

TRANSCANADA HYDRO NORTHEAST, INC.  
MASSACHUSETTS'  
VEGETATION MANAGEMENT PLAN  
2013-2017

Submitted by:  
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**Submitted: April 22, 2013**

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## Section I: INTRODUCTION

In compliance with the Commonwealth of Massachusetts' Right-of-Way Vegetation Management Regulation, 333 CMR 11.00, TransCanada Hydro Northeast, Inc. (hereafter TransCanada) hereby submits this five year Vegetation Management Plan (VMP). The VMP is consistent with all applicable state and federal regulations that mandate the management of utility rights-of-way including but not limited to: Chapter 132 B, *Pesticide Control Act*; all pertinent clauses in *Chapter 85 of the Acts of 2000*; MESA; MGL c.131, *Massachusetts Endangered Species Act* and its regulations, 321 CMR 10.00, *Massachusetts Endangered Species Regulations*; 310 CMR 10.00, *Wetlands Protection* and 310 CMR 22.00, *Drinking Water* of the Massachusetts Department of Environmental Protection; applicable Federal Energy Regulatory Commission standards including NERC Standard FAC-003-1, Commissioner Order 693, and all applicable Federal Occupational Safety and Health Act, Department of Transportation and Department of Environmental Protection regulations.

Currently TransCanada's Massachusetts' ROW system consists of water power generation canals and their related structures located in the towns of Monroe, Florida and Buckland (See Appendix I). The Federal Energy Regulatory Commission (FERC) requires TransCanada to maintain the appropriate vegetation conditions to enable visual inspections of its generation structures; earthen and stone rip-rap embankments, underground water conduits and related access roads.

This VMP is designed on a 3 year treatment cycle to effectively encourage the establishment of desirable plant communities while eliminating target vegetation that interferes with the safe operation of the facilities. It encompasses an Integrated Vegetation Management (IVM) program (a combination of Mechanical, Chemical and Natural controls), that depends upon periodic review and revision with the development of new regulations and methods that are proven practical, environmentally responsible and cost effective.

TransCanada also relies on professional field personnel who demonstrate the ability to identify plant species and who understand IVM techniques and policies. These contractors must comply with the specifications set forth in this VMP and with all applicable state and federal regulations. They will also be monitored by TransCanada representative(s) who will ensure their compliance.

## **Section II: GOAL AND OBJECTIVES**

Within the parameters of 333 CMR 11.00, TransCanada's VMP outlines and explains the standards of vegetation control expected from the implementation of an IVM program. It provides guidance for both TransCanada and contract field personnel regarding appropriate vegetation control methodologies and philosophies. It also serves as an educational and communication link for state and municipal officials, and the public-at-large.

### **GOAL**

- To continue an established IVM program that is legal, safe, environmentally sound, economically feasible and which has the flexibility to accommodate unique situations including the need to use more appropriate techniques as they arise in accordance with new regulations and/or "state-of-the-art" scientific advances.

### **OBJECTIVES**

- To maintain safe, reliable hydro-electric facilities
- To outline an IVM program
- To control undesirable vegetation that impedes the monitoring and inspection of infrastructure
- To control undesirable vegetation that interferes with access to the hydro-electric structures for maintenance or emergencies
- To encourage the establishment of wildlife habitat that does not interfere with the primary function of the hydro-electric structures
- To manage and contain the spread of invasive plants
- To promote positive public relations with abutting property owners, state and municipal officials, contractors, and the public

### **Section III: IDENTIFICATION OF TARGET VEGETATION**

All vegetation must be removed that grows tall enough to interfere with the safe, efficient and legal operation of the hydro-electric structures and related facilities. The vegetation acceptable on each structure depends upon its function. Therefore, while vegetation free conditions are necessary along the stone rip rap of the power generation canals, grasses and herbaceous growth are encouraged on the earthen dike walls and some very low growing woody vegetation might not cause problems.

Dense, woody vegetation impedes the ability to inspect the conditions of the canal banks and can interfere with both foot and vehicle access. Tall growing woody vegetation can also compromise the integrity of earthen dike structures as wind and storm blown trees can uproot and dislodge large volumes of earth thus weakening water impounding structures. Tree species are, therefore, the primary target vegetation, followed by woody shrubs, vines, and noxious vegetation including invasive plant species (invasives) and poisonous plants.

These species include, but are not limited to:

- Tree species such as Aspen, Beech, Birch, Cherry, Maples, Oak and Pines
- Shrubs such as Mountain Laurel, Speckled Alder, Staghorn Sumac, Maple-Leaf Viburnum and Witch Hazel
- Woody vines such as Bittersweet, Wild Grapes and Virginia Creeper
- Other noxious vegetation such as Poison Ivy, Blackberry, Multiflora Rose and Autumn Olive.

Except where vegetation free conditions are required, non-target vegetation includes herbaceous growth and possibly very low-growing woody vegetation that generally do not interfere with the function and inspection of the structures. These early successional ecological communities promote a wildlife friendly environment that competes with undesirable target vegetation.-

Where applicable, desirable low growing vegetation includes, but is not limited to:

- Grasses
- Herbaceous plants such as ferns and wildflowers
- Very low growing woody plants such as Huckleberry, Low Bush Blueberry and Sweet Fern.

### **INVASIVE PLANT SPECIES**

Invasive plant species have become an increasing concern throughout the country especially along ROW corridors where they can spread rapidly and then move into the adjacent landscape. Invasive plants species are part of a group of plants defined as “Noxious

Weeds.”<sup>1</sup> They are “Exotics,” or non-native plants introduced by human activity—intentionally or accidentally—that aggressively invade or alter both natural and managed areas. Nation-wide, invasives cover an area at least equal in size to the Northeast or approximately 100 million acres and they are spreading at an annual rate of 8-20% (2x the size of Delaware) or 4,600 acres per day.<sup>2</sup>

As a responsible landowner, TransCanada intends to monitor and manage for invasive species while performing regularly scheduled vegetation management cycles. Additionally, some invasives, particularly Japanese Knotweed, interfere with the safe operation of hydro-electric structures. Vegetation management contractors have the resources to properly identify and make a positive impact on containing, controlling and slowing the spread of invasive species when they first appear and in the early stages before they become established. In an effort to promote responsible land stewardship, TransCanada also works in concert with federal, state, public and private land use agencies in an effort to curtail the spread of invasive species.

