

Vegetation Management Plan 2018 - 2022

Holyoke Gas & Electric
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1 Introduction

The purpose of this Vegetation Management Plan (VMP) is to outline the City of Holyoke Gas and Electric Department (hereafter referred to as “HG&E”) plan for managing vegetation during the five-year period 2018 through 2022 in compliance with the Rights-of-Way (ROWs) Management regulations 333 CMR 11.00 (see *Appendix B*). This VMP addresses the HG&E plan for managing vegetation along rights-of-way associated with their gas and electrical transmission and distribution operations as well as the approximately 8 miles of ROWs along the three canals in Holyoke, Massachusetts managed by HG&E. In addition, included in *Appendix A* of this VMP is additional guidance intended to meet the requirements of the NERC Standard Compliance Template FAC-003-1 Requirement 1 for vegetation management specifically for transmission lines. This information is included to satisfy the ISO New England self-certification for the compliance with the NERC requirement cited above. The North American Electric Reliability Corporation (NERC) Transmission Vegetation Management Plan (TVMP) is included as *Appendix A* to consolidate HG&E vegetation management-related documentation.

In addition to the utility ROWs listed above, the VMP addresses vegetation management activities in ROWs associated with public pathways owned and maintained by HG&E and located in Lower Riverside Park, and Gatehouse Park in South Hadley, Massachusetts.

2 Goals and Objectives

2.1 Goals of the Vegetation Management Plan

The primary goals of this utility right-of-way VMP are the control of vegetation and the establishment of standard operating procedures relative to vegetation management to maintain the safe and uninterrupted electric, gas and the hydropower systems of HG&E. The provision of physical and visual access to HG&E equipment and lines is also necessary to permit routine and emergency maintenance and operation in order to provide continuous and reliable utility service. Additional goals for ROWs in Lower Riverside Park and Gatehouse Park include removal and control of nuisance and invasive species to provide safe access and passage for the public utilizing the parks.

An additional goal of this VMP is that the vegetation management practices along all HG&E ROWs are conducted in the most environmentally sound manner through an integrated vegetation management (IVM) program that will minimize the reliance upon herbicides and encourage the growth of herbaceous species within the ROWs.

This VMP is a guidance document that forms the basis for the Yearly Operational Plans (YOPs). A YOP will be prepared for each year of the VMP to provide a detailed description of the vegetation management activities to be conducted in that calendar year.

2.2 Objectives of the Vegetation Management Plan

The primary objectives of the VMP are:

- the selective elimination of woody vegetation that has the potential to fault overhead conductors on the ROW, causing circuits to open and leading to interruptions in electrical service;
- the maintenance of a required low-growth area around gas distribution vaults in accordance with requirements of the Massachusetts Department of Public Utilities;
- the control of vegetation to provide physical and visual access to above-ground lines and equipment and the canal banks for inspection, maintenance and repair;
- the selective elimination of woody vegetation to protect the structural integrity of the canal walls by preventing root systems from penetrating and damaging the masonry walls of the canals, which could impact power generation; and
- control of nuisance vegetation (e.g., poison ivy), invasive species, and maintenance of low-growth areas along pathway ROWs in Lower Riverside Park and Gatehouse Park to provide safe access and passage for the public and emergency vehicles.

The program -outlined in this VMP is also designed to maintain an acceptable appearance of the rights-of-way, as well as minimize erosion and inhibit the re-establishment of target tree species by encouraging the development of ground cover and low shrubs.

The management program will accomplish these objectives in a cost effective manner with appropriate regard for worker safety, protection of public health and the environment from unreasonable adverse effects, and in compliance with all applicable Local, State, and Federal laws and regulations.

In order of preference by HG&E, this VMP will involve the use of mechanical, chemical, and cultural control techniques to control undesirable vegetation in an ecologically sound manner. The choice of the target vegetation and appropriate control technique will be the core of the program. It is the intent of HG&E to use only herbicides and application methods recommended for use in sensitive areas, as per 333 CMR 11.04 (d), on the full length and width of all ROW areas it shall treat.

This VMP is intended to provide State and Local officials, and any other interested parties, a basic source of information on the HG&E VMP. This document is further designed to provide overall guidance for the licensed and certified applicators working on behalf of the HG&E to implement the VMP.

2.3 Location of Rights-of-Way

The ROWs for electrical transmission and distribution lines are primarily located within the City of Holyoke, with a limited amount of lines extending into the adjacent City of Chicopee. Approximately 906 pole miles of transmission and distribution lines provide service.

Transmission lines operate at a voltage of 115 KV and connect the HG&E generating facilities with substations and are also interconnected with the transmission facilities of other utilities. The distribution lines operate at 4,800 and 13,800 volts. Bulk supply lines link substations and local distribution lines. The latter provide electrical service to HG&E customers.

The majority of the local distribution lines are located along roads and driveways. The remainder of the lines are off-road and traverse a variety of land uses. Although included in prior VMPs, the above ground steam distribution and condensate lines located in downtown Holyoke have been decommissioned and removed. While the gas distribution lines are located below ground, gas distribution vaults contain pressure regulating/relief stations that may have equipment projecting above ground. These stations reduce and control the gas pressure in a pipeline downstream from a higher pressure source of natural gas.

The HG&E canal ROWs are located in the City of Holyoke (see *Figure 1*). The three-level canal system extends through the lower areas of the City of Holyoke and provides water for industrial and hydropower generation. The canal ROWs total approximately 8 miles in length.

Lower Riverside Park is located along the Connecticut River in South Hadley, Massachusetts. The recreational park is located downstream of the Holyoke Dam, east of Route 202, and west of Route 116. The nearly 8.4 acre park has approximately 1,300 linear feet of pathways providing public pedestrian, ADA and emergency vehicle access, limited parking, and a viewing platform (*Figure 1*).

