VEGETATION MANAGEMENT PLAN
FOR
VERMONT ELECTRIC COOPERATIVE, INC.
TRANSMISSION AND DISTRIBUTION SYSTEMS

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INTRODUCTION
Vermont Electric Cooperative, Inc. (VEC), a member-owned electric distribution cooperative, is the second largest electric utility in the state of Vermont in terms of meter count and land area covered. VEC serves approximately 34,000 households and businesses in seventy-four towns in northern Vermont. With a predominantly rural residential customer base, VEC also serves agricultural, commercial, industrial and limited urban residential members. The service area encompasses approximately 2,717 miles of electric distribution lines (+/- 2,442 miles of overhead) and 157 miles of overhead transmission lines. VEC’s mission is to provide energy and other appropriate services to its members.

A twelve-member Board of Directors is elected by members to represent geographically-based districts. The board sets policy and provides general direction for VEC’s operations, which are overseen by the Chief Executive Officer (CEO). The company is structured with many specialized technical and service departments designed to support one another, such as Power Supply; Member Service; Metering; Human Resources; Accounting; Information Technologies; and Operations - Transmission and Distribution, Substation Metering, System Operations, Mapping, Engineering, Scheduling and Vegetation Management.

LOCATION
Headquartered in Johnson, Vermont, with additional Service Centers in Newport, Grand Isle and Richford, VEC’s service area encompasses the majority of Northern Vermont. VEC’s territory stretches across Caledonia, Chittenden, Essex, Franklin, Grand Isle, Lamoille and Orleans Counties. (See Appendix A - VEC Service Territory Map)

OWNERSHIP HISTORY
VEC was founded in 1938 in Eden Mills, Vermont to serve residents in parts of rural Lamoille County who had been bypassed by investor-owned utilities. Initially, VEC serviced 155 homes in Eden and Lowell. Before long, neighboring farms, homes and businesses were added and membership grew to 2,440 by 1950. Early service extensions continued into Chittenden and Franklin Counties. From the 1940’s until the 1960’s, the service territory continued to expand in Northern Vermont through the construction of new lines and the acquisition of small private companies. In 1969, VEC expanded into Southern Vermont through a merger with Halifax Electric Cooperative (this service territory was subsequently sold to Central Vermont Public Service in 2006). In 1970, VEC acquired the International Electric Company serving the Derby Line area located along the Canadian border. In April of 2004, VEC completed the acquisition of Citizens Communication Company’s Vermont Electric Division (hereinafter referred to as Citizens), more than doubling the membership-base.

MAINTENANCE CYCLE
VEC has a target of attaining a five-year vegetation maintenance cycle on transmission rights-of-way and an eight-year maintenance cycle on distribution rights-of-way. Transmission and distribution line scheduling units have been identified and a long-range plan has been developed to attain these cycles. A five-year cycle on transmission lines was attained in 2012 (See Appendix B – VEC Transmission System Vegetation Management Treatment Schedule). Development of a detailed Distribution System Vegetation Maintenance Treatment Schedule took place in 2009 and implementation is underway with a goal of taking a cycle and a half (12
years) to achieve the target eight-year cycle (See Appendix C – VEC Distribution System Vegetation Management Treatment Schedule). Vegetation management funding has increased from $1,000,000.00 in 2005 to $2,508,000.00 in 2014 with an additional $450,000.00 of budgeted spending, dependent upon cost contributions from Fairpoint Communications. Vegetation Management funding will continue to be adjusted appropriately as long range plans are implemented to attain and maintain target cycles on transmission and distribution systems.

STATEMENT OF PURPOSE
VEC has a responsibility to maintain vegetation so as not to threaten the safety and integrity of their overhead electric facilities. It is the intent of VEC to develop and implement a long-term, comprehensive vegetation management program designed to meet the goals and objectives of the Cooperative, as well as the requirements of the Public Service Board, as they both relate to electric utility right-of-way maintenance.

GOALS AND OBJECTIVES
The primary goal of the vegetative management program is to develop an environment-friendly approach to vegetation management designed to improve reliability, provide for safe and efficient operation and maintenance of distribution and transmission systems, maximize cost-effectiveness and enhance member satisfaction. Key indicators of success include the reduction of vegetation-related safety hazards and service interruptions, as well as a reduction in tree related service orders.

Specific objectives include
- minimization of safety hazards for landowners, workers and users of land along and/or adjacent to VEC’s utility rights-of-way.
- protection of all material and equipment utilized to transmit and distribute power
- removal and/or control of undesirable species
- retention, encouragement and maintenance of healthy low growing vegetation compatible with utility lines
- ongoing collection of data on vegetation quantities and characteristics
- utilization of a professionally trained work force
- minimization of soil erosion
- minimization of impacts to wetlands
- maintenance and promotion of favorable wildlife populations
- consideration of aesthetic impacts
- sensitivity to the concerns of property owners
- promotion of conditions compatible with landowner and other acceptable joint uses
- consideration of invasive exotic vegetation
- minimization of impacts to rare, threatened and endangered species

VEC is committed to developing and implementing a financially and ecologically-sustainable vegetation management program and will continue to pursue and evaluate new technologies and techniques to facilitate meeting the above goals and objectives.
GUIDING PRINCIPLES

VEC’s vegetation management program is based on the following basic principles, as published in the National Rural Electric Cooperative Association (NRECA) Cooperative Research Network’s (CRN) Vegetation Management Manual.

1. **Cost effective vegetation management requires a long-term, consistent approach.**

   VEC is committed to providing consistent vegetation management personnel and funding. Vegetation management is no longer simply incorporated into other line maintenance activities and/or overseen by line department personnel with competing responsibilities. VEC’s vegetation management program is administered by a professional forestry staff with a dedicated annual budget.

2. **Proactive vegetation management operations are more efficient and effective than reactive operations.**

   An International Society of Arboriculture (ISA) study, The Economic Impacts of Deferring Electric Utility Tree Maintenance,\(^1\) found that deferring maintenance beyond an optimum cycle length causes a marked increase in pruning costs per tree. The cost jump is a result of the increased number and size of branches and trees that must be removed, handled, and disposed of, and the increased difficulty associated with safely removing branches and trees that have grown into, through, or beyond the conductors. The implication is that pruning or removing trees whose maintenance has been deferred reduces the effectiveness of maintenance dollars, which results in the deferral of maintenance elsewhere on the system, thus compounding the problem.\(^2\)

VEC’s forestry staff continually works to improve management processes used to assess and prioritize vegetation maintenance needs in order to facilitate a preventative maintenance strategy. While there will always be a need for some level of unplanned vegetation maintenance to address danger tree removals and hot spots, separate contracts are awarded for this type of work in an effort to limit the impact on scheduled maintenance activities and allow for completing routine maintenance systematically and on the desired cycle.

3. **Proper arboricultural practices are essential to minimizing costs and maximizing the effectiveness of tree maintenance operations.**

   VEC’s Vegetation maintenance activities are conducted by Qualified Line Clearance Contractors who are bound by contract to adhere to the American National Standards Institute (ANSI) Std. A300, "Tree, Shrub, and Other Woody Plant Maintenance-Standard Practices", and other established and widely accepted pruning guidelines such as those presented in The Society of Arboriculture’s “Best Management Practices Utility Pruning of Trees” and/or Dr. Alex Shigo's booklet titled "Pruning Trees Near Electric Utility Lines", as well as “VEC’s Specifications for Vegetation Management on Transmission and Distribution Systems” (See Appendix D – VEC

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Vegetation Management Plan for VEC T&D Systems

Vegetation Management Specifications. VEC’s Forestry staff conducts routine maintenance inspections and contract administration to ensure that maintenance activities are conducted in accordance with established standards (See Appendix E – VEC Vegetation Management Field Inspection Report).

4. Programs based on Integrated Vegetation Management (IVM) techniques are both the most efficient and environmentally sound.

Following a thorough review and evaluation of the benefits of an Integrated Vegetation Management (IVM) strategy, VEC introduced the selective use of herbicides to control vegetation along approximately 20 miles of transmission line and 30 miles of distribution line in 2009. Since 2009, herbicide application has been expanded, where appropriate, on the remainder of VEC’s transmission and distribution systems.

5. Proper record keeping and productivity measurement are critical to long-term success.

VEC’s Forestry staff has worked closely with Information Technology (IT) to develop a comprehensive record-keeping and reporting system. Detailed information regarding maintenance activities and costs are entered into an access database and vegetation management activities are scheduled and tracked utilizing Clearion Mobile Software, a full featured, map-based data collection and editing application designed for use by mobile workforces like those of utility vegetation management programs. VEC’s forestry staff is able to create, share, track and audit map-based vegetation control information. These applications have and will continue to facilitate a significant gain in efficiencies within the vegetation management program and provide continuous, long-term information to assist in justification of management decisions, annual forecasting and budgeting, prioritizing and scheduling workloads, monitoring crew productivity and determining the most cost-effective vegetation maintenance methods.

6. Professional supervision and sufficient technical expertise are essential to ensuring that a program is successful and cost-effective.

VEC’s Forestry staff includes a SAF (Society of American Foresters) Certified Forester and an ISA (International Society of Arboriculture) Certified Arborist.

HISTORY OF RIGHT-OF-WAY MANAGEMENT

The history of VEC’s right-of-way management is related to land use, electric power demand and previous electric utility right-of-way maintenance policies. This information was gathered based on review of records and interviews with employees.

In the early years of VEC, much of Vermont was pastured or open land, where placement of off-road utility lines did not represent any significant right-of-way maintenance obstacles. This was especially true near the many small farming communities where power was needed. The vegetation maintenance needs of these early lines was minimal, with the majority of cutting being focused on hedgerows and scattered tree growth that pastured animals found undesirable. Over time, as land use patterns changed, much of the pasture land was left idle and reverted back to woodland, resulting in a greater need for right-of-way maintenance.

Beginning in the late 1940’s, maintenance activities included both hand cutting and chemical treatments. Although this work was commonly contracted out, there was a period of time during the 1970’s when VEC employed in-house tree trimming and herbicide spray crews. Before long,
it became too expensive to maintain these crews through the winter and they were replaced with outside contractors. As a result of some individuals wanting to avoid the use of herbicides on their property, there were also brush control agreements in place to allow some lines to be owner-maintained, but in many cases, these lines were never actually maintained by the owners.

As chemical treatments became less popular with the public, the use of herbicides ended in the late 1980’s. Since that time, while limited vegetation maintenance is conducted by VEC linemen, the majority of right-of-way maintenance is done by professionally trained, qualified line clearance contractors.

With the exception of a few years in the mid to late 1980’s, when funding was not available, VEC has had an active right-of-way maintenance program since the 1940’s. In the mid to late 1970’s, the use of coated wire became more common, resulting in a decrease in required clearances, but continued routine right-of-way maintenance. Historically, much of the maintenance was on an as-needed basis and there was not always an established cycle. In recent years, the target was a ten year cycle. The program was administered by the Line Superintendent, with the help of the Line Worker Group Leaders in the various districts. Maintenance activities were tracked on a set of paper maps, and staking sheets were prepared identifying pole numbers, span lengths and footage cleared.

In general, the rights-of-way for the former VEC stand-alone system have been routinely maintained. While there are definitely lines in need of maintenance, the majority of the system is in adequate to good condition.

While the former Citizens’ rights-of-way are also located in rural areas that are most commonly old agricultural land, many of these lines are located on roadsides. These rights-of-way include fewer long off-road spans, but are often still very heavily wooded with roadside forests and hedgerows.

Unlike the VEC rights-of-way, there is no known history of the use of herbicides on these lines and the maintenance program did not follow an established maintenance cycle until more recent years, when an approximate 7-year cycle was the target for the transmission lines. The transmission system was identified as a top priority and beginning in the early 1980’s, the system was viewed from the air via helicopter at least once a year to identify mechanical faults and trimming needs, with additional flights following large storms. Key distribution lines, especially off-road systems, were also viewed during these flights. In 1999, Central Vermont Public Service’s (CVPS) Forestry Department was hired to implement vegetation management on the Citizens’ transmission rights-of-way. This maintenance included both hand cutting and mowing activities and took place annually from 1999 to 2002. While records for this work have been obtained from CVPS, no vegetation management records were passed along in the transaction from Citizens to VEC. Most of Citizens transmission lines were sold to VELCO prior to the sale of the remainder of its system to VEC.

Many of the Citizens’ distribution lines were converted to coated wire (or tree wire), and vegetation maintenance was conducted on an as needed basis. Some degree of tree maintenance took place each year (with the exception of a few years in the late 70’s to early 80’s when
funding was not available) in locations identified by the Linemen District Representatives as being trouble spots. Similar to VEC, this work was predominantly conducted by contracted tree services, with limited tree maintenance being done by the line workers.

RIGHT-OF-WAY OWNERSHIP/EASEMENTS
Lands within the VEC rights-of-way are either owned by private individuals or are in State or Federal ownership. A perpetual easement is the most common type of utility right-of-way document. While such documents exist for all rights-of-way within the former VEC standalone system, they do not appear to exist for all former Citizens’ rights-of-way.

Most former VEC easements provide for cutting and trimming of all trees and shrubbery to the extent necessary as determined by VEC to keep the utility lines clear, including removal of all dead, weak, leaning or dangerous trees which are tall enough to strike the wire in the event such trees should fall. Some of the easements also have more specific details hand written, regarding the allowed activities within the right-of-way.

The easements also include restrictions on what landowners can do within the right-of-way. They are not permitted to erect structures of any kind within 25 feet of the pole line, to place obstructions of any kind within the right-of-way or to change the grade of the right-of-way without the prior written consent of VEC.

The physical descriptions of the former VEC rights-of-way vary. Older easements do not have any specified width, while some specify a 30 foot width and most recently, a 50 foot width. The widest easement to date is 50 feet on both transmission and distribution lines.

Where they exist, older former Citizens’ easements provide for cutting down or trimming any trees necessary in the opinion of the Company to give proper clearance for the utility line. Similar to the older former VEC easements, the width of the right-of-way is not always specified for distribution lines. More recent former Citizens’ distribution line easements provide for clearing and keeping cleared a strip along the utility line not exceeding 20 feet in width. Restrictions in these easements prohibit land owners from erecting buildings or any other structures; planting trees or bushes; and changing grade, fill or excavation if, in the judgment of the Company, such activities might interfere with the proper operation and maintenance of the utility lines. The following uses are forbidden within the right-of-way: swimming pools, tennis courts, any building or other structure, unregistered vehicle parking or storage of any materials or equipment. Former Citizens’ transmission line easements are generally 100 feet in width.

VEC’s primary strategy for addressing the lack of recorded easements in some areas is to require that line clearance contractors conduct advanced notification of vegetation maintenance activities. Detailed member notifications (See Appendix D, Exhibit 3) – VEC Member Notification Hang Tags) have been developed to clearly explain scheduled vegetation maintenance activities and provide contact information for members with questions and/or concerns.
Standard easements for new VEC rights-of-way are a minimum of 50 feet in width for distribution lines and 100 feet in width for transmission lines (See Appendix F- VEC Overhead Utility Easement Template).

SURROUNDING LAND USE PATTERNS

Land use patterns are varied among VEC’s rights-of-way. Residential land use covers a wide range of situations, including individual homes on large acreages, developments and condominiums, small villages and large towns. Many VEC rights-of-way pass through agricultural land including cash crops such as alfalfa, corn, potatoes, soy beans, oats, pumpkins, apples, strawberries, blueberries and grapes, as well as dairy, beef cattle, sheep, goat, horse, veal and poultry farms. Recreational uses along VEC rights-of-way are very prevalent and include hunting, fishing, skiing, snow shoeing, bird watching, snowmobiling, horse-back riding, hiking, berry picking and camping. Industrial land use is located near the larger towns and includes the forest products industry, electronics, military equipment manufacturing, grain processing, tool manufacturing and many other Vermont manufacturing and processing industries. The wooded areas among VEC rights-of-way are frequently actively managed forests ranging from backyard woodlots to Christmas tree farms to timber investment properties to sugar bushes utilized for maple syrup production.

While VEC’s transmission and distribution systems pass through areas utilized for many varied land uses, they are all clearly connected to Vermont’s rural way of life. It is the land use patterns of VEC’s members that serve as the foundation for Vermont’s rural economy and VEC is privileged to provide these members reliable electric service. Through the use of proper vegetation management techniques, VEC will continue to promote conditions compatible with Vermont’s land use patterns.

PHYSICAL DESCRIPTION OF VEC RIGHTS-OF-WAY

VEC transmission and distribution lines traverse many types of landforms, which are predominantly located in rural wooded areas. While much of the former Citizens’ lines are located along roadsides, a large portion of the former VEC lines are off-road.

VEC rights-of-way pass over and are located in close proximity to many mountains, lakes, ponds and rivers across Vermont. The most noteworthy mountains are Mount Mansfield, Jay Peak and Brousseau Mountain. Significant lakes in close proximity include Lake Champlain, Lake Memphramagog, Lake Carmi, Fairfield Pond, Lake Seymour, Island Pond, Norton Pond, Big Averill Lake, Maidstone Lake, Lake Salem, Lake Iroquois and Derby Pond. Major rivers near VEC rights-of-way include the Missisquoi, Black, Lamoille, Coaticook and Winooski Rivers.

VEC’s rights-of-way cross varied terrain, from low, flat farmland used for crops or pasture to gentle rolling hills to steep, rugged mountainous terrain. Side slopes and hidden gullies are commonly found in VEC rights-of-way, as are frequent rock outcroppings and areas of ledge. Dense ferns, berry bushes, tree sprouts and advanced regeneration often conceal holes, rocks and ditches. Traversing the rights-of-way can be a difficult and hazardous task.
VEGETATION/FOREST TYPES
A variety of vegetation is present along VEC rights-of-way, ranging from open agricultural land (growing various crops), low-growing shrubs and brush, as well as fully grown trees. Tree growth rates vary widely and depend on a number of factors, such as aspect of slope, moisture, sunlight, competition, seed source and soil makeup.

Groups of tree species present in any given location are generally related to the elevation, site and climate of the specific area. The most common forest types in wooded areas along VEC rights-of-way are Northern hardwoods, Spruce-fir, Eastern hemlock-Yellow birch and White pine. Components of individual species within these types vary from location to location and several of these types often overlap, resulting in what is often referred to as a mixed wood forest.

In addition to these forest cover types, there are also individual stands of Northern white cedar, Red pine, Norway spruce and White spruce along some VEC rights-of-way. The cedar often occurs on the lower portions of abandoned pasture and the Red pine and Spruce are typically plantations. Less common species often found in residential areas include Willow and Lombardi Poplar.

Northern hardwoods and hardwood dominated mixed woods are most commonly present on low to mid slopes. These are the predominant forest cover types that the VEC rights-of-way cross through. Primary species are Sugar Maple, American Beech and Yellow birch. Associated species include Red maple, White birch, Black cherry, White ash, Eastern hophornbeam, Red Spruce and Balsam fir. Lesser components of American Basswood, Butternut, Red Oak, Quaking aspen, Balsam Poplar, American elm, White Pine and Eastern hemlock are also present in some locations (site dependent). The trees in these forest types are generally moderate to fast growing and can be quite difficult to control.