#### **IDENTIFICATION METHODS:**

To insure the accurate identification of target and non-target vegetation, all vegetation management contractors are required to supply only professional, well-trained, experienced personnel familiar with the vegetation typically found growing on these sites. They must also have a working knowledge of invasives and the resources available to identify them.

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<sup>1</sup>“NOXIOUS WEED.—The term “noxious weed” means any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment.” (PUBLIC LAW 106–224—JUNE 20, 2000, TITLE IV—PLANT PROTECTION ACT).

<sup>2</sup>Leslie Mehrhoff, “The Biology of Plant Invasiveness,” New England Wildflower; Conservation Notes of the New England Wild Flower Society, Vol. 2, No.3, 1998.

## Section IV: INTENDED METHODS OF VEGETATION MANAGEMENT AND RATIONALE FOR USE

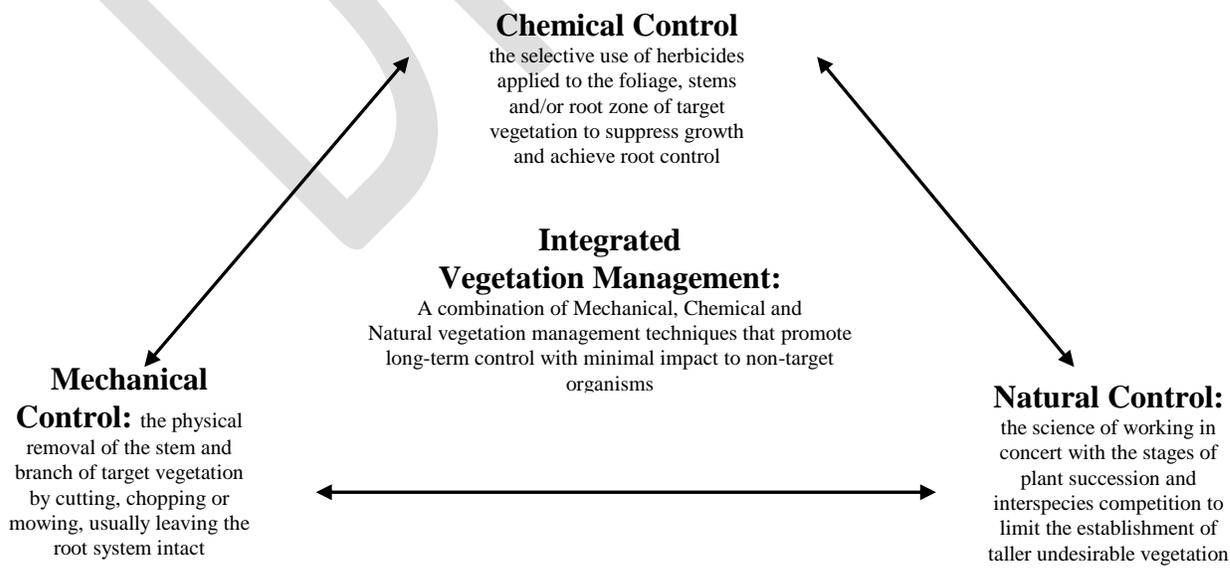
TransCanada's VMP takes into consideration all factors involved in the maintenance and operation of its hydro-electric structures and related facilities. It reflects TransCanada's intent to prevent any unreasonable adverse effects to the environment and to the safety and health of non-target organisms while supporting TransCanada's primary concern to provide hydro-electric generation on a regular and dependable basis.

A comprehensive vegetation management program takes into account geologic, geographic, climactic, environmental and legal factors in determining the best approach to controlling vegetation. Soil type, moisture levels, elevation and land use patterns determine species composition, density and growth rate. Taking the aforementioned factors into consideration, selecting the best control method depends on the time of year and the type and location of sensitive sites in relation to the treated hydro-electric structures.

The strategy outlined in this VMP will advance the consistent and safe operation of these ROW's through an appropriate vegetation management policy. To further insure this commitment, all vegetation management activities are carried out in strict compliance with the regulations of authorized federal and state agencies. No herbicide applications will be permitted on the ROW's without an approved VMP, YOP, completed public notification process and written approval of the YOP/VMP by the Natural Heritage and Endangered Species Program (NHESP) of the Massachusetts Division of Fisheries and Wildlife for treatments in State-listed Species Habitat, the Estimated Habitats of Rare Wildlife and the Priority Habitat for State-listed Species.

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**TABLE I**



When implemented by trained, experienced IVM professionals, the direct management techniques of mechanical and chemical controls encourage the development of natural controls. All three components are dependent upon the others and the conditions at the specific sites being treated in a continuous cycle that employs the unique advantages of each. When used in concert, they control undesirable vegetation while simultaneously encouraging the development of desirable plant communities (where applicable).

With the exception of most conifer species, cut woody vegetation resprouts creating a stem density greater than the original situation. Subsequent cutting cycles further increase the dense areas of woody vegetation escalating the need for management. This dense woody vegetation competes with and dominates low growing, desirable vegetation.

Systemic herbicides prevent resprouts through effective root system control. Target vegetation treated with herbicides; therefore, do not pose a problem for future maintenance cycles, which reduces the frequency and intensity of subsequent treatment cycles. Not all areas are treated with herbicides, chemical, easement and sensitive area restrictions affect the areas of a ROW that can be managed by herbicides. Mechanical controls, therefore, are the only options for such sites despite the disadvantages of resprouts. Mechanical and chemical controls are also used in concert, such as the use of cut stump treatments after hand cutting and to cut vegetation over 12 feet in height in preparation for an herbicide application.

Except in areas requiring vegetation-free conditions—such as stone rip rap—natural controls completes the foundation of a well-constructed IVM program. As undesirable target species are controlled or eliminated, low-growing plants invade the resulting void to take advantage of the available sunlight, moisture and nutrients. This results in primarily herbaceous plant communities, such as ferns, grasses and wild flowers, that compete with the germination and survival of undesirable species, such as woody vines and trees. As is currently the case on TransCanada's hydro-electric structures after multiple treatment cycles, these low-growing plant communities ultimately decrease the dependence on chemical and mechanical controls, as desirable vegetation becomes increasingly dominant.

The stability of low-growing plant communities is augmented by the fact that these naturally occurring plant species are adapted to their specific environment. They have a much better opportunity for survival, especially during adverse growing conditions, as compared to planted vegetation that may not survive due to incompatible site-species relationship.