Gatehouse Park is located along the Connecticut River in South Hadley, Massachusetts, upstream of Lower Riverside Park. This park is located adjacent to the Holyoke Dam, east of Route 202 and west of Route 116. The park provides public access and is approximately 350 feet long and 100 feet wide and provides a picnic area overlooking the dam (*Figure 1*).

2.4 Summary

In summary, the goals and objectives of this plan are as follows:

- To utilize an IVM program designed to maximize control of undesirable vegetation while minimizing the use of herbicides through their judicious use.
- To maintain the canal ROWs to their full width.
- To coordinate vegetation management activities with the existing Comprehensive Canal Operations Plan (CCOP) and Threatened and Endangered Species Protection Plan for the canals.
- To insure that all vegetation management operations are conducted in a safe, effective manner and in conformity with Local, State and Federal laws, regulations and permit conditions.
- At a minimum, to treat all public or private ground and surface drinking water supplies, surface waters, wetlands and water over wetlands, inhabited areas, agricultural areas, certified vernal pools, and priority habitat areas as sensitive sites that require special consideration during vegetation management operations.

- To hand cut or mow when possible, especially to protect environmentally sensitive sites and other areas where herbicide use is not permitted.
- To retain appropriately certified and licensed applicators to implement the HG&E VMP.
- To have an HG&E representative respond quickly to any questions or complaints from the public and/or governmental agencies that relate to the VMP.
- To perform an annual review of the VMP to assess treatment and cost effectiveness, environmental effects, public safety and compliance with regulations.

3 Identification of Target Vegetation

For the purposes of this plan, plant species are divided into two groups, (1) undesirable (i.e. target) species capable of interfering with conductors and access to electric lines and gas distribution vaults and/or capable of damaging the canal walls and access to canals, and (2) desirable species. It is the responsibility of the vegetation control contractor to be knowledgeable about and to instruct crews in the identification of desirable and undesirable species and the various herbicide control techniques necessary for IVM.

In general, undesirable species include trees, tall maturing shrubs (i.e., greater than 12 feet in height) and vines. This includes, but is not limited to, conifers, pines, grape vines, Virginia creeper, bittersweet, poison ivy, mulberry, staghorn sumac, catalpa, white ash, cottonwood, poplar, silver maple, red oak, American elm, box elder, black cherry, black birch, black locust, dogwood, Japanese knotweed, Norway maple, tree of heaven, autumn olive, Japanese barberry, exotic bush honeysuckle, and black willow. Grasses also may be considered target species in the immediate vicinity of the gas distribution vaults. Removal of other undesirable species is necessary to facilitate physical and visual access to the ROWs for inspection, maintenance and repair.

Desirable species in the canal, electric line, and park ROWs include low maturing shrubs, ferns, grasses, herbs, and wildflowers. In the area immediately surrounding the above-ground portions of the gas distribution vaults (i.e., an approximately 10-foot radius), only low-growing grasses are desirable.

4 Methods of Vegetation Management and Rationale for Use

Vegetation along the ROWs will involve IVM, including cultural (e.g. encouraging the growth of low-growing, herbaceous species), mechanical control methods (e.g., hand cutting, mowing, selective trimming) and chemical control (e.g., foliar herbicide treatments and cut stump treatments). The method chosen for a given vegetation problem will attempt to achieve a long-term, low maintenance vegetation management program through the encouragement of a stable herbaceous community.

4.1 Planting

Where appropriate on the canal ROWs, planting that encourages the development of a stable herbaceous layer and eliminates the presence of woody species along the canal banks may be used. It is anticipated that planting for slope stabilization and erosion and sedimentation control may also be required in areas where tree species are removed by mechanical methods. Planting of wildflower species for habitat and aesthetic benefit may occur along the park ROWs.

4.2 Hand Cutting

Hand cutting consists of the mechanical cutting of target species using chain saws or brush cutters. Target species are cut as close to the ground as practical with stump heights usually not exceeding three inches. Hand cutting is used in order to protect environmentally sensitive sites, or on target vegetation greater than twelve feet tall where herbicide use is prohibited by regulation. Hand cutting is used on those restricted sites where terrain, site size or sensitivity render mowing impossible or impractical. Hand cutting may be used at any time of the year.

4.3 Mowing

Mowing consists of the mechanical cutting of target vegetation using machines. Depending upon the resources available, mechanical cutting may be made using a consumer-type push mower, a large self-propelled or rider mower, brush hog, edgers, and “Weed Whackers”. Selection of specific equipment is based on terrain, target vegetation size and equipment availability. Mowing is used on sites where herbicide use is prohibited by regulation, where a large number of target species stems have exceeded maximum control heights, or where access is inhibited by high woody vegetation density and that access is required in the short term. The use of mowing as a treatment method is restricted by steep slopes, rocky terrain, and wet sites with deep soft soils. Mowing shall be used in most areas where terrain, site size and sensitivity permit efficient use of the equipment. Mowing may be used at any time of the year except when snow precludes operations.

4.4 Selective Trimming

Selective trimming consists of the mechanical pruning of the tops or encroaching limbs of trees. This trimming will be accomplished using aerial lifts mounted on trucks or tractors or, if terrain or obstructions prevent equipment access, climbing crews.

4.5 Foliar Treatments

Foliar treatments involve the selective application of an herbicide diluted in water to the foliage of target vegetation. The two types of equipment used for foliar treatments are the hand-held pump sprayers and motorized truck-mounted sprayer. Both treatments use low pressure (i.e., below 60 psi at the nozzle) for application. Foliar treatments with hand-held pump sprayers are used on low-density target vegetation.

