Electric Facilities and Rights-of-Way Pest Management Plan

Reference: FBC 20/25
Confirmation # 799-0016-20/25



Expires June 2025

Table of Contents

1.0 Introduction

1.1 FortisBC Background

FortisBC Inc. (FortisBC) is an integrated regulated electric utility based in Kelowna, British Columbia. The company serves approximately 172,000 customers throughout its service area in the West Kootenay, Okanagan and Boundary areas of the Province (Appendix A).

The company is cognizant that the presence of pests[1] can adversely impact infrastructure integrity that can threaten worker and public safety and can compromise system reliability. As part of FortisBC's Safety and Environmental Policy, the company is committed to delivering safe, reliable power in an environmentally responsible manner.

Compliance with environmental regulations is part of the policy commitments and is a duty that FortisBC takes seriously. The British Columbia *Integrated Pest Management Act* requires that management of vegetation on specified industrial sites be approved under a single, comprehensive Pest Management Plan (PMP). The PMP ensures:

- Compliance with the provisions of the *Integrated Pest Management Act* and other applicable federal, provincial and regional laws and regulations;
- The responsible use of pesticides;
- The incorporation and use of integrated pest management; and,
- Public awareness of FortisBC's pest management programs.

The company understands that the presence of pests can adversely impact infrastructure integrity that can threaten worker and public safety and can compromise system reliability. In 2009, FortisBC developed PMPs to deal with vegetation issues within its facilities and on its rights-of-way (ROW) including transmission and distribution corridors and access roads. FortisBC received authorization for these PMPs under Confirmation Numbers 799-0012-15/20 and 799-0013-15/20 respectively.

This PMP has been prepared to replace previous PMPs that expire in June 2020. The PMP uses the principles of integrated pest management (IMP) and is designed to control and/or eradicate unwanted vegetation within FortisBC facilities and on ROW (ROW). Noxious weeds and invasive plants are controlled by local weed committees and are not included under this PMP.

1.2 Geographic Boundaries of the Plan Area [IPMR Section 58(1)(a)]

This PMP applies to all FortisBC facilities and transmission and distribution line ROWs throughout the FortisBC service area. Appendix A contains a map describing the geographic boundaries of the area to which this plan applies.

[1] "Pest" for the purposes of this PMP refers to a weed plant or vegetation that has the potential to impact, influence or interfere with safety and reliability of the FortisBC electric grid.

1.3 Pest Management Plans

Under the British Columbia *Integrated Pest Management Act* a PMP is defined as a plan that describes:

- A program, for managing pest populations or reducing damage caused by pests, based on integrated pest management; and,
- The methods of handling, preparing, mixing, applying and otherwise using pesticides within the program.

According to the Act the term pesticide[2] means a microorganism or chemical or other material that is used to prevent, destroy, repel, or mitigate a pest.

FortisBC, its contractors and agents, will use this PMP when carrying out vegetation management activities within facilities and on transmission and distribution line ROW throughout the FortisBC service area.

1.4 Person Responsible for Managing Pests [IPMR Section 58(1)(b)(c)]

Within FortisBC, the person responsible for managing pests and the principal contact for information relating to this PMP is:

Dean Lambert, R.P.F.
FortisBC Inc.
1975 Springfield Road
Kelowna, BC V1Y 7V7
Ph: 250-868-4562
email: dean.lambert@fortisbc.com

1.5 FortisBC Facilities and ROW

This PMP covers FortisBC's pest management program within facilities and along transmission and distribution corridors. Facilities include generation facilities (including switching stations), substations, other electrical facilities including all fenced facilities, vacant undeveloped land within facilities, buildings structures, tower compounds, access roads and pole yards throughout the service area. The term "facilities" will be used in this PMP to encompass the above noted areas.

ROW (ROW) addressed under this PMP include transmission corridors, distribution networks and access roads that are used to access utility infrastructure such as poles, power lines and some facilities such as substations.

[2] The terms pesticide and herbicide are used interchangeably in this document and refer to chemicals used to treat pests.

Transmission corridors contain the highest voltage power lines in the FortisBC service area and include approximately 1,500 km of 60kV, 138kV, 170kV and 230kV lines. As well as moving power from the FortisBC hydroelectric generating sites on the Kootenay River, these lines are connected into the external power grid that supplies electricity throughout North America.

Distribution networks are the lower voltage lines that supply directly to the customer. ROWs for these lines can be similar but smaller to transmission corridors and are typically situated adjacent to existing road networks.

Access roads provide vehicular and worker entry to ROWs for routine operations and maintenance, safety inspections and emergency response.

Electricity is an essential part of everyday lives for economic, health, social and safety needs; therefore, a well-defined ROW PMP is critical for FortisBC to ensure reliable power supply to its customers. See Appendix I for ROW clearance specifications.

2.0 Pest Management Using Integrated Pest Management Principles

Vegetation must be managed within and around FortisBC ROWs to:

- Eliminate vegetation with growth potential capable of contact with power lines; and,
- Remove hazards such as tree failure and wildfire potential to eliminate powerline contact.

Operational, safety and aesthetic concerns govern the need to control pests within and around FortisBC facilities. Some of these concerns are:

- Vegetation can become a fire hazard or serve as a fuel source for fires;
- Vegetation can restrict access to electrical components for maintenance, safety inspections and emergency response;
- Vegetation growing adjacent to a facility can serve as a seed source;
- Vegetation can contaminate the crushed rock base at electrical facilities – leading to increased electrical hazard and worker injury;
- Vegetation can increase the risk of tripping and slipping;
- Vegetation can serve as shelter and food for structural insect pests, especially rodents;
- Compliance with provisions of the BC Weed Control Act that requires occupiers of land control noxious weeds; and,
- To stop seeds, leaves, and other organic matter from entering electrical facilities.

Vegetation management at switching station and substations is critical for safety reasons. If a lightning strike occurs or there is an electrical fault, electrical current can flow through the structure and into the ground. This can cause potentials (step and touch) that can lead to worker electrocution. Electricity can also be transmitted outside fenced facilities by vectors such as vegetation.

2.1 The Principles of IPM

In order to ensure effective vegetation management at all of its facilities and on ROW corridors, FortisBC has adopted the principles of IPM into company programming. IPM means a process for managing pest populations that includes the following activities:

- **Planning (prevention)** and managing ecosystems to prevent organisms from becoming pests;
- **Identifying** pest problems and potential pest problems;
- **Monitoring** populations of pests and beneficial organisms; damage caused by pests and environmental conditions;
- **Using injury (treatment) thresholds** in making treatment decisions,
- **Suppressing (pest treatment options and method selection)** pest populations to tolerable levels using strategies based on consideration of biological, physical, cultural, mechanical, behavioural and chemical controls in appropriate combinations and environmental and human health protection; and,
- **Evaluating** the effectiveness of pest management strategies.

3.0 Facilities Integrated Pest Management

3.1 Prevention [IPMR Section 58(2)(a)]

Preventative measures aimed at stopping the initial growth and spread of unwanted vegetation are an integral part of an IPM program. These measures are considered, where feasible, for incorporation into substation and switching station designs prior construction and may be implemented during facility upgrades. In some instances, preventative measures may reduce the need for future maintenance using both pesticide and non-pesticide control methods.

3.1.1 Surfacing Materials at Facilities

The proper selection and installation of surfacing materials at FortisBC facilities are important in minimizing growth of unwanted vegetation.

The presence of organic material, such as soil fines, at facilities provides a growth medium for unwanted vegetation. Suitable surfacing material of a correct thickness and free of organic material can reduce the establishment of unwanted vegetation. The following options for surfacing materials will be considered by FortisBC for new construction and upgrading of existing structures:

- Use of crushed rock;
- Use of crushed rock over landscape fabric (geotextile); and,
- Use of asphalt and concrete

3.1.2 Maintaining Vegetation Free Perimeter Fences

Large trees (especially deciduous) and shrubs growing within 6 meters of the outside perimeter fence of substation and switching stations will be removed. These trees and shrubs deposit organic debris into the stations, compromise station security and public safety by improving access over the fence and can create safety and fire hazards if they grow too close to equipment. These can also restrict visibility and inhibit site access roads throughout the facility.