In summary, natural control is the process of working with the biological cycles of plant succession and interspecies competition to achieve a lower dependence on chemical and mechanical controls. Deriving the maximum advantage from natural controls, however, calls for the use of both chemical and mechanical controls. The progression of plant succession does not support stable plant communities and must, therefore, be stabilized by mechanical and chemical controls.

Natural controls are part of the solution to controlling invasives but again only with the assistance of chemical and mechanical controls. Invasives which by their nature are aggressive competitors are easily established and grow rapidly by producing abundant fruit and seeds with very effective dispersal methods; they even interrupt the ability of site-compatible native plants to flourish. Invasives also move readily along corridors such as waterways and ROWs (in this case both corridor types apply). For TransCanada, many invasives, such as Japanese Knotweed (frequently found along waterways) also would obstruct the ability of TransCanada to maintain and inspect its hydro-electric structures.

In conclusion, the establishment and management of desirable plant communities by an IVM program on a ROW is beneficial to both humans and wildlife. For example, maintaining established ROW corridors supports early successional wildlife habitat such as the low growing flower and herbaceous plants needed for food and shelter by insects, various bird species and mammals that are not found in a mature forest.

### **INTENDED CHEMICAL (HERBICIDE) CONTROL METHODS:**

**FOLIAGE:** the application of herbicides to fully developed leaves, stems, needles or blades of a plant. The herbicide is mixed or diluted with water and applied as a uniform spray over the entire foliage of the plant. The application period usually extends from early June through the beginning of leaf abscission in early fall. This is generally the most economical and effective method, particularly in medium and high brush density situations. It is also the best technique to control noxious and poisonous vegetation that presents a hazard to inspection and maintenance crews.

1. **Low Volume Foliage Techniques** utilize hand-operated pumps or motorized, backpack sprayers with herbicide concentrations usually ranging from 3-20%. The motorized, backpack sprayer produces an air current to deliver the herbicide solution to the target vegetation. The hand-pump sprayer uses a column of water to deliver the solution. In both cases, the amount of herbicide solution applied only dampens or lightly wets the target vegetation, instead of being applied to the point of run-off. This minimizes the amount of excess herbicide drip from target species onto desirable ground cover. Low volume applications also eliminate the need to bring heavy equipment on the ROW for the transportation of large quantities of herbicide solution.
2. **Modified Low Volume Foliage Techniques** are capable of delivering uniform, penetrating herbicide mixtures to dense target vegetation. This technique usually involves 200-500 gallon hydraulic sprayers mounted on a truck or tractor equipped with several hundred feet of hose and hand held spray guns. The herbicide mixture, usually a 1-2% concentration, can be directed to specific target vegetation for spot treatments or broadcast for uniform coverage in dense thickets. It is appropriate where walking conditions are difficult especially along the steep slopes of the canal embankments where the weight of a backpack sprayer can throw the applicator off balance.

3. **Anti-drift Agents** are added to the mix or solution in all foliage applications in order to reduce the potential of herbicide drift beyond target vegetation. Drift control agents reduce the break-up of spray into fine droplets and offer increased selectivity, leaf tissue penetration, and herbicide deposition on target plants. Even with anti-drift agents, however, there are times when selective foliage application operations cease due to wind conditions that make it impossible to prevent herbicide movement off the target area.

**PLANT GROWTH REGULATORS/BROADLEAF CONTROL (PGR):** the selective application of herbicides to slow down the growth of grasses and remove broadleaf plant species. This treatment method can control broadleaf plant species—many of which are noxious species—where they are out-competing desirable grasses. A PGR treatment has the advantage of controlling the target broadleaf species without damaging desirable grass species. It is used in the same time frame as foliar treatments, using the same types of equipment.

**LOW-VOLUME STEM BASAL:** the selective application of herbicides to the lower portion of the plant stem. This technique can be used year-round, except during deep snow conditions that cover the target stem area. It is, however, typically employed during the non-foliage season when target stems are easier to identify without the interference of lush, tall grasses or ferns. It utilizes special blended light petroleum oil as the diluent, which enables the herbicide solution to penetrate the bark tissue of target species and translocate within the plant. Unlike foliage applications, stem basal is not appropriate to control high target stem densities due to unreasonable labor costs and herbicide rates per acre. The advantage of extending the herbicide treatment period beyond the foliage season, however, justifies using this technique for appropriate vegetation conditions.

**CUT STUMP SURFACE TREATMENT:** the application of an herbicide solution to the cut surface of a stump following or during a cutting operation using an herbicide concentration, usually 50% diluted in water. To obtain root control, it is only necessary to treat the phloem and cambium tissue, regardless of the stump diameter, and ideally, treatment should be made to freshly cut stumps. This technique can be used year-round except during deep snow conditions that prevent cutting the stumps low enough, and it is best avoided during the season of high sap flow. Application equipment includes low-volume, backpack, hand-pump sprayers; hand held squirt bottles; paintbrushes, or sponge applicators. This method is not practical in moderate to heavy stem densities but offers the opportunity to chemically treat undesirable vegetation in extremely sensitive sites where other methods are not possible. It is also commonly used to prevent resprouts when hand cutting vegetation over twelve feet in height in preparation for a foliage application.

## **INTENDED MECHANICAL CONTROL METHODS:**

**HAND CUTTING:** the use of chain and brush saws to remove the stem and/or branches from the plant's root system.

1. Cutting is normally used under the following conditions:
  - a. When target vegetation is 12' tall and over
  - b. When conifers exceed 6' in height or are present in wetlands
  - c. In easement restricted areas
  - d. In chemical restricted sensitive areas
2. The following guidelines are observed during cutting operations:
  - a. Trees are cut as close to the ground as possible so that stump height is no higher than root swell
  - b. Cut stems are slashed and left along the edge of the ROW corridor, in parallel lines following the direction of the ROW, windrowed or chipped, depending on the situation; larger trees are limbed and diced up
  - c. Cut brush is not left on or across paths, roads, fence lines, stone walls or in waterways and its placement must comply with applicable State Fire Marshall's regulations
  - d. All cut cherry is removed from active pastures.