Motorized application equipment is used on higher density target vegetation. Both are used to apply the herbicide solution to lightly wet the target plants.

Foliar treatments are used on woody plants, grasses, weeds and conifer species, except in wetlands. All tree species less than 12 feet in height will be foliar herbicide treated. Treatment will take place when plants are in full leaf and actively growing, or in accordance with the manufacturer's recommendations. Foliar treatments are incorporated into the VMP because, when used according to the HG&E application program, they are an effective and efficient method to control the whole target plant. Controlling the whole target plant reduces competition from sprout growth.

4.6 Cut Stump Treatment

Cut stump treatments consist of mechanical cutting of target species typically using chain saws immediately followed by a herbicide treatment applied with a squirt bottle or painted on the freshly cut surface of the stump. The herbicide application is limited to the freshly cut surface of the remaining stump. Similar to the hand cutting procedures, target species are cut as close to the ground as practical with stump heights usually not exceeding three inches. Hard or softwoods greater than 12 feet tall will be cut stump treated. Cut stump application is preferred during the dormant period.

4.7 Summary of Control Strategies

Control strategies for the HG&E ROWs can be generally categorized as follows:

Table 1 – Summary of Control Strategies

Target	Techniques	Comments
Poison Ivy	Foliar	No treatment in no spray areas around sensitive areas.
Grasses	Mowing	In most cases, grasses will be mowed.
	Foliar	Spot treatment of grass growing along fencing or cracks where mowing or cutting is not practical, except in no spray area around sensitive areas.
Low Growth	Mowing	In most cases; option for sensitive areas.
	Foliar	Where terrain prevents mowing or hand cutting; rapid resprouting species, except in no spray areas around sensitive areas.
	Hand cutting	Where terrain prevents mowing and resprouting is not a concern option; option for sensitive areas.
Tall Growth	Selective trimming	In cases where the visibility or interference does not warrant removal of entire vegetation; option for sensitive areas.

Target	Techniques	Comments
Tall Growth (continued)	Hand cutting	Terrain prevents mowing; mowing not effective due to stump size; species greater than 12 feet in height that will not resprout; option for sensitive areas.
	Foliar	Used on hardwoods less than 12 feet in height, except in no spray areas around sensitive areas.
	Cut stump	For situations where the size of the vegetation, the potential for off-target drift, or other considerations preclude the use of foliar applications, except in no spray areas around sensitive areas.

5 Justification of Herbicide Applications

The HG&E vegetation management plan supports HG&E's mission of providing reliable electric, steam, and gas service at a reasonable cost to its customers while placing primary importance on health, safety and environmental protection, as well as providing a safe and accessible recreational area at Lower Riverside Park and Gatehouse Park. The use of herbicides on rights-of-way should not cause unreasonable adverse effects to health and the environment when used according to label directions. All herbicides proposed for use are regulated by the U.S. Environmental Protection Agency and approved for use by the Massachusetts Department of Agricultural Resources (MDAR). All herbicides will be applied by contractors that are licensed/certified by the State and in accordance with herbicide label directions and precautions, as well as all applicable Federal and State laws and regulations.

This section describes the relative benefits of herbicide control and describes why herbicide use is justified on the ROWs.

5.1 Regulation of Stem Density and Plant Composition

Prior to initiating the HG&E VMP in the late 1990s, wood vegetation was growing in and adjacent to the HG&E canal walls, threatening to compromise the structural integrity of the walls. Over the past decade, a program of mechanical removal and herbicide application has results in the elimination of woody vegetation and the establishment of grasses.

5.2 Wildlife Habitat

Selective application of herbicides will support the development of a stable plant community. In certain areas of the ROW, this will provide habitat in an otherwise highly urban environment. In other areas, selective herbicide use will develop an edge habitat and environment beneficial to a variety of species including deer and song birds that typically use ROWs for food, cover and travel corridors. In addition,

selective herbicide application will reduce the need for mechanical removal methods and the associated potential for erosion.

5.3 Economics

A VMP utilizing only mechanical removal methods would be cost prohibitive. When hand-cutting or mowing is done without follow-up application of herbicide, the root system of the plant remains alive and is capable of resprouting and the single stem that was removed is replaced by multiple sprouts. This results in a repeated need for clearing due to resprouts, which has a cost that is typically multiple times the cost of a single herbicide application. In addition, the mechanical clearing usually must be performed two to three times more often than selective herbicide treatment, increasing costs. While hand clearing is necessary in some areas (i.e., in restrictive sensitive areas, when the weather conditions are unsuitable for herbicide application, or when woody vegetation is too tall for effective herbicide application), in general, the high per acre cost of mechanical removal coupled with the lack of sprout control and the necessity for more frequent maintenance reduce the long-term effectiveness of mechanical removal methods without accompanying herbicide treatment.

5.4 Erosion Control

Selective herbicide control encourages the development of a dense ground cover that provides soil stabilization and prevents erosion.

5.5 Noise and Air Pollution

Exclusive use of mechanical cutting methods would result in increased air and noise pollution compared to control integrating herbicide application.

5.6 Safety

In several locations the banks of the canal are steep, creating difficult conditions for the operation of mechanical removal equipment. Consequently, selective herbicide treatment that reduces the need for and frequency of mechanical clearing on steep areas of the ROW would lessen the potential for equipment or personnel accidentally entering the canals.

The canals and, in several locations, the utility lines, are located in highly urban areas. Consequently, providing visual and physical access to the ROWs is important to discourage inappropriate activities within the ROWs adjacent to the lines and canals and to facilitate rapid access by HG&E and emergency services personnel in the event of an emergency on or adjacent to one of the lines or canals.