Certain types of low growing vegetation are considered to be invasive weeds and can grow through/entwine chain link fencing found in substations, switching stations, compounds, office complexes and pole yards.

3.1.3 Seeding Disturbed Areas

Soils disturbed during construction of new facilities, upgrading of facilities or other activities will be seeded if other surface materials are not installed. These areas outside the station fence can become infested with noxious and other weed species. These areas can also be subject to erosion; planting of low growing vegetation or turf, or installation of landscape fabric and crushed gravel will be undertaken where feasible.

3.2 Pest Identification [IPMR Section 58(2)(b)(ii)]

Unwanted vegetation growing within or adjacent to FortisBC facilities will be termed "weeds" within this PMP. Weeds are a term used to describe vegetation growing where it is not desired (i.e., interfering with human activity and/or causing safety issues), and is therefore considered to be a pest. The accurate identification of unwanted vegetation (i.e., weeds) at FortisBC facilities is important for several reasons:

- Depending on their growth rates and characteristics, and their location within the facility, control may not be warranted or desirable. For example, grass growing in a site where the soil has been disturbed by construction would be desirable;
- Control methods may differ depending on the plant species. Some may be easily controlled by non-chemical methods, but others, may only be managed through the use of certain types of pesticides (aka. herbicides); and,
- Certain plants may be noxious weeds and must be controlled by law.

There are numerous publications that will assist in the identification of unwanted vegetation. FortisBC staff and contractors use field guides and other identification tools to help them identify weeds. There are many online resources available for information on identifying weeds, including the resources listed in the following table:

Table 1 Vegetation Identification Information Available Online

BC Ministry of Forests, Lands and Natural Resources and Invasive Species Council of British Columbia	"Field Guide to Noxious Weeds and Other Selected Invasive Plants of British Columbia"	https://bcinvasives.ca/documents/Field_Guide_to_Noxious_Weeds_Final_WEB_09-25-2014.pdf
E-Flora BC	Electronic Atlas of the plants of BC	http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Vaccinium+oxycoccos
BC Ministry of Forests, Lands and Natural Resources	Invasive Plant Pest Management Plan for Provincial Crown Lands in the Southern Interior of British Columbia	https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/invasive-species/pest-management/flnrord_southern_interior_pmp_402-0678-1924_2019_to_2024.pdf
Invasive Species Council of BC	List of invasive species in BC	https://www.bcinvasives.ca

3.3 Monitoring Pest Populations [IPMR Section 58(2)(c)]

FortisBC staff and contractors monitor vegetation, including danger trees, on or adjacent to their facilities and their access roads on a regular basis. Monitoring of facilities provides a record of information about weed occurrence and density, and site conditions. Monitoring also includes recording information on changes to weed species composition, distribution, and density over time, as well as changes to adjacent plant communities that could invade the facility. Monitoring is generally done visually and documented in writing.

3.3.1 Monitoring Methods [IPMR Section 58(2)(c)(i)]

Monitoring is generally carried out on foot or by vehicle, depending on the terrain. Monitoring normally consists of a visual inspection, where the density, location and type of vegetation present are documented.

3.3.2 Monitoring Methods [IPMR Section 58(2)(c)(ii)]

Incidental Monitoring:
Sites are normally monitored on a monthly basis as part of a general safety and maintenance inspection. Emerging weed problems are brought to the attention of the appropriate FortisBC supervisor for further assessment.

Annual Monitoring:
FortisBC staff, in conjunction with the vegetation management contractor, annually monitor conditions at facilities to ensure that treatments are applied at the most effective times for weed control. Annual inspections are also a legal requirement for dams and penstocks. At sites where there are electrical concerns or environmental sensitivities, sites may be monitored more frequently.

3.3.3 Data Collected During Monitoring [IPMR Section 58(2)(c)(iii)]

During monitoring, each site will be visually assessed to determine if treatments are necessary, and, if treatments are deemed necessary, on the timing of the treatments. The monitoring that is done at each site is visual, and the results may be recorded on a Facilities Site Data Sheet and Management Plan. The percentage weed cover is used to determine the treatment threshold (the level above which treatment is warranted) (see next section for details).

The Facility Site Data Sheet and Management Plan provides a starting point for the collection of site information for sites requiring integrated vegetation management, primarily substations. A copy of this Site Data Sheet and Management Plan is shown in Appendix F. Lesser sites for which a Site Data Sheet and Management Plan is not developed will have an informal prescription prepared prior to treatment. The prescription will contain the following:

- Site sensitivities (nearby water bodies, pesticide-free zones, residual-free zones);
- Current conditions (surfacing materials, list of weed species within and outside the facility);
- Preventive measures that can be taken; and
- Recommended treatment methods, procedures, and timing.

3.4 Injury Thresholds *[IPMR Section 58(2)(d)]*

Treatment of weeds/vegetation within FortisBC facilities is required when the vegetation reaches a certain level. This level is termed the treatment threshold**,** which is the level of surface weed cover, expressed as a percentage of the total area, that can be tolerated and still maintain the integrity, security, and safety within the site.

3.4.1 How Injury Thresholds are Chosen [IPMR Section 58(2)(d)(i)]

Any percentage weed cover above the established treatment threshold requires a vegetation management action. Treatment thresholds will vary, since vegetation control is more critical for certain areas within each facility. They can be specific and include all weed species (e.g., within a switching station, where there is a low tolerance for vegetation growth), or they may be specific to one weed species (e.g., where a single, tall growing tree or shrub species compromises site safety and security). Consequently, the level of control required is determined by either the:

- Type of facility;
- Density of weed establishment; and,
- Specific weed problem species.

Appendix B indicates the types of problem weeds generally found at FortisBC facilities, and also describes how the location of the weeds within the facility dictates which weeds will be of most concern.

3.4.1.1 *Density of Weed Establishment*

In sites where the tolerance for weeds is low, the treatment threshold is determined by the density of all weed species and dead organic matter present at the site. This is specific for areas within FortisBC facilities. Areas such as substations and switching stations will have a much lower treatment threshold, for example, than gravel parking areas and access roads.

3.4.1.2 *Specific Weed Problem Species*

Only specific high-risk weed species will be managed in areas such as infrequently used sites, along access roads and outside fence perimeters. When present, these species will be selectively controlled in a manner that minimizes the disturbance to adjacent low risk vegetation.

3.4.2 Injury Threshold Application [IPMR Section 58(2)(d)(ii)]

Treatments will be implemented annually at all FortisBC facilities covered under this PMP to ensure that the surfaces within electrical facilities remain as free of vegetation as possible, and that vegetation encroaching alongside fence lines and access roads is maintained. The vegetation management contractor will visually assess the weed cover at each site, and a decision will be made to take action against weed problems based on the specific treatment thresholds described below. The contractor will only employ approved vegetation management treatments as contained in this PMP and must be cognizant of all site sensitivities.

3.4.3 Specific Treatment Thresholds

Specific vegetation management treatment thresholds for the different types of FortisBC facilities covered by this PMP are detailed below:

Within Electrical Compounds (Substations, Switching Stations and Tower Compounds)
Electrical facilities are critical sites for vegetation management for safety reasons. If an electrical fault or lightning strike occurs, current can flow through the structure and into the ground, creating step and touch potentials that can cause injury or death to workers.

Because of serious electrical safety hazards, there is no tolerance for any vegetation within fenced substations, switching stations and tower compounds. All weeds present at a site when treatment crews are present will be controlled **(0% threshold),** especially any tall-growing species whose roots could reach the grounding system.

In addition, the following areas are maintained weed free (**0%**):

- Under or around electrical equipment;
- Under switch operators and equipment control cabinets because of the high risk of people standing at the equipment during an electrical fault;
- Around oil-filled transformers and equipment; and
- Around high voltage equipment with ground level insulators.