**MOWING:** the cutting, severing or shattering of vegetation by large rotary or flail mowers. These heavy-duty mowers, usually ranging from 5-8 feet wide, are typically mounted on large four-wheel drive rubber tired tractors or tracked vehicles. Mowing is primarily used where herbicides are prohibited. Mowing can be the preferred method, especially on sites where extremely tall and dense target vegetation makes hand cutting inefficient and expensive. On non-restricted sites, mowing may be used to remove tall target vegetation followed by an herbicide treatment to the resprouts following one growing season. Mowing is an excellent tool, especially in cases of extensive Invasive infestations, however, because it is the least selective of the mechanical methods, non-target organisms can be damaged, including food, cover and nesting sites for wildlife. Mowing is restricted by terrain conditions such as steep, rocky sites or wet soils, and it necessitates the use of hand cutting methods next to obstructions such as stone walls and fence lines. Since mowing can throw large chips and debris great distances from the cutting equipment, it often requires employing someone to prevent people and animals from coming too close to the work site.

**SIDE TRIMMING:** trimming or removal of encroaching branches and/or tops of trees growing on or near a ROW. This management technique is usually accomplished by the use of an aerial lift mounted on an off-road capable vehicle, although, tree climbing is employed in situations where terrain prevents the passage of equipment. This method is useful in maintaining the edge definition of ROW corridors, and provides for easier inspections of vegetation conditions during aerial patrols. All trimming activities are performed in accordance with proper arboriculture practices and in compliance with all applicable regulations in order to insure the health and aesthetic value of the trees.

## Section V: JUSTIFICATION OF HERBICIDE USE

When used in concert, the chemical and mechanical components of an IVM program support the establishment of low-growing and potentially allelopathic, ecological communities of early-successional plant species, or natural controls. Chemical controls are, therefore, an integral part of an IVM program and the selective and judicious use of herbicides is critical in the effective management of TransCanada's ROWs.

As discussed above, without chemical controls, the stumps of cut vegetation remain alive allowing adventitious buds to produce resprouts. Nourished by established root systems, these aggressive resprouts are capable of growing several feet per year. Repeated cycles of mechanical control techniques, therefore, increase the density of target stems intensify the labor necessary for acceptable control.

When relying on mechanical methods alone, dense areas of target vegetation become costly and dangerous to hand-cut with power saws and when the landscape allows, are best controlled by mowing. Large mowing equipment, however, has its own negative impact on non-target plant communities whose establishment is crucial to developing successful natural controls. The scarification of the soil surface creates a potential seedbed for fast growing, pioneering target species such as poplars, cherries, birches and invasives. This can increase the frequency of the maintenance cycle and destroy the dominance of early successional ecological communities. Similarly, sensitive sites, such as wetlands and residential areas may be adversely impacted when crossed by mechanical maintenance equipment.

Therefore, in order to support its IVM program, TransCanada must consider **Herbicides** because they:

1. Are specifically designed to control resprouts while minimizing the amount of manpower and equipment necessary and their repeated impact on the environment
2. Increase the length of time between treatment cycles by reducing the recurrence and density of target vegetation
3. Are one of the most efficient, practical method(s) of maintaining noxious vegetation including poisonous plants and invasives (including but not limited to Autumn Olive, Greenbrier, Hawthorn, Multi-flora Rose, Oriental Bittersweet, Poison Ivy and Sumac)
4. Can be used on extremely steep, rocky terrain where mechanical controls are difficult and dangerous
5. Are the only method that achieves season-long vegetation-free conditions (where appropriate and necessary)
6. Promote more efficient and generally safer working conditions for inspection and maintenance crews, including foot and vehicle access

7. Offer varied degrees of selectivity and favor—or release—certain types of plants; broadleaf vegetation can be controlled with little or no impact to grasses, and all herbicides can be applied selectively by utilizing the appropriate application technique
8. Are effective year round by choosing the appropriate herbicide and application technique
9. Are generally cost effective and less expensive than mechanical controls, especially for long-term vegetation management
10. When used selectively, the results are generally less dramatic than mechanical methods because of the ability to select out target vegetation, leaving non-target communities intact
11. Promote wildlife habitat by encouraging plant species diversity
12. When used selectively, they are much less destructive than mowing to nesting sites and the vegetation cover necessary for food and concealment by wildlife
13. Continued selective herbicide applications promote early successional ecological communities of plants and wildlife
14. When applied over a number of years in repeated cycles, result in lower target species' densities that require less maintenance.

TransCanada schedules herbicide treatment cycles on a 3 year cycle to sustain acceptable vegetation control at minimal application rates without jeopardizing the efficient functioning of the hydro-electric structures. If necessary, due to slower than anticipated vegetative growth, budgetary constraints, or other unforeseen restricting circumstances, TransCanada may extend the treatment cycle to 4 or 5 years. On the other hand, although rare, if conditions warrant, TransCanada may from time to time shorten the treatment cycle; for example, in the case of an unexpected invasive species problem.

TransCanada's reliance on state-of-the-art herbicide application equipment and the requirement that contractor(s) apply herbicides in the most judicious manner possible minimizes environmental site damage. Herbicides, particularly when applied selectively by low-volume methods dry quickly on the plant surface, thereby significantly restricting the greatest potential for dermal exposure. The use of anti-drift adjuvants in all foliage applications can be adjusted to accommodate changes in wind velocity further limits the likelihood of unintentional exposure to non-target organisms.

Applications are also not made in situations when there is a reasonable expectation that herbicides will drift from the target, or during measurable precipitation. Herbicides are not applied to target vegetation over 12 feet in height; within 10 feet of surface water; within chemical restricted Sensitive Areas per 333 CMR 11.00 (see Appendix II); to active pasture land unless arrangements are made with land owners to move livestock to an alternative location; or under unique circumstances that might unreasonably jeopardize the health and safety of non-target organisms and the environment.

## Section VI: IDENTIFICATION OF SENSITIVE AREAS AND PROPOSED CONTROL STRATEGIES

Per 333 CMR 11.02, sensitive areas are "any areas within rights-of-way...in which public health, environmental or agricultural concerns warrant special protection to further minimize risks of unreasonable adverse effects." They include, but are not limited to, the following:

### Water Supplies:

- Zone I's
- Zone II's
- IWPA's (Interim Wellhead Protection Areas)
- Class A Surface Water Sources
- Tributaries to a Class A Surface Water Source
- Class B Drinking Water Intakes
- Private Wells

### Surface Waters:

- Wetlands
- Water Over Wetlands
- The Mean Annual High Water Line of a River
- The Outer Boundary of a Riverfront Area
- Certified Vernal Pools

### Cultural Sites:

- Agricultural Areas
- Inhabited Areas

### Wildlife Areas:

- Certified Vernal Pool Habitat
- Priority Habitat.