For fire safety reasons, the Massachusetts Department of Public Utilities requires that the area around each gas distribution vault remain clear of sources of ignition. Consequently, vegetation removal is important to reduce the potential for secondary brush fires that could occur around heavily vegetated gas distribution vaults in the event of an emergency resulting from an accidental gas release.

As previously noted, the control of woody vegetation is a primary goal of this VMP. However, elimination of some nuisance vegetation species, such as poison ivy, is also necessary to facilitate safe access to the utility lines and canals for maintenance and inspection by HG&E personnel, as well as providing safe access for the public in Lower Riverside Park and Gatehouse Park. Due to the low growing nature of poison ivy, it is nearly impossible to control it through cultivation, hand pulling or mowing at the height generally used in ROW mowing operations. Moreover, the climbing characteristics of this plant over tree trunks and fences make mechanical control out of the question for safety and economic reasons. Through the selective use of herbicides, the development of herbaceous communities that crowd out poison ivy can be achieved.

6 Sensitive Area Identification and Vegetation Control Strategies within Sensitive Areas

6.1 Methods, References and Sources for Identifying Sensitive Areas

Sensitive areas defined in 333 CMR 11.04 are identified as public groundwater supplies, public surface water supplies, private drinking water supplies, surface waters, wetlands, state-listed species habitat, inhabited areas and agricultural areas. For the purpose of identification, sensitive areas can be separated into two categories:

- areas not readily identifiable in the field; and
- areas that are readily identifiable in the field.

It is the intent of HG&E to use only herbicides and application methods recommended for use in sensitive areas, as per 333 CMR 11.04 (d), on the full length and width of all ROW areas it shall treat. The operational effect of this policy is that outer limits of sensitive areas need not be identified in the field by treatment crews.

Each sensitive area has a defined limit for special protection to further minimize environmental and public health risks. Within most sensitive areas, there is an area in which herbicide use is prohibited (no spray areas). Within those portions of the sensitive area where herbicide application is allowed (i.e. limited spray areas), the use of herbicides and application methods recommended jointly by the MDAR and Massachusetts Department of Environmental Protection (DEP) is required. The general characteristics of the sensitive area herbicides are: low toxicity to humans and other animal species; short-term soil persistence; biodegradation of active ingredients; and low soil mobility. Details on these characteristics are discussed in the MDAR Herbicide Fact Sheets included in the annual YOP.

6.2 Areas Not Readily Identifiable in the Field

Sensitive areas not readily identifiable in the field include public groundwater supplies, private water supplies and public surface water supplies. The reference materials and sources used to identify sensitive areas not readily identifiable in the field include, but are not limited to the following:

- US Geological Survey (USGS) Topographic maps
- City of Holyoke Well List
- Massachusetts DEP Watershed Maps (1:25,000); delineates the perimeter of public watersheds and the location of public wells
- Massachusetts DEP Wetland Conservancy Maps (scale usually 1:1,000)
- Municipal maps and records, including information provided in response to the required municipal notification letters to the Board of Health, Conservation Commission, etc.
- Meetings with municipal officials or street abutters prior to or during treatment operations, and information provided to the HG&E during the public review of the YOP
- Regional Planning Agencies maps and records
- US Fish and Wildlife Services National Wetlands Inventory maps
- Readily available online MassGIS mapping.

The following is a description of how the sensitive areas will be identified for required protection:

- Consult the appropriate reference materials and sources to determine the precise location of these areas in the field.
- Place the boundaries of these sensitive areas on USGS topographical maps or other HG&E mapping.
- Prior to commencement of herbicide application operations, the treatment crew will be provided the marked-up mapping with which to mark boundaries of these sensitive areas.
- The treatment crew will deploy a cutting crew or point person in advance of the main herbicide application operation to locate and mark these boundaries or the boundaries of the appropriate buffer zone.

6.3 Areas Readily Identifiable in the Field

Sensitive areas readily identifiable in the field include surface waters, wetlands, inhabited areas, and agricultural areas. The method utilized to identify these sensitive areas will be as follows:

- Consult USGS topographic maps to locate any of these sensitive areas that may already be identified on these maps.
- Consult MassGIS spatial data to locate any of these sensitive areas that may already be identified on these maps.
- Prior to commencement of herbicide application operations, the treatment crew will be provided the marked mapping.

- The treatment crew will visually survey the area to be treated for any sensitive areas.
- Submission of a Request for Determination of Applicability for work within 100 feet of a wetland in the South Hadley parks.
- Appropriate distances will be measured from sensitive areas to identify no herbicide treatment areas and limited herbicide treatment areas.

Table 2 - Sensitive Area Restriction Guide (333 CMR 11.04)

Sensitive Area	No Spray Area	Limited Spray Area	Where Identified
Wetlands and Water Over Wetlands	Within 10 feet (unless provisions of 333 CMR 11.04(4)(c) are followed)	10 – 100 feet; 12 months must elapse between applications; Selective low pressure, using foliar techniques or basal or cut-stump applications	YOP Maps and identify on site
Certified Vernal Pool	Within 10 feet	10 feet to the outer boundary of any Certified Vernal Pool Habitat; 12 months must elapse between applications; Selective low pressure, using foliar techniques or basal or cut-stump applications	YOP Maps and identify on site
Public Ground Water Supply	Within 400 feet (Zone I)	Zone II or IWPA (Primary Recharge Area); 24 months must elapse between applications; Selective low pressure, using foliar techniques or basal or cut-stump applications	YOP Maps
Public Surface Water Supply	Within 100 feet of any Class A public surface water source	100 feet to the outer boundary of the Zone A; 24 months must elapse between applications; Selective low pressure, using foliar techniques or basal or cut-stump applications	YOP Maps
	Within 10 feet of any tributary or associated surface water body located outside of the Zone A	10 feet to the outer boundary of the Zone A; 24 months must elapse between applications; Selective low pressure, using foliar techniques or basal or cut-stump applications	
	Within 100 feet of any tributary or associated surface water body located within the Zone A of a Class A public surface water source		
	Within a lateral distance of 100 feet for 400 feet upstream of any Class B Drinking Water Intake	Within a lateral distance of between 100 -200 feet for 400 feet upstream of intake; 24 months must elapse between applications; Selective low pressure, using foliar techniques or basal or cut-stump applications	
Private Water	Within 50 feet	50 – 100 feet;	In YOP well