Outside and Inside Substation, Switchyard and Tower Compound Perimeter Fences
In many FortisBC substations, switchyards and tower compounds, the ground grid extends beyond the perimeter fence for 1.5 to 2 meters for safety reasons (as outlined above). Herbaceous broadleaf and grass species, as well as noxious and invasive weeds, will be controlled where weed density exceeds 5% of the perimeter area within 6 meters of the fence (0% threshold). For safety reasons, all tall growing tree and shrub species within 1 meter of the perimeter fence will be controlled (0% threshold), and all other vegetative cover within 6 meters of the fence will be kept below 15 cm in height.

Roads Within Facilities
The majority of roads adjacent to FortisBC facilities have either gravel or dirt surfacing and are not paved. Weeds established within or alongside these roads can act as seed sources to rapidly spread weeds to adjacent electrical compounds or can limit access for safety inspections or for emergency response. When weed levels exceed 15% of the area, control will be initiated (**15%threshold).** The exception is for weeds growing through asphalt -surfaced roadways, where all weeds will be controlled **(0% threshold),** to maintain the resistivity and integrity of the asphalt surface.

Compounds, Equipment Storage Yards, and Around Buildings/Offices
Although the electrical hazard in compounds, storage yards and around buildings is not as high as in electrical facilities, weeds growing in these areas can serve as a seed source, interfere with access to equipment, compromise site security, serve as food and harbourage for ants,

rodents and wood pests, increase the rate of corrosion of steel equipment by retaining moisture, increase the fire hazard ,and increase the risk of slipping and tripping Controls will be initiated when weed levels exceed 15% of the area **(15% threshold).**

Pole Yards

For the same reasons as compounds, storage yards, and around buildings and offices, weeds must be controlled in pole yards. Pole yards may either by enclosed within a fenced compound or outside of the fenced areas. The Canadian Standards Association governs the storage of wood poles. CAN/CSA 015, Section 5.7 requires that poles be piled and supported in such a manner that all poles are at least 30 cm above the general ground level, and that no vegetation is permitted underneath stored poles. Under pole bunks, all vegetation will be controlled for safety (fire prevention) reasons (**0% threshold).** Controls will also be initiated when weed cover within 10 meters of the pole bunks exceeds 10% of the area **(10% threshold).** Controls will be initiated throughout the pole yard when weed cover exceeds 15% of the pole yard area (5**% threshold).**

In addition, tall trees and shrubs growing within 1 meter of the pole yard perimeter fence will be removed to reduce the safety hazard.

Vacant and Undeveloped Land Within Facilities

Many of the larger facilities, such as generation sites, have large areas of vacant or undeveloped land. Many of these areas contain vegetation. Although vegetation management is not routinely conducted in these areas, these areas have the potential of being the source of weeds, weed seeds and noxious and invasive weeds that can increase the vegetative cover in electrical facilities. No threshold level is currently established for weeds growing in these areas and thresholds will typically be developed on a case by case basis.

Generation Facilities

In addition to the areas discussed above, generation facilities include concrete dams, penstocks, spillways and diversion channels. Weeds growing in these areas are a safety concern, and must be removed because:

- Weed roots can penetrate the dam core and increase the risk of water leaks;
- Weeds can reduce access and block sightlines to structure instrumentation during safety inspections to monitor seepage; and,
- Weeds can provide food and shelter for rodents and other pests.

It is important that weeds be managed before they establish extensive root systems that can provide channels for water to move through the dam, spillway and diversion channel structures.

Concrete Dams
Seepage must be continuously monitored around the toe of dams. Through visual inspections. Weeds growing around the toe of the dam, in cracks, and around the buttresses must be managed to provide clear visibility during inspections. All vegetation growing within 6 meters of the toe of the dam will be removed **(0% threshold).** Controls will be initiated when shrubs and deep- rooted trees over 1 meter in height exceeds 5% cover **(5% threshold)** on the upstream and downstream dam faces. Low growing shrubs, moss, algae and liverworts are usually only controlled if they present a slipping hazard to workers.

Penstocks
Penstocks are large pipes that carry water from the reservoir to the turbines inside the power plant. Their concrete foundations are protected from erosion by means of drainage canals located alongside. Weeds must be managed along the penstock ROW, along drainage channels, around the penstock support structure, and to 1 meter below the penstock.

The main reasons to undertake weed management around penstocks is to maintain their structural integrity, allow easy access for safety and maintenance inspections, prevent vegetation from impeding drainage in ditches and waterways, and minimize fire hazards by removing a source of fuel. Controls will be initiated when weed levels exceed 10% **(10% threshold)** of the area. Tall growing trees and shrubs within 1 meter below the penstock and 5 meters on either side of the penstock will be removed.

Spillways and Diversion Channels (Power Canals)
Spillways are concrete or natural channels designed to pass excess water around the dam without going through the turbines. Diversion channels carry water to the penstocks or to storage reservoirs. Weed control is required around spillways and diversion channels mainly to prevent organic debris from accumulating in the channel and to maintain access for safety inspections and maintenance. Trees and shrubs growing within 5 meters of spillways and drainage channels will be managed when they cover 10% of the area (**10% threshold)**.

Noxious Weeds (Invasive Plant Species)
There is no tolerance for noxious weeds (**0% threshold).** They will be controlled on a priority basis to comply with provisions of the BC *Weed Control Act.*

3.5 Treatment Options & Selection Criteria [IPMR Section 58(2)(e)]

IPM involves the use of different techniques to control undesirable vegetation on FortisBC transmission and distribution ROW. The IPM techniques proposed for use under this PMP at FortisBC facilities include physical controls, cultural controls, biological controls, and chemical controls (herbicides). The selection of a particular technique depends on a number of criteria that are further described herein.

Physical controls will be primarily considered in the selection process to manage vegetation growing within or adjacent to FortisBC facilities. Herbicides will be combined with physical treatments where physical treatments alone are not providing effective vegetation

management. The targeted purpose for each herbicide approved under this PMP is discussed in detail later in this section. During all use of herbicides, disturbance to low growing vegetation will be minimized when controlling woody vegetation and noxious weeds by selective applications. The timing of herbicide applications to control noxious weeds growing within or adjacent to facilities will be carefully coordinated in areas where biological control agents have been released, to minimize negative impacts to the released insects.

3.5.1 Physical Control Methods

Physical controls may include manual (placement of geotextiles, weed trimming, hand pulling, selective slashing, girdling, tree removal, pruning) and mechanical (mowing, stump removal). Table 2 provides a description and rationale and the benefits and limitations of each of these physical treatment methods.

Table 2 Description, Rationale, Benefits and Limitations of Physical Control Methods

Description & Rationale	Benefits/Limitations
Selective Slashing is manual treatment for managing woody tree and shrub species using tools such as chain saws, brush saws and axes. Woody vegetation is most commonly found encroaching outside of fence lines. Selective slashing of certain deciduous species is sometimes combined with a follow-up herbicide treatment to reduce re-sprout from the cut stump.	The advantages of selective slashing are that it is selective and meets electrical safety requirements. The disadvantages are that use of power tools to fall trees can pose safety hazards and is expensive and labour intensive.
Girdling is an effective technique to control the growth of certain deciduous species (e.g., alder, birch, cottonwood) that commonly re-sprout following cutting. A strip of bark is removed from around the entire tree trunk with an axe or other hand tool. This causes damage to the phloem tissue within the sapwood. Transport of nutrients (needed for photosynthesis) to the roots is inhibited, which causes the tree to slowly die.	This technique is effective in killing the tree roots, but above ground parts remain. The technique, which is very labour intensive, is useful in areas adjacent to water bodies or other environmentally sensitive areas where herbicide application is not permitted. Girdling also allows for the selective management of individual stems and species, which can be removed on a tree-by-tree basis. The disadvantage to girdling is that it has the potential to create a standing dead leave tree (or snag) which presents an ongoing safety concern. For this reason, the use of girdling will be limited. Topping is preferred when it is safe to do so.