Sensitive areas consist of no-spray areas in which herbicide use is prohibited, limited spray areas, and areas that require special treatment recommendations. Protecting these environmentally sensitive sites is accomplished by establishing limited spray and no-spray areas and treatment restrictions based on the sensitivity of each site and the requirement to minimize any unreasonable adverse impacts within that area (See Table II).

Only herbicides specified by the Department as acceptable for use in *sensitive areas* pursuant to the Cooperative Agreement [Memorandum of Understanding] executed between the Department of Agricultural Resources and the Department of Environmental Protection on July 1-2, 1987, or future amendments thereto, shall be used in *sensitive areas* (333 CMR 11.04(1)(d)).

The herbicides included in the resulting *Herbicides Recommended for Use in Sensitive Areas List (Sensitive Area Materials List)* will be applied in limited spray areas

according to the application restrictions in 333 CMR 11.04 or in the case of Priority Habitat, approval of the YOP by the Natural Heritage and Endangered Species Program of the Massachusetts Department of Fisheries and Wildlife (“NHESP”). A current copy of the *Sensitive Areas Materials List* and Massachusetts Department of Agricultural Resources approved active ingredient fact sheets are available at:<sup>3</sup>

<http://www.mass.gov/eea/agencies/agr/pesticides/rights-of-way-vegetation-management.html>

**TABLE II: CONTROL STRATEGIES FOR SENSITIVE AREAS**

| <i>Sensitive Area</i>   | No-Spray and Limited Spray Areas (feet)  | Control Method  | Restriction Code |
|---|--|---|------------------|
| Public <b>Ground</b> Water Supplies   | 400'   | Mechanical Only   | None             |
| Primary Recharge Area   | Designated buffer zone or 1/2 mile radius  | Mechanical, Recommended Herbicides*                         | 24 months        |
| Public <b>Surface</b> Water Supplies (Class A & Class B)                      | 100'   | Mechanical Only   | None             |
|   | 100'-400'  | Recommended Herbicides                                      | 24 months        |
| Tributary to Class A Water Source, within 400' upstream of water source       | 100'   | Mechanical Only   | None             |
|   | 100'-400'  | Recommended Herbicides                                      | 24 months        |
| Tributary to Class A Water Source, greater than 400' upstream of water source | 10'  | Mechanical Only   | None             |
|   | 10'-200'   | Recommended Herbicides                                      | 24 months        |
| Class B Drinking Water Intake, within 400' upstream of intake                 | 100'   | Mechanical Only   | None             |
|   | 100'-200'  | Recommended Herbicides                                      | 24 months        |
| Private Drinking Water Supplies   | 50'  | Mechanical Only   | None             |
|   | 50'-100'   | Recommended Herbicides                                      | 24 months        |
| Surface Waters  | 10'  | Mechanical Only   | None             |
|   | 10'-100'   | Recommended Herbicides                                      | 12 months        |
| Rivers  | 10' from mean annual high water line   | Mechanical Only   | None             |
|   | 10'-200'   | Recommended Herbicides                                      | 12 months        |
| Wetlands  | 100' (treatment in wetlands permitted up to 10' of standing water)* <sup>+</sup> | Low-pressure Foliar, CST, Basal<br>Recommended Herbicides   | 12 months        |
| Inhabited Areas   | 100'   | Recommended Herbicides                                      | 12 months        |
| Agricultural Area (Crops, Fruits, Pastures)                                   | 100'   | Recommended Herbicides                                      | 12 months        |
| Certified Vernal Pools  | 10'  | Mechanical Only when water is present                       | None             |
| Certified Vernal Pool Habitat   | 10'-outer boundary of habitat  | No treatment without written approval per 321 CMR 10.14(12) |                  |
| Priority Habitat  | No treatment without written approval per 321 CMR 10.14(12)                      |   |                  |

Restrictions “24 Months”: A minimum of twenty-four months shall elapse between applications

“12 Months”: A minimum of twelve months shall elapse between applications

\*Massachusetts recommended herbicides for sensitive sites

<sup>+</sup>Per the *DFA Decision Concerning the Wetlands Impact Study* for utilities per 333 CMR 11.04(4)(c)(2).

<sup>3</sup>Herbicides, manufactures labels and fact sheets are included in the YOPs.

## IDENTIFICATION OF SENSITIVE AREAS

Sensitive areas can be divided into two additional categories that help the individuals assigned the task of identifying and treating them in the field: “readily identifiable in the field” and “not readily identifiable in the field.” Readily identifiable in the field areas will be treated, identified and when appropriate, marked according to all applicable restrictions listed in 333 CMR 11.00. Not readily identifiable in the field areas will likewise be treated and marked when appropriate, but they are identified by the use of data marked on maps and collected in the YOP and notification processes.

1. Sensitive areas usually identifiable in the field, include but are not limited to: surface water, some private and public water supplies, wetlands, inhabited and agricultural areas
2. Sensitive areas not usually identifiable in the field, including, but are not limited to: designated public surface water supplies, public ground water supplies, some private drinking supplies, certified vernal pools and Priority Habitat of State-listed Species.

As appropriate, therefore, sensitive areas will be identified by either TransCanada personnel, trained and experienced vegetation management contractor personnel, and/or by individuals trained in the identification of sensitive areas. The following resources help in the identification of sensitive areas:

1. TransCanada’s pipeline alignment sheets, maps, records and institutional knowledge
2. Massachusetts Department of Environmental Protection water supply mapping layers available through MassGIS
3. Municipal Board of Health maps and lists of identified private wells
4. Correspondence, meetings and input from municipalities within the forty-five day YOP and twenty-one day municipal right-of-way notification letter review and comment periods and the 48 hour newspaper notification (under 333 CMR 11.06 & 11.07 and Chapter 85 of the Acts of 2000)
5. Correspondence and meetings resulting from TransCanada's voluntary abutter notification procedure
6. A point person who verifies identified sensitive areas and any additional areas that may require special precautions
7. USGS topographical maps
8. Information from contractor’s knowledge and records
9. Information from MassGIS
10. Confidential information from NHESP
11. A copy of the YOP and VMP

12. Treatment crew(s) are required to have the following references on the job site to help identify sensitive areas:
  - a. Topographical maps (electronic or paper)
  - b. Copy of YOP
  - c. Any additional information that may become available.

