required to know and understand all laws and regulations pertaining to the control of vegetation on right-of-ways, the use of herbicides and any restrictions to herbicide use for each state in which they are performing right-of-way vegetation control.

VI. Property Owner Notification

The contractor shall inform property owners and right-of-way abutters with homes or buildings located within 200 feet of the right-of-way or with maintained property to the edge of the right-of-way or within the right-of-way area, of the proposed work at least 7 days prior to the commencement of work. Personal contact or notification by a door hanger is required. The contractor shall also keep a listing of the contacts made and provide this list to the Owner's Representative at the completion of the project, or upon request by the Owner's Representative during the course of the project.

Notification may be made by personal visit, phone contact or use of a Company-approved door hanger. When door hangers are used, the Contractor will provide the contact name and a phone number for both the contractor and the Company Representative handling the project.

The contractor shall note the name of the person contacted when notification is made in-person or through a phone contact on the approved NU notification log.

The contractor shall use a toll-free number on all door hangers for property-owner inquiries.

VII. Environmental

All work performed under the rights-of-way brush control program will comply with all pertinent state statutes and federal regulations regarding herbicide use and applications. It is the Company's position that strict compliance with the principles of selective vegetation control and the identification and preservation of listed desirable species will be required. To be environmentally compliant, all crews shall be trained in the proper methods and use of herbicide application techniques being used. Low-volume and low pressure application methods are preferred. Proposals to employ high-volume/high pressure applications must be made at the time the bid proposal is submitted and will only be allowed after review and approval of the Company's Representative.

All crew personnel shall be trained and knowledgeable in the proper actions for oil and pesticide spill containment and cleanup. All vehicles shall possess containment and cleanup equipment and materials at all times while performing this contract. All spills will be reported to the Company Representative in accordance with the procedure listed under Section VIII, D. Problems and Complaints (below) and all state and federal agencies shall be notified if any spill meets the requirements for reporting for these agencies.

Failure to adhere to the requirements of this section may result in contract suspension or cancellation.

VIII. Miscellaneous

A. Preparatory Cutting and Patrols

In order to ensure that there are no potential tree/conductor problems during the course of the maintenance period and prior to the completion of all work, it shall be necessary for the contractor to perform a cursory patrol of all areas and identify any potential tree problems. **The patrol and danger tree identification shall be completed before April 1st of each year. Also, all cutting - selective cutting areas, structure and access clearing and the cutting of vegetation in excess of 12 feet in height shall be performed and completed before June 1st of each year.**

B. Access for Rights-of-Ways

The Company will provide information on the appropriate access points to rights-of-way where they exist. The Company will supply keys for all Company locked gates that will be returned to the Owner's Representative upon completion of the contract. The contractor shall be responsible for obtaining landowner permission to use any other access points not designated by the company. Access along rights-of-way shall not cause harm or damage to any private or company property or fixtures.

C. In-Lieu-Of Agreements

At easement locations where the property owner has refused the use of herbicides or the removal of potentially interfering target species, the Owner's Representative will obtain an in-lieu-of agreement for the property owner to maintain the right-of-way area in a manner that is approved and accepted by the Company. If the contractor obtains a property owner refusal to perform the work as specified, the contractor shall inform the Owner's Representative immediately so that an in-lieu-of agreement can be developed.

D. Work Periods

Work shall normally be performed during the company's normal work period - weekdays 7:30 am to 4:30 pm unless prior approval has been obtained from the Owner's Representative. There will be no work performed on weekends or company observed holidays unless prior approval is obtained from the Owner's Representative.

E. Problems and Complaints

The contractor shall immediately inform the Owner's Representative of any problems or complaints received from property-owner's, abutters or town or state officials that develop during the course of the work.

The contractor shall also immediately notify the Owner's Representative of any incidents involving:

- Electric interruptions
- Electrical contacts by employees
- Employee accidents or injuries (non-electrical)
- Damage to NU equipment or property
- Damage to private property
- Herbicide or oil spills

Completion of the Contractor Incident Report Form (Appendix 5) is required on all recordable incidents listed above.

The Contractor is responsible for any repairs to Company or private property damaged during the course of the work.

In accordance with TD 916, the Owner's Representative shall document the incident in the contractor's work file.

F. Weekly Reports

Northeast Utilities Weekly Transmission Brush Control or Tree Work Report (form OP3368 - Appendix 2) or Northeast Utilities Weekly Distribution Tree/Brush Report (form OP3367 - Appendix 3) shall be completed daily and submitted to the Owner's Representative weekly. The report shall be complete and provide all information relative to the project including the line or project numbers(s) all labor and equipment hours, amounts of herbicide mixtures and materials used, amount of area treated, location of areas treated (by structure number, road crossing or substation) and the number of trees removed or linear feet of trimming along the right-of-way edge. NOTE: only one form required per right-of-way project.

G. Project Summary Reports

The contractor shall submit summary information on the Northeast Utilities Transmission and Distribution Right-of-Way Summary Report form (Appendix 4) for each project worked that year. This includes the general maintenance year as well as the touch-up performed in subsequent years.