Description & Rationale	Benefits/Limitations
Hand Pulling is a viable physical control only for certain established weeds that can be easily uprooted such as young tree seedlings and clumps of grass where the roots can be fully removed. It is effective if the number of weeds to be pulled is small and the site is a manageable size. When hand pulling is used to manage weeds, the exposed soil should be immediately covered with existing gravel.	Hand pulling of weeds at electrical facilities is not done very often, as it tends to break down the crushed rock surface. Excessive hand pulling increases the organic matter in the crush rock, which encourages weed establishment. There can also be a serious safety issue with hand pulling weeds within electrical facilities. If the weed roots are in contact with the ground grid, workers hand pulling roots risk electrocution. In areas where there has been little or vegetation management undertaken for an extended period of time, hand pulling can be effective at reducing a large volume of vegetation to a manageable level. Other control methods can then be used to complete the vegetation management work.
Weed-Trimming at the ground surface can be used in areas such as along fence lines, at low priority sites, for removing herbaceous vegetation growing on gravel areas, within cracks in asphalt or concrete and along access roads.	When done early in the season, weed trimming helps to remove seed heads. It does not remove roots and has only limited effectiveness against weed species that reproduce from stem pieces. A common two-step procedure within gravel areas combining weed trimming with a follow-up herbicide application is effective in managing weed growth while. Weeds are cut down, raked up along with the organic matter, and removed off site for disposal. The cut portions of the vegetation that remain on the gravel surface are then treated with an appropriate herbicide.
Mowing is the cutting of problem vegetation, primarily grasses or other low growing herbaceous species. Vegetation will be mowed using commercial lawnmowers, garden tractors or industrial tractors.	Mowing is useful for maintaining vacant or undeveloped areas within a facility. Vacant areas are those that have no electrical facilities or equipment storage or have been designated for future expansion. The surface of the vacant areas may be covered with grass or other low growing herbaceous vegetation and is maintained only by mowing. Vegetation should be mowed prior to developing seed heads, to reduce the seed source available for dispersal to other areas of low weed tolerance within the facility.
Pruning is useful for the selective removal of limbs and branches from large native trees and domestic shrubs growing on perimeter fencing. Tree pruning can be used where tree removal may not be appropriate. In residential areas, pruning is often a more acceptable method of controlling problem vegetation than other manual/mechanical techniques.	Pruning is useful for the removal of selected branches from trees encroaching along fence lines in areas such as substations and switching stations. The advantage of pruning using proper arboriculture practices is that it causes minimal disturbance to the surrounding environment.
Geotextile is a porous polypropylene fabric that is placed below mulches in landscaped areas such as flower or shrub beds. It works by preventing root growth of the unwanted vegetation.	The use of geotextile under crushed rock may give better control of unwanted vegetation than the use of crushed rock alone. When geotextiles prove beneficial in reducing weed growth, its use will be incorporated into new and upgraded substations and switchyards.

Description & Rationale	Benefits/Limitations
Stump Removal is the removal of large, mature trees and is sometimes required adjacent to facilities to improve site safety, security and aesthetics.	Stump removal is often required following tree cutting if the stump is unsafe, aesthetically displeasing, or is in a construction location. Stump removal in construction sites is achieved with heavy machinery, while individual stumps can be ground down with a stump grinder.

3.5.2 Cultural Control Methods

Cultural controls involve the establishment of local, low-growing competitive vegetation to minimize the need for long-term control of woody vegetation and noxious weeds, or grass seeding large areas of bare soil. These techniques can be used on undeveloped sites or disturbed area within a facility.

Table 3: Description, Rationale, Benefits and Limitations of Cultural Control Methods

Description & Rationale	Benefits/Limitations
Grass Seeding refers to the manual planting of turf or agricultural grasses. This method is used to reduce the establishment of broad-leaved weeds with rapidly spreading airborne seeds. Required equipment may include cyclone spreaders, seed drills and hydro-seeding machines.	The advantages of using grass seeding are that it prevents erosion, inhibits weed growth and promotes aesthetics.

3.5.3 Chemical (Herbicides) Selection [IPMR Section 58(2)(e)]

Chemical control involves the use of herbicides to inhibit growth of problem vegetation within or adjacent to FortisBC transmission and distribution ROWs. Selection of the herbicide and method of treatment is determined by:

- Soil residual activity
- Mode of action
- Selectivity
- Environmental characteristics
- Health and safety characteristics

Soil Residual Activity

An herbicide with residual properties tends to be retained in the soil for a certain period of time. Herbicide active ingredients are generally classified by their degree of soil residual activity—low, moderate, or high. The most common herbicides used by FortisBC have low to moderate soil residual activity.

Mode of Action
An herbicide's mode of action refers to how it affects the plant. Uptake of herbicides is by plant roots, stems, and foliage.

Selectivity
Herbicides that control all vegetation are termed non-selective, while those that are effective in controlling certain types of vegetation are termed selective.

Environmental Characteristics
The following properties are considered when making an herbicide selection:

- Volatility
- Adsorption to soil particles
- Toxicity to non-target organisms
- Selectivity
- Residual activity

Health and Safety Characteristics
All herbicides used by FortisBC have low to moderate toxicity. Applicators are well trained and protected by personal safety equipment such as goggles, gloves, coveralls, and chemical-resistant boots based on the label recommendations. To minimize exposure, FortisBC selects herbicides with the lowest level of toxicity and rates that proved acceptable levels of weed control.

3.5.4 The Need for Herbicide Use

Although a main objective of this PMP is to minimize the use of herbicides for the control of problem vegetation where viable alternatives exist, herbicides are an important tool in vegetation management. This is especially true in areas where non-chemical methods cannot be employed because of safety issues, such as within substations and switching stations.

Mowing, pruning, trimming and cutting remain important parts of FortisBC's IPM program, yet in some instances these methods can be impractical, dangerous for workers, incompatible with environmental protection values, labour intensive and expensive. There are worker safety issues inherent in attempting to hand pull vegetation within an electrical facility related to contact with ground wires. In certain areas, mechanical methods cannot be used for vegetation control. Steep terrain may limit access by mowers and can be dangerous for a chain saw operator. Dense brush can create both a visibility and a physical hazard to workers and can result in increased injuries due to slipping and tripping while operating power equipment. Mechanical methods are non-selective and can lead to soil erosion by removing a high percentage of the vegetative ground cover; they can also damage compatible plant species such as low growing shrubs and grasses. Biodiversity is reduced when non-selective mechanical methods are used to remove most of the vegetation from a site. Studies have shown that there are worker health risks arising from exposure to power saw exhaust during brushing activities. The exhaust of a brush saw or a chain saw has been shown to contain many toxic compounds, including potent mutagens,

carcinogens, irritants and central nervous system depressants. Studies indicate that work done in dense brush and quiet air can result in exhaust concentrations that may impair worker health. There are also the unknown effects of power saw exhaust on the environment. From an economic viewpoint, mechanical methods have been shown to cost, on the average, four times more per hectare than control of the same vegetation using herbicides.

Herbicide use has not been shown to impair applicator health provided that personal protective measures and equipment, as indicated on product labels, are adhered to. With the exception of the active ingredient glyphosate, all herbicides proposed for use are selective in their mode of action. They will not affect grasses growing on a treatment site, thus reducing the chances of soil erosion. Due to their generally selective use (to control re- sprouting of deciduous vegetation), their impacts on biodiversity will be generally less than with mechanical methods. Effects on biodiversity that result from the use of glyphosate have been shown to be temporary due to its non-residual nature.

Appendix C provides details on the properties/use patterns, timing of application, and where and how applied for the herbicide active ingredients proposed for use under this PMP.

3.5.5 Herbicide Identification, Application Equipment, and Application Methods

The herbicide active ingredients proposed for use under this PMP are 2-4-D, Aminocyclopyrachlor, Aminopyralid, Chlorsulfuron, Dicamba, Flumioxazin, Glyphosate, Imazapyr, metsulfuron-methyl, Indaziflam, Pyroxasulfone, Salfluefenacil, Triclopyr, Clopyralid, MCPA, picloram and Diflunfenzopyr. More detail on these herbicides is included in Appendix C.