## **CONTROL STRATEGIES FOR SENSITIVE AREAS:**

Mandated sensitive areas will be treated following the restrictions in applicable state and federal regulations.

TransCanada intends to primarily use herbicides from the *Sensitive Areas Materials List*, however, TransCanada reserves the right to use herbicides that are not currently on this list. The purpose of this policy is to retain the flexibility to take advantage of the new chemistry that may offer environmental and selective control benefits. Any herbicide considered for use will be registered by the DAR, Pesticide Board sub-committee and labeled for the target species and/or site. No herbicides will be used in limited spray areas that are not expressly approved for use in these sensitive areas.

### ***Wetlands***

Pursuant to 333 CMR 11.04 (4) (c) (2), based upon the results of two ROW wetland impact studies, the Massachusetts Department of Agricultural Resources in consultation with the Department of Environmental Protection and the VMP Advisory Panel, made a determination that herbicides, when used at various utilities, under the guidance of an IVM program and other conditions as set forth in the determination, have less impact on wetlands than mechanical only techniques. Therefore in accordance with the conditions of the Department's determination, TransCanada will selectively apply herbicides to wetland sites, except within ten feet of standing and flowing water and to conifers which will be cut (see Appendix III).

### ***Public and Private Water Supplies***

Appropriate sources and references will be consulted to determine the location of public and private water supplies. TransCanada's YOP maps will include all known public and private water supplies at the time of printing using the sources listed above, and the mapping information used by contract treatment crews will be updated as necessary during the treatment cycle.

To aid in the public and private water supply identification process, under 333 CMR 11.01(3)<sup>4</sup>, TransCanada requests that during the notification processes under 333

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<sup>4</sup>333 CMR 11.01(3): "[The Specific goals of 333 CMR 11.00 are to] Ensure ample opportunity for public and municipal agency input on potential impacts of herbicide application to rights-of-way in environmentally sensitive areas."

CMR 11.06-11.07 and during the treatment cycle, that public and municipal agencies share information on new or unidentified public and private water supplies.

Identified private drinking supplies within one hundred feet of a ROW are included in our permanent records and maps, and landowners are encouraged to post signs on the edge of the ROW to help identify private water supplies (the no-spray treatment area is fifty feet from a private well).

A point person will patrol the ROW in advance of herbicide applications to verify sensitive areas and buffers are appropriately measured and flagged, and recorded on pipeline alignment sheets for permanent record.

### ***Massachusetts Endangered Species Act***

TransCanada recognizes the importance of the Massachusetts Endangered Species Act, M.G.L.C. 131 A, and its significance to ROW vegetation management. TransCanada will comply with all applicable portions of this Act and the regulations promulgated thereunder. TransCanada will also follow the rules and prohibitions directed at human activities which Take Species or alter their Significant Habitat (as of this printing there are no designated Significant Habitat in Massachusetts).

321 CMR 10.14, Massachusetts Endangered Species Act Regulations, Part II Exemptions and 333 CMR 11.04(3)(a-c) exempts utility ROW vegetation management from the permit process under the following condition:

The management of vegetation within existing utility rights-of-way provided that the management is carried out in accordance with a vegetation management plan approved in writing by the Division prior to the commencement of work for which a review fee shall be charged, the amount of which shall be determined by the commissioner of administration under the provisions of M.G.L. c.7, § 3B...

To comply with this exemption, TransCanada will submit this VMP and YOPs to the NHESP.

The NHESP has delineated areas as Priority Habitat based on the "Best Scientific Evidence Available" to protect State-listed species from a "take." Under the approval process, details about the Priority Habitat of state-listed species that might be affected by our activities and management recommendations are shared with TransCanada under strict confidentiality agreements.<sup>5</sup> Using this data and best management practices, TransCanada and contract personnel will follow the appropriate vegetation management treatment methods within these sensitive areas taking all practical means and measures to modify ROW vegetation management procedures to avoid damage to State-listed species and their habitat.

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<sup>5</sup> A map layer of Priority Habitat is available to the general public at MassGIS, but it is neither specific to the areas of concern for herbicide applications nor does it have detailed data on the species of concern; the exact location and details of their habitat is kept confidential for their protection.

To identify Priority Habitats, TransCanada personnel, NHESP approved review botanists and vegetation management crews must use proper identification procedures. Contractors are, therefore, required to train their personnel to recognize the location of Priority Habitats using one of the following tools: paper maps, GPS coordinates and/or GIS systems.

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## **Section VII: OPERATIONAL GUIDELINES FOR APPLICATORS RELATIVE TO HERBICIDE USE**

TransCanada sets forth the following set of operational guidelines for their vegetation management programs:

1. TransCanada relies on independent contractors for vegetation management applications and requires, in a contractual agreement, that contractors comply with all applicable federal and state laws and regulations. These include, but are not limited to, applicable OSHA, FIFRA and DOT regulations, 333 CMR 1-15.00 including Rights-of-Way Management, Chapter 132B, Chapter 85 of the Acts of 2000 (see Appendix IV) and 321 CMR 10.00 as managed by NHESP.
2. Both the Contractor and TransCanada are responsible to insure that vegetation management activities are conducted in a professional, safe, efficient manner, with special attention directed towards minimal environmental impact. The following individual is responsible for monitoring, supervising and coordinating vegetation management programs:

David Murray, Environmental Specialist  
TransCanada Hydro Northeast, Inc., Walpole Office  
2 Killeen Street  
North Walpole, NH 03609
3. The contractor must provide qualified, licensed and certified personnel to apply herbicides. “Qualified” means those personnel who have been trained to recognize and identify target and non-target vegetation and are knowledgeable in the safe and proper use of both mechanical and chemical vegetation management techniques. All personnel applying herbicides in Massachusetts must be licensed in the Commonwealth and must work under the on-site supervision of a certified applicator.
4. All contract personnel will follow all herbicide Label instructions regarding Personal Protective Equipment (PPE).
5. Vegetation management crews will exercise care to insure that low-growing desirable vegetation and other non-target organisms are not unreasonably affected by the application of herbicides.
6. Herbicides will only be applied in a safe and judicious manner
7. Herbicides will be handled and applied only in accordance with the Labeled instructions.
8. Contractors will strictly adhere to all mandated safety precautions directed towards the public, the applicator and the environment.
9. Applicators will at all times, exercise good judgment and common sense during herbicide treatment activities, and will immediately cease operations if adverse conditions or other circumstances warrant.
10. Herbicides will NOT be applied during the following adverse weather conditions:

- a. During high wind velocity, per 333 CMR 11.03
  - b. Foliar applications during periods of dense fog, or moderate to heavy rainfall
  - c. Foliar applications of volatile herbicides during periods of high temperatures (90 plus degrees Fahrenheit) and low humidity
  - d. CST or Basal application when deep snow (i.e. 6" plus or ice frozen on stem or ground to stump) prevents adequate coverage of target plants to facilitate acceptable control
  - e. Basal applications when the stems are excessively wet from moisture (i.e. dew, fog, rain)
9. All conifers over six feet tall will be controlled by cutting. Where appropriate, all pitch-pine stumps will be treated with an herbicide to prevent resprouting.
10. The contractors' foreman or senior crew member, must complete daily vegetation management reports that include:
- a. Date, name and address of vegetation management contractor(s)
  - b. Identification of site or work area
  - c. List of crew members
  - d. Type of equipment and hours used, both mechanical and chemical
  - e. Method of application and description of target vegetation
  - f. Amount, concentration, product name of herbicide(s), adjuvants, and dilutants (EPA registration numbers must be on file)
  - g. Weather conditions (three times over the course of an 8 hour day)
  - h. Notation of any unusual conditions or incidents, including public inquiries
  - i. Recording and/or verification of sensitive areas on ROW maps
12. All equipment used for vegetation management programs must be maintained in good working condition and should be of adequate design and ability to produce the professional quality of work that TransCanada requires. Instead of dictating the exact equipment models and calibration methods, TransCanada recognizes the vast variety and performance of herbicide application equipment and simply requires that the contractor provide the most appropriate application equipment, calibrated to effectively and legally control target vegetation.
13. Vegetation management programs must result in a 95% control of all target species. If less than the desired control is achieved, then the contractor may be held responsible to re-treat or remove the remaining vegetation to TransCanada's satisfaction.
14. Land owners will be treated with courtesy and respect at all times. Permission must be obtained for ingress and egress if entering the ROW from private land. Care and common sense shall be exercised when moving vehicles and equipment. All bar-ways and gates shall be immediately closed, and care must be exercised to prevent the rutting

or destruction of roadways, fields or any other form of access. No litter of any kind will be left on the ROW or adjoining land.

15. When addressing inquiries or complaints from a concerned person, the foreman of the ROW crew will explain the program in a polite and professional manner. If the individual demands that the vegetation maintenance cease, then the foreman should remove the crew and equipment off the property, and contact TransCanada's representative who should be advised of the situation as soon as possible. The crew will not return to that location until given clearance by TransCanada.
16. When addressing serious complaints about herbicide usage from a landowner, or other concerned person, notice will be sent to the appropriate authorities at the Massachusetts Department of Agricultural Resources, Pesticide Program (DAR) regarding the incident/concern.

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## **Section VIII: ALTERNATE LAND USE PROVISIONS**

At this time, TransCanada does not offer any “Landowner Maintenance Agreements” or “Alternative Land Use Programs” as these hydro-electric structures are located on land owned and operated by TransCanada.

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## **Section IX: REMEDIAL PLAN TO ADDRESS SPILLS AND RELATED ACCIDENTS**

This section is offered as a general procedural guide for responding to chemical spills or related accidents (related accidents include but are not limited to fire, poisoning and vehicle accidents). TransCanada contracts with independent, professional, certified herbicide applicators that are responsible for the containment, clean up and reporting of chemical spills or accidents. The following is, therefore, only a guide to the items that *shall be* available to the treatment crew(s) in the event of a chemical spill or emergency:

### **TYPES OF CHEMICAL SPILLS THAT REQUIRE ACTION:**

1. Herbicides
2. Bar and Chain Oil
3. Motor & Hydraulic Oil
4. Diesel Fuel
5. Gasoline.

### **REQUIRED SPILL RESPONSE EQUIPMENT**

(as a minimum, the ROW crew should have available on the job site):

1. Appropriate Personal Protective Equipment (PPE)
2. MSDS and product labels
3. Appropriate absorbent material such as “speedi dri” or “soak up”
4. Shovel
5. Broom
6. Flagging
7. Leak proof container
8. Heavy-duty plastic bags.

### **TECHNICAL REFERENCE MATERIALS:**

1. Product Label
2. Product Material Safety Data Sheet (MSDS)
3. Product Fact Sheet, if available.

**Table III: Manufacturers**

| MANUFACTURER                        | TELEPHONE NUMBER | SPECIAL INSTRUCTIONS |
|-------------------------------------|------------------|----------------------|
| Albaugh Inc.                        | 800-247-8013     |                      |
| BASF Corporation                    | 800-832-4357     |                      |
| Dow Agro Sciences                   | 800-992-5994     |                      |
| E.I. du Pont de Nemours and Company | 800-441-3637     | Medical Emergencies  |
| Monsanto                            | 314-694-4000     |                      |
| Nufarm                              | 877-325-1840     | Medical Emergencies  |
| Rainbow Treecare                    | 877-272-6747     |                      |

**Table IV: State Agencies**

| STATE AGENCY  | TELEPHONE NUMBER  | SPECIAL INSTRUCTIONS  |
|---|---|---|
| Massachusetts Pesticide Program   | 617-626-1700  | A.S.A.P. (within 48 hours)  |
| Massachusetts Department of Environmental Protection, Division of Hazardous Waste         | Main Office:<br>617-292-5500<br>Western Regional:<br>(413) 784-1100 | For emergencies involving reportable quantities of hazardous materials; required info: City/town, street address, site name (if applicable), material |
| Massachusetts Dept of Public Health, Bureau of Env. Health Assessment Toxilogical Program | 17-624-5757   |   |
| Massachusetts Poison Information Centers  | 800-682-9211  | For medical emergencies involving suspected or known pesticide poisoning symptoms   |