Areas which have experienced significant soil disturbance and/or increase in sunlight will generally regenerate with tree species that are shade intolerant and thrive in the sunlight. These are known as pioneer species and are aggressive and fast growing, including species such as Pin Cherry, Grey birch, White Birch and Poplar. These early successional species tend to be shorter lived and will eventually be replaced by the Beech- Birch- Maple forest described above.

Spruce-fir forests occur on the well-drained to excessively well drained upper mountain slopes characterized by steepness, rockiness and shallow soils, as well as on the imperfectly to moderately drained flats, low ridges and knolls, continuing to the base of the lower mountain slopes. Primary species include Red Spruce, Balsam Fir, Yellow Birch, Red Maple and Eastern hemlock. Lesser components of Northern white cedar, Tamarack, White birch, American beech and several other Northern hardwoods can also be found in this forest type. While the softwood trees in these forests may not reach the lines as quickly as the hardwood, these forests are often heavily stocked with trees growing very tightly together, creating difficult trimming conditions.

Eastern Hemlock is often found in conjunction with Yellow birch, predominately in well-drained areas along benches and flats and among frequent rock outcroppings, on what would be considered mixed wood sites. Pockets of White pine are scattered throughout the VEC rights-of-way, predominantly found on sandy, well-drained soils. In heavy seed years, these species
aggressively invade VEC’s rights of way. The trees in these forest types are tall growing, easily reaching heights of over 50-100+ feet, and they frequently represent potential danger to utility lines.

UNDESIRABLE VERSUS DESIRABLE VEGETATION

Following any initial disturbance, there is an orderly development of different types of vegetation over time on land that is left idle. Annual weeds such as ragweed and pigweed are generally the first to appear, followed by grass-like plants and biennial or perennial herbaceous broadleaf weeds. Next, shrub-like plants become established and eventually trees. While the low growing vegetation found during the earlier stages of development are most desirable in utility rights-of-way, regardless of which stage of vegetation development a right-of-way is in, it will eventually develop into a forest, if it is not maintained.

Essentially all of the commercial tree species found in the forest types identified within VEC rights-of-way are classified as incompatible with electric utility lines (See Appendix G – Incompatible Vegetation List). They are generally moderate to fast growing species, reaching mature heights in excess of 15 feet tall. Immature trees (less than 4 inches in diameter at breast height and with the capability to exceed 15 feet in height) are defined as incompatible target brush for the purposes of this plan.

Although immature target brush does not pose an immediate threat to system reliability or safety, allowing it to mature can increase maintenance costs and impede or prevent accessibility to electric facilities. Aggressive incompatible target brush species control is crucial in limiting VEC’s future vegetation control workload and cost increases.

While individual healthy trees existing within rights-of-way may be pruned and maintained in order to avoid contact with conductors, the majority will be eliminated when economically feasible, and planting of these tree species within the rights-of-way is strongly discouraged.

The most common reason for pruning an incompatible tree rather than removing it is landowner request. This may be because of the aesthetic value, or because of its value as a shade tree or as a screen from a highway. Apple trees, due to their value as wildlife feed, will be pruned for maximum clearance without jeopardizing their survival and removed only when necessary.

Not all vegetation found in VEC rights-of-way is undesirable. There are many low-growing plants and shrubs such as lilac, serviceberry, dogwood, hawthorns, honeysuckle, etc., which can be compatible with utility lines. In wetlands and boggy areas, species such as speckled alder and pussy willows, as well as cattails, ferns and many other low growing plants and shrubs are quite compatible (See Appendix H – Compatible Vegetation List).

Retaining or encouraging the growth of low-growing desirable vegetation will help to suppress the growth and density of less desirable species. While shrub growth will not eliminate the encroachment of tree species, it will compete with the other species for nutrients, light, and space.
Significant shrub growth shall not be retained in the area immediately surrounding pole locations and the centerline under the conductors. These areas should be kept free of obstruction to facilitate access to the poles and create an open climbing space. This is especially important for any plant species bearing briars or thorns, as they could cause a puncture hole in a lineman’s rubber gloves, thereby creating the risk of electric shock.

SOILS
Vermont has a wide variety of soils most of which create desirable conditions for tree growth. The parent materials range from hard crystalline rocks to lake-plain sands and clays. The glaciers caused a mix of solid with sandstone, limestone, clays and shales. Podzolic soils tend to dominate our landscape. Hydromorphic soils are also found in Vermont. In the higher elevations we find rough stony land with shallow podzols.

The soils that are dominant in the northeastern portion of Vermont are loams and clay loams that came from glacial drift. Stony and gravelly loams, also from glacial drift, are found prevalent in the Connecticut and Champlain valleys. The latter soils have lower bulk densities and higher permeability rates than clay and silt clay soils.

In addition to site conditions for tree species, soil structure is important in relation to field stabilization or erosion control. Less stable soils may require extra care and maintenance such as the installation of water bars and seeding in places where the soil is disturbed by vegetation maintenance activities.

Although soils in the state are often acid and fairly low in phosphorous, they are generally very suitable for vegetative growth. In general, vegetation requires low nutrient levels for good growth conditions.3

VEC’s forestry staff review and evaluate specific site conditions as they relate to soil stability, soil productivity and tree growth when determining the appropriate vegetation maintenance activities in any given area.

CLIMATIC CONDITIONS
Throughout the year, Vermont’s climate is extremely variable. The wet spring season, combined with productive soils, often results in rapid tree and shrub growth.

Vermont is near the middle of the North Temperate Zone and the prevailing winds are from a westerly direction. Climate in Vermont can be described as changeable and on some occasions violent. Extremes of temperatures of both heat and cold are common. Temperatures can range from 100°F above to 42°F below zero.

Ice storms and heavy wet snows are not an uncommon condition in Vermont. When rain falls from a warm upper layer into a shallow freezing cold area near the earth, ice is formed on exposed objects. Ice on the side of a dense, unbroken evergreen, 50 feet high with an average

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crown width of 20 feet, weighs about 5 tons, clearly representing a significant danger to utility lines.

Wind, in combination with rain, wet snow and/or ice, can have devastating results. Heavy rains, especially in the spring or late summer, have the effect of softening up the typical Vermont soils, thus increasing the likelihood of trees blowing over in the wind.

Severe cold can also cause problems. This is especially true when the drop in temperatures is sudden. Water in branch seams, expanding when it turns to ice, can break limbs off. Rapid drops in temperature can cause other mechanical damage to bark resulting in rot and eventual breakage.  

SPECIAL ELEMENTS OF VEGETATION MANAGEMENT

There are several special elements that must be considered in the development and implementation of a vegetation management plan. These elements include wetlands, wildlife, aesthetics, erosion control, fire protection, public lands, invasive exotic species and rare, threatened or endangered species. What follows is a description of management considerations in each of these areas.

**Wetlands**

VEC has incorporated the wetlands data layer available through the Vermont Agency of Natural Resources (ANR) into their system map and strives to minimize the impacts of vegetation maintenance activities to wetlands while meeting the goals and objectives of the vegetation management program.

Wetlands in the State of Vermont are regulated by the Vermont Water Resource Board. This board has developed and issued the Vermont Wetlands Rules, by which activities in wetlands are guided. The University of Vermont Extension Service has developed a booklet titled “Wetlands Rules and Regulations: What they mean to your logging operation in Vermont”. This publication summarizes the major rules and regulations affecting timber harvesting in Vermont’s wetlands and shall serve as a guide for VEC’s vegetation management activities within wetlands.

Vegetation management activities within wetlands are typically limited due to the slower growth of most trees in wet areas and the fact that many plant species which tend to grow in wetlands, such as speckled alder and pussy willows, as well as cattails, ferns and many other low growing plants and shrubs are generally compatible with electric utility lines. When limited cutting and/or pruning activities are conducted within wetlands, brush will not be placed in areas of open water.

**Wildlife**

VEC recognizes that a properly maintain utility right-of-way promotes bio-diversity which results in favorable habitat conditions for many wildlife species.

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Early successional habitats, such as those created by most accepted vegetation management techniques, are critical in the maintenance of healthy populations of birds and other wildlife species dependent upon such areas. Retention of compatible low-growing vegetation within VEC rights-of-way provides beneficial habitat for wildlife. A right-of-way covered with a diverse shrub growth has been shown to support a greater and more diverse population of songbirds than a clear-cut right-of-way. Maintaining and encouraging a diverse plant and shrub community along VEC rights-of-way will provide beneficial food sources and cover, as well as nesting and brooding habitat for ground nesting birds. Mechanical vegetation maintenance techniques will be avoided during bird nesting season.

Covering thousands of miles of ground, the VEC rights-of-way host many different and varied wildlife habitat niches. Some of the important habitat components present include: coarse woody debris; undeveloped, relatively remote acreage; varying vegetation age and structure; significant areas of “edge” (the interface between two differing habitat types, for example the area where an open right-of-way and forest meet); wetlands and riparian areas; and mast producing plants and shrubs such as raspberries, apple trees and Mountain ash.

Open-forest "edges" such as the transition zones between the forest and maintained rights-of-way support distinct wildlife communities. Edges are heavily used by wildlife to feed in, as they offer the greatest number of niches in the least amount of area. Mixtures of forested and non-forested habitats produce long-lasting brushy edge habitats for species that would not otherwise be found in either heavily forested or very open habitats. For example, one would expect to see Cooper's hawks, indigo buntings, catbirds, song sparrows and foxes along these brushy edges between forested and non-forested habitat.

**Aesthetics**

A cleared right-of-way can have a raw look, with little apparent vitality. Retaining low-growing compatible species wherever possible helps to maintain an aesthetically pleasing right-of-way, without compromising long-term line clearance.

As a member-owned cooperative, VEC is very conscious of the appearance of the rights-of-way following vegetation management activities. The use of proper pruning techniques is critical to maintain the health and appearance of mature trees remaining along the rights-of-way. Following tree removal, stump heights and disposal of brush, chips and remaining wood are all designed to minimize visual impact. Following tree removal in residential areas, VEC requires disposal of brush and chips to leave a clean appearance. Also, trees are cut so that stumps are close to the ground thus minimizing visual impacts. Screens are retained where practical in visibly sensitive areas.

**Erosion Control**

VEC’s vegetation management program is designed to encourage the stabilization of vegetation such as ferns and grasses, blueberries, blackberries, raspberries, serviceberry, dogwood, hawthorn and other low-growing shrubs that will promote strong healthy root mat conditions.

Erosion along stream banks is of particular concern. If incompatible species dominate the species composition of a stream bank, removing all vegetation during one cycle will be avoided, if
possible. If removing all vegetation cannot be avoided, appropriate erosion control methods will be implemented.

Mechanical vegetation control methods which result in significant soil disturbance will be followed with the installation of waterbars and seeding and mulching where necessary to minimize soil erosion. Where possible, sensitive areas will be left covered with vegetation to help stabilize the soil.

Where applicable, VEC will conduct vegetation management activities in accordance with the Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont, as published by the Vermont Department of Forests, Parks and Recreation.

**Fire Protection**
VEC will adhere to all Federal, State and local fire protection laws and regulations.

**Public Lands**
VEC recognizes the impact vegetation management activities can have on public lands such as State and Federal Wildlife Management Areas, State Forests, Parks and Recreation Areas and municipal forests and parks adjacent to a utility right-of-way and will work with the various agencies to develop vegetation management strategies to meet the goals and objectives of VEC’s vegetation management program, as well as those of the site.

**Invasive Exotic Species**
These are plant species which have been purposefully or accidentally introduced outside of their original geographic range and are able to proliferate and aggressively alter or displace native biological communities. These plants often lack the predators that keep them in check in their own native regions and can out-compete native plants for space, sunlight and nutrients. Native plants help keep an ecosystem healthy and stable and are generally more beneficial to wildlife populations. Infestations of exotic plants can interfere with plant diversity, navigation, recreation, water supplies, production on agricultural and range lands and create public health and safety hazards. Although many invasive exotic species are low-growing, they can seriously impede access in utility rights-of-way and make it difficult to work safely on and around the power lines.

VEC recognizes the threats posed by invasive exotic plant species and will identify and work to arrest the spread of exotics along rights-of-way where practical. In particular, invasive exotic plant species will be addressed where pioneer populations are becoming established and/or where existing populations are heavily established in the wire zone. VEC will also work with landowners to control invasive exotic species along the right-of-way in areas where they are being controlled by a landowner on lands adjacent to the right-of-way. These invasive exotics may include, but are not limited to: glossy and common buckthorn (*Rhamnus* spp.), oriental bittersweet (*Celastrus orbiculatus*), Japanese knotweed (*Fallopia japonica*), common reed (*Phragmites australis*) and several species of honey suckle (*Lonicera* spp.).
Rare, Threatened or Endangered Species
VEC has incorporated the significant communities data layer (including rare, threatened and endangered species) available through the Vermont Agency of Natural Resources (ANR) into their system map and are working with ANR and other Vermont utilities to develop best management practices designed to minimize the impacts of vegetation maintenance activities to rare, threatened and endangered species while meeting the goals and objectives of the utilities’ vegetation management programs.

DETERMINATION OF VEGETATION MANAGEMENT NEEDS
The Manager of Forestry is responsible for establishing a preventative maintenance strategy, identifying an appropriate routine maintenance cycle, identifying necessary funds to complete maintenance on the desired cycle, determining a scheduling unit, prioritizing scheduling units and completing routine maintenance systematically and on the desired cycle. Vegetation maintenance records, service interruption data, detailed Line Worker Reports, aerial and ground patrols and member input all contribute to assigning priorities for vegetation maintenance each year.

There are several factors the Forestry staff must consider when evaluating vegetation management needs. These include the frequency of service interruptions, vegetation quantities and characteristics, time elapsed since last treatment and member requests. Extreme weather conditions such as thunderstorms, snowstorms and high winds will also need to be taken into consideration and often take priority over treatments scheduled based on normal factors.

Frequency of Service Interruptions
Outage History Reports describing the location and cause of each outage are generated by VEC’s Outage Management System (OMS) and reviewed by the Manager of Forestry to identify any vegetation-related outages (See Appendix I – VEC OMS Outage History Report). Each time a crew is dispatched, a Line Worker’s Report is completed, including detailed information about the call. Line Worker’s Reports for all vegetation-related calls are submitted to the Manager of Forestry for review (See Appendix J - VEC Line Worker’s Report). By referring to these records, it is possible to isolate areas of frequent vegetation-related outages incidence and conduct further review to determine whether they should receive immediate attention or if action can be delayed until regularly scheduled maintenance.

Vegetation Quantities and Characteristics
As vegetation growth rates vary significantly with respect to species and location, it is important to routinely monitor the general condition of the vegetation throughout the system. This can be accomplished by random line patrols and/or random sample vegetation surveys.

Among the elements to be considered in such a program are:

1. Present tree-to-conductor clearance
2. Species of vegetation
3. Present size and density of vegetation
4. Demographic and accessibility characteristics (e.g. urban vs. rural, roadside vs. off-road, etc.)
5. Type of work and crew (e.g. pruning, removal, aerial lift crew, manual flat cutting crew, etc.)
6. Any special conditions (e.g. poor access, steep slope, riverbank, etc.)

In addition to these elements, important non-vegetation factors to be considered include customer density and critical members such as hospitals, members on life-support systems, and members using complex computer systems with volatile memories.

**Time Elapsed Since Last Treatment**

Vegetation maintenance activities are entered into VEC’s System Map, allowing the Forestry staff to track and audit map-based vegetation control information and quickly determine how long it has been since a line was last maintained, note any areas that were skipped over and/or identify line sections which may need attention sooner than the remainder of the line.

**Member requests**

Frequently, members have specific concerns, which they feel should receive immediate attention. These requests are often directed to the Line Department and are frequently situations that can be handled by the local line crew. If the merit of the request is questionable or if the scale of the work required in order to respond to the request is extensive, the request is referred to VEC’s Forestry staff. Following a field review, the determination is made as to whether the issue is one which is endangering the utility line, a priority is assigned to the problem area and it is handled accordingly.

**INSPECTION AND MONITORING STANDARDS**

Understanding the extent and nature of the vegetation to be managed is essential to developing and implementing VEC’s vegetation management program effectively. Accurate information regarding the vegetation conditions on VEC’s rights-of-way will permit the development of historical records, which will allow for an assessment of the effectiveness of past management decisions. The following is a description of various methods of right-of-way inspection and monitoring used on VEC’s rights-of-way.

**Helicopter Patrols**

This type of patrol is done to determine general right-of-way conditions on VEC’s transmission system including equipment conditions, as well as vegetation conditions. Aerial patrols are generally conducted four times a year to monitor right of way conditions, provide an overview of vegetation growth and general changes in right-of-way conditions, identify potential hazard trees and assist in targeting areas in need of further review.

Dead and dying trees, as well as those that are beginning to wind throw or starting to bend due to water conditions and/or unbalanced crown can often be spotted. Notes are made regarding the type and location of potential problems and aerial patrols are often followed up by more extensive and exacting ground patrols.

**Routine Ground Patrols**

These patrols are conducted on VEC’s transmission and distribution systems. They are administered from a vehicle and on foot on a routine basis to evaluate the right-of-way condition in a given area as follows:
Reconnaissance Patrol
This is done on an annual basis in areas that are being considered for maintenance in the upcoming year. The areas targeted for ground patrol are determined by review of maintenance records and outage reports, as well as casual field observations made by the VEC employees and/or members. During this patrol, information is gathered regarding vegetation species present, evidence of tree-conductor contact and conditions of sensitive areas. Notes are made on potential problems and estimates of time and crew composition to do the job.

Operations Patrol
This is the most frequent patrol and is carried out prior to and during all vegetation management operations. Information concerning access, danger trees, clearance levels of aesthetic screening and road conditions is gathered.

Danger Tree Ground Patrol
Information concerning danger trees is received from helicopter patrols, field observation by line crews, line clearance crews and members. Foot patrols are carried out on an on-going basis to determine the number and a more accurate evaluation of these “danger” trees.

Field Review
This is done to determine the nature of a specific condition or situation. Some examples of this type of activity are: logger working near lines; erosion due to new road on ROW; new plantings observed under lines or any other type of encroachment. Notification of the individuals involved may also be carried out. Frequency of these checks is as needed.

VEGETATION CONTROL SYSTEMS
The manner in which vegetation maintenance is completed on an electric system has direct impacts on reliability, safety and cost-effectiveness. One component of VEC’s vegetation management program is an on-going exploration of economically and environmentally sound vegetation management strategies.

It is understood that there are varying risks associated with every course of action and all vegetation management techniques represent a cost, which will eventually be paid by VEC’s members. When reviewing options for vegetation control, VEC has an obligation to all its members to provide safe, reliable power in an efficient manner at a reasonable cost. The decision as to which methods of vegetation control will be used must be based on factors that transcend the desires or possible benefits of any one individual.

VEC will select the method to control undesirable vegetation at any given location on the basis of treatment effectiveness, site characteristics, environmental impacts (including impacts to desirable, non-target vegetation species), safety and economics.

Integrated Vegetation Management (IVM) is a control concept that considers a combination of methods to control undesirable vegetation including biological, chemical, cultural and physical (e.g. mechanical and manual). Within each of these technologies there are several methods, depending on the type of vegetation, site characteristics, and environmental or aesthetic concerns.
Flexibility is an important aspect of IVM, affording a right-of-way manager multiple options to employ the most effective methods of control in a given area. Properly implemented, IVM is recognized as a methodology that encompasses a range of industry-established best practices. It is therefore, an integral component of an effective vegetation management program. VEC’s IVM program began in 2009 with the introduction of the selective use of herbicides on VEC rights-of-way.