Sensitive Area	No Spray Area	Limited Spray Area	Where Identified
Supply		24 months must elapse between applications; Selective low pressure, using foliar techniques or basal or cut-stump applications	list and identify on site
Surface Waters	Within 10 feet from mean annual high-water line	10 feet from the mean annual high water line and the outer boundary of the Riverfront Area; 12 months must elapse between applications; Selective low pressure, using foliar techniques or basal or cut-stump applications	YOP Maps and identify on site
Agricultural and Inhabited Areas	N/A	0 – 100 feet 12 months must elapse between application; Selective low pressure, using foliar techniques or basal or cut-stump applications.	Identify on site
State-listed Species Habitat	No application within habitat area except in accordance with a Yearly Operational Plan approved in writing by the Massachusetts Division of Fisheries and Wildlife Natural Heritage & Endangered Species Program (NHESP)		YOP Maps

6.4 Control Strategies for Sensitive Areas

The following strategies will be utilized in all areas:

- Herbicides will be used in accordance with the VMP and YOP, which will be carried with the applicator at all times.
- Herbicide treatments will be made only by applicators that are appropriately certified and/or licensed by the MDAR.
- No foliar application will be used to control vegetation greater than 12 feet in height.
- Touch up applications will occur within 12 months of the date of approval of the YOP and no more than 10% of the initially identified target vegetation on the ROW may be treated and the total amount of herbicide applied in any one year shall not exceed the limits specified by the label and the YOP.
- The MDAR; the Holyoke, Chicopee, and South Hadley Conservation Commissions; the Holyoke, Chicopee, and South Hadley Boards of Health; the Mayors of Holyoke and Chicopee, and the South Hadley Board of Selectmen will be notified by registered mail at least 21 days prior to any application.
- Herbicide concentrates shall not be handled, mixed, or loaded on a right-of-way within 100 feet of a Sensitive Area.
- No herbicide shall be applied when the wind velocity is such that there is a high propensity to drift off target and/or during measurable precipitation.

In addition, the following strategies will be utilized in sensitive areas:

- A minimum of 24 months will elapse between herbicide applications in the limited herbicide treatment areas of public ground water supplies, public surface water supplies, and private drinking water supplies.
- A minimum of 12 months will elapse between herbicide applications in the limited herbicide treatment zones of surface waters, wetlands, certified vernal pools, and inhabited and agricultural areas.
- No more than the minimum labeled rate of herbicide appropriate to the site, pest (i.e., target vegetation), and application method will be applied in Sensitive Areas.
- Herbicides recommended for sensitive areas and guidelines for their use will be followed in accordance with the MDAR's list of approved herbicides for sensitive areas on rights-of-way.
- Herbicides shall be applied selectively by low pressure foliar techniques or stem applications. Foliar applications must include the use of appropriate anti-drift agents, and must not result in the off-target drift to non-target species. Cut stump treatments may be conducted in those situations where the size of the vegetation, the potential for off-target drift, or other considerations preclude the use of foliar applications. Cut stump applications shall be restricted, when practicable, to periods when static ground water levels are low or conditions consistent with label restrictions.
- All other limitations placed on Sensitive Areas will be followed as provided by 333 CMR 11.04.

In areas where herbicides are prohibited (No Spray Areas), mechanical methods only will be used.

6.5 Massachusetts Endangered Species Act

The Massachusetts Endangered Species Act (MESA) (M.G.L. c. 131A) and regulations found at 321 CMR 10.00 protect rare species and their habitats by prohibiting the “take” of any plant or animal listed as Endangered, Threatened or of Special Concern by the Division of Fisheries and Wildlife (DFW). The regulations require that work in the areas mapped as Priority Habitats (PHs) be subject to review and approval by DFW. Portions of the HG&E rights-of-way are located within areas identified as PH areas by the Natural Heritage & Endangered Species Program (NHESP) of the DFW. Pursuant to 333 CMR 11.04(3)(b), the management of vegetation within existing utility rights-of-way is exempt from the requirements of 321 CMR 10.18 through 10.23, provided that the management is carried out in accordance with a YOP approved in writing by the DFW, pursuant to 321 CMR 10.14(12).

A Threatened and Endangered Species Plan was prepared for the canals to comply with the licensing agreement issued by the Federal Energy Regulatory Commission for the Holyoke Hydroelectric Project and this Plan applies to vegetation management within and along the Holyoke Canals, along the Pioneer Valley Railroad, and along the Connecticut River.

A subset of utility ROW areas (including Lower Riverside Park and Gatehouse Park) proposed for vegetation management activities are mapped, in part, for the presence of state-listed snake species, state-listed salamander species, state-listed turtle species, state-listed plant species, and state-listed lepidoptera

(moth and butterfly) species. Specific requirements developed by the NHESP for vegetation management in these areas are detailed in the YOP.

7 Operational Guidelines for Applications

HG&E will contract all of the vegetation management applications to applicators who maintain current appropriate licensure by the Commonwealth of Massachusetts. Applications will be on-site supervised by a certified applicator with a Rights of Way Commercial Certification (Category 40). All contractors will be required to comply with all applicable Local, State and Federal laws and regulations, including 333 CMR 11.00. In addition to the applicable rules and regulation, applicators will adhere to the following operational guidelines.

7.1 Safety

The HG&E VMP will comply with all appropriate Local, State and Federal safety laws and regulations. This includes applicable sections of the MDAR Pesticide Bureau “Storage, Mixing and Loading of Pesticides Guidelines”, and all worker safety related statements and instructions on the herbicide label.

7.2 Weather

Herbicide application will be restricted during certain adverse weather conditions, such as rain, wind or deep snow.

Herbicide applications will not be made during periods of moderate or heavy rainfall. Foliar applications are effective in light mist situations; however, any measurable rainfall that creates leaf runoff will wash the herbicide off the target species. If foliar applications are interrupted by unexpected rainfall, the treatment will not resume until the rain ends and active leaf runoff has ceased.

Excessive wind can create drift during foliar applications. Significant herbicide drift can cause damage to desirable vegetation on or off the ROW. Cut stump treatments are much less affected by wind because they are applied in such a close proximity to the ground.

To minimize off-target drift, the applicator will comply with the following restrictions:

- During periods of wind, which are strong enough to bend the tops of the main stems of tree species on the ROW, the applicator will periodically observe the application of the foliar treatment to insure that there is no significant movement of the herbicide. If the applicator can see the herbicide moving off target, the application will immediately stop until the wind has subsided enough to permit further application.
- All herbicide solutions to be used for a foliar application will contain low drift agents. Low-drift agents will be added to the foliar herbicide solution as per the low-drift agent label. In moderate wind conditions, as per label recommendations, more low-drift agent may be added, at the discretion of the applicator to control drift.
- Foliar treatments will not be made to target vegetation that exceeds approximately twelve feet in height.

7.3 Equipment Calibration

Foliar application equipment will be calibrated at the beginning of the season, prior to any touch-up application treatment, and in accordance with manufacturer's directions. Foliar application equipment will be adjusted to apply a coarse spray. Pressure at the nozzle of hand-pump sprayers, and air speed and throttles on motorized sprayers, will be kept to the minimum setting required to transport the herbicide solution to the tops of each target and penetrate the foliage to the main stem of each target. Cut stump treatment squirt bottle applicators will be adjusted to deliver the herbicide solution in a thin stream to the target zone of the vegetation.

7.4 Disposal

Surplus herbicides and empty herbicide containers shall be disposed of as described on the herbicide manufacturer's label. To reduce herbicide surplus, the applicator should plan the treatment operation to minimize the amount of excess mixture.

7.5 Record Keeping

The Occupational Safety and Health Act (OSHA) of 1970 requires employers of 11 or more employees to maintain records and prepare periodic reports concerning work-related deaths, injuries, and illnesses. In the Commonwealth of Massachusetts, record keeping is required for all certified commercial applicators and licensed applicators. Operational records must include the information specified in 333 CMR 10.14.

7.6 ROW Vegetation Management Width

The HG&E VMP will be applied to remove and/or control all undesirable vegetation within the ROWs.

7.7 Sensitive Area Restrictions

In defined sensitive areas, there exist no spray areas where herbicide use is prohibited and limited spray areas where herbicide use is allowed under certain conditions. In areas around sensitive areas where herbicide use is allowed, only the minimum labeled rate of application for the control of target species can be applied.

7.8 Identification of No Spray Areas

Prior to commencement of herbicide application operations, the treatment crew will be provided the marked mapping included in the YOP. The treatment crew will visually survey the area to be treated for any sensitive areas. Appropriate distances will be measured from sensitive areas to identify no spray areas and limited spray areas. The Certified Applicator or a point person under his/her supervision will mark no spray buffer areas immediately prior to any application taking place, to make sure no herbicide is applied in such areas. No Spray Areas, where the use of herbicides is prohibited include the following:

Water Supplies

- Zone I
- Interim Wellhead Protection Areas
- Class A Surface Water Sources
- Tributaries to a Class A Surface Water Source
- Class B drinking water intakes
- Private wells

Surface Waters

- Wetlands
- Water over wetlands
- Mean annual high water line of a river
- Outer boundary of a riverfront area
- Certified vernal pools

Cultural Sites

- Agricultural areas
- Inhabited areas

Wildlife Areas

- Certified vernal pool habitat
- Priority habitat

7.9 ROW Specifications

The Certified Applicator in coordination with HG&E or its agent will determine which ROWs are to be treated, the range of dates of treatment and the methods, materials and mixing rates to be used, as defined in the YOP.

HG&E will supply the Licensed/Certified Applicator(s) with maps from the YOP indicating treatment restrictions and written instructions outlining any special treatment considerations of instruction for each right-of-way.

No work will be done until the Licensed/Certified Applicator(s) have the appropriate maps, permits, restriction list, mixing rate instructions, daily log sheets, applicable MSDS and pesticide label, and YOP in-hand, unless otherwise authorized by HG&E.

In addition to the specifications listed above, all treatment crews must carry a copy of the VMP, spill mitigation kit, first aid supplies, and a one hundred foot measuring tape.

7.10 General Requirements

Vegetation management operations must be conducted according to this VMP and according to the written instructions of HG&E. Failure to do so is grounds for immediate cessation of operations and disciplinary action, up to and including discharge, at the discretion of HG&E. The following general requirements must also be followed:

- Label Instructions – Adherence to all herbicide label instructions.
- Designation of Approved Herbicide Mixture – Designation of herbicide (including manufacturer and brand name) carrier and mixture to be used will be provided by HG&E or its representative in coordination with the Certified Applicator prior to the start of work.
- Restriction of Herbicide Treatment Application Due to Precipitation – In the event of moderate or heavy precipitation, herbicide treatment shall cease, and shall not resume until stems and foliage are dry.
- Stump Treatment Applications – Do not apply during periods of precipitation.