3.5.6 Herbicide Application Equipment

The application equipment proposed for use in applying herbicides under this PMP include:

Backpack Sprayer
A backpack is a portable, manually operated, pressurized container with a positive shut-off system and a nozzle for applying herbicides. It operates under low pressure, thus minimizing the possibility of drift. It is particularly useful for spraying small areas or individual trees and plants. Within this PMP, backpack sprayers may be used for the foliar or soil application of all the active ingredients for vegetation management at facilities, for the application of the active ingredients to cut surfaces (i.e. stumps) following physical controls, and for the control of noxious weeds and invasive plants.

Wick/Wipe on Applicator
Wick/wipe on application may be used to selectively apply herbicides containing the active ingredient glyphosate by wiping it directly onto plants. Only small amounts of herbicide are applied, so the need for pumps, control devices and spray tanks are eliminated. Wick/wipe on applications are ideal for vegetation management in areas where no spray drift can be tolerated. Wick/wipe on applications of glyphosate may be used for vegetation management at facilities,

for the application to cut surfaces (i.e. stumps) following physical controls, and for the control of noxious weeds and invasive plants

Handgun (Power Hose and Nozzle)
A handgun (power hose and nozzle) is a hand-held spray gun and hose attached to a portable tank filled with herbicide solution, usually with a power-driven pump to provide pressure to the herbicide solution in the hose. Handguns are generally used within facilities where large areas of vegetation have to be controlled but may also be used for the control of noxious weeds and invasive plants. Within this PMP, handguns may be used for the foliar or soil application of all the active ingredients for vegetation management at facilities, and for the control of noxious weeds and invasive plants. Tanks may be mounted on an ATV or vehicle.

Squirt Bottle
A hand-held, non-pressurized container used to apply the herbicide active ingredients to the cut surface of deciduous stumps to inhibit re-sprouting following physical control methods.

Injection Tools
A lance used to inject the herbicide active ingredients to individual deciduous stems to inhibit re-sprouting following physical control methods.

3.5.7 Herbicide Application Methods/Techniques

The herbicide application methods/techniques proposed for use under this PMP include foliar, wick/wipe-on, and cut surface applications. A description, rationale for use, and the benefits and limitations of each of these application methods/techniques, is shown in Table 3.

Table 3 Herbicide Application Methods/Techniques

Description & Rationale	Benefits/Limitations
Foliar applications involve use of a manually operated pressurized backpack sprayer or a handgun and can be used to apply all of the active ingredients. This method/technique is most effective when the target vegetation is actively growing.	Foliar applications can be carried out at any time of the year, provided the target plants are actively growing. As foliar applications are susceptible to drift, caution must be exercised around desirable plants and environmentally sensitive areas. If non-selective herbicides are being applied, they will control both the target vegetation and desirable plants that are growing among them.
Soil applications involve the use of manually operated pressurized backpack sprayer or a handgun and can be used to apply the active ingredients diuron and simazine for total vegetation control within facilities.	Because both diuron and simazine are non-selective, residual herbicides, they can be used for vegetation control within most facilities where long-term control of all vegetation is the objective. They are effective in preventing seed germination of some broadleaf vegetation, annual and perennial grasses when applied to the soil. Care must be exercised in their use within facilities if used in areas subject to heavy rainfall or snow, as the herbicides may be washed or moved offsite.

Description & Rationale	Benefits/Limitations
Wick-Wipe-on applications involve the use of a wick soaked with the active ingredient glyphosate that is wiped or dragged over the foliage of the target vegetation. The wick applicators are available in various materials and in many sizes. This technique will generally be used where cut stumps have re-sprouted, or for treating small patches of vegetation within facilities in areas where no drift can be tolerated.	This application technique virtually eliminates drift and is useful for the safe and effective treatment of individual plants or stems located in areas of desirable vegetation. This technique is labour intensive, however, and is only practical to use for small treatment areas or for a small number of individual plants.
Cut Surface applications will be used in conjunction with manual treatments for controlling deciduous vegetation. With this method/technique, the problem vegetation is cut as low to the ground as possible and herbicide is applied to the cut surface of the stump to limit re-sprouting.	This method/technique is preferable in highly visible areas or in areas where standing dead trees do not meet treatment objectives. Because herbicide application is restricted to the cut surface of freshly cut stumps, there is generally no herbicide drift, resulting in minimal impact to fish, wildlife, and bodies of water, water sources, and food intended for human consumption. Cut surface applications pose little risk of herbicide exposure to workers or the general public. If treatment is not undertaken immediately following physical control, this technique may not be successful.

3.6 Treatment Selection Criteria [*IPMR Section 58(2)(e)(iv)*]

Integrated vegetation management involves a decision-making process that looks at the various treatment options that are available for any particular vegetation complex. This decision-making process ensures that the most suitable, effective, environmentally compatible and cost-effective method or combination of methods is selected for a particular facility. In making these decisions, FortisBC personnel or contractors will generally use the following assessment criteria to justify and evaluate the method(s) chosen:

- Urgency of the required treatment;
- Species of problem vegetation (conifer/deciduous);
- Location of the problem vegetation (under piping, perimeter fences);
- Accessibility to the problem vegetation (terrain, slope, remote areas);
- Safety issues (the public, FortisBC personnel and contractors;
- Risk of fire (fuel loading on the ground);
- Objectives of vegetation management (reduce fire hazard, access, site security);
- Consequences of not taking action;
- Stem density of problem vegetation;
- Height of problem vegetation;
- Effect on adjacent property owners and land uses;
- Indigenous and public concerns;
- Aesthetic considerations;
- Short and long-term impacts of the method(s) being considered;

- Expected efficacy of the method(s) being considered;
- Benefits and limitations of each method;
- Cost effectiveness of each method;
- Environmental considerations (proximity to water sources, bodies of water, food growing or planted for human consumption, riparian areas, wildlife and fish habitat); and,
- For herbicide treatments, the choice of herbicide, application methods/techniques and application equipment.

Wherever possible the contractor and FortisBC will work to ensure that treatments are applied at the most effective time for weed control. If the treatment option being considered involves the use of an herbicide, the most effective control will be achieved if the herbicide is applied at the correct growth stage of the weed.

If a site is recommended for herbicide application to manage the weeds, the contractor will have in his possession the most recent copy of the Site Data Sheet and Management Plan for the site during the treatment. At the conclusion of the treatment, the contractor will record on the plan the following information:

- Date and time of treatment;
- The active ingredient(s) applied, application rate, total area treated in square meters;
- The site location;
- An estimate of the total area treated; and,
- The target species.

3.7 Post Treatment Evaluations [IPMR Section 58(2)(c)]

All applications of herbicides for facilities vegetation management under this PMP will be undertaken by contracts issued to qualified companies in possession of a valid BC Pest Control Service Licence. All herbicide applications will be made by certified pesticide applicators in the appropriate category of certification or supervised by certified pesticide applicators in the appropriate category of certification.

During their regular operations and maintenance site visits, FortisBC staff will monitor the effectiveness of vegetation management treatments undertaken by each contractor.

Work will be inspected by FortisBC or contractors to determine:

- Compliance with the commitments made in this PMP;
- Compliance with the *Integrated Pest Management Act and Regulations*;
- That site objectives have been achieved;
- The success of the treatment methods employed;
- If pesticide free zones, no treatment zones and buffer zones were maintained;
- If any negative environmental impacts have occurred; and,
- If corrective action is required.

Inspections will be undertaken on the ground and will generally be based on visual evaluations. Evaluations may include both qualitative and quantitative determinations of mortality to the targeted problem vegetation, as well documentation of any non-target treatment that is evident. Effectiveness of the treatments will be evaluated.

The above information can also be used in the Facilities Site Data Sheet and Management Plan.

4.0 Rights of Way Integrated Pest Management

4.1 *Prevention* [IPMR Section 58(2)(a)]

Preventative measures, such as regular vegetation management cycles, hazard tree identification and shared planning, are aimed at preventing the initial growth and spread of unwanted vegetation and are an integral part of an IPM program.

Under its prevention program, FortisBC and qualified contractors conduct regular patrols. Information such as hazard tree identification, vegetation management requirements, clearances and anticipated cycle times is gathered during these patrols. From this information FortisBC is able to establish regular vegetation management cycles and hazard tree removal schedules.