In general, physical and/or chemical control methods are the most appropriate and most frequently used vegetation control options for utility rights-of-way. The retention of low-growing, compatible vegetation will inhibit the future growth of incompatible species and is therefore considered a form of biological control. Other biological controls (e.g. grazing by animals) and cultural controls (e.g. using fire to eliminate undesirable vegetation) have limited application and are seldom used as utility vegetation maintenance techniques.

The vegetation management techniques described in this section are recognized by the electric utility industry as the best management practices available for maintaining trees and controlling incompatible target brush species within the right-of-way on an overhead electric system.

**Physical Control Methods**

Mechanical control is the oldest vegetation management method and includes hand-pulling, hoeing, blading, mowing, cutting, pruning, carefully controlled burning, flooding, bulldozing and cropping. These control methods provide short-term control, are generally very labor intensive, pose a significant risk of traumatic injury to applicators, and are therefore quite costly to implement over large areas. The most common forms of mechanical control used on utility rights-of-way are described below, as stated in the NRECA CRN’s Vegetation Management Manual.

**Flat Cutting**

This technique involves the use of chainsaws or brush saws to remove undesirable target vegetation at ground level. This is the preferred maintenance technique for sites where obstacles (e.g. rocks, poles, etc.) exist or terrain conditions prevent access by mowing equipment and herbicides cannot be used. Unfortunately, hand cutting only affects the above-ground portion of the vegetation that is being maintained. The root collar area of the cut vegetation remains in tact and viable, which typically results in vigorous stump sprouting and, in some species, root suckering, as well. Consequently, this technique only provides short-term control and is generally significantly more expensive than alternative methods. Optimally, flat cutting should be followed by subsequent herbicide applications where appropriate to control re-sprouting.

This method is a primary method of control on VEC rights-of-way in areas of dense underbrush and trees, which must be removed due to their proximity to the conductors. Stems are cut as close to the ground as possible and stump heights shall not exceed 3 inches. Cuts shall not be made on an angle, which can be hazardous to humans, animals and equipment. If a line is not located immediately along a public road or highway, the wood and brush is windrowed at the edge of the right-of-way. If the line runs immediately along and adjacent to a road, the wood is piled at the tree line and the brush is chipped.
Pruning
This technique involves the use of hand saws or chainsaws to remove dead or living parts or branches of a tree. This is the preferred maintenance technique where removal of all trees near the conductors is not necessary, economically feasible or aesthetically acceptable or where only the branches of a tree rather than the tree itself pose an immediate threat to the conductors. In these cases, it is acceptable to prune the tree. This method is a primary method of control on VEC rights-of-way in residential areas.

The type of pruning and amount of live tissue that should be removed depends on tree size, species and age, as well as the location of the vegetation in relation to the conductor. All tree species have defined growth habits, which lend themselves to certain types of pruning. Familiarity with these growth habits is essential. Most shade trees lend themselves well to natural pruning or directional pruning, i.e. pruning a tree in such a manner that it guides the growth of the tree away from the conductors.

The use of well-trained professional arborists capable of determining the best pruning techniques in a given situation is essential to the success of VEC’s vegetation management program. Descriptions of proper pruning techniques and improper trimming practices can be found in VEC’s Specifications for Vegetation Management, as well as in the American National Standards Institute (ANSI) Std. A300, "Tree, Shrub, and Other Woody Plant Maintenance-Standard Practices," The International Society of Arboriculture’s “Best Management Practices Utility Pruning of Trees” and Dr. Alex Shigo's booklet titled "Pruning Trees Near Electric Utility Lines."

Danger Tree Take Downs
This technique involves the complete removal of a mature tree which represents a hazard to the electric facilities, due to its size, location and/or condition.

Many trees at the edge of the right-of-way have crowns that have grown in towards the conductors. Many factors influence a tree’s physical condition. Some examples are: disease, insect damage, frost, lightning and mechanical damage (i.e. logging, road construction, etc.), age, soil conditions and genetic factors. Some trees appear normal and healthy yet are in a poor condition, having serious rot with only a thin wooden shell on the outside. Signs of a dying tree can be very evident or very subtle, and are often only recognized by an experienced forester or arborist.

When evaluating potential danger trees, it is important to know at what size each species is mature and which species are most susceptible to heart rot. Signs to consider include: seams, fungus, fruiting bodies, bark condition, root condition, wood cellular condition and tree configuration. Another consideration is the effect that removing a tree will have on the remaining trees.

Of primary consideration when cutting danger trees is the safety of the public, the line clearance crew, and the electric facilities. Some tree removal conditions require de-energizing the conductors prior to the operation. The safety risks of tree removal are generally greater than
those of standard right-of-way maintenance. The removal of danger trees is slow, costly, and at times, a difficult procedure.

As a result of deferred maintenance in many locations across VEC’s service territory, current right-of-way conditions require aggressive tree removal in order to re-establish adequate clearance.

In addition to utility initiated tree removal, this maintenance technique is frequently utilized on VEC’s rights-of-way as a result of a member request. When a property owner requests such a removal, the wood and brush disposal is generally their responsibility. If VEC chooses to take down a danger tree, absent of a member request, brush disposal will be the responsibility of VEC, but the wood is considered to be property of land owner.

**Mowing**

This technique involves the removal of incompatible target species with a large cutting machine attached to a tracked or rubber-tired vehicle. Depending on the size of the mowing equipment being used and the target species being managed, vegetation up to about 8 inches in diameter can reasonably be cut. As with hand cutting, mowing results in the immediate elimination of all undesirable target stems. However, this technique is less selective and all desirable low-growing vegetation within the mower’s path is eliminated as well. This results in the site being left in a disturbed and more open state, which allows tree seeds to germinate, in addition to encouraging stump sprouting. Consequently, mowing will not provide long-term control unless followed up with an herbicide application to control re-sprouting.

Site conditions must be evaluated carefully when considering mowing, as this technique has a potential to compact soil and/or cause erosion. Mowing shall be avoided during ground bird nesting periods.

This is the preferred maintenance technique for drier sites that support moderate to heavy densities of incompatible target species and are relatively flat with few obstacles (e.g. rock outcroppings, boulders and stone walls). It may also be a desirable method for short-term control in locations where herbicides cannot be used. This method of control is used on VEC rights-of-way, where site conditions are suitable.

**Planting**

This technique involves the planting of grass, shrubs and certain species of trees within the right-of-way. Pruning and mowing is used to conduct maintenance on these locations. To prepare the site for this condition requires grading and filling with topsoil. It is sometimes used near substations and is costly to establish and maintain. Planting shrubs and trees in a right-of-way condition is often difficult. The mass of roots and organic matter is not conducive for survival of planted material. The shallowness of the soil and rocky ground condition are also obstacles. This management technique is also used in instances of erosion control.

**Chemical Control Methods**

The effectiveness of selective herbicide application has been well documented by the electric utility vegetation management industry. Judicious herbicide use is an important component of an
IVM strategy. It is critical to the establishment of a low-growing plant community within rights-of-way, which results in a cost-effective vegetation management program. Other important benefits of IVM include:

- Increased visibility and access along rights-of-way
- More timely and less costly outage restoration
- Safer working conditions for line workers and line clearance contractors
- Improved species selectivity
- Long-term control
- Promotes stable plant communities
- Supports natural (biological) control
- Promotes bio-diversity among plants and wildlife
- Only feasible control method for invasive species
- Only method that lowers undesirable stem densities, reducing future maintenance costs
- Most efficient and economical control

By impeding the sprouting and growth of undesirable species, which generally increase in density following the implementation of mechanical control methods, the use of herbicides facilitates the establishment of low-growing desirable plant communities. As these communities become well-established, the occurrence of non-compatible tree stems decreases and future maintenance costs are reduced. These plant communities also provide a more stable environment than the cyclical environment which follows the use of mechanical control methods. The most common forms of chemical control used on utility rights-of-way are described below, as stated in the NRECA CRN’s Vegetation Management Manual.

**Broadcast Foliar**

Broadcast foliar applications are applied to the foliage of target tree species during the period of active growth when leaves are fully developed (late spring to early fall). A fixed herbicide rate per area is applied in a water solution and broadcast over the entire target area. Broadcast foliar herbicide applications are sometimes the most cost-effective way of initially controlling heavy-density communities of tall-growing target tree species, particularly over large areas. Following initial control, this type of application is not done on an extensive basis, as it is not desirable to eliminate all of the vegetation in the right-of-way. VEC will not conduct broadcast foliar herbicide applications.

**Cut Stubble Applications**

When a reclamation phase is necessary and the moderate to high-density vegetation is too tall to initially implement a broadcast herbicide application, the site should first be mowed before herbicides are applied. An herbicide can be applied via a broadcast foliar application one or two growing seasons following mowing to vegetation that has re-sprouted. An alternative is to immediately follow mowing with a broadcast application of a soil-active herbicide, which prevents re-sprouting altogether. This technique, known as a cut stubble application, is employed in more visually sensitive areas since treated vegetation has minimal leaf-out and brown-out is substantially reduced.
This maintenance technique is subject to the same limitations described for mowing and broadcast foliar herbicide applications. The cut stubble technique is not selective, meaning that many desirable species are usually eliminated with this treatment method. Depending on the herbicide formulation used, some selectivity for grasses can be achieved. VEC will not conduct cut stubble herbicide applications.

**High-Volume Foliar**

High-volume foliar is an application technique that typically utilizes a maneuverable vehicle (such as a truck or tractor) equipped with a large spray tank. The concentration of herbicide used for this technique is low. Herbicide applications are applied to the foliage of target tree species using a hand-held, high-volume spray gun. Maximum effectiveness is generally achieved when target tree heights are between 8 and 15 feet.

High-volume foliar applications should be performed during the period of active growth and when leaves are fully formed (generally from late spring to early fall). This technique can be performed on any site as long as terrain conditions permit access by spray vehicles.

When treating a right-of-way that has a high density of target species, the difference in results between selective high-volume foliar and uniform broadcast applications will often be minimal. The vast majority of plant materials on the right-of-way should be target species if either of these application techniques is used, which will result in a right-of-way with a browned-out appearance.

**Low-Volume Foliar**

This method of application uses a higher concentration of herbicide than the high-volume technique. The selectivity of the low-volume foliar spray technique is achieved through the close application of coarse sprays that are directed at individual stems or clumps of non-compatible target species while directing the spray away from compatible vegetation. Low-volume applications are generally targeted at incompatible stems that are less than 6 to 8 feet high and of low to moderate density. A conventional diaphragm or piston pump backpack is the most commonly used piece of equipment for low-volume applications, but small-volume battery-operated tanks on ATVs have also been used effectively.

Low-volume foliar applications are directed at the top of the crown of target stems, and the upper 60% to 75% of the crown typically receives treatment. Application is made to wet the leaves, but not to the point of runoff. As with other foliar application techniques, low-volume applications should be done during the period of active growth, when leaves are fully developed.

**Low-Volume Basal Bark**

Basal applications control undesirable vegetation through the application of an herbicide and penetrating oil mixture to the lower 12 to 15 inches of target stems. The mixture typically contains a relatively high proportion of herbicide to oil (20% to 30% by volume) that effectively controls trees up to 6 inches in diameter at a low spray volume.

Low-volume basal herbicide applications offer increased flexibility over foliar applications. Basal applications can be performed during the dormant season, as well as during the period of
active growth. Dormant season applications allow crews to be productive during the off-season and can be advantageous in some locations where the brownout associated with foliar applications may be objectionable. This is a very selective application technique.

Basal herbicides are typically applied with a backpack application unit equipped with oil tolerant seals. The backpack unit utilizes a low volume wand that can deliver a small amount of herbicide mixture to the lower stem of target species. The entire circumference of the lower stem of target species is sprayed to wet, but not to the point of runoff. Basal applications can be made at any time of the year except when snow or water prevents spraying stems to the ground line, although they are most effective when applied in the late dormant season (from late winter to early spring) rather than in the late fall or early winter periods. VEC will not conduct herbicide applications in the rain or snow or on frozen ground.

Cut Surface
Cut surface or cut stump applications involve hand cutting incompatible target vegetation followed immediately (at least within 1/2 hour) by a waterborne herbicide application to the exposed cambium layer along the perimeter of the stump surface. The treatment window can be extended by up to 6 months if the herbicide solution includes a penetrating oil. If the latter method is employed, any exposed bark and root flares should be treated to the point of runoff to the root collar zone, in addition to treating the cambium layer. Indicator dyes can be included in the solution to help identify stumps that have already been treated.

Immediate cut surface applications are typically applied with a hand-held trigger spray bottle. Because of the small amount of herbicide solution that is applied very close to the cambium area along the edge of the stump surface, there is minimal opportunity for non-target or off-site contamination. Delayed applications may require a backpack applicator as a result of the greater volumes of herbicide solution that must be applied to each stump.

This is the preferred application technique in areas containing low to moderate densities of incompatible target stems where hand cutting is the preferred maintenance technique and herbicides can be used. Cut stump applications can be made year-round as long as snow does not prevent the cutting of stems at ground level. However, tardiness in the application or outright misses can drastically influence the effectiveness of the treatment.

Treatments done in the early spring when tree sap flow is high can also have reduced effectiveness. Long-term cost savings can be realized by using the cut stump treatment method on tree removals to prevent re-sprouting.

CONTRACT STRATEGY
Vegetation Management represents a significant expense to VEC and its members. Careful monitoring of all aspects of contract negotiation and administration are critical to ensuring the implementation of VEC’s vegetation management plan as cost-effectively as possible. The following factors will be considered:

- Competition helps to maximize the value of vegetation management expenditures.
- Low bids that are not responsive to contract specifications are likely to create complications and adversely impact cost-effectiveness.
• Annual or multi-year contracts encourage stable employment opportunities, which allow contractors to hire and retain qualified personnel.
• Long term contracts shall be carefully evaluated, as periodic contract negotiation promotes competitive pricing.
• Low-quality work or poor production from individual crews will undermine the program’s effectiveness and shall not be tolerated.
• Contract method (e.g. time and materials, firm price or unit price) and crew complement (e.g. aerial crew vs. ground crew, etc.) must be carefully evaluated in relation to the specific site conditions (e.g. roadside vs. off-road, high vs. low density vegetation) and type of work to be done (e.g. pruning vs. flat cutting, etc.).

CONTRACTOR ACCOUNTABILITY
The Contractor is required to train all field personnel (supervisors and technicians) in the concepts of VEC’s Vegetation Management Plan and Program and the crew foremen shall keep a copy of VEC’s Vegetation Management Specifications (See Appendix D) in their possession while working on VEC rights-of-way. VEC’s Forestry staff will inspect the field crews on a frequent basis (generally, at least once a week) to monitor activities and insure compliance with VEC’s Vegetation Management Specifications and all related regulations and safety standards (See Appendix E - VEC Vegetation Management Field Inspection Report). Quality of performance shall be evaluated based on:

• Compliance with all safety regulations
• Clear understanding of performance expectations
• Quality of work (proper pruning techniques, stump heights, adequate clearances, proper disposal of brush, chips and wood, site clean-up, etc.)
• Productivity
• Public Relations
• Communication with VEC Forestry Staff
• Record Keeping (completeness and accuracy)
• Equipment Maintenance

In addition to frequent visits to active job sites, VEC’s Forestry Staff periodically reviews completed jobs to evaluate effectiveness and quality and to determine whether or not plans were understood and followed.

Formal VEC Safety Observations are conducted monthly, with a goal of conducting a minimum of one observation on each crew operating within VEC rights-of-way at least annually. (See Appendix D Exhibit 6) - VEC Qualified Line Clearance Contractor Safety Observation Report.

MAPPING
VEC has a Geographic Information System (GIS) based map. Each utility pole throughout VEC’s service territory has been located in the field with a Global Positioning System (GPS) Unit. Detailed electric facility information such as individual substations, pole and circuit numbers and protective devices are all identified in the map. In addition, vegetation management activities are scheduled and tracked utilizing a full featured, map-based data collection and editing software application.
VEGETATION MANAGEMENT RECORDS
To effectively administer a vegetation management program, considerable data is required to support decision-making and the planning process. A comprehensive record-keeping and reporting system is an essential component of a successful vegetation management program.

VEC’s Utility Vegetation Maintenance Reports (Appendix D Exhibit 2) include type of utility line being maintained, location of work performed, total distance covered and total distance treated, crew identification, labor and equipment hours and type of maintenance that was conducted. These reports are received weekly along with the associated invoices, and data is entered into an access database, with which, line maintenance data is analyzed and reports are generated.

In addition to the maintenance reports and access database, vegetation maintenance activities are tracked in VEC’s GIS based map, providing a quick reference for identifying areas which have not been treated recently and/or areas that may have been skipped.

VEGETATION MANAGEMENT PLAN REVIEW
The Manager of Forestry and Chief Operating Officer will conduct an internal annual review of VEC’s vegetation management program to ensure that the goals and objectives identified on page 4 of this management plan are being met. Vegetation management activities and associated outcomes will be evaluated to measure accomplishments and seek areas to improve upon. Specific areas of consideration include:

- Cost per foot / Year End Reports
- Vegetation-Related Safety Hazards and Service Interruptions
- Tree-Related Service Orders
- Physical Condition of Rights-of-way
- Right-of-way Easements
- Vegetation Control Methods
- Contract Strategy
- Member Customer Contact/Notification
- Public Relations
- Environmental Impact
- Visual impact
- Best Management Practices (i.e. Integrated Vegetation Management, Water Quality, Exotic Invasives, Rare, Threatened and Endangered Species)

VEC’s vegetation management program shall include the flexibility to adjust for conditions as they are found in the field, as well as for future changes in land use. VEC rights-of-way are treated on a prescription basis. Each area is evaluated based on site-specific conditions and management methods and schedules are assigned appropriately.

Results of the annual review and other periodic evaluations will be compiled and plan revisions will be made at least once every 5 years.
Vermont Electric Cooperative, Inc.
Transmission System
Vegetation Management Treatment Schedule
3/14/14

5 YEAR CYCLE

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1 in = 13 miles

Maintained by VELCO or GMP

Appendix B

Vermont Electric Cooperative, Inc.
Transmission System
Vegetation Management Treatment Schedule
3/14/14
Specifications for Vegetation Management
On Transmission and Distribution Systems

PREPARED BY:

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Licensed in New Hampshire #350
Society of American Foresters, Certified #1175
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Exhibit 2 - VEC Utility Line Vegetation Maintenance Report
Exhibit 3 - VEC Vegetation Management Member Notification Hang Tags
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Exhibit 5 - VEC Line Clearance Contractor Job Briefing Form
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Exhibit 7 - VEC Herbicide Application Property Owner Notification Log
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GENERAL INFORMATION

Scope
The purpose of these specifications is to set forth in clear terms the methods, procedures, and other information necessary to guide those engaged in vegetation management work on the Vermont Electric Cooperative transmission and distribution system. The work shall be completed in conformance with these specifications and all other provisions of the contract documents.