8 Identification and Qualifications of Individuals Developing and Submitting the VMP

The individual representing HG&E and responsible for submitting and supervising the VMP is:

Christopher Perry
Environmental Health and Safety Coordinator
Holyoke Gas & Electric Department
99 Suffolk Street
Holyoke, MA 01040-5082
Cell: 413-563-9818
Cell: 860-944-4942
Fax: 413-536-9315
Email: CPerry@hged.com

The VMP was developed by Fuss & O'Neill, Inc. Consulting Engineers. The contact person at Fuss & O'Neill is:

Robin Casioppo
Environmental Scientist
Fuss & O'Neill, Inc.
1550 Main Street, Suite 400
Springfield, MA 01103
Telephone: 860-646-2469 ext. 4411
rcasioppo@FandO.com

Ms. Casioppo has prepared several YOPs for the HG&E canal and electric, gas, and steam system ROWs.

All herbicide treatments will be performed by a contractor licensed to perform such work in the Commonwealth of Massachusetts.

9 Techniques/Programs to Minimize the Amount and Frequency of Herbicide Application

Integrated Vegetation Management (IVM) as it applies to ROW maintenance, involves utilizing a variety of techniques, both chemical and non-chemical, to control unwanted vegetation in the most ecologically based manner. Implementation of IVM will result in a long-term reduced reliance on herbicides by encouraging the establishment and stabilization of desirable vegetation. The resulting cultural controls will reduce the need for herbicides in the future. Vegetation management activities will use the most suitable techniques in light of the goal of controlling the undesirable vegetation and establishing a stable, beneficial vegetation community, where possible. When used, herbicide use will be minimized through timing of applications to maximize control, and avoiding fixed application schedules while protecting non-target organisms and environmentally sensitive sites. The specific components of the ROW program are described in the following sections.

9.1 Monitoring

All ROWs will be inspected prior to any scheduled treatment program. Monitoring will be made by foot or by vehicle.

9.2 Record Keeping

In addition to the record keeping requirements of the Pesticide Board regulations (333 CMR 10.14), a log of areas monitored will be kept for future planning and reference. Areas maintained either through mechanical or chemical control will be recorded.

9.3 Action Levels

Decisions to maintain vegetation (either mechanically or chemically) will be based upon the following priority levels:

Priority One:

Vegetation that is encroaching upon electrical conductors or lines, or is inconsistent with the requirements of the Massachusetts Department of Public Utilities relative to gas distribution vaults and/or is located within or is encroaching upon the walls of the canals. Also, vegetation that is impairing emergency vehicle or Americans with Disabilities Act (ADA) access to the park pathway ROWs.

Priority Two:

Vegetation that interferes with visual or physical access to the ROWs.

9.4 Control Tactics

The decision to use one of the vegetation control techniques will depend on evaluating the specific situation. The goal of the control tactic will be to establish an easily maintainable, stable plant population that will not interfere with the canal walls or overhead electrical conductors and will provide visual and physical access to the above-ground electric lines and equipment, the gas distribution vaults, and the canal walls and provide safe access to the pathways in the park area. Emphasis will be given to the control tactic that will address the vegetation problem in the most environmentally sound manner and in a way to minimize vegetation control in the long term. For example, vegetation control on the canal walls is timed to coincide with other maintenance activities that require drawdown of the canals in order to maintain the required setback from standing water for herbicide application. Generally, control tactics include the following:

- Cultural control – Cultural control refers to the use of ecological principles for the regulation of stem density and species composition by encouraging the growth of low-growing, herbaceous species. As the density of low-growing species increases, the need for control of undesirable vegetation is reduced. If in some locations or situations plantings are necessary to stabilize soils and establish a ground cover, appropriate non-invasive species will be planted.
- Selective Application Techniques – Selective application is the application of diluted herbicide mixtures directly to target vegetation with precision. These techniques include cut stump treatment that applies herbicide directly to the remaining stump after mechanical cutting and foliar treatments that minimize the amount of herbicide used by using appropriate spray nozzle pressure, spray adjuvants to reduce the chance of off-target drift, and applications directed at individual plants.

9.5 Selective Herbicides

Selective herbicides affect a particular group of plants with little or no effect on others. For example, removal of grasses may be desirable at certain locations and times. At other locations or times, removal of broadleaf species may be the goal.

9.6 Timing of Applications

Proper timing of herbicide applications is critical to achieve both maximum effectiveness of the herbicides and the long-term success of the vegetation management program. Procedures relevant to treatment timing, both seasonal and daily, include:

- Foliar techniques are typically used after leaves are fully developed and while the plant is still actively growing.
- No herbicide application when the wind velocity is sufficient to result in drift of herbicide to non-target species and/or when there is measurable precipitation.

10 Alternative Land Use Provisions or Agreements Minimizing the Need for Herbicides

Unlike many other rights-of-way that consist of easements on properties not owned by the utility company, the canal rights-of-way are entirely owned by the City of Holyoke Gas and Electric Department. Consequently, opportunities for alternative land use provisions and license or maintenance agreements for the canals are extremely limited.

However, HG&E is continuously evaluating alternative vegetation management methods that allow for land use options and agreements to minimize the need for herbicides in the HG&E ROWs. These methods include the following:

Land Use Provisions

The land use beneath electrical transmission and distribution lines may be residential, commercial, industrial or agricultural. In many cases these land uses have created a vegetation cover that restricts the growth of brush and other target species, eliminating the need for herbicide treatment.