Information required on this form includes the total acreage treated using the various application methods and materials as well as the total volumes of herbicide mixtures applied, the total amounts of each individual herbicide product applied (along with corresponding acreage) and the total amounts of basal oil diluents used. The summary report shall also list the total man hours, man-days and calendar days required to complete the project. A man-day is considered an 8-hour day.

All Project Summary Reports are due before December 31st of the year in which the project was performed.

2005 Rights-of-Way Section III.doc
REV. 4/26/2004

APPENDIX 1

WOODY SPECIES ALLOWED TO REMAIN IN CONDUCTOR ZONE: (PARTIAL LIST)

<u>COMMON NAME</u>	<u>GENUS/SPECIES</u>
Arrowwood Viburnum	<i>Viburnum dentatum</i>
Bayberry	<i>Myrica pennsylvanica</i>
Blueberry - Highbush *	<i>Vaccinium corymbosum</i>
Blueberry - Lowbush	<i>Vaccinium angustifolium</i> & <i>V. vacillans</i>
Brambles	<i>Rubus spp.</i>
Buttonbush	<i>Cephalanthus occidentalis</i>
Dogwood - Gray	<i>Cornus racemosa</i>
Dogwood - Redosier	<i>Cornus stolonifera</i>
Dogwood - Silky	<i>Cornus amomum</i>
Elderberry	<i>Sambucus spp.</i>
Hazelnut	<i>Corylus americana</i> & <i>C. cornuta</i>
Honeysuckle - Bush	<i>Diervilla lonicera</i>
Honeysuckle - Fly	<i>Lonicera canadensis</i>
Honeysuckle - Tartarian	<i>Lonicera tatarica</i>
Huckleberry	<i>Gaylussacia spp.</i>
Maple-leaf Viburnum	<i>Viburnum acerifolium</i>
Meadowsweet - Broad-leaved	<i>Spiraea latifolia</i>
Meadowsweet - Narrow-leaved	<i>Spiraea alba</i>
Mountain Laurel *	<i>Kalmia spp.</i>
Oblong Fruited Juneberry	<i>Amelanchier bartramiana</i>
Oldfield Common Juniper	<i>Juniperus depressa</i>
Pasture Juniper	<i>Juniperis communis</i>
Running Shadbush	<i>Amelanchier stolonifera</i>
Sheeplaurel	<i>Kalamia augustifolia</i>
Spicebush	<i>Lindera benzoin</i>
Steeplebush	<i>Spiraea tomentosa</i>
Sweetfern	<i>Comptonia peregrina</i>
Sweetpepperbush	<i>Clethra alnifolia</i>
Winterberry	<i>Ilex verticillata</i>
Witch Hobble	<i>Viburnum alnifolium</i>
Witherod	<i>Viburnum cassinoides</i>

* Normally will not be treated or removed regardless of height

SPECIES ALLOWED TO REMAIN IN THE SIDE ZONES: (PARTIAL LIST)

All species listed above including:

Alder	<i>Alnus spp.</i>
Hornbeam	<i>Carpinus betulus</i>
Dogwood - Alternate-leaved	<i>Cornus alternifolia</i>
Dogwood - Flowering	<i>Cornus florida</i>
Sumac - Shining	<i>Rhus copallina</i>
Sumac - Smooth	<i>Rhus glabra</i>
Sumac - Staghorn	<i>Rhus typhina</i>
Willows (except tree species)	<i>Salix spp.</i>
Witch-Hazel	<i>Hamamelis virginiana</i>

APPENDIX 2**Northeast Utilities Transmission Rights-of-Way Danger Tree Report**

Project Number: _____ **Contractor:** _____ **Week Ending** _____

Line Number	Structure Number	Description of Problem

[illegible]

APPENDIX 4

Northeast Utilities System Rights-of-Way Herbicide Application Summary Report

Year: _____

Project No: _____

Project
Description: _____

Contractor: _____

Total Project Acres: _____

Application Type:	Acres Treated	Mix Quantity	Herbicide	Herbicide Amount	Total Man-Days
Open Acres					

Notes:

APPENDIX 5

**NORTHEAST UTILITIES
DISTRIBUTION LINE CLEARANCE
INCIDENT REPORT**

District: _____ Date of Incident: _____

Time of Incident: _____ Contractor: _____

Foreman: _____ Person Involved in Incident: _____

Town: _____

Street: _____ Pole No.: _____

Nature of Incident:

- ☐ Electrical Contact
- ☐ Employee Injury (non electrical)
- ☐ Vehicle Accident
- ☐ Property Damage
- ☐ Electrical Interruption
- ☐ OIL Spill
- ☐ Pesticide Spill

Interruption No.: _____ Circuit: _____ Voltage: _____

No. Customers Interrupted: _____ Contractor Charges: _____

Incident Description:

Follow Up Action Taken With Contractor:

Reviewed By: Arborist: _____ Date: _____

Contractor: _____ Date: _____