Safety
This specification is not intended to replace or interfere with the implementation of any national or state safety standards or OSHA regulations. VEC is not indicating that these are the only such laws, rules, codes, or regulations that Contractors and their employees need to comply with. Each Contractor is individually responsible to ensure that it is in compliance with all laws, rules, codes, and regulations (including all applicable safety rules of VEC) that apply to the nature of its daily business (see Safety Standards).

Definitions

**Adjuvant**
A relatively nontoxic ingredient added to the herbicide mixture to assist the active ingredient in doing its job (e.g. wetting agent, spreader, adhesive, emulsifying agent, penetrant, anti-drift agent, etc.).

**Blazed**
Marked (usually with an axe or hatchet and/or paint) to identify a trail or boundary line.

**Branch Collar**
A “shoulder” or bulge formed at the base of a branch by the annual production of overlapping layers of branch and stem tissues.

**Cambium**
A thin formative layer between the bark and the sapwood of most vascular plants that gives rise to new cells and is responsible for secondary growth.

**Clearance**
The distance between conductor and vegetation crown edge.

**Conductors**
The wires strung from insulator and pole to insulator and pole that carry electrical current. Usually located in the central part of the right-of-way.

**Conifer**
A cone-bearing tree or other plant that produces seeds in a structure called a cone. Trees such as spruce, fir and pine are conifers.
**Contractor**
Any person, persons, partnership, company or corporation with which VEC has a contractual relationship for vegetation management services.

**Crown**
The upper portion of foliage on a tree or shrub.

**Crown Reduction Pruning**
A method of pruning used to reduce the height of the tree. The main leader or leaders are cut back to suitable laterals (at least one-third the diameter of the limb being removed).

**Danger Trees**
Any tree that due to size, location and/or condition, has a potential for damaging the conductors or structures now or within the next few years. Dead, dying, and diseased trees; multi-stemmed trees with weak crotches and/or included bark; and excessively leaning trees that could damage overhead electrical facilities if they failed structurally all fall into this category.

**Deciduous**
A tree or other plant that sheds its leaves annually and stays leafless generally during the cold season; the opposite of evergreen. Trees such as maple, ash and cherry are deciduous.

**Desirable Species**
Those plant species that at maturity will not attain a height that will endanger the safe and reliable operation of the line, and will provide food and/or cover for wildlife.

**Diameter at Breast Height (DBH)**
Diameter of a tree measured at a point 4 1/2 feet above the ground.

**Distribution**
A line voltage system used for carrying primary voltages ranging from 2.4kv to 14.4kv from substations and metering points through VEC territory with purpose of serving members.

**Emulsifying Agent**
A chemical which helps one liquid form tiny droplets and thus remain mixed in another liquid. Used to form a stable mixture between two liquids which usually would not mix (e.g. oil in water).

**Energized**
With voltage flowing to or through.
**Fording**
Crossing of a body of water, without the use of a bridge.

**General Foreperson / Supervisor**
Supervisory personnel working for the Contractor who is responsible for work performed by any and all of that Contractor’s crews.

**Included bark**
Bark enclosed between two branches or a branch and the trunk with narrow angles of attachment, forming a wedge between the branches and often resulting in a dead spot.

**Insulator**
A device made of electrical insulating material used to separate or support conductors.

**Lateral**
Secondary or subordinate branch.

**Line Map**
The general location of the right-of-way as indicated on maps supplied by VEC.

**Lop**
To cut or sever woody branches.

**Overhang Pruning**
Removal of limbs overhanging the conductors, depending on the type of facility, tree species and/or other site conditions. Overhanging limbs should always be removed from above high-voltage transmission lines.

**Pollarding**
The practice of maintaining certain species of trees and shrubs at a predetermined size by systematically removing annual growth, resulting in a flush of slender shoots and branches each spring.

**Pruning**
The use of widely recognized, proper arboricultural techniques to remove limbs or branches from a tree.

**Re-closing**
The automatic reconnection of electrical flow following an unplanned interruption of that flow. A reclosure device will automatically re-close a circuit following an electrical fault.
Right-of-way
The right, established by common or statutory law, to utilize a strip of land over which the utility’s electric power lines pass.

Roundovers
Rounding over (or shearing) is the practice of making many small cuts so that a tree crown is sheared in a uniform line. This creates an unhealthy tree condition and results in rapid regrowth.

Rutting
Tracks worn by a wheeled vehicle, tracked equipment or habitual passage, resulting in a channel, groove or furrow in which water could flow.

Screen
Trees serving as an ornamental device shielding an area from view.

Selective Cutting
Removal from within the right-of-way or easement boundaries of only that vegetation that would potentially interfere with the construction and/or operation of the utility line.

Shrub
A woody plant that normally matures at a height of less than 20 feet with a generally bushy appearance and several erect, spreading, or prostrate stems. It usually attains a diameter of less than 4 inches at breast height (4 1/2 feet above ground).

Side Pruning
Cutting back or removing the side branches of a tree. Limbs should be removed at a lateral branch or the main trunk.

Slash
Debris made up of cut saplings, shrubs, branches, limbs, stems and treetops less than 4 inches in diameter, as well as leaves, twigs and bark resulting from a clearing/pruning operation.

Specification
The detailed description of the method and manner of performing work.

Stubbing
Indiscriminate cuts made between lateral branches, rather than at the lateral. This practice damages the tree and encourages rapid re-growth.

Substation
A subsidiary station in which electric current is transformed.
**Surfactant**
An herbicide mix additive that improves the wetting, spreading and penetration characteristics of herbicides.

**Topped**
Condition in which the top of a tree has been reduced/removed by stubbing off major limbs.

**Transmission**
A line voltage system used for carrying high voltages (in the range of 34.5kv to 46kv) from power suppliers to VEC substations with the purpose of serving VEC distribution systems.

**Tree**
A woody plant normally maturing at 20 feet or more in height and achieving a diameter at breast height of at least 4 inches.

**Under Pruning**
Removing limbs from the lower portion of the tree crown to allow conductors to pass below the tree. All cuts should be made as close as possible to the branch collar at the base of the branch.

**VEC**
Vermont Electric Cooperative, Inc.

**VEC Forestry Staff**
Any individuals employed by VEC and designated by VEC Management to implement the Vegetation Management Program. The VEC Forestry staff will be an SAF Certified Forester and/or ISA Certified Arborist.

**VEC System Operator**
Any individual employed by VEC and designated by VEC Management to interact with members on service problems, dispatch line personnel to restore power and correct service problems, monitor and record power system flows, control generation and transmission system switching and issue work clearances.

**Waterbar**
A man-made device designed to turn running water and/or drain wet sections of a road or trail.

**Windrow**
A long, low heap or pile of cut vegetation.

**Water Supply Areas**
Areas controlled or owned by a public or private agency used for water supply purposes.
Field Considerations

Accessibility
VEC’s roadside utility lines are accessed by state, local and private roads. The Contractor shall be responsible for, at his/her own expense, returning all road surfaces to as good or better condition as they were initially. All temporary traffic control installation, maintenance and removal shall be in compliance with the Manual on Uniform Traffic Control Devices (MUTCD) as published by the U.S. Department of Transportation Federal Highway Administration and adopted by the Vermont Agency of Transportation.

Off-road sections shall be accessed by a single route wherever possible. If any variations from the original access are needed, the Contractor must have the approval of the property owner or his representative and the VEC Forestry staff. The Contractor shall restore, to its original condition, or the landowner’s satisfaction at Contractor’s expense, all property so damaged during the operation.

Stream Crossings
Existing bridge crossings should be utilized to the maximum extent possible for equipment crossings, holding fording to a minimum in areas where it is necessary to cross streams and/or rivers, the Contractor will be responsible for obtaining all necessary permits or written approvals.

Where applicable, vegetation management activities shall be conducted in accordance with the Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont, as published by the Vermont Department of Forests, Parks and Recreation.

Pipelines/Railroads
If it becomes necessary to cross any pipeline or railroad with equipment, it shall be the responsibility of the Contractor to obtain the necessary permission for such a crossing from the appropriate companies. The Contractor shall hold VEC harmless from all claims resulting from such crossings.

Water Quality and Supply Areas
The Contractor shall not cause the discharge of any materials into the waters of Vermont including but not limited to organic material and petroleum products.

All man-made and natural water supply areas will be left undisturbed. Springs, pipelines and natural watercourses fall into this category.

Where applicable, vegetation management activities shall be conducted in accordance with the Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont, as published by the Vermont Department of Forests, Parks and Recreation.
**Fences, Stonewalls, Blazed Property Lines**

Fences or stonewalls that are damaged within the right-of-way or along access roads, will be restored to the condition they were in before the job began. All gates and fences will be kept closed unless otherwise directed. The Contractor will be responsible to see that any livestock in or near the work area are kept safe and not allowed to escape their pasture area as a result of vegetation management activities.

Blazed property lines will be maintained where practical. The Contractor will contact the VEC Forestry staff when blazed trees are found in or on the edge of the right-of-way. If a blazed property line tree is a danger tree, then is should be topped and/or trimmed.

**Screens**

Over the years, many screens have been established to lessen the visibility of VEC’s transmission and distribution system. These should have the following characteristics:

- Adequate clearance for maintenance of vegetation present.
- Suitable low growing vegetation.
- Shallow depth for ease of maintenance of vegetation (less than 25ft).
- Not act as a major barrier to right-of-way access and line maintenance.
- Adds to the overall aesthetics (e.g. a hedgerow at the edge of a field often may be suitable because of low growing shrubs and it tends to maintain an existing natural area).
- The vegetation shall not be allowed to grow any closer than 12 feet from the lines.

If the above criteria cannot be met, then the screen shall be cut or not established. The VEC Forestry staff shall make this determination. It is far better to plant the proper shrubs than to try to maintain a problem area.

**Vegetation to Avoid When Cutting**

Vegetation that will not have a negative impact on the conductors or accessibility shall be retained. The Contractor’s Foreperson shall be trained to differentiate between low growing desirable shrubs, trees, and high brush. If there are questions, the VEC Forestry staff shall be contacted. Many plants, such as alder, arbor vitae, sumac (in some cases), bayberry, hawthorns and others are suitable for wildlife habitat and will tend to discourage encroachment of trees. Some conifers may be left in areas where there is suitable species and/or clearance. This shall be determined by the VEC Forestry staff.
• **Christmas Trees**
  Christmas tree plantations may be allowed to grow as determined by VEC Forestry staff. If any area appears to have been used for harvesting Christmas trees, it shall be skipped and the VEC Forestry staff shall be notified.

• **Ornamental Plantings**
  All plantings of this type should be referred to the VEC Forestry staff for review. If plant species are of acceptable mature height and are environmentally compatible with the right-of-way, poles, lines and equipment; then no further action should be required.

  If they are not, then the property owner should be notified. When the latter situation results in vegetation that is less than 15 feet away from the conductors, the VEC Forestry staff will have the tree pruned back to 20 feet or more.

• **Natural Trees Near Residences or Commercial Buildings**
  Unless previously maintained, trees which are growing naturally (as opposed to being planted) within the minimum clearance distance, near residences or commercial buildings should be cut after notification of the property owner.

• **Cherry Trees in Pastureland – CAUTION!**
  Cherry tree leaves that are wilting are poisonous to animals. It is important that these trees be removed from pastures or left uncut until the farmer is notified and animals can be removed. When this situation occurs, it shall be reported on the weekly maintenance report, including specific location.

• **Maintenance Agreement Locations**
  Specified sections on some rights-of-way are subject to previous Agreements to be maintained by property owners. These areas shall be skipped unless otherwise directed by the VEC Forestry staff.

**Erosion Control**

Vehicle and equipment tracks leading to rutting of access roads and damage to fragile parts of the right-of-way shall be avoided. Most potential problems can be handled with shovels and picks. Where necessary, waterbars shall be installed by hand to drain wet sections of access roads and minimize erosion problems. Extra caution is needed where soils are sandy and/or where the terrain is steep. The brush shall be cut and left on the ground or hand piled on one side of the access roads.
Erosion along stream banks is of particular concern. If incompatible species dominate the species composition of a stream bank, removing all vegetation during one cycle shall be avoided, if possible. If removing all vegetation cannot be avoided, appropriate erosion control methods shall be implemented.

Mechanical vegetation control methods which result in significant soil disturbance will be followed with the installation of waterbars and seeding and mulching where necessary to minimize soil erosion. Where possible, sensitive areas will be left covered with vegetation to help stabilize the soil.

Where applicable, vegetation management activities shall be conducted in accordance with the Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont, as published by the Vermont Department of Forests, Parks and Recreation.

Fire Protection
All Federal, State and local fire protection laws and regulations shall be adhered to and the Contractor shall be responsible for obtaining any necessary permits.

Operation Standards

Supervision
VEC’s Forestry staff will direct the Contractor’s General Foreperson or Supervisor of the work areas and be in charge of vegetation management operations, communicating to the crew(s) through the General Foreperson/Supervisor.

VEC will provide assistance to the Contractor for locations of access and parking areas. All rights-of-way will be previewed with VEC’s Forestry staff before operations begin. The Forestry staff will provide the General Foreperson with a line map and all known records pertinent to the individual right-of-way.

The Contractor is responsible for providing adequate supervision of all employees at the work site. The Contractor must effectively supervise employees to ensure the satisfactory completion of all applicable vegetation management operations safely and efficiently. This includes routine inspections of crew production and quality of work, any necessary discipline or remedial training, provision and maintenance of tools and equipment, provision of necessary maps, etc.

Crew Coordination
The General Foreperson or Supervisor will coordinate activities and assist the Crew Forepersons on a regular basis.

Crew Forepersons
A crew Foreperson shall:
Vegetation Management Specifications for VEC: T&D Systems  

(March 2014 Revision)

- be capable of supervising all work performed by his/her crew to the satisfaction of the VEC Forestry staff.
- be responsible for the crew’s production and proper work techniques, as well as for ensuring that the crew operates in a safe and prudent manner.
- maintain accurate records and notes concerning the crews’ work.
- be familiar with the contents of these specifications and carry them out.

Crew Size
The standard cutting crew consists of three men (one foreperson, one climber and one laborer). The minimum for light maintenance will be one man plus a working foreperson. Two person crews shall not be used in remote areas. In certain situations, it may be necessary to have a crew of four or more as per the VEC Forestry staff.

Herbicide application crew make-up is determined based on the access, brush density and width of the right-of-way along the specific line sections to be treated. The minimum for light maintenance will be a two person crew. All herbicide application crews shall have a minimum of one crew member on-site and within voice command, who is a certified herbicide applicator in the state of Vermont.

Larger crews consisting of several applicators and a support technician to move materials and equipment will need to have at least two certified herbicide applicators, as the individual handling/moving the material must be certified and there must be a certified applicator within voice command of the physical application taking place.

Public Relations
Supervisors must have sufficient public relations skills to be able to effectively communicate with the public as the need arises. Supervisors and workers shall be presentable and act professionally. If necessary, contact with members, landowners, and public officials shall be courteous and businesslike. Any discussion of impending maintenance shall be clear and precise in order to avoid misunderstanding or apprehension. If a misunderstanding occurs and cannot be resolved, the Contractor shall notify the VEC Forestry staff. Trucks and other equipment shall be kept clean and neat and in good working order.

Work Schedule
The General Foreperson shall submit a weekly work schedule to the VEC Forestry staff, identifying daily crew locations. Time shall begin and end on-site, travel time is at the Contractor’s expense. If time is lost due to a holiday, inclement weather or other reasons, it may be made up on Saturday, or working additional hours per day (only with the approval of the VEC Forestry staff). Invoices will not be paid if advanced approval is not secured.
Work Progression
The Contractor shall work progressively along the line and shall complete all assigned work before starting work in another location. Exceptions shall be approved in advance by the VEC Forestry staff.

Equipment and Tools
Each line clearance truck will be equipped with a complement of tools that allows the Contractor to complete the assigned work efficiently, professionally, and productively. All-Terrain Vehicles (ATV’s) may be used in areas with poor access with landowner permission and approval by the VEC Forestry staff. All trucks, chippers, and saws are to be maintained so that the safety, quality and quantity of work completed is not impaired (See Exhibit 1 – VEC Operating Procedure OP 27 Part One: Oil Spill Reporting Procedure). VEC reserves the right to request that equipment experiencing excessive mechanical problems be replaced. Routine maintenance of equipment by the Contractor will not be completed during normal working hours unless authorized by the VEC Forestry staff.

All equipment will be invoiced according to actual use. VEC will not be invoiced for spare or idle equipment present on the job site.

Maintenance Reports
VEC shall furnish Utility Line Vegetation Maintenance Report Forms (See Exhibit 2). The Contractor shall turn in these reports weekly, which are to be completed on a daily basis and made available to the VEC’s Forestry Staff. The original copy of the work report shall be submitted along with the invoice. The work report includes identification of the crew Foreperson, all labor and equipment hours and specific daily work location information, including the distance of line covered and distance of line cut at each location. Payment may be withheld as a result of incomplete Maintenance Reports.

Billing
Invoices will be submitted weekly and accompanied by Maintenance Reports. Substation name and number will be listed on the sheet. If two different Substations have been worked on during one week, separate maintenance reports will be submitted for each. All invoices must be approved by the VEC Forestry staff.

Line Defects
Any line defects observed, such as excessive conductor sag, broken insulators, broken guy wires, split crossarms, etc., shall be reported directly to VEC’s Scheduling Department (802-730-1135) in a timely manner.

Work Inspection
The Contractor's work shall at all times be subject to inspection by the VEC Forestry staff and public authorities. Contractor shall notify the VEC Forestry
staff of any proposed changes in daily crew assignments or working hours sufficiently in advance.

**Improper Work Techniques**
Any variance from instructions given the crew by the VEC Forestry staff or from VEC policy as stated herein, will be grounds for dismissal of Foreperson and/or all or any member of the crew from VEC rights-of-way.

**Property Owner Notifications**
The Contractor has the primary responsibility for contacting property owners prior to the commencement of vegetation management work. Personal contact will be made wherever possible and a VEC member notification hang tag will be left at all residences along the rights of way scheduled for maintenance activities (See Exhibit 3 – VEC Member Notification Hang Tags).

Where personal notification has not been made, maintenance activities will not take place for a minimum of 5 days following the placement of a VEC member notification hang tag. If 5 days have passed and the hang tag has not been removed from the door, the Contractor shall notify VEC Forestry staff of the location and obtain any available contact information to facilitate notification prior to maintenance activities.

A reasonable effort will be made to identify property owners at locations where there is not a nearby residence.

Herbicide applications shall only take place following personal contact and clear identification of property boundaries.

In instances where the Contractor is unable to identify and/or contact a property owner, the Contractor will work with VEC’s Forestry staff to determine the appropriate course of action prior to any herbicide application.

**System Operation Procedures**

**Contact Availability**
All Crew Forepersons shall carry a pager and a cell phone and the Contractor shall provide VEC with a contact sheet including cell, pager and home phone numbers for all Crew Forepersons, as well as Company Management. The Contractor and their employees shall respond to all calls from VEC immediately.

**Notification of Work Locations**
Crew Forepersons shall notify the VEC System Operator (802-730-1219 or 800-832-2667) prior to commencing work on a daily basis. Notification shall include specific work location(s) identified by substation, device, line number, structure number, and road location. Notification of work location shall take place when conducting member notifications, as well as when conducting maintenance.
activities. The Crew Foreperson shall also notify the VEC System Operator if they change locations during the day and when they go off the VEC system each day.