**Table V: Emergency Services**

| EMERGENCY SERVICE                          | TELEPHONE NUMBER    | SPECIAL INSTRUCTIONS  |
|--|---------------------|---|
| Massachusetts State Police, Central Office | 617-566-4500 or 911 |   |
| Local Fire / Police Dept.                  | 911                 |   |
| ChemTrec                                   | 800-424-9300        |   |
| Clean Harbors                              | 800-OIL-TANK        |   |
| Pesticide Hotline                          | 800-858-7378        | PST: 6:30 am – 4:30 pm,<br>Web:<br><a href="http://www.NPIC.orst.edu">www.NPIC.orst.edu</a> |

**Table VI: Local Boards of Health/Town Hall**

| TOWN     | BOARD OF HEALTH/<br>TOWN HALL |
|----------|-------------------------------|
| Florida  | (413) 662-2448                |
| Monroe   | (413) 424-5272                |
| Buckland | (413) 625-8572                |

**TransCanada's contact in the case of a spill or accident:**

Mr. DAVID MURRAY  
TransCanada Hydro Northeast, Inc.  
Walpole Office  
2 Killeen Street  
North Walpole, NH 03609  
(603) 445-6803

**CLEAN-UP PROCEDURES:**

Education and attention will constantly be directed at accident and spill prevention, however, in the event of an unfortunate incident the following suggestions may serve as a guideline:

In the event of **Personal Contact** with hazardous chemicals:

1. Wash affected area with plenty of soap and water
2. Change clothing which has absorbed hazardous chemicals
3. If necessary, contact a physician
4. If necessary, contact the proper emergency services
5. If necessary, follow the procedures for Major or Minor Spills as outlined above
6. Avoid breathing the fumes of hazardous chemicals.

**REPORTABLE SPILLS (reportable quantity of material): FOLLOW STEPS 1-10**

**NON-REPORTABLE SPILLS: FOLLOW STEPS 1, 2, 3, 4, 7, 8 & 9 and contact the TransCanada representative.**

**Table VII: Herbicide Spill Check List**

| Order  | ACTION  | Done<br>(√) |  |
|--|---|-------------|--|
| 1  | Use any and all PPE as directed by product label or MSDS.   |             |  |
| 2  | Cordon-off spill area to unauthorized people and traffic to reduce the spread and exposure of the spill   |             |  |
| 3  | Identify source of spill and apply corrective action, if possible stop or limit any additional amounts of spilled product.  |             |  |
| 4  | Contain spill and confine the spread by damming or diking with soil, clay or other absorbent materials.   |             |  |
| 5  | Report spills of "reportable quantity" to the Mass. DEP and MDAR:   |             |  |
|  | MDAR, Pesticide Bureau  |             | (617) 626-1700   |
|  | Massachusetts Department of Environmental Protection, Emergency Response Section 9call within 2 hours)  |             | Main Office: (888) 304-1133<br>Central Region:<br>(508) 792-7650 |
| 6  | If the spill cannot be contained or cleaned-up properly, or if there is a threat of contamination to any bodies of water, immediately contact any of the following applicable emergency response personnel: |             |  |
|  | local fire, police, rescue  |             | 911  |
|  | TransCanada Rep: (Listed in YOP)  |             |  |
|  | Product manufacturer(s)   |             |  |
|  | 1   |             | 1  |
|  | 2   |             | 2  |
|  | 3   |             | 3  |
|  | Chemtrec  |             | (800) 424-9300   |
| additional emergency personnel   |   |             |  |
| If there is a doubt as to who should be notified, contact local State Police Barracks: FILL IN |   |             |  |
| 7  | Remain at the scene to provide information and assistance to responding emergency clean-up crews  |             |  |
| 8  | Refer to the various sources of information relative to handling and clean up of spilled product  |             |  |
| 9  | If possible, complete the process of "soaking up" with absorbent materials  |             |  |
| 10   | Sweep or shovel contaminated products and soil into leak proof containers for proper disposal at approved location  |             |  |
| 11   | Spread activated charcoal over spill area to inactivate any residual herbicide  |             |  |

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APPENDIX I:  
MAPS

**APPENDIX II:  
333 CMR 11.00**

**APPENDIX III:  
WETLANDS FINDINGS**

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APPENDIX IV:  
CHAPTER 85 of the ACTS OF 2000

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APPENDIX V:  
IDENTIFICATION AND QUALIFICATIONS OF INDIVIDUALS  
DEVELOPING AND SUBMITTING PLAN

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## **APPENDIX V: IDENTIFICATION AND QUALIFICATIONS OF INDIVIDUALS DEVELOPING AND SUBMITTING PLAN**

The individuals responsible for developing this plan:

Wendy L. Priestley, Ph.D.  
Vegetation Control Service, Inc.  
2342 Main Street  
Athol, Massachusetts, 01331.  
tel: (978) 249-5348.

Her qualifications extend from her education, work experience, and practical experience in the field of herbicide application, crew management and VMP consulting:

She graduated with a B.A. in History from Skidmore College with college and national honors including election to Phi Beta Kappa. She currently holds a Ph.D. in American Civilization from The George Washington University, Washington, DC.

She has worked since 1985 for Vegetation Control Service, Inc., a consulting and service company that provides vegetation management programs for utilities, municipalities, private business and landowners throughout New England. In this capacity, she is a certified pesticide applicator and her experience includes both field and administrative experience in rights-of-way and industrial weed control programs. She has written or co-authored a number of Vegetation Management Plans for utilities both in Massachusetts and throughout New England.

Jeffrey M. Taylor  
Vegetation Control Service, Inc.  
2342 Main Street  
Athol, Ma 01331  
tel: (978) 249-5348

For more than forty-three years, Mr. Taylor has been employed by Vegetation Control Service, Inc. As a field crew foreman for fifteen years, he gained valuable hands-on experience implementing chemical and mechanical vegetation maintenance programs. As General Manager, his responsibilities have included the following: estimation and preparation of vegetation contract quotations and coordination of vegetation management operations. In addition to general administrative duties, he provides educational and technical assistance and workshops on integrated vegetation management to industries, regulatory agencies and professional organizations.

A certified International Society of Arboriculture and New Hampshire Arborist, Mr. Taylor is a graduate of the Stockbridge School of Agriculture, University of Massachusetts with an AA.S degree in Arboriculture and Park Management. He is a certified herbicide applicator in all of the New England States and the applicator representative on the Massachusetts Department of Agricultural Resources VMP panel.