Agreements

Some gas distribution vaults are located within residential neighborhoods and may be “adopted” by neighborhood groups for roadside beautification areas. In this case, the area around the regulator is typically mowed and low-growing flowering species have been planted. Such areas are noted by HG&E in the ROW monitoring that occurs and may not require herbicide application if the landscaping is compatible with fire safety requirements for the vaults.

11 Remedial Plan to Address Spills and Related Accidents

This remedial plan is presented as a guide to proper procedures for addressing pesticide accidents. Since every spill or related accident is different, applicators must weigh the specific factors of the situation and use their own judgment to decide the appropriate course of action. Because applicators normally carry only relatively small amounts of herbicides, the potential for a serious spill or accident is relatively small. State and Federal statutes establish emergency response procedures that must be followed by vegetation management contractors in the event of a spill or related accident. Under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), it is the legal responsibility of the applicator to clean up pesticide spills resulting from his/her use and handling of the product. Applicators are liable for damages, subject to penalties, and obligated to clean up and decontaminate areas resulting from pesticide spills.

The following discussion outlines general guidelines to prevent and address spills and related accidents. Transporting only the amount of herbicide necessary to carry out the vegetation control, based on the monitoring results, will ensure that there will be no waste and minimize potential problems. Any vehicle carrying out a spray operation will be equipped with a bag of adsorbent, activated charcoal, leak-proof containers, a broom and a shovel in case of minor spills. A clipboard log of the herbicides on the vehicle will be kept on the vehicle. Herbicide labels and fact sheets shall be carried on-site by the applicator.

As soon as any spill is observed, immediate action will be taken to contain the spill and protect the spill area. The cause of the spill must be identified and secured. Spill containment will be accomplished by covering the spill with adsorptive clay or other adsorptive material or, for large spills, building clay or soil dikes to impede spill progress. Until completely clean, protection of the spill area will be accomplished by placing barriers, flagging or a crewmember at a strategic location. If a fire is involved, care will be taken to avoid breathing fumes from any burning chemicals.

In the event of a spill, information on safety precautions and clean up procedures may be gathered from the following sources:

Source

Herbicide Label

Herbicide Fact Sheet

Herbicide Material Safety Data Sheet

Information

See *Appendix F* of the current year's YOP

same as above

same as above

In the event of a spill, the following contacts and telephone numbers are provided:

Source

Herbicide Manufacturer

Telephone Number

BASF (Arsenal)
800-832-4357
DuPont (Escort, Krenite, Oust)
800-441-7515
Dow AgroScience
(Glypro-Plus, Rodeo and Garlon 4)
800-992-5994
Monsanto (Roundup)
800-424-9300
NuFarm Americas (AquaNeat,
Patriot, Polaris, Razor, Spyder)
800-345-3330
Rainbow Treecare (Cambistat)
952-922-3810

Holyoke, Chicopee, and South Hadley
Fire and/or Police Departments

911

Holyoke Gas & Electric Department (EH&S Coordinator)

(413) 563-9818

Holyoke Board of Health

(413) 322-5595

Holyoke Conservation Commission

(413) 322-5615

Source

Chicopee Board of Health

Telephone Number

(413) 594-1660

Chicopee Conservation Commission (Planning Dept.)

(413) 594-1515

South Hadley Board of Health

(413) 538-5017 ext. 204

South Hadley Conservation Commission

(413) 538-5017 ext. 208

Holyoke Medical Center

(413) 534-2500

Massachusetts Pesticide Bureau

(617) 626-1700

Steven E. Antunes-Kenyon

(617) 626-1784

Massachusetts Dept. of Environmental Protection (DEP)

(413) 784-1100 or
(888) 304-1133

Massachusetts Dept. of Public Health, Bureau of
Environmental Health, Toxicology Program

(617) 624-5757

Massachusetts Poison Control Center (800) 222-1222

CHEMTREC (800) 262-8200

US Environmental Protection Agency (EPA)
National Pesticide Information Center (800) 858-7378

Spills will be remediated by soaking up the spill with adsorptive clay or other adsorptive material and placing it in leak proof containers for proper disposal. Dry herbicides, such as granulars, will be swept up or shoveled directly into leak proof containers for proper disposal. All contaminated soil will be placed in leak proof containers, removed from the site and disposed of properly. Activated charcoal will be incorporated into the soil at the spill location at a rate of seven pounds per thousand square feet to inactivate any herbicide residue.

In cases where the spill cannot be contained and/or removed by the crew, the DEP Incident Response Unit and the Pesticide Bureau must be contacted. A spill of any size must be reported to the Pesticide Bureau. Emergency first responders (including, but not limited to, fire and police) should be notified of any major spills or a spill of any size that may be considered a potential risk to public health, safety and the environment.

A release of oil, hydraulic fluid and/or hazardous material (OHM) in excess of the Massachusetts Reportable quantities listed in the Massachusetts Contingency Plan (MCP) 310 CMR 40.1600 shall be reported to the MA DEP within the appropriate time frame as specified in 310 CMR 40.0300. Pursuant to 310 CMR 40.0311 ("Releases Which Require Notification Within Two Hours"), persons shall notify the MA DEP as soon as possible, but not more than two hours after obtaining knowledge of "a sudden, continuous or intermittent release to the environment of any hazardous material that is listed at 310 CMR 40.1600 or that exhibits one or more of the characteristics described in 310 CMR 40.0347, when: (a) the quantity of the release is equal to or greater than the applicable Reportable Quantity."

Appendix A

NERC Transmission Vegetation Management Plan

Appendix B

333 CMR 11.00 Rights-of-Way Management Regulations