Calling on and clearing off the system must be done on location and shall not be done from home or the garage. Calls for work locations where there is not cell service must take place as close as possible to on-site arrival and departure.

Crew locations are entered in the Control Center Daily Log, identifying the location of all line clearance crews (including herbicide application crews) as they call in. The crew will not be logged off the system until the Crew Foreperson has cleared off the system through System Operations.

In the event of an outage on a circuit identified as having a line clearance crew or herbicide application crew on location, the VEC System Operator will not re-energize the conductors until he/she has made contact with the Crew Foreperson on that line, and an “all clear” is received.

If the line clearance/herbicide application crew(s) does not clear off the line(s) by 6:30 p.m. or they can’t be reached, unless otherwise notified, the VEC System Operator will contact the Contractor’s General Foreperson or a member of the VEC Forestry staff. These individuals have the authority to report the line clearance/herbicide application crew(s) as cleared off the line.

**Outages**

When working on or near energized facilities, the Contractor shall take all necessary precautions to prevent any unscheduled outages and/or damage to facilities.

Crew Forepersons shall carefully and continually monitor the safety of their crew while involved in vegetation maintenance activities near energized electric facilities. When specific vegetation conditions result in situations where the required maintenance is unsafe, the Contractor shall take the appropriate measures and request blocking of automatic re-closing or a scheduled outage.

The Crew Foreperson is responsible for requesting blocking of automatic re-closing through VEC System Operations. Requests shall be placed when conducting vegetation maintenance activities in compliance with all applicable safety rules and regulations where the Crew Foreperson determines taking additional precautions is prudent (e.g. vegetation is located beside or above high voltage transmission lines, vegetation is placing tension on the electric facility, condition/construction of the electric facility contributes to the potential for an electrical fault occurring, etc.).

A Utility Initiated Outage Request Form (See Exhibit 4) shall be submitted to VEC Forestry staff for all outages being requested by line clearance crews. All
trees which are within minimum approach distances and cannot be reached with an insulated tool shall be left untouched and reported to VEC’s Forestry staff along with a Utility Initiated Outage Request Form.

In the event that the Contractor experiences any contact (direct or indirect) with the electric facilities and/or is responsible for an unscheduled outage, all work shall immediately cease and desist, the crew will clear off the line and the Crew Foreperson will notify the VEC System Operator immediately (Emergency phone: 802-635-9294). After clearing off the line, the Crew Foreperson shall stay on site to speak with VEC Line Personnel when they arrive to restore power. An interview and post incident review shall be conducted with the entire line clearance crew by VEC’s Manager of Safety and Compliance and/or VEC’s Forestry staff as soon as practical, following the incident. A formal incident report shall be submitted by the Contractor. The members of the line clearance crew shall not return to work on VEC’s system prior to the completion of incident review and shall only return to the system upon approval by the Manager of Forestry.

Following all incidents where a line clearance crew experiences any contact (direct or indirect) with the electric facilities, all crew members present during the incident will be suspended from working on the VEC System for a period of no less than 3 business days.

Following any incident involving a fault on the line or any compromised state of the electric facility, at least one member of the crew shall remain on site to secure the scene and prevent any members of the public from entering the work zone until VEC personnel have arrived on site. Failure to comply with this requirement shall warrant immediate termination.

**Thunderstorms**

All line clearance crew(s) must clear off the line in the event of a thunderstorm. Once the thunderstorm passes, crew(s) can go back to work after obtaining proper clearances from the VEC System Operator.

**Safety Standards**

The Contractor and all contract employees shall comply with the American National Standards Institute (ANSI) standards Z133-1 and A300, the Occupational Safety and Health Administration (OSHA) Regulation 1910.269 (see 29 Code of Federal Regulations Part 1910) and all applicable electric cooperative safety rules. Any Contractor-produced or adopted safety rules should be presented to VEC for review and approval.

Safety Procedures shall include, but not be limited to the following:

- General safety supervision
- Instruction of new employees
- Written pre-job safety briefings (See Exhibit 5 – VEC Line Clearance Contractor Job Briefing Form)
  Briefings shall include identification of the closest emergency 911 address to the work location and cover at a minimum: energy source controls, job hazards review, work procedures, special precautions and personal protective equipment.

  The Contractor shall collect and review all pre-job safety briefings and provide copies to VEC Forestry staff weekly.

- Use of correct protective equipment and gear
- Proper equipment operation
- Location and use of safety equipment and signs on the job
- Other miscellaneous safety considerations (hidden guy wires, brush covered holes, barbed wire, hidden ledges, boulders)
- Observation of a dangerous situation
  It is the Contractor’s responsibility to conduct all vegetation management activities in a safe manner. When the condition of vegetation and/or electrical equipment represents an unsafe situation (e.g. vegetation in hard contact with electrical facilities, broken insulators or other hazardous or unusual situations) the Foreperson will postpone maintenance and contact the VEC Forestry staff as soon as possible.

  If there is any question as to the safety of conducting vegetation maintenance activities, they shall be postponed and a temporary outage will be scheduled.

- VEC notification of any injury or safety incident, however slight, which occurs while on VEC’s system.

- Routine safety observations of all crews operating on VEC’s system.
  The Contractor shall ensure that each crew working on the VEC System is observed by their employer once a month.

  Safety observations shall be conducted by a company Safety Manager or other designated management personnel and must include active work site observation and examination of work methods.

  The Contractor shall furnish documentation and results of all safety observations to VEC Forestry staff by the end of each month (See Exhibit 6 – VEC Line Clearance Contractor Safety Observation Report).

Failure to comply with all applicable safety standards may result in monetary fines levied against the Contractor based on the gravity of the safety infraction and at a rate not to exceed $500.00 per infraction. Fines shall be levied in the form of a direct donation to a charitable organization of the Contractor’s choice, with VEC’s approval.
Operational Policy

Certificate of Insurance
Contractors will not be allowed to commence operations until VEC receives a certificate of insurance from a carrier approved by VEC, indicating compliance with insurance bonding, which VEC may specify. Insurance coverage must be satisfactory in all respects and have a clause for thirty (30) or more days prior notice to VEC of any change in coverage, including its cancellation. VEC shall be listed as a Certificate Holder and an Additional Insured. Certificates will be submitted to VEC prior to acceptance of a contract, or before commencing work.

Contractor Responsibility
If the Contractor refuses, neglects, or is unable, for any reason, to supply and maintain a sufficient number of properly skilled workmen and/or proper equipment to maintain the scheduled program for this work, or fail in the performance of any covenants contained in these specifications, VEC shall exercise its right to terminate the services of the crew and/or equipment.

Property Owner Refusals
If a property owner refuses to allow the required tree work, line clearance employees shall not agree to reduced clearance or any other deviations from the specifications without the consent of the VEC Forestry staff. All refusals shall be documented and passed on to the VEC Forestry staff for follow-up.

Complaints
All complaints resulting from line clearance operations are the responsibility of the Contractor and if justified, shall be corrected as soon as possible. The VEC Forestry staff is to be promptly notified of all complaints and their resolution. If the resolution involves commitment of extra work, approval shall be received from the VEC Forestry staff before proceeding.

Private Work
Under no circumstances shall the Contractor's employees solicit or accept payment for services rendered or products resulting from those services (firewood, wood chips, logs, etc.) while working for VEC. Should the Contractor enter into an Agreement to provide services to a VEC member when not working for VEC, the Contractor shall notify VEC of this Agreement prior to the commencement of any work.

Legislation
The Contractor shall be responsible for adhering to all applicable Federal, State and local laws, rules and regulations, including but not limited to the Vermont Fire Warden and Slash Law as follows:

It is hereby enacted by the General Assembly of the State of Vermont:
Sec. 2. 10 V.S.A 2648 (a)

(a) A person may cut, or cause to be cut, forest growth only if all slash adjoining the right-of-way of any public highway, or the boundary lines of wood lots owned by adjoining owners, is treated as follows:

(1) All slash shall be removed for a distance of 50 feet from the right-of-way of any public highway or from the boundary lines of wood lots owned by adjoining property owners.

(2) All slash shall be removed for a distance of 100 feet from standing buildings on adjoining property.

LINE CLEARANCE, TREE PRUNING AND REMOVAL OPERATIONS

Scope
This section covers the policies, methods, procedures, and other information necessary to guide those engaged in utility line clearance, tree pruning and removal work. All line clearance work shall be completed in conformance with these specifications.

Tree Pruning Guidelines
Trees that have the potential to interfere with primary lines should be pruned or removed to obtain clearances from tree branch parts. All pruning shall be performed with consideration given to the impact of that pruning on line reliability, individual tree condition and tree aesthetics. All pruning shall adhere to the American National Standards Institute (ANSI) Std. A300, "Tree, Shrub, and Other Woody Plant Maintenance-Standard Practices," and other established and widely accepted pruning guidelines such as those presented in The Society of Arboriculture’s “Best Management Practices Utility Pruning of Trees” and/or Dr. Alex Shigo's booklet titled "Pruning Trees Near Electric Utility Lines." All work will be performed with respect to property owners and their lands.

Cutting Methods – The following is a description of the various cutting methods involved in the maintenance of VEC’s rights-of-way.

Prime Flat Clearing
This refers to the initial cutting of a right-of-way to establish a corridor for a utility line. All trees within 25 feet of the center pole line on distribution lines shall be removed in preparation for the installation of bare conductors. All trees within 15 feet of the center pole line on distribution lines shall be removed in preparation for the installation of insulated conductors. All trees within 50 feet of the center pole line shall be removed in preparation for the installation of transmission lines.
**Maintenance Cutting**  
This refers to the cutting of incompatible species of vegetation in an established right-of-way to allow accessibility and protection for existing utility lines. Includes flat cutting of all brush within the right of way to ground level, as well as proper pruning of all branches growing over or towards conductors and removal of trees, which cannot be properly pruned to provide adequate clearance.

**Widening and Side Pruning**  
Widening refers to the cutting of an established right-of-way back to legal and/or proper width. Side pruning refers to the cutting of large limbs that are growing over or toward conductors.

**Selective Cutting**  
This refers to cutting in special areas (screens, urban, ornamentals, parks, or other established maintenance work). Selective cutting often requires climbing or bucket work and usually chipping and/or brush removal.

**Minimum Tree-to-Conductor Clearances**  
When pruning trees for clearance around primary overhead distribution conductors (4KV, 12KV & 14.4KV), a minimum of 10 feet of clearance on each side of the outside conductor and 20 feet of clearance for all branches that overhang the conductors shall be achieved. Additional clearance should be achieved on branches that could bend (due to snow or ice loading) or break and contact the conductors below.

*Note: Clearances may need to be reduced in rights-of-way where the total easement width is 20 feet, depending on member permission.

When pruning trees for clearance around transmission lines (34.5KV & 46KV), a minimum of 15 feet of clearance on each side of the outside conductor shall be achieved. No branches shall be left overhanging the conductors.

These clearances should be considered minimum unless the tree is properly side pruned back to the main trunk or a major limb. The tree's location, health, species, and growth rate should be considered when deciding appropriate/acceptable clearances.

**Pruning Practices** - The following is a description of the pruning practices to be implemented in the maintenance of VEC’s rights-of-way.

**Directional Pruning**  
All pruning shall be performed to direct tree growth away from the conductors.

**Drop Crotch Pruning**  
Limbs and branches shall be cut back to a suitable lateral limb or branch that is at least one-third of the diameter of the one being cut. If a proper sized limb or branch is not available, the pruning cut shall be back to the parent branch or the tree trunk.
Proper Pruning Methods
Proper pruning methods include the following:
- Crown Reduction
- Side Pruning
- Overhang Pruning
- Under Pruning

Improper Trimming Methods
Roundovers, topping, stubbing of branches or limbs, or pollarding shall not be done. Exception shall be made only as a result of member refusal to authorize proper pruning techniques.

Quantity Removed
Only healthy trees shall be pruned. No more than one-third of the crown of a tree shall be removed in any one growing season. Removal of more than one-third of the crown can adversely affect the health and/or appearance of the tree. If removal of more than one-third of the crown is required to provide proper clearance, serious consideration should be given to removal of the tree.

Proper Pruning Cuts
Proper pruning cuts are very important in preventing future decay in the tree. Refer to ANSI Std. A300, "Tree, Shrub, and Other Woody Plant Maintenance Standard Practices," The International Society of Arboriculture’s “Best Management Practices Utility Pruning of Trees” and/or Dr. Alex Shigo's booklet titled "Pruning Trees Near Electric Utility Lines" for guidance on making proper pruning cuts.

Tree Paint
Research has shown that the past practice of painting cuts with asphalt tree paint does not prevent decay and, in fact, may hasten it. Therefore, tree paint shall not be used.

Bark Stripping
Limbs shall be removed with proper sequence and placement of saw cuts to prevent stripping or tearing of bark from the remaining limb, branch, or trunk. See ANSI Std. A300, "Tree, Shrub, and Other Woody Plant Maintenance-Standard Practices," The International Society of Arboriculture’s “Best Management Practices Utility Pruning of Trees and/or Dr. Alex Shigo's booklet titled "Pruning Trees Near Electric Utility Lines" for guidance.

Hangers
All branches, limbs, and tops that hang up in the tree being worked on, or in adjacent trees, shall be removed before moving from that work site.
Climbable Trees
Climbable trees are defined as trees having sufficient handholds and footholds to permit an average adult or child to easily climb the tree without the use of a ladder or special equipment. Climbable trees within VEC rights-of-way in areas where people live or normally congregate shall be considered for removal or modification by the removal of the lower limbs.

Tree Houses
All tree houses, platforms, or other tree structures that are in close proximity to overhead wires and are encountered during line clearance operations shall be reported to VEC’s Forestry staff for follow-up. The adjacent property owner shall be notified that the structure must be removed to eliminate a potentially hazardous situation.

Special Clearance
All deadwood and tree parts weakened due to decay, included bark, or split crotches shall be removed if they pose a potential hazard to primary lines or structures.

   All vines that are climbing poles or guy wires shall be cut at ground level. The vines should only be removed from the poles or guy wires by use of properly insulated tools if the vines are in contact with energized conductors or equipment.

Tree Removal
Consistent with safety, satisfactory line clearance, economic operation, public relations, and the appearance of public roads, it is desirable to remove trees under certain conditions rather than to trim them. Whenever justified, tree removal should be considered. Low-growing, desirable plant species shall not be removed unless they present a hazard to the system or line workers, or if they hinder access to the line facilities.

   Removal Conditions
   Trees shall be removed when the pruning necessary to provide proper clearance

   • would likely result in the death of the tree.
   • would put the line clearance crew or the public in greater danger than removal.

The Contractor shall remove or make safe all identified danger trees. In addition, the Contractor shall primarily remove small trees (less than 12 inches dbh) of undesirable species within 10’ of the outside conductor and all whips or saplings within the right of way.
Felling
Trees shall be felled away from the conductors whenever possible. If this is not possible, they shall be topped before being felled to prevent the possibility of the tree striking the conductors.

Cut Stumps
Cut stumps shall not be more than 3 inches above ground and parallel with the grade (no angled cuts). This standard may vary with approval of the VEC Forestry staff as per field conditions. Stumps left higher than 3 inches due to snow depth shall be cut down to the 3 inch standard at the Contractor’s expense as soon as practical following snow melt, but no later than May 15th.

Special Deals
Special deals shall not be negotiated with property owners. When a landowner requests or requires the Contractor to do special removal and/or pruning work that is outside the scope of the assigned work, the Contractor shall notify the VEC Forestry staff prior to performing any work.

Disposal Procedures
As specified by the VEC Forestry staff, all trees, brush, and other woody residue shall be disposed of in accordance with the procedures outlined below.

Chipping
Chipping will be the primary method of handling slash from pruning and tree removal operations and shall be done along roadsides, as well as within manicured lawns, established trails and other areas utilized by the public.

Wherever possible, chips shall be blown along the right-of-way, where they will help to slow and/or impede regenerating vegetation. Chips should not exceed 12 inches in depth, and they should not enter surface water, clog culvert pipes, or accumulate in the branches of nearby trees.

In the event that a member objects to chips being blown within the right-of-way, chips may be blown into the woods or removed. If chips are removed from the site, they must be properly disposed of.

Brush Piles
In rural, off-road areas brush shall be moved away from poles, out from under the conductors and neatly windrowed along the right-of-way edge. Windrows shall not be more than 4 feet high and the specific location will not interfere with roads, trails, streams, and property lines.

There will be a 20’ firebreak in the windrows every 500 feet.
Lop and Scatter
Upon approval by VEC Forestry Staff, in rural areas where slash density is light and/or upon member request, the slash may be lopped into smaller pieces and scattered within the right-of-way, well outside of the wire zone (i.e. at least 15 ft. from the outside conductors).

Remaining Wood
Trees, which have been cut remain the property of the landowner and shall be left on site. Trees that appear to contain merchantable products shall be left in long lengths (except when it is necessary to take them down in smaller sections). All remaining wood shall be left in manageable lengths, as directed by the member and piled at the edge of the right-of-way (leave wood log length whenever agreeable with the member).

Job Site Cleanup
Upon the completion of work, the Contractor shall leave the work site clean and tidy. All pruning debris and wood shall be disposed of according to the relevant specifications. Contractor shall not dispose of paper, cans, or other trash at the site, and shall pick up and properly dispose of any such items found during the workday. Trash is not to be mixed with pruning debris.

HERBICIDE APPLICATION

Scope
This section covers the policies, methods, procedures, and other information necessary to guide those engaged in target brush species control through the application of herbicides. All line clearance target brush species control work shall be completed in conformance with these specifications, in addition to all other relevant specifications contained in this document.

Herbicide Permit
VEC will obtain a permit from the Vermont Agency of Agriculture to conduct all scheduled herbicide treatments along the utility rights-of-way, which will be reviewed with and made available to the Contractor prior to herbicide application operations.

Herbicide Registration and Approval
Herbicides used for vegetation management must be registered for use by the United States Environmental Protection Agency and approved for use by the Vermont Agency of Agriculture. The Contractor is responsible for ensuring compliance with all federal, state and local regulations governing herbicide use. Herbicides shall not be used in violation of any applicable law or regulation.

Specifications and Application Methods
VEC’s Forestry staff will specify the location of all herbicide use and review and approve the type of herbicide, mixtures and method of application.
In all situations, herbicides shall be applied in strict conformance to label requirements and the requirements of any state or federal agency having jurisdiction, except in situations where utility experience and/or generally accepted practices within the industry indicate the need for more restrictive application.

Herbicides shall be applied only by trained applicators and each crew shall have a minimum of one crew member for small crews (2-3 persons) and two crew members for larger crews (4+ persons), who is a certified herbicide applicator in the state of Vermont.

Herbicides shall be applied to target species as directed by VEC Forestry staff along the entire length and width (from outside edge/tree-line to outside edge/tree-line) of the identified right-of-way, excepting any required buffers on water supplies and/or sensitive areas.

Herbicides shall be applied only by manual methods that target individual plants or compact clusters of plants. Aerial or wide-area spraying shall not be utilized.

Herbicides shall be applied at the minimum label rate known to be effective for the target species, brush density and site.