Using the results of inspection information and available information on average growth rates for the various species of trees in each area, a plan is designed so that each area is managed on an appropriate and regular cycle (e.g., every 3 years). Where feasible preventative measures are incorporated into corridor designs prior to construction or may be implemented during infrastructure upgrades. In some instances, these measures may reduce the need for future maintenance requirements of pesticide and non-pesticide control methods. Descriptions of the preventative methods of vegetation management that will be used under this PMP are shown in Table 4.

Table 4 Preventative Methods of Vegetation Management

Prevention Methodology	Description
Vegetation Management Cycles	• Reference clearance specifications included in Appendix D. • Designed to ensure public safety and system reliability are maintained. • Cycle times normally 3 to 5 years. • In wet areas where the vegetation is fast growing, such as the interior rain forest of the West Kootenay region, a cycle may be reduced to 2 years. In drier areas, such the Okanagan and Similkameen Valleys, cycle times may be extended to 4 or 5 years, especially for areas with slow growing vegetation. In some urban areas heavily affected by homeowner irrigation, the cycle may be a 4 year / 2-year combination, where selected locations are managed every 2 years. • Several FortisBC transmission corridors traverse different biogeoclimatic zones; therefore, the vegetation management cycle may not be consistent throughout the length of line.
Hazard Tree Identification	• Critical and ongoing activity. • Criteria include dead, dying or infirm trees due to physical conditions (wind shock, snow loading, lightening, weakened root structure, etc.) or forest health issues (fir bark beetle, mountain pine beetle, birch worm, spruce bud worm, root rot, etc.).

Prevention Methodology	Description
Shared Planning	• Setting and enforcing clearance specifications for new construction, for customer owned facilities and secondary conductors are examples of preventative measures designed to reduce the likelihood of electrical outages by reducing the incidence of line contacts. This practice also typically reduces the frequency and extent of future vegetation management treatments.

4.2 Pest Identification [IPMR Section 58(2)(b)(ii)]

Unwanted vegetation has the potential to adversely impact FortisBC's infrastructure and to threaten the safety of employees and the public.

Accurate identification of unwanted vegetation on or adjacent to FortisBC ROWs enable the company to better understand growth rates and characteristics, predict locations and whether or not control is warranted or desirable. By understanding the pests along its ROW corridors, FortisBC has a better appreciation of the types of control methods needed/available, and the appropriateness of application. In some cases, pest species may be easily controlled by non-chemical methods, yet others may only be effectively managed through a combination of non-chemical and chemical methods. Re-sprouting of certain deciduous tree species, for example, are best controlled by manual cutting followed by the application of a pesticide to the freshly cut stump.

4.2.1 Growth Stages of Plants

Table 5 describes the four stages of development typical of most plants:

Table 5 The Four Stages of Development Typical of Most Plants

Plant Development Stage	Characteristics	Effectiveness of Chemical Treatment
Seedling	• Seed leaves and the first true leaves may be present • Plants are small and easily controlled by both chemical and non-chemical methods	• Good. • Less waxy coating allows better penetration of leaf surface. • Younger plants have small roots systems near the soil surface. • Small size of the plants requires less herbicide • Less likelihood of unsightly patches of dead weeds or brush.
Vegetative	• Rapid growth of stems, foliage and roots. • Rapid uptake of water and nutrients,	• Very effective

	• Greater movement of water and nutrients throughout the plant	
Reproductive	• Flowering and seed production stage • Uptake of water and nutrients is reduced • Plant growth is limited. • Water and nutrients directed to the reproductive parts, including flowers, fruit and seeds. • Movement of plant food to the roots is reduced	• Herbicide use is less effective • As plants become larger, the leaves are more difficult to penetrate, and their roots are deeper and have more stored food.
Senescent (Mature)	• Little plant growth • Movement of water, nutrients and any chemical treatment is very slow.	• Ineffective

4.2.2 Vegetation Classification

ROW vegetation can be grouped into several broad categories according to their growth form. Categories include grasses, sedges, forbs, ferns, vines and woody plants (brush, trees, shrubs). Woody plants and vines are the only problem vegetation on ROWs and are described in the Table 6 below:

Table 6 Problem Vegetation and Their Characteristics

Problem Vegetation	Characteristics
Vines	• Can be either woody or herbaceous. • Often have persistent, woody stems. • Easily invade weed-free areas. • Can climb utility poles and signs and can severely reduce access to structures. • Most vines are perennials, but a few are annuals.
Woody Plants: Brush, Trees & Shrubs	• Perennials that reproduce by seed or from sprouting roots. • Brush and shrubs have several stems that grow to 3 meters in height. • Trees divided into hardwoods (deciduous) and conifers usually have a single stem and grow greater than 3 meters in height. • Trees are the primary target in ROW vegetation management due to their height and potential for contact with lines. • For conifers: mechanical, non-chemical methods are the preferred control due to ability to re-sprout from cut areas. • For deciduous trees: a combination of mechanical methods followed by the selective application of herbicides in targeted areas to eliminate re-sprouting is preferred.

4.3 Monitoring Populations of Problem Vegetation [IPMR Section 58(2)(c)]

Monitoring problem vegetation, including hazard trees, is an essential planning and prevention tool for the FortisBC Vegetation Management Program. Results of monitoring inspections/patrols are used to determine what action is required to minimize risks associated with the possibility of vegetation coming into contact with transmission and distribution lines. FortisBC uses tree risk identification and evaluation processes to make decisions regarding what potential hazards may be associated with a particular tree or groupings of trees. Table 7 provides a summary of the FortisBC monitoring program that is completed on a regular basis:

Table 7 Summary of the FortisBC Monitoring Program

Monitoring Method	Data Collection
Helicopter Patrol	GPS, species, physical location, hazard rating*
Ground Patrol	GPS, species, physical location, hazard rating*
Public/ Internal Reports	Site specific follow up and work plan if required

* hazard rating – is determined by the combination of (1) the presence of vegetation that could grow into contact with transmission and distribution lines, and (2) the presence of trees that are defective (i.e. hazard trees) that could hit or damage transmission or distribution lines when they fall.

4.4 Injury Thresholds *[IPMR Section 58(2)(d)]*

The decision to initiate treatment for problem vegetation is based almost exclusively on clearance specifications. The intent is to remove tree species that have the potential to grow into energized conductors. Clearance requirements for existing lines/ROW depend on the voltage. Special clearance requirements for radial circuits to mountain repeaters are summarized in Appendix D.

4.5 Treatment Options & Selection Criteria [IPMR Section 58(2)(e)]

IPM involves the use of different techniques to control undesirable vegetation on FortisBC transmission and distribution ROWs. The selection of a particular technique will depend on:

- How required clearance specifications can be achieved;
- Land use (including public verses private and adjacent land uses);
- Proximity of water sources, bodies of water and other environmentally sensitive features;
- The possibility of adverse impacts to wildlife, fish, surrounding land, workers and adjacent residents;
- Safety, security and economic impacts;
- Existing soil types, weed species present, objectives of control, and how these relate to the suitability of the particular method(s)s being considered;
- Site accessibility; and,

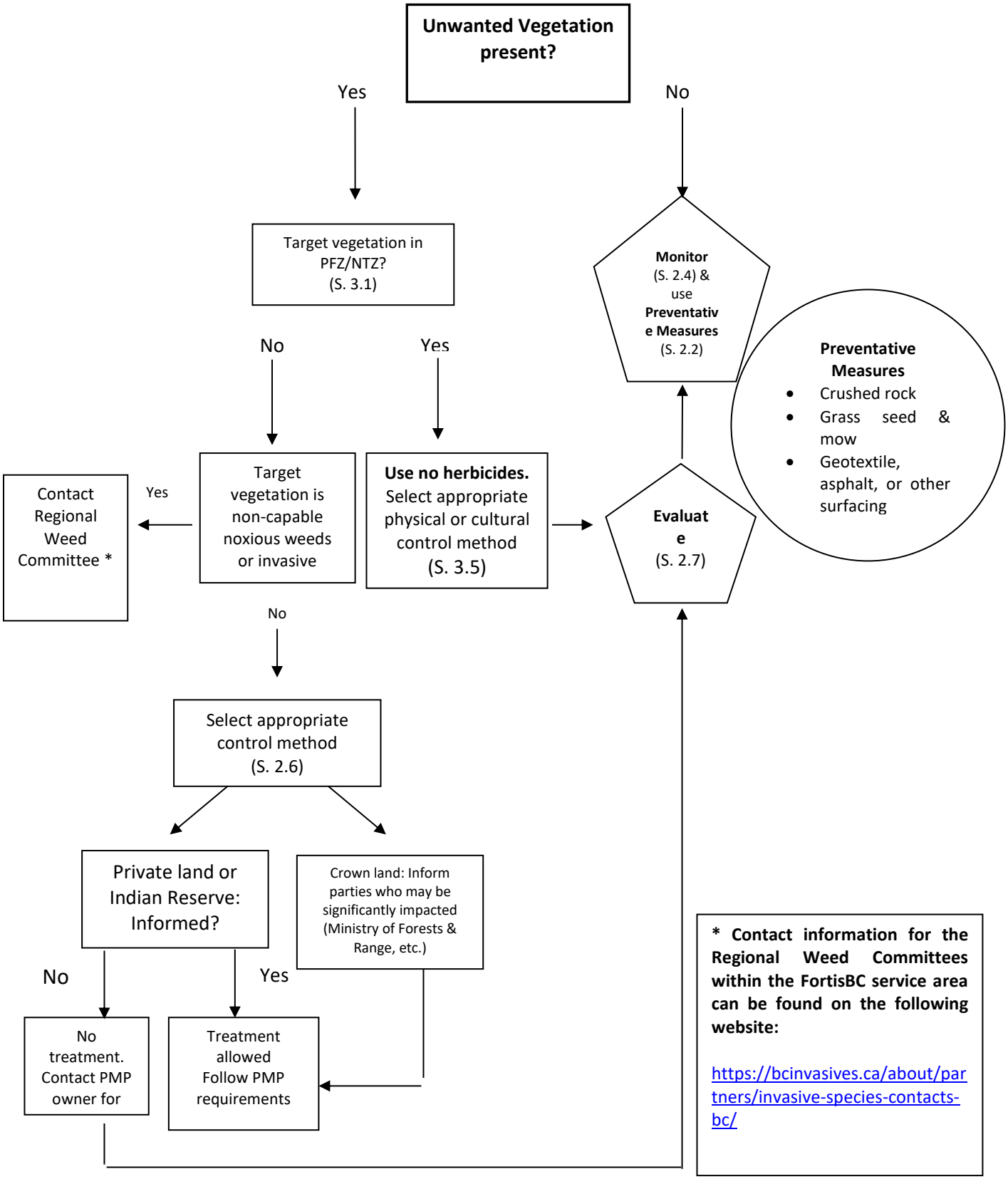
- The consequences of not treating.

General site conditions and environmental sensitivities are assessed during regular inspections or during patrols, and again immediately prior to control measures being implemented.

A Treatment Decision Tree, such as is shown below, can be used to determine the most appropriate IPM technique to employ for problem vegetation.

The IPM techniques proposed for use under this PMP on or adjacent to FortisBC transmission and distribution ROWs include physical controls, cultural controls, biological controls, and chemical controls (herbicides). Physical controls will be primarily considered in the selection process to manage problem vegetation. Herbicides will be combined with physical treatments where physical treatments alone are not providing effective vegetation management. The targeted purpose for each herbicide approved under this PMP is discussed in detail later in this section. During all use of herbicides, disturbance to low growing vegetation will be minimized when controlling woody vegetation by selective applications.

Treatment Decision Tree



*** Contact information for the Regional Weed Committees within the FortisBC service area can be found on the following website:**

https://bcinvasives.ca/about/partners/invasive-species-contacts-bc/

4.5.1 Non-Chemical Treatment Options

Include Physical and Cultural Treatment methods. See tables 8, 9 & 10 below.

4.5.1.1 *Physical Control Methods*

Physical controls may include slashing, mowing, pruning and burning. Table 8 provides a description and rationale, and the benefits and limitations of each of these physical treatment methods.

Table 8 Description and Rationale, Benefits and Limitations of Physical Control Methods

Description & Rationale	Benefits/Limitations
Selective Slashing is the primary physical method to remove problem vegetation and involves the use of chain saws or other appropriate tools to selectively cut problem vegetation to ground level in order to maintain the required clearance specifications. For conifer trees, re-sprouting will not occur if all green branches are removed. For deciduous trees, herbicide may be applied to the cut stump area to prevent re-sprouting.	Species specific and enables desirable vegetation to be left on the right-of-way. Useful for deciduous vegetation control, as it allows the follow-up selective application of herbicides to cut surfaces to inhibit re-sprouting. Can be done without decreasing slope stability, increasing erosion potential or causing damage to the streambed of bodies of water and riparian areas Generally, not suitable or economical for areas with high stem densities (> 5,000 to 10,000 coniferous stems per hectare or > 10,000 to 20,000 deciduous stems per hectare), or where the problem vegetation is greater than 4 meters in height. It may also be dangerous for workers if the vegetation is dense or is located in areas of steep terrain. Selective slashing taller vegetation generally results in an excessive amount of debris that could become an increased fire risk. Appendix E provides more details on selective slashing.

Description & Rationale	Benefits/Limitations
Mowing is the use of mechanized mowers such as tractor-mounted mowers, grade all or hydro axes to remove all ROW vegetation to ground level.	Less expensive than other physical methods, as problem vegetation can be removed faster. Generally, not suitable for use in areas that are rocky, have stumps, or that are on slopes or boggy areas, due to restricted access and/or worker safety considerations. Not suitable for use in riparian areas or in areas where low-growing compatible species predominate. Often promotes the re-sprouting of deciduous vegetation, resulting in the need for future treatments or herbicide applications to inhibit re-sprouting. Because mowing uses wheel or track-mounted equipment, there is generally widespread soil disturbance (track marks and rutting) that can lead to the establishment of noxious weeds and invasive plants. Although less labour intensive and therefore less expensive it is not selective and both desirable and undesirable species are removed. Mowing mulches, the brush using high speed, flail type action, which can spread debris across the ROW. This may also open up the opportunities for undesirable species to sprout from seed if soil is disturbed. Appendix E provides more details on mowing.
Pruning is the reduction of tree growth through the use of proper arboricultural practices. It requires the consideration of two factors: clearances required to ensure line safety for the length of the cycle (normally 3 years); and the health of the tree. The priority is to optimize long-term clearances. Proper pruning methods influence the direction of branch growth so that trees can be pruned away from conductors.	Can be used in riparian areas to protect wildlife habitat where tree removal may not be appropriate or allowed. May also be used where the main stem of the problem tree is not on the ROW, but the branches are encroaching. In residential areas, pruning is often a more acceptable method of controlling problem vegetation than other physical control methods. Proper pruning on right-of-way perimeters may influence the direction of branch growth and may eliminate the need to remove problem trees. Does not adversely affect wildlife habit, biodiversity or aesthetics. Because pruning may have to be repeated at regular intervals, it is costlier and more labour intensive than other physical control methods. Knowledge and experience of proper arboricultural techniques are needed for successful pruning. Improper pruning can cause tree damage and can result in unsightly, unhealthy and hazardous trees that may require further remedial action. Appendix 3 provides more details on pruning.

Description & Rationale	Benefits/Limitations
Burning is a recognized physical control for problem vegetation. Unless undertaken in accordance with the requirements of the BC Ministry of Forests, FortisBC will generally not utilize burning as a physical control method.	

4.5.1.2 *Cultural Control Methods*

Cultural controls involve encouraging the planting and maintaining of low growing trees and shrubs and/or compatible tree species by private landowners adjacent to the ROW, encouraging the establishment of certain types of agroforestry on the ROW, and investigating the feasibility of using tree growth regulators/inhibitors if and when they become registered for use in Canada. Table 9 provides a description and rationale, and the benefits and limitations of each of these cultural treatment methods.

Table 9 Cultural Control Methods

Description & Rationale	Benefits/Limitations
Planting Low Growing Trees and Shrubs on adjacent private land will be promoted where practical and feasible.	Landowners can be educated on the benefits of planting and maintaining of low growing trees and shrubs for safety; system reliability; reduced requirement for treatment of undesirable vegetation. Desirable species include native and cultivated trees and shrubs, grasses and/or field crops not capable of growing tall enough to interfere with overhead lines.
Planting Compatible Tree Species on adjacent private land will be promoted where practical and feasible.	Planting and maintaining trees at sites close to distribution lines maybe be acceptable, provided that the tree is appropriate for the location and is planted far enough away from the lines that it will not encroach within the limits of approach. Planting trees near transmission lines, is generally not acceptable.
Encouraging Agroforesty ventures on ROWs will be encouraged, provided that they do not grow or can come into contact with transmission and distribution lines.	FortisBC will consider commercial agroforestry ventures as long as they do not adversely impact the Company's business. Currently, the following types of agroforestry ventures are located on FortisBC ROW: • Christmas tree farms; • Commercial vineyards; and, • Native grasses and seed production.
Tree Growth Regulators/Inhibitors will be investigated for possible use on both ROWs and on adjacent private land.	No products are yet registered in Canada that would allow for tree growth regulators/inhibitors on utility corridors. Once available, FortisBC will include these products into its PMP toolkit where practical and feasible. Potential sites may be municipal boulevards where limiting growth may result in saving aesthetically appealing trees from excessive pruning.

4.5.2 Chemical (Herbicides) Selection [IPMR Section 58(2)(e)]

Refer to section 3.5.4 for further information regarding herbicide selection rationale.

4.5.3 Herbicide Use

Herbicides may be required on FortisBC ROWs to target specific types of vegetation problems. Herbicides will generally be used to selectively control deciduous vegetation and re-sprouting, to control individual stems or trees, or for the spot treatment of problem vegetation following physical controls. Although a main objective of this PMP is to minimize the use of herbicides for vegetation management where viable alternatives exist, herbicides are an important tool in right-of-way vegetation management.

Although mowing, pruning and selective slashing remain important parts of FortisBC's ROW maintenance program, in some instances these methods can be impractical, dangerous for the workers, incompatible with environmental protection values, labour intensive and expensive. In certain areas, mechanical methods cannot be used for vegetation control. Steep terrain may limit access by mowers and can be dangerous for a chain saw operator. Exceedingly dense brush can create both a visibility and a physical hazard to workers and can result in an increased incidence of injuries due to slipping and tripping while operating power equipment. Mechanical methods are non-selective and can also lead to soil erosion by removing a high percentage of the vegetative ground cover. They can also damage compatible plant species such as low growing shrubs and grasses. Biodiversity is reduced when non-selective mechanical methods are used to remove most of the vegetation from a site.

Herbicide use has not been shown to impair applicator health provided that personal protective measures and equipment, as indicated on product labels, are adhered to. Herbicide use is often the only practical and safe method of controlling vegetation where ROW traverse rugged, mountainous terrain, or areas inaccessible to motorized equipment. From an economic viewpoint, mechanical methods have been shown to cost, on the average, four times more per hectare than control of the same vegetation using herbicides.

Appendix C provides details on the properties/use patterns, timing of application. Where and how they will be applied, and the equipment used for application, for the herbicide active ingredients proposed for use under this PMP.

4.5.4 Herbicide Identification, Application Equipment, and Application Methods

Refer to section 3.5.6 for a list of herbicides & methods proposed for use under this PMP.

4.5.4.1 *Herbicide Application Equipment*

Refer to Section 3.5.7 for herbicide application equipment proposed for use under this PMP.

4.5.5 Herbicide Application Methods/Techniques

Refer to Section 3.5.8 for application methods proposed under this PMP.

4.6 Post Treatment Evaluations [IPMR Section 58(2)(c)]

All herbicide applications on FortisBC transmission and distribution ROWs under this PMP will be undertaken by contracts issued to qualified companies in possession of a valid BC Pest Control Service License. All herbicide applications will be made by certified pesticide applicators in the appropriate category of certification or supervised by certified pesticide applicators in the appropriate category of certification.

During their regular operations and maintenance site visits, FortisBC staff will monitor the effectiveness of vegetation management treatments undertaken by each contractor.

FortisBC will ensure independent evaluations of contractor's work through inspections of sites treated with herbicides. The timing and procedure for evaluating specific treatment programs will be dependent on the treatment used. Inspections will be undertaken on the ground and will generally be based on visual evaluations. Evaluations may include both qualitative and quantitative determinations of mortality to the targeted problem vegetation, as well documentation of any non-target mortality that is evident. Effectiveness of the treatments will be determined by comparing pre-treatment and post-treatment problem vegetation levels.

Work will be inspected to determine:

- Compliance with the commitments made in this PMP;
- Compliance with the *Integrated Pest Management Act and Regulations*; i.e. type of treatment performed, date & time of audit,
- That site objectives have been achieved; i.e. Were goals & objectives of program met?
- The success of the treatment methods employed; i.e. Treatment efficacy,
- If pesticide free zones, no treatment zones and buffer zones were maintained;
- If any negative environmental impacts have occurred; i.e. Any non-target damages?
- If corrective action is required.

A ROW Post Treatment Monitoring Form is shown in Appendix G.

5.0 Environmental Protection Strategies and Procedures

All pest management activities undertaken under this PMP (both chemical and non-chemical) incorporate measures designed to protect the natural environment including:

- Strategies to protect community watersheds;
- Strategies to protect domestic and agricultural water sources;
- Strategies to protect fish and wildlife, riparian areas, bodies of water and wildlife habitat;
- Strategies to prevent herbicide contamination of food intended for human consumption;
- Pre-treatment inspection procedures for identifying treatment area boundaries;
- Procedures for monitoring weather conditions and strategies for modifying herbicide application methods for different weather conditions; and,
- Procedures for pre-treatment inspections to ensure protection of human health and the environment during treatment period.

In this PMP, all pesticide free zones (PFZ) and no treatment zones (NTZ) will comply with the standards contained in Division 7 of the IPMR.

5.1 Water Protection PFZs and NTZs

According to the *Integrated Pest Management Regulation (IPMR)*:

Table 10 Definitions of PFZ and NTZ as Stated in the IPMR

Pesticide Free Zone (PFZ)	means an area of land that a. must not be treated with pesticide, and b. must be protected from pesticide moving into it
No Treatment Zone (NTZ)	means an area of land that must not be treated with pesticide

The following table lists the minimum NTZs and PFZs that are followed to protect domestic and agricultural water sources, such as water intakes and wells.

Table 11 Protection Measures for Domestic & Agricultural Wells, Water Intakes, Bodies of Water

All Pesticides	Required Distance
Domestic and agricultural wells and water intakes	**30-meter NTZ**
Any water body or stream using any pesticide except glyphosate, subject to label restrictions	**10-meter PFZ**
Glyphosate Applications	
A water body or stream that is fish bearing and not within an industrial site (as defined by *Integrated Pest Management Regulation*)	**5-meter PFZ**
A water body or stream that is fish bearing and within an industrial site (as defined by *Integrated Pest Management Regulation*)	**2-meter PFZ**

A permanent water body that is not fish bearing at any time of the year	**2-meter PFZ**
Up to high water mark of a temporary free-standing body of water that is not fish-bearing and does not drain directly into fish-bearing water, at any time of year	**0-meter PFZ**
Dry streams that are not fish bearing at any time of the year and do not drain directly into fish bearing water, at any time of the year	**0-meter PFZ**

**Any waterbody where fish bearing status is unconfirmed, and there are not obvious barriers to fish passage, will be assumed to be fish bearing.

5.2 Environmental Feature Protection Strategies and Procedures

Table 12 Strategies/Procedures for the Protection of Environmental Features

Environmental Feature	FortisBC PMP Protection Strategy/Procedure
Community Watersheds – defined under