Herbicides shall not be applied in the rain or snow or on frozen ground.

**Equipment Condition**
All vehicles, spray units, equipment and containers must be spill and leak proof. Equipment with openings and/or connections must be sealed so that leakage will not occur. All equipment shall be properly maintained and shall carry spill control kits.

**Security**
All vehicles used to carry herbicides shall have storage facilities so that containers/drums can be secured and locked. All chemical containers will have lockable caps and will be locked and left in a secure location whenever unattended.

**Additive Requirements**
When performing foliar herbicide applications, an adjuvant will be added when recommended by individual product labels and/or requested by VEC.

**Mixing Solution**
The herbicide solution must be thoroughly mixed by means of circulation or agitation prior to and during application to ensure uniform dispersion of the herbicide concentrate. The proper mixing sequence shall be followed at all times.

**Herbicide Samples**
VEC reserves the right to sample herbicide and/or herbicide solutions at its discretion.
Licensing Requirements
The Contractor shall assume full responsibility for equipment and personnel licenses as required by federal and state laws and regulations for the work covered by this specification.

Off-Target Dispersion
Herbicides shall not be used at locations where, or during times when they may pose an unreasonable risk of off-target dispersion (e.g. adjacent to streams or gardens or more than moderate wind, in the rain or snow or on frozen ground). Applicators must assess surroundings and evaluate weather conditions to determine if application should be performed. This includes consideration of wind speed and precipitation condition.

The Contractor is expected to perform herbicide applications in accordance with all applicable regulations and label directions in a manner such that off right-of-way damage will not occur. If any off right-of-way damage does occur, the Contractor assumes all liability for the correction of any damage.

Property Owner Notification
VEC will conduct general notification to landowners according to Vermont Public Service Board Rule 3.6 and the Vermont Regulations for the Control of Pesticides. VEC Forestry staff will provide the Contractor with the physical address of all individuals who have previously requested that herbicides not be utilized on their property.

The Contractor is responsible for making personal contact with each individual who has requested that herbicides not be used and meeting with them to clearly identify their water supply and property lines on the ground prior to any herbicide applications.

The Contractor has the primary responsibility for making personal contact with all property owners prior to the commencement of any herbicide applications to discuss the proposed project, identify property lines and locate any un-mapped and/or non-visible water supplies. All member contacts shall be documented in an Herbicide Application Property Owner Notification Log (See Exhibit 7) and contact records shall include crew member name and position, landowner name and contact info, date/time of contact, location of affected property, summary of conversation and actions taken (e.g. identified property lines, flagged water supply/sensitive areas, etc.).

In instances where the Contractor is unable to identify and/or contact a property owner, the Contractor will work with VEC’s Forestry staff to determine the appropriate course of action prior to any herbicide application.

In addition to adhering to the general Public Relations specifications discussed on page nine of this document, the Contractor must exhibit a high level of expertise in all relevant subjects related to the use of herbicides for right-of-way maintenance. The Contractor must be able to knowledgeably discuss all aspects of the herbicide application operation, including, but not limited to the effectiveness, benefits and risks of all herbicides being
utilized, regulatory requirements, training of field personnel, application techniques and the transport and storage of herbicides.

**Property Owner Refusals**
Herbicides shall not be used within the property of any landowner who has upon receiving all available information regarding the planned application, requested that herbicides not be used on their property. All refusals shall be documented and passed on to the VEC Forestry staff for follow-up.

**Herbicide Application Field Preparation**
The Contractor, working under or with VEC’s Forestry staff, shall review all sections of line scheduled for herbicide application to ensure that all environmentally sensitive areas are flagged in the field and noted on the map.

**Retention of Compatible Species**
The Contractor must understand not only the products they are applying, but also understand natural plant succession and the importance of retention of low-growing, desirable plant species. The Contractor shall ensure that all field personnel are adequately trained in the identification and avoidance of compatible species.

**Training**
The Contractor shall conduct and document training for all members of herbicide application crews prior to beginning a vegetation control program on VEC’s system. Training shall include, but not be limited to:

- Herbicide application techniques
- Proper handling of herbicides
- Interpretation of label instructions
- Spill response
- Identification and retention of compatible species
- Public relations and property owner notification/contact
- Record Keeping
- First aid/CPR; equipment, electrical and fire safety; specific precautions associated with herbicide application and general safety procedures
- The complete contents of the permit issued by the Vermont Agency of Agriculture for the scheduled herbicide application
- VEC’s Specifications for Vegetation Management on Transmission and Distribution Systems

**Pre-Operation Meeting**
The Contractor shall ensure that all members of the herbicide application crew are present for a pre-operation meeting conducted by VEC’s Forestry staff prior to herbicide application operations. Topics covered will include a review of:

- VEC line map of area scheduled for herbicide application
- Type of herbicide, mixture, rate of application and method of application
- Permit issued by Agency of Agriculture
- Sensitive areas, water supplies, wetlands, buffer strips, areas to be avoided, etc.
- Significant habitat maps
- VEC’s Specification for Vegetation Management on Transmission and Distribution Systems
- Daily notification of work location
- Record Keeping

On-Site Requirements
The following is required to be on-site and available to herbicide application crews prior to and during herbicide application operations:

- Vermont Agency of Agriculture issued permit (including all herbicide labels and Material Safety Data Sheets).
- A minimum of one crew member within voice command of the physical application, who is a certified herbicide applicator in the state of Vermont.
- A VEC line map showing details including: line voltage, power lines, structures, structure numbers, county lines, town boundaries, access, water supplies, wetlands, property owner refusals/requests, etc.
- Required personal protective equipment in accordance with herbicide labels and all other applicable regulations.
- Drinking water and wash water
- Spill Kit including spill response instructions, shovel, absorbent material and container
- Herbicide Spill Response Instructions (See Exhibit 8– VEC Operating Procedure OP 27 Part Two: Herbicide Accidental Release Measures)

Record Keeping
The Contractor is responsible for recording all required information regarding herbicide applications and shall submit weekly reports to the Vermont Agency of Agriculture.

The Contractor shall submit VEC Utility Line Vegetation Maintenance Reports weekly, which are to be completed on a daily basis and made available to the VEC’s Forestry Staff. The original copy of the work report shall be submitted along with all invoices.

Herbicide Application Methods
The following provides a brief description of available herbicide application techniques acceptable for use on VEC’s system.

- **Selective Low-Volume Foliar Application**
  Undesirable woody vegetation in rural areas below a height specified by VEC’s Forestry staff shall be treated with a solution of herbicide, a surfactant (if required) and water. Application is made with either a powered or hand-powered backpack sprayer. The leaf surface is lightly wetted. The applicator is to walk the right-of-way and treat each target plant individually. The spray nozzle is to be turned off when walking between target plants. Care shall be taken not to apply
Vegetation Management Specifications for VEC: T&D Systems  (March 2014 Revision)

the herbicide to desirable or non-target species. This herbicide treatment shall be performed only during the active growing season.

- **Selective Low-Volume Basal Application**
  Light to moderate-density undesirable woody vegetation with a height less than the maximum specified by VEC’s Forestry staff shall be treated with a solution of herbicide and mineral oil. The lower 12 to 18 inches of the target plant’s stem is wetted (not to the point of run off). Application is made with a hand-powered backpack sprayer by an individual walking the right-of-way. Basal treatments can be applied throughout the year, unless snow depths prevent application to the base of the stem and root collar. **VEC will not conduct herbicide applications in the rain or snow or on frozen ground.**

- **Cut Surface Application**
  Stumps of deciduous hardwood trees that have been cut are to be treated with either an herbicide and water (or oil) solution or a “ready-to-use” (RTU) herbicide. The cambium area of the freshly cut stump is treated by an individual with a hand-powered backpack sprayer or a plastic spray bottle.

  Generally, the herbicide is most effective if applied within ½ hour of the tree’s being cut with water based herbicide solutions. Mineral or basal oil stump treatment formulations can be treated any time after cutting. Treatment can be performed at any time of the year except when the stump is snow covered. **VEC will not conduct herbicide applications in the rain or snow or on frozen ground.** This technique should be used to control re-sprouting of removed deciduous trees that exceed maximum height restrictions for other herbicide application techniques or are located in sensitive areas. When cutting most conifers or evergreens, no herbicide application is necessary since most of these species do not readily re-sprout with the exception of pitch pine.

PART ONE: OIL SPILL REPORTING PROCEDURE

I. SCOPE

VEC Operating Procedure No. 27 – Part One: Oil Spill Reporting Procedure, establishes a protocol for reporting by Vermont Electric Cooperative, Inc. (herein referred to as VEC) of discharges and/or releases [of transformer oil] as required under the Federal Water Pollution Control Act pursuant to the requirements of 40 CFR Part 110/Discharge of Oil.

This procedure is to be followed in the event of a discharge and/or release of hazardous material which necessitates appropriate immediate action to protect human health and environment including but not limited to, emergency containment measures, clean up and reporting as required by Federal, State and Local officials.

II. DEFINITIONS

Agency: The Vermont Agency of Natural Resources

Certified Hazardous Waste Facility: A treatment, storage, or disposal facility which is authorized to operate under a federally approved state hazardous waste program, the federal hazardous waste program, or a foreign government

Container: Any portable device, in which a material is stored, transported, treated, disposed of or otherwise handled

Discharge: The accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into or on any land or water

Disposal: The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste of hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any ground or surface waters

EPA: The United States Environmental Protection Agency
Hazardous Material: All petroleum and toxic, corrosive or other chemicals and related sludge

PCB’S: Polychlorinated biphenyls

PPM: Parts per Million

III. BACKGROUND

VEC is committed to complying with the U.S. Environmental Agency CFR Title 40: Protection of Environment and the State of Vermont Agency of Natural Resources, Hazardous Waste Management Regulations

In the event of a discharge and/or release [of transformer oil], VEC will perform the appropriate emergency action, reporting and corrective actions necessary to comply with the State of Vermont, Agency of Natural Resources.

IV. RESPONSIBILITIES

VEC Field/Line personnel responsibility

A hazardous discharge/release (i.e. oil spill) needs to be reported to the State of Vermont, Agency of Natural Resources immediately if one of the two following criteria exists:

1. The discharge/release is over 1 gallon and contains greater than or equal to 50 PPM PCB’s

2. The discharge/release is over 2 gallons, and contains less than 50 PPM PCB’s

The first VEC personnel to discover the hazardous discharge/release will:

- Access the amount of the spill
- Secure the area if necessary
- Perform a Chlor-N-Oil test
- Use proper PPE
- Stop the source of discharge/release if possible
- Contain discharge/release by trenching area with soil and
absorbent material

Clean up procedure

Determine if clean-up is manageable or non-manageable.

Manageable:

- Less than 20 gallons
- Not near water supply or wetland
- Has not penetrated soil 3 inches
- Confined to an area less than 100 feet

Non-manageable

- Threatens or enters waterway
- More than 20 gallons spilled
- Has penetrated soil more than 3 inches
- Spread of an area greater than 100 feet

If the clean-up is manageable, use speedi-dry or other absorbent material where released material is puddled or concentrated.
Place all clean-up material in 55-gallon drums and transport back to the district office. Notify Steve Johnson, 802-730-1211, who will supply drum label and drum number.

If clean-up is non-manageable, advise Systems Operations.

VEC field/line personnel will be responsible for calling System Operations and providing the following information regarding the spill and spill location:

- Source of spill or leak
- Exact location of spill or leak (street address/town)
- Type of material involved
- Result of Chlor-N-Oil test
- Estimated amount of spill or leakage
- Is spill or leak near waterway?
- Containment status
- Is clean-up manageable or non-manageable?
VEC System Operator Responsibility

The System Operator is responsible for obtaining the above information from field/line personnel and relaying this information to Management personnel. The management notification list is as follows:

First Contact:
John Varney, Safety and Compliance Manager
Contact first by pager (802)741-2078, Alpha page
If no response, contact by cell phone (802)730-4117
If no response, contact by home phone (802)527-2988

If no response:

Second Contact:
Mike Allard, System Operations Manager
Pager (802) 741-2743
Cell Phone (802) 730-4235
Home (802) 334-2324

If no response:

Third Contact:
Justin Lapointe, Operations Supervisor
Pager (802) 742-0666
Cell Phone (802) 793-4554
Home (802) 793-4554

VEC Management Responsibilities

Management will contact the State of Vermont, Agency of Natural Resources, Department of Environmental Conservation, and Waste Management Division

(802) 241-3888
After hours: 800-641-5005
Provide ANR with the following information:

- Date/time oil spill discovered
- Street address/town
- Equipment causing leak
- Product spilled
- PCB level (result of Chlor-N-Oil test)
- Method of clean-up (if non-manageable, who has been contacted and status of clean-up)

If the clean-up is unmanageable and will require outside assistance, contact:
Environmental Products and Services of Vermont Inc., 802-862-1212

**Contractors working on VEC system responsibilities**

Contractors working for and on VEC’s transmission and distribution systems and or properties are obligated to adhere to reporting procedures regarding the discharges and/or releases of oil as required under the Federal Water Pollution Control Act pursuant to the requirements of **40 CFR Part 110/Discharge of Oil**.

Reportable oil spills will be made to the State of Vermont, Agency of Natural Resources, Department of Environmental Conservation, and Waste Management Division

(802) 241-3888
After hours: 800-641-5005

Contractors will also notify the following VEC personnel regarding any oil spill occurring on VEC properties:

**VEC Manager of Forestry, Sara Packer:**
Office 802-730-1104
Pager 802-741-1972
Cell 802-254-1458

**VEC Chief Operating Officer, Jeffrey Wright:**
Office 802-730-1170
Pager 802-741-1370
Cell 802-730-4233
APPENDIX
FLOW CHART FOR OIL SPILL REPORTING
VEC PERSONNEL
VERMONT ELECTRIC COOPERATIVE, INC.
UTILITY LINE VEGETATION MAINTENANCE REPORT

<table>
<thead>
<tr>
<th>Check One</th>
<th>TRANSMISSION</th>
<th>DISTRIBUTION</th>
<th>Circuit</th>
<th>MAINT.</th>
<th>HERBICIDE</th>
<th>SERV. ORDER</th>
<th>CAPITAL W.O.</th>
<th>WK. ENDING</th>
<th>SHEET</th>
<th>OF</th>
</tr>
</thead>
</table>

**SUB NAME & NUMBER** _________________________________________

**CIRCUIT** _____________

**CONTRACTOR** _____________________________________________

**CREW FOREMAN** __________________________________________

**INSPECTOR** ______________________________________________

**JOINT WITH** _____________________________________________

**Treatment Codes**
- CT = Cutting (Re-clearing)
- RC = Re-claiming
- MO = Mowing
- DT = Danger Tree Removal (Indicate # of DT removed in remarks section)
- WD = Widen
- FO = Foliar
- CS = Cut Surface
- BA = Basal

**Chemical Codes**
- 1 = Accord Conc. EPA Reg. #62719-324
- 2 = Arsenal Powerline EPA Rog. #241-431
- 3 = Escort XP EPA Reg. #352-439
- 4 = Krenite S EPA Reg. #352-395
- 5 = Garlon 3A EPA Reg. #62719-37
- 6 = Garlon 4 Ultra EPA Reg. #62719-40
- 7 = Stalker EPA Reg. #241-398

---

<table>
<thead>
<tr>
<th>DATE</th>
<th>TREATMENT</th>
<th>ROAD</th>
<th>VEC LINE #</th>
<th>VEC POLE #</th>
<th>FOOTAGE</th>
<th>TEL FROM</th>
<th>TEL TO</th>
<th>TEL TREATED</th>
<th>TEL OPEN</th>
<th>TELEPHONE POLE #</th>
<th>FOOTAGE</th>
<th>CHIPPED</th>
<th>CHEM CODE</th>
<th>VOL</th>
<th>USED</th>
<th>REMARKS</th>
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<table>
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<th>NAME</th>
<th>POSITION (CODE)</th>
<th>S</th>
<th>M</th>
<th>T</th>
<th>W</th>
<th>F</th>
<th>S</th>
<th>TOTAL</th>
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</table>

<table>
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<th>S</th>
<th>M</th>
<th>T</th>
<th>W</th>
<th>F</th>
<th>S</th>
<th>TOTAL</th>
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</thead>
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<table>
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<th>EQUIPMENT</th>
<th>EQUIPMENT #</th>
<th>S</th>
<th>M</th>
<th>T</th>
<th>W</th>
<th>F</th>
<th>S</th>
<th>TOTAL</th>
</tr>
</thead>
</table>

- Aerial Device (bucket)
- 4X4 Truck
- Ton Truck
- Chipper
- Saw (ft)

Prepared By: ____________________________________________________________

Approved By: _________________________________________________________
TREE WORK SCHEDULED

PLEASE READ

THIS CONCERNS YOUR PROPERTY

VEC is currently conducting vegetation management activities in your area in order to minimize vegetation related interruptions in the utility service to you and your neighbors. VEC’s Forestry staff of licensed/certified forester(s)/arborist(s) are responsible for the supervision of qualified line clearance contractors hired to manage vegetation growth around the utility lines.

**Line Maintenance** generally involves the cutting of all brush (up to 25 ft. on each side of the center of the pole line for distribution lines and up to 50 ft. on each side for transmission lines) to ground level, as well as proper pruning of all branches growing towards conductors and removal of any/all trees, which can not be properly pruned to provide adequate clearance.

**Hazard Tree Removal** involves the removal of trees, which due to size, location and/or condition, have a potential for damaging the conductors or structures now or within the next ten years. These trees will be removed regardless of distance from the center of the pole line.

If you did not receive this notice in person and would like to discuss this work with the tree company conducting the maintenance, please call the number listed below. If contact is not made within 5 days of receiving this notice, maintenance activities will take place without any further notice.

Crew Foreperson: ____________________________ Date: ________________

Contractor: ___________________________________________________

Day Telephone: ________________ Evening Telephone: ________________

Work Scheduled: □ Line Maintenance □ Hazard Tree Removal
□ Distribution □ Transmission

Please read the back of this notification for further explanation of VEC Vegetation Management Specifications.
VEC’s Vegetation Management Plan, as submitted to the Vermont Department of Public Service, provides the following specifications:

**Minimum Tree-to-Conductor Clearances**
Distribution System - A minimum of 10 feet of clearance on each side of the outside conductor and 20 feet of clearance for all branches that overhang the conductors must be achieved. Additional clearance is necessary on branches that could bend (due to snow or ice loading) or break and contact the conductors below.
Transmission System - A minimum of 15 feet of clearance on each side of the outside conductor must be achieved. No branches shall be left overhanging the conductors. These are the minimum required clearances. Individual tree location, health, species, and growth rate must be considered when determining appropriate/acceptable clearances.

**Disposal Procedures**
Brush, branches and woody debris from pruning and removal operations along roadsides and within manicured lawns will be chipped. In all other areas, brush will be moved away from the poles, out from under the conductors and windrowed (placed in a long, low heap or pile) off to the side.
Trees, which have been cut remain the property of the landowner and will be left on site. Trees that appear to contain log products will be left in long lengths (except when it is necessary to take them down in smaller sections) and all other wood will be blocked up and piled, unless directed otherwise by the member.

**Compatible Species**
Plant species which at maturity will not attain a height that will endanger the safe and reliable operation of the line and may provide food and/or cover for wildlife (e.g. apple, lilac, hawthorn, dogwood, etc.) will be retained except in areas immediately surrounding pole locations and directly under conductors.
Please note: maintenance requirements are very site specific and each location must be evaluated individually.
VEC is currently conducting vegetation management activities in your area in order to minimize vegetation related outages. A variety of Integrated Vegetation Management (IVM) methods are used including hand cutting, mowing and selective herbicide application with handheld equipment. Maintenance activities are implemented by certified and experienced contractors under the supervision of VEC’s licensed/certified forester(s)/arborist(s).

Vegetation in close proximity to the electric facilities is not only the leading cause of power outages, but also represents a safety risk to utility workers and the general public.

VEC has selected IVM to promote low-growing, sustainable plant communities that are compatible with the electric facilities and to discourage incompatible plant species which at maturity attain a height of greater than 15 feet tall and may pose a variety of concerns including safety, access, electric service reliability, emergency restoration, regulatory compliance and environmental concerns.

Important benefits of IVM include:
- Increased visibility and access along rights-of-way
- More timely and less costly outage restoration
- Safer working conditions for line workers and line clearance contractors
- Improved species selectivity
- Long-term control
- Promotes stable plant communities
- Supports natural (biological) control
- Promotes bio-diversity among plants and wildlife
- Only feasible control method for invasive species
- Only method that lowers undesirable stem densities, reducing future maintenance costs
- Most efficient and economical control

Use of herbicides within our IVM approach is regulated by federal and state statutes and regulations which protect sensitive areas such as surface waters and public and private water supplies.

All products to be used are federally registered and labeled for specific uses by the Environmental Protection Agency (EPA) and will be applied by certified applicators according to product label directions. Product applications will be selective, in that the herbicide will be applied directly to incompatible species of plants.

If you have a private water supply that is within 100 feet of the right-of-way, please call the contractor designated below:

The contractor conducting maintenance in your area is:

The contractor’s representative is:

and may be contacted at:

The electric company identification for the right-of-way is:

We at VEC believe our IVM approach to vegetation management is the most responsible way to provide safe and reliable electric service at a reasonable cost. We would be happy to answer any questions you may have as this work is carried out.
Vermont Electric Cooperative, Inc.
Vegetation Maintenance
Utility Initiated Outage Request Form

Date: ______________

Company Name: ______________________________

Substation Name and #: _________________________

Point #: ______________

Town: ______________

Outage Time Required: _________________________

Desired Date(s) and Time(s) of Outage: _______________________________________

Contractor Comments:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Internal Use Only – Do Not Write Below This Point

VEC Forestry Comments:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

VEC Line Department/Scheduling Comments:
________________________________________________________________________
________________________________________________________________________

Date and Time of Scheduled Outage: _________________________________________
**LINE CLEARANCE CONTRACTOR JOB BRIEFING FORM**

**PERSON IN CHARGE:**

**CONTRACTOR:**

**EMERGENCY INFORMATION**

**CONTROL:** 730-1219  **EMERGENCY:** 635-9519

**911 ADDRESS (Nearest To Worksite):**

(If None - LIST DIRECTIONS TO SITE ON BACK)

**TOWN:**

**FIRST AID KIT:** Y / N  **FIRE EXT:** Y / N  **-cell service Y / N**  **RADIO CHANNEL:**

**NOTE:** Minimum approach distances to energized conductors for persons other than qualified line clearance arborists & qualified line clearance arborist trainees is as follows:

<table>
<thead>
<tr>
<th>Nominal Voltage (in Kilovolts kV)</th>
<th>Minimum Approach Distance Phase to Phase</th>
<th>Elevation Factor Sea Level-5000 ft. MAD meters</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.051 to 0.3</td>
<td>Avoid Contact</td>
<td></td>
</tr>
<tr>
<td>0.301 to 0.75</td>
<td>1' 0&quot;&quot;</td>
<td>0.33</td>
</tr>
<tr>
<td>0.751 to 15.0</td>
<td>2' 05&quot;&quot;</td>
<td>0.70</td>
</tr>
<tr>
<td>15.1 to 36.0</td>
<td>3' 00&quot;&quot;</td>
<td>0.91</td>
</tr>
<tr>
<td>36.1 to 46.0</td>
<td>3' 04&quot;&quot;</td>
<td>1.01</td>
</tr>
</tbody>
</table>

**JOB BRIEFING REQUIREMENTS**

**ENERGY SOURCE CONTROLS**

- Nominal Voltage
- Min. Approach Dist.
- Substation
- Protective Device
- Energized Equipment

**JOB HAZARDS REVIEW**

- Electricity
- Utility Hardware Condition
- Sagging Conductors
- Vegetation Touching Conductors
- Vegetation w/in Min. Approach Dist.
- Tree Condition
- Included Bark
- Overhangs/Deadwood

**WORK PROCEDURES**

- Assign Tasks
- Communications
- Establish Work Zone
- Plan Escape Routes
- Identify Drop Zones
- Traffic Control Setup
- Distribution Work
- Transmission Work
- Storm Response

**SPECIAL PRECAUTIONS**

- Equipment Safety
- On Site First Aid/CPR
- Public/Parking Safety
- Weather Precautions
- Fire Suppression
- Overhead Hazards
- Terrain Hazards
- Special Protection Areas

**PERSONAL PROTECTIVE EQUIPMENT (PPE) REVIEW**

- Hard Hat
- Safety Glasses
- Re-inforced Toes
- Gloves

**NOTE:** IS THE CREW ABLE TO SAFELY PERFORM THE JOB?  ☐ YES  ☐ NO

**IF THE JOB CANNOT BE PERFORMED SAFELY --- STOP THE JOB --- AND ASK FOR ASSISTANCE!**
WHO CAN CLIMB:

CREW MEMBER QUALIFICATIONS:

CAPABILITIES OF EACH CREW’S EQUIPMENT:

IDENTIFY/DEFINE WORK ZONE(S):  

ESTABLISH DROP ZONE(S):

JOB SCOPE OF EACH CREW:  
( WHO is doing WHAT and HOW)

SPECIAL DISCUSSION
(To be conducted whenever multiple crews are working together or in close proximity to one another)

AUDIT REVIEW

FOLLOW UP REVIEW - COMMENTS:

REVIEWED BY SUPERVISOR:  
DATE:

REVIEWED BY VEC:  
DATE:

PHONETIC ALPHABET

A  ALPHA  N  NOVEMBER
B  BRAVO  O  OSCAR
C  CHARLIE  P  PAPA
D  DELTA  Q  QUEBEC
E  ECHO  R  ROMEO
F  FOXTROT  S  SIERRA
G  GOLF  T  TANGO
H  HOTEL  U  UNIFORM
I  INDIA  V  VICTOR
J  JULIET  W  WHISKEY
K  KILO  X  X-RAY
L  LIMA  Y  YANKEE
M  MIKE  Z  ZULU

REMINDER:

ASKING US TO OVERLOOK A SINGLE SAFETY VIOLATION WOULD BE ASKING US TO COMPROMISE THE VALUE WE HAVE PLACED ON YOUR LIFE!

ALWAYS USE 3 WAY COMMUNICATION
### Vermont Electric Cooperative, Inc.
#### Qualified Line Clearance Contractor
### Safety Observation Report

**Date:** ______________________________  **Time** __________________

**Description of Job Being Performed:** _______________________________________________________________

**Location of Observation:** __________________________  **By:** __________________________

**Crew Foreperson Observed:** __________________________  
**Worker 1 Observed:** __________________________

**Worker 2 Observed:** __________________________

**Worker 3 Observed:** __________________________

---

**PERSONAL SAFETY**

<table>
<thead>
<tr>
<th>Ref. 1910</th>
<th>Crew Foreperson</th>
<th>Worker 1</th>
<th>Worker 2</th>
<th>Worker 3</th>
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<tbody>
<tr>
<td>1. Hard Hat</td>
<td>.135</td>
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<tr>
<td>2. Safety Glasses</td>
<td>.133</td>
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<tr>
<td>3. Appropriate Workboots</td>
<td>.136</td>
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<td>□</td>
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<tr>
<td>4. Gloves</td>
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<tr>
<td>5. Appropriate Clothing</td>
<td>.269 (l)</td>
<td>□</td>
<td>□</td>
<td>□</td>
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<tr>
<td>6. Fall Protection</td>
<td>.269(r)</td>
<td>□</td>
<td>□</td>
<td>□</td>
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<tr>
<td>7. Safety Vest In Work Zone</td>
<td>MUTCD</td>
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<td>8. Face Shield or Goggles</td>
<td>.133</td>
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<td>9. Hearing Protection</td>
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<td>10. Personal Flotation Vest</td>
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<tr>
<td>11. Appropriate Leg Protection</td>
<td>.269 (g)</td>
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<tr>
<td>12. Required Training Current</td>
<td>App A</td>
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<td>□</td>
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<tr>
<td>13. Qualification Forms On File</td>
<td>App A</td>
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</tr>
</tbody>
</table>

**14. Knowledge of**

- a) Nominal Voltage | .269 (r) | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
- b) Min. Approach Distances. | .269 (r) | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
- c) Distinguish Live Parts | .269 (r) | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |

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**WORK AREA SAFETY**

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<tr>
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<td>b) Procedures</td>
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<tr>
<td>c) Special Precautions</td>
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<tr>
<td>d) Personal Protective Equip</td>
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<td></td>
<td></td>
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<tr>
<td>e) Energy Source Control</td>
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</tbody>
</table>
Vermont Electric Cooperative, Inc.
Qualified Line Clearance Contractor
Safety Observation Report

16. Safe & Clean Working Environment □ □ □ □ _______________
17. Insulated Tools Clean & Serviceable .269 (j) □ □ □ □ _______________
18. First Aid Kit .151 □ □ □ □ _______________
19. Fire Extinguisher .157 □ □ □ □ _______________

<table>
<thead>
<tr>
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<td>21. Arrival Called into Dispatch</td>
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<td>22. Wheel Chocks Set</td>
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<td>25. Pre-Flight Aerial Lift Checks</td>
<td>.67</td>
<td>□</td>
<td>□</td>
<td>□</td>
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<th>WORK METHODS OBSERVED</th>
<th>Ref. 1910</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>26. 2nd Person Present within voice</td>
<td>.269 (r)</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>_______________</td>
</tr>
<tr>
<td>27. Use of Insulated Tools</td>
<td>.269 (r)</td>
<td>□</td>
<td>□</td>
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<td>_______________</td>
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<tr>
<td>28. Use of Aerial Lifts</td>
<td>.269 (r)</td>
<td>□</td>
<td>□</td>
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<tr>
<td>29. Tree Felling</td>
<td>.269 (r)</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>_______________</td>
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<tr>
<td>30. Pruner Operations</td>
<td>.269 (r)</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>_______________</td>
</tr>
<tr>
<td>31. Climbing Trees/Pre-climb Inspection</td>
<td>.269 (r)</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>_______________</td>
</tr>
<tr>
<td>32. Use of Power Saws</td>
<td>.269 (r)</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>_______________</td>
</tr>
<tr>
<td>36. Use of Brush Chippers</td>
<td>.269 (r)</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>_______________</td>
</tr>
<tr>
<td>37. Proper Roping and Rigging</td>
<td>.269 (r)</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>_______________</td>
</tr>
</tbody>
</table>

Ref. # Description Of Discrepancy (Include Employee Name For Personal Safety Issues)
Exhibit 7
Herbicide Application
Property Owner Notification Log

Line Name: ____________________ Structure No.'s: ____________________

Town: ______________________________ Road: _______________________

Contractor: ________________________ Crew Member: ________________________

Property Owner: __________________________ Phone: __________________

Date of Contact: _________ Time of Contact: _________ Form of Contact: _________

Summary of Conversation:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Actions Taken: ______________________________________
________________________________________________________________________
________________________________________________________________________

Additional Comments: ____________________________
________________________________________________________________________
________________________________________________________________________
PART TWO:
HERBICIDE ACCIDENTAL RELEASE MEASURES

I. SCOPE

VEC Operating Procedure No. 27 – Part Two: Herbicide Accidental Release Measures, establishes a procedure for personal precautions, controlling, containing, clean up and reporting of any accidental release of pesticide during application for vegetation maintenance on Vermont Electric Cooperative, Inc. (herein referred to as VEC) transmission and distribution line rights-of-ways in accordance with the State of Vermont, Title 6 V.S.A., Chapter 87.

Measures taken in response to an accidental release clean up will conform to EPA Worker Protection Standard 40 CFR Part 170.240 regarding Personal Protective Equipment as follows:

170.240 Personal protective equipment.

(a) Requirement. Any person who performs tasks as a pesticide handler shall use the clothing and personal protective equipment specified on the labeling for use of the product.

(b) Definition. (1) Personal protective equipment (PPE) means devices and apparel that are worn to protect the body from contact with pesticides or pesticide residues, including, but not limited to, coveralls, chemical-resistant suits, chemical-resistant gloves, chemical-resistant footwear, respiratory protection devices, chemical-resistant aprons, chemical-resistant headgear, and protective eyewear.

Measures taken in response to an accidental release clean up will conform to Vermont Act 31, relating to Community and Worker Right-to-Know of 1985 as follows:
1. Emergency Actions

A person responsible for the application, storage or handling of a pesticide upon knowledge of an accident involving such pesticide shall immediately take actions intended to protect human health and the environment, including but not limited to emergency containment measures and notification as described within this section.

2. Emergency Notification

a. All Class A, B and C Dealers, certified commercial and noncommercial applicators, certified private applicators, licensed pesticide applicator companies, pesticide producing establishments and persons working for licensed applicator companies under the supervision of a certified applicator, shall report pesticide accidents immediately by telephone to either the:

Vermont Department of Agriculture, Food and Markets Plant Industry Section
116 State Street, Drawer 20
Montpelier, VT 05620-2901
(802) 828-2431

OR

Vermont Department of Public Safety
Waterbury State Complex
103 South Main Street
Waterbury, VT 05676
1-800-641-5005 (operating 24 hours; 7 days/week)
II. ACCIDENTAL RELEASE MEASURES

In the event of an accidental herbicide release, stabilize the situation. If the product is leaking from a drum or tank, then action shall be taken to stop this flow by changing the position of the barrel or tank, shutting off a valve or up-righting the container. Isolate and dike the spill area preventing material from entering sewers, waterways or low areas. The following are the Manufacturer's MSDS directions for accidental release clean up.

**FOSAMINE AMMONIUM:**
(Krenite S)

**ACCIDENTAL RELEASE CLEAN UP**

Soak up spill with sawdust, sand, oil dry or other absorbent material. Shovel or sweep up. Never return to container for reuse. Scoop the absorbed material into bags or boxes with a plastic or aluminum shovel.

If spill area is on ground near valuable plants or trees, remove top 2 inches of soil after initial cleanup.

**GLYPHOSATE:**
(Accord Concentrate Herbicide)

**ACCIDENTAL RELEASE CLEAN UP**

Absorb spills with an inert absorbent material such as Hazorb, Zorball, sand or dirt.

**IMAZAPYR:**
(Arsenal/Stalker/Habitat)

**ACCIDENTAL RELEASE CLEAN UP**
Absorb spills with a suitable absorbent material. Place into suitable containers for disposal in a licensed facility. After decontamination, spill area can be washed with water. Collect wash water for approved disposal.

**METSULFURON METHYL:**  
*(Escort XP)*

**ACCIDENTAL RELEASE CLEAN UP**
Shovel or sweep up.

**TRICLOPYR:**  
*(Garlon 3A & 4)*

**ACCIDENTAL RELEASE CLEAN UP**
Absorb spills with an inert absorbent material such as Hazorb, Zorball, peat moss, commercial sweeping compound or similar absorbent material. If these are not available use absorbing agents such as kitty litter, sand, clay or topsoil, sand or dirt. Store collected absorbed material in secure containers until safe disposal can be arranged. Small spills on topsoil should be worked into the soil and allowed to degrade under natural conditions.

**III. FIRST AID**

In the event of herbicide poisoning or contamination, emergency measures described on the product label shall be taken immediately. As soon as these instructions have been completed, a doctor should be notified. It is important to provide a label for the doctor’s reference so he will be able to determine the appropriate treatment.

The following is the contact information for the Vermont Poison Control Center:

Vermont Poison Center  
Fletcher Allen Health Care  
111 Colchester Ave.  
Burlington, Vermont 05401  
(802) 658-3456
IV. REPORTING RESPONSIBILITIES

In the event of an accidental herbicide release, contact the following:

Vermont Department of Agriculture:
802-828-2431 (during work hours)

Vermont Department of Public Safety:
1-800-641-5005 (after work hours)

VEC Manager of Forestry, Sara Packer:
Office 802-730-1104
Pager 802-741-1972
Cell 802-254-1458

VEC Chief Operating Officer, Jeffrey Wright:
Office 802-730-1170
Pager 802-741-1370
Cell 802-730-4233
Revision History

<table>
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<th>Rev No.</th>
<th>Date</th>
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Approval (Latest Revision)

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<th>Approved by</th>
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<td>X:</td>
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Distribution List (Hard Copy)

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<th>Company</th>
<th>Title</th>
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<tbody>
<tr>
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Distribution List (Email “PDF” Copy)

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<tr>
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Procedure Review Schedule
Refer to VEC Operating Procedure OP-51 for the operating procedure review schedule.
### Appendix E

**VERMONT ELECTRIC COOPERATIVE, INC.**

**VEGETATION MANAGEMENT FIELD INSPECTION REPORT**

<table>
<thead>
<tr>
<th>CONTRACTOR:</th>
<th>FOREPERSON:</th>
<th>DATE:</th>
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<tbody>
<tr>
<td>SUBSTATION:</td>
<td>DISTRICT:</td>
<td>TOWN(S):</td>
</tr>
<tr>
<td>ROAD(S):</td>
<td>INSPECTOR:</td>
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#### GENERAL PERFORMANCE -VEC SPECIFICATIONS

<table>
<thead>
<tr>
<th>0 = Not Checked-N/A</th>
<th>1 = Poor</th>
<th>2 = Fair</th>
<th>3 = Good</th>
<th>4 = Very Good</th>
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</thead>
<tbody>
<tr>
<td>* More than one rating of 1 requires Contractor signature and corrective action plan</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper cuts to outside branch collar, not flush or stubs, correct angle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cuts to proper laterals, directional pruning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantity removed no more than 1/3 crown, only healthy trees pruned</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No bark rips, tears, excess wounding</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No branches, limbs or tops left hanging in trees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tree shape and overall appearance acceptable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clearance to specifications (Consider member limitation only if noted on maintenance report)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All deadwood and weakened tree parts removed if posing threat to primary line</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Danger trees effectively identified and removed</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Stump height 3 inches or less and cut parallel with ground grade (no &quot;pongee stakes&quot;)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disposal procedures consistent with specifications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Windrows 4' high or less &amp; not interfering w/ roads, trails, streams or property lines; 20' firebreak every 500'</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Preservation of low-growing desirable species</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vines cut at ground level</td>
<td></td>
<td></td>
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<tr>
<td>Water quality protection, no discharge of organic material or petroleum products; water supplies undisturbed</td>
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<tr>
<td>Fences &amp; stonewalls preserved or restored, gates &amp; fences kept closed, blazed property lines maintained</td>
<td></td>
<td></td>
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<tr>
<td>Erosion Control - rutting avoided or repaired, waterbars installed where necessary</td>
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<td></td>
</tr>
<tr>
<td>Housekeeping, work site cleanup</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copy of clearance standards and specifications</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance reports complete and legible</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Invoices accurately reflect work conducted on the ground</td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Project map marked and current</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Certified herbicide applicator w/in voice command of physical herbicide application</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Herbicide application certification up to date and present</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Herbicide application to spec (entire length/width of identified treatment area is treated &amp; buffers maintained)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Appropriate herbicide equipment/container storage (spill/leak proof &amp; lockable, secured when unattended)</td>
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<td></td>
<td></td>
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<tr>
<td>Herbicide permit, label(s) and material safety data sheet(s) on site</td>
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<tr>
<td>Herbicide spill kit, spill response instructions, drinking water and wash water on site</td>
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</tr>
<tr>
<td>Herbicide application property owner notification log current, legible and adequate</td>
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<td></td>
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</tbody>
</table>

#### COMMENTS

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Contractor Signature: ____________________ Contract Supervisor Signature: ____________________
KNOW ALL PEOPLE BY THESE PRESENTS, THAT I/we ___________________________ (hereinafter called the “Grantor,” whether one or more), for and in consideration of the sum of One Dollar and other valuable consideration paid by Vermont Electric Cooperative, Inc., a corporation duly organized under the laws of the State of Vermont (hereinafter together called the Grantees), the receipt whereof is hereby acknowledged, do hereby GIVE, GRANT, BARGAIN, SELL and OR CONVEY unto the said Grantee, their successors and assigns a utility easement, fifty (50) feet in width, in, over, above, across, through and under Grantor’s land, together with the right to enter upon the land of the Grantor for the purposes of exercising any of the rights herein granted, said land being situated in the Town of __________________, State of Vermont, more particularly described as follows:

Being the same land and premises conveyed to the Grantor herein by ___________________________ and recorded in Book__________, Page ___________ of ________________, State of Vermont, consisting of _____acres, more or less, and bound on the north by land now or formerly owned by _______________________________, on the east by land now or formerly owned by ______________________________, on the south by land now or formerly owned by ______________________________, on the west by land now or formerly owned by ______________________________.

The easement shall be described as follows: Grantees may place, construct, reconstruct, operate, repair, maintain, improve, mark, replace therefrom, and in or upon all streets, roads or highways abutting said land, electric, communications and data transmission and distribution systems consisting of poles, wires, cables, conduits, equipment and other fixtures and appurtenances used or adopted for the purpose, upon, over, through and under the surface of the land owned by the Grantor. Grantees may also cut and prune and apply herbicide to all trees and vegetation to the extent necessary as determined by the Grantees to protect the said systems and keep the systems clear of the growth. Together, also, with the permanent right at any and all times to enter on adjacent lands of the Grantor and to cut or prune and remove such trees growing outside the limits of the Easement Area (Danger trees) which may, in the opinion of the Grantees interfere with or be likely to interfere with the successful operation of the facilities now or hereafter to be constructed on said Easement Area. The decision for final location of the easement shall be made by the Grantees and shall become permanent upon the construction of utility Systems.

The Grantor covenants for themselves, their heirs and assigns as follows: 1) not to place any structures within twenty-five (25) feet of the Systems which shall establish the center of the easement herein conveyed; 2) that no obstructions of any kind shall be allowed or suffered by the Grantor, their heirs and or assigns in or upon the easement herein conveyed; 3) no grade changes in and to the herein conveyed easement shall be made without the prior written consent of Grantees; and 4) no trees or other vegetation which grow to a mature height of more than 15 feet shall be planted within the herein conveyed easement and no trees or vegetation which grow to a mature height of less than 15 feet shall be planted within 15 feet of a pole.

TO HAVE AND TO HOLD the above granted rights and easements, with all privileges and appurtenances thereunto belonging, unto the said Grantees, their successors and assigns forever, to them and their own proper use, benefit and behoof. Grantor covenants with the Grantees that at and until the ensealing of these presents the Grantor is well seized of said premises as a good indefeasible estate in fee simple, and has good right to sell and convey the rights and easements aforesaid in the manner and form above written, and that the same are free from all encumbrances whatsoever, and furthermore, the Grantor agrees to warrant and defend the same to the Grantees and their successors and assigns forever against all claims and demands whatsoever.

IN WITNESS WHEREOF, the undersigned has set their hand and seal this _________ day of ____________________, ____________ year.

In the presence of:

Witness ___________________________________________ Grantor ____________________________

Witness ___________________________________________ Grantor ____________________________

State of ___________________________________________

___________________________ County, ___________

At _________________, in said County, on this ___ day of _____________, ____________, personally appeared ______________________ and he/she acknowledged this instrument, by him/her sealed and subscribed, to be his/her free act and deed.

Before me,

_____________________________________
Notary Public
My Commission Expires:

To be completed by VEC

W.O. # __________________________ Pole # ______________ Acct. # __________________________

Name on Acct __________________________________ 911 Address _______________________________
## Appendix G

### Incompatible Vegetation

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Mature Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ash (White, Green)</td>
<td>Fraxinus</td>
<td>50 - 80'</td>
</tr>
<tr>
<td>Aspen (Bigtooth, Quaking)</td>
<td>Populus</td>
<td>40 - 70'</td>
</tr>
<tr>
<td>Beech (American, European)</td>
<td>Fagus</td>
<td>50 - 80'</td>
</tr>
<tr>
<td>Birch (Black, Yellow, White, Grey, River)</td>
<td>Betula</td>
<td>30 - 70'</td>
</tr>
<tr>
<td>Boxelder</td>
<td>Acer</td>
<td>40 - 70'</td>
</tr>
<tr>
<td>Butternut</td>
<td>Juglans</td>
<td>40 - 70'</td>
</tr>
<tr>
<td>Catalpa</td>
<td>Catalpa</td>
<td>50 - 90'</td>
</tr>
<tr>
<td>Cedar (White)</td>
<td>Thuja</td>
<td>40 - 60'</td>
</tr>
<tr>
<td>Cherry (Black, Pin)</td>
<td>Prunus</td>
<td>50 - 90'</td>
</tr>
<tr>
<td>Common Witchhazel</td>
<td>Hamamelis</td>
<td>20 - 30'</td>
</tr>
<tr>
<td>Cottonwood</td>
<td>Populus</td>
<td>75 - 100'</td>
</tr>
<tr>
<td>Eastern Redbud</td>
<td>Cercis</td>
<td>20 - 30'</td>
</tr>
<tr>
<td>Elm (American, Chinese)</td>
<td>Ulmus</td>
<td>40 - 90'</td>
</tr>
<tr>
<td>Fir (Balsam, White)</td>
<td>Abies</td>
<td>50 - 80'</td>
</tr>
<tr>
<td>Ginko</td>
<td>Ginko</td>
<td>50 - 80'</td>
</tr>
<tr>
<td>Hemlock</td>
<td>Tsuga</td>
<td>50 - 80'</td>
</tr>
<tr>
<td>Hickory (Bitternut, Pignut, Shagbark)</td>
<td>Carya</td>
<td>50 - 80'</td>
</tr>
<tr>
<td>Honeylocust</td>
<td>Gleditsia</td>
<td>30 - 70'</td>
</tr>
<tr>
<td>Hop Hornbeam</td>
<td>Ostrya</td>
<td>30 - 50'</td>
</tr>
<tr>
<td>Juniper (Eastern Red Cedar)</td>
<td>Juniperus</td>
<td>40 - 50'</td>
</tr>
<tr>
<td>Larch</td>
<td>Larix</td>
<td>40 - 80'</td>
</tr>
<tr>
<td>Linden (American, Littleleaf)</td>
<td>Tilia</td>
<td>60 - 80'</td>
</tr>
<tr>
<td>Locust (Black)</td>
<td>Robinia</td>
<td>50 - 80'</td>
</tr>
<tr>
<td>Lombardy Poplar</td>
<td>Populus</td>
<td>40 - 50'</td>
</tr>
<tr>
<td>Maple (Sugar, Red, Silver, Norway*)</td>
<td>Acer</td>
<td>40 - 90'</td>
</tr>
<tr>
<td>Mountainash (European, Korean)</td>
<td>Sorbus</td>
<td>20 - 50'</td>
</tr>
<tr>
<td>Oak (Red, White, Black, Pin)</td>
<td>Quercus</td>
<td>50 - 90'</td>
</tr>
<tr>
<td>Pine (White, Red, Scotch, Austrian)</td>
<td>Pinus</td>
<td>40 - 100'</td>
</tr>
<tr>
<td>Spruce (Red, Black, White, Blue, Norway)</td>
<td>Picea</td>
<td>50 - 90'</td>
</tr>
<tr>
<td>Sycamore</td>
<td>Platanus</td>
<td>75 - 100'</td>
</tr>
<tr>
<td>Walnut (Black)</td>
<td>Juglans</td>
<td>50 - 75'</td>
</tr>
<tr>
<td>Willow (Weeping, White)</td>
<td>Salix</td>
<td>40 - 90'</td>
</tr>
</tbody>
</table>

## Appendix H

### Compatible Vegetation

**Wire Zone (area under the conductors and 15 feet outside of the conductors on each side)**

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Mature Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Elder</td>
<td>Sambucus</td>
<td>5 - 12'</td>
</tr>
<tr>
<td>Azalea (Pinksterbloom, Swamp)</td>
<td>Rhododendron</td>
<td>2 - 10'</td>
</tr>
<tr>
<td>Barberry (Common, Japanese*)</td>
<td>Berberis</td>
<td>3 - 10'</td>
</tr>
<tr>
<td>Bearberry</td>
<td>Arctostaphylos</td>
<td>6 -12'</td>
</tr>
<tr>
<td>Black Elderberry</td>
<td>Sambucus</td>
<td>12 -15'</td>
</tr>
<tr>
<td>Canadian Yew</td>
<td>Taxus</td>
<td>3 - 6'</td>
</tr>
<tr>
<td>Chokeberry (Red, Black)</td>
<td>Aronia</td>
<td>6 - 10'</td>
</tr>
<tr>
<td>Common Ninebark</td>
<td>Physocarpus</td>
<td>5 - 10'</td>
</tr>
<tr>
<td>Common Privet</td>
<td>Ligustrum</td>
<td>12 - 15'</td>
</tr>
<tr>
<td>Common Winterberry/Inkberry</td>
<td>Ilex</td>
<td>6 - 10'</td>
</tr>
<tr>
<td>Dogwood (Silky, Roughleaf, Redosier)</td>
<td>Cornus</td>
<td>6 -15'</td>
</tr>
<tr>
<td>Flowering Crab Apple</td>
<td>Malus</td>
<td>8 - 12'</td>
</tr>
<tr>
<td>Hazelnut (American, Beaked)</td>
<td>Corylus</td>
<td>8 - 15'</td>
</tr>
<tr>
<td>Honeysuckle*</td>
<td>Lonicera</td>
<td>4 - 8'</td>
</tr>
<tr>
<td>Hydrangea (Smooth, Bigleaf, Oakleaf)</td>
<td>Hydrangea</td>
<td>3 - 8'</td>
</tr>
<tr>
<td>Junipers (Common, Creeping)</td>
<td>Juniperus</td>
<td>1 - 10'</td>
</tr>
<tr>
<td>Laurel (Mountain, Sheep)</td>
<td>Kalmia</td>
<td>1 - 15'</td>
</tr>
<tr>
<td>Leatherleaf</td>
<td>Chamaedaphne</td>
<td>2 - 5'</td>
</tr>
<tr>
<td>Lilac (Common, Late)</td>
<td>Syringa</td>
<td>6 - 15'</td>
</tr>
<tr>
<td>Mountain Holly</td>
<td>Nemopanthus</td>
<td>6 - 10'</td>
</tr>
<tr>
<td>Northern Bayberry</td>
<td>Myrica</td>
<td>5 - 12'</td>
</tr>
<tr>
<td>Rhododendron</td>
<td>Rhododendron</td>
<td>3 - 6'</td>
</tr>
<tr>
<td>Roses</td>
<td>Rosa</td>
<td>2 - 10'</td>
</tr>
<tr>
<td>Rubus (Rasberries, Blackberries, Dewberries)</td>
<td>Rubus</td>
<td>3 - 10'</td>
</tr>
<tr>
<td>Smokebush</td>
<td>Cotinus</td>
<td>10 - 15'</td>
</tr>
<tr>
<td>Spicebush</td>
<td>Lindera</td>
<td>6 - 12'</td>
</tr>
<tr>
<td>Spirea</td>
<td>Spirea</td>
<td>3 - 8'</td>
</tr>
<tr>
<td>Sweetfern</td>
<td>Comptonia</td>
<td>2 - 4'</td>
</tr>
<tr>
<td>Viburnum (Arrowwood, Cranberry)</td>
<td>Viburnum</td>
<td>6 - 15'</td>
</tr>
</tbody>
</table>

* Indicates species with invasive tendencies in the state of Vermont

**Border Zone (area outside the wire zone, extending to the outside edge/treeline on each side)**

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Mature Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maple (Mountain, Striped)</td>
<td>Acer</td>
<td>10 - 30'</td>
</tr>
<tr>
<td>American Hornbeam</td>
<td>Carpinus</td>
<td>20 - 30'</td>
</tr>
<tr>
<td>American Mountain Ash</td>
<td>Sorbus</td>
<td>30 - 40'</td>
</tr>
<tr>
<td>Apple (Common, Crab)</td>
<td>Malus</td>
<td>10 - 30'</td>
</tr>
<tr>
<td>Autumn-olive</td>
<td>Elaeagnus</td>
<td>12 - 18'</td>
</tr>
<tr>
<td>Buckthorn (Common, Glossy*)</td>
<td>Rhamnus</td>
<td>12 - 25'</td>
</tr>
<tr>
<td>Common Chokecherry</td>
<td>Prunus</td>
<td>20 - 30'</td>
</tr>
<tr>
<td>Dogwood (Gray, Pagoda, Flowering)</td>
<td>Cornus</td>
<td>10 - 30'</td>
</tr>
<tr>
<td>Eastern Redbud</td>
<td>Cercis</td>
<td>20 - 30'</td>
</tr>
<tr>
<td>Hawthorn</td>
<td>Crataegus</td>
<td>15 - 25'</td>
</tr>
<tr>
<td>Hydrangea (Panicle)</td>
<td>Hydrangea</td>
<td>10 - 20'</td>
</tr>
<tr>
<td>Japanese Tree Lilac</td>
<td>Syringa</td>
<td>20 - 30'</td>
</tr>
<tr>
<td>Serviceberry/Shadbush</td>
<td>Amelanchier</td>
<td>15 - 25'</td>
</tr>
<tr>
<td>Speckled Alder</td>
<td>Alnus</td>
<td>15 - 25'</td>
</tr>
<tr>
<td>Sumac</td>
<td>Rhus</td>
<td>15 - 25'</td>
</tr>
<tr>
<td>Willow (Pussy, Purple, Shining)</td>
<td>Salix</td>
<td>13 - 25'</td>
</tr>
<tr>
<td>Winged Euonymus/Burning Bush</td>
<td>Euonymus</td>
<td>10 - 20'</td>
</tr>
<tr>
<td>Witchhazel (Coomon, Vernal)</td>
<td>Hamamelis</td>
<td>10 - 30'</td>
</tr>
</tbody>
</table>

### Outage History Report

<table>
<thead>
<tr>
<th>Outage</th>
<th>Time Off</th>
<th>Time On</th>
<th>Duration</th>
<th>Type</th>
<th>Map Loc.</th>
<th>Cause</th>
<th>Equip</th>
<th>Sub</th>
<th>Feeder</th>
<th>Phase</th>
<th>Line Sector</th>
<th>Nbr Out</th>
<th>Weather</th>
<th>Temp</th>
<th>Windy</th>
<th>Major Storm</th>
</tr>
</thead>
</table>

---

**Appendix I**
MEMBER NAME _______________________________________

DATE _________________________

DATE/TIME OFF ____________________ DATE/TIME ON __________________

METER LOCATION

□ HOUSE/STRUCTURE  □ POLE  □ 5 WIRE LOOP (MOP)  □ OTHER

WIRE TYPE

□ OVERHEAD  □ PRIMARY  □ SERVICE WIRE

SIZE _______ □ BARE WIRE  □ TREE WIRE  □ COATED  □ OPEN WIRE  □ TRIPLEX

□ ALUMINUM  □ COPPER  □ AAA  □ ACSR  □ OTHER ______________________________

□ UNDERGROUND  □ DIRECT BURIED  □ IN CONDUIT  □ 175 ML  □ 220 ML  □ SIZE _______

DEFINITION OF TROUBLE

□ 1 TREE  □ 2 WEATHER  □ 3 VEC INITIATED  □ 4 EQUIPMENT FAILURE  □ 5 OPERATOR ERROR

□ 6 ACCIDENT  □ 7 ANIMAL  □ 8 POWER SUPPLIER  □ 9 NON-UTILITY POWER SUPPLIER

□ 10 OTHER ___________________________________________ □ 11 UNKNOWN

SUPPORTING INFORMATION

***Only complete section that corresponds with the definition of trouble checked off above***

1 TREE: SPECIES _________________________ DIAMETER _______ DIST. FM. CENTER POLE LINE _______

□ TREE  □ BRANCH(ES)  □ DEAD  □ ALIVE  □ LINE DOWN  □ HARD CONTACT

□ INSIDE ROW  □ OUTSIDE ROW  □ SNAPED OFF  □ UPROOTED  □ BRUSHING CONDUCTORS

□ WIND  □ LIGHTNING  □ SNOW/ICE (UN)LOADING  □ LINE MAINT. ERROR

ROW CONDITION  □ VERY POOR  □ POOR  □ AVERAGE  □ GOOD  □ VERY GOOD

2 WEATHER: □ WIND  □ RAIN  □ LIGHTNING  □ SNOW  □ ICE  □ OTHER _________________________

3 VEC INITIATED: □ ROW MAINT.  □ SUB MAINT.  □ LINE MAINT.  □ MEMBER REQUEST

□ STORM CLEAN-UP  □ OTHER

4 EQUIP. FAILURE: □ CUT-OUT  □ INSULATOR  □ TRANSFORMER  □ REGULATOR  □ CT

□ DISCONNECT  □ CONDUCTOR  □ RECLOSER  □ BREAKER  □ SWITCH  □ BYPASS  □ PT

□ ARRESTER  □ OTHER __________________________

8 POWER SUPPLIER: □ CVPS  □ GMP  □ VELCO  □ HYDRO QUEBEC

5, 6, 7, 9 OR 10: TYPE/EXPLANATION ____________________________________________________________

FOLLOW UP: □ SERVICE ORDER  □ WORK ORDER  □ ROW CREW  □ MEMBER CONFLICT

□ ADDITIONAL EQUIPMENT/TYPES  □ OTHER __________________________

□ INVOICE MEMBER  □ YELLOW SHEET COMPLETED  □ ESTIMATED # MEMBERS AFFECTED

SYSTEM OPERATOR _________________________ CREW _________________________

TIME DISPATCHED ________________ LOCATION _________________________ WEATHER _________________________

REMARKS ____________________________________________________________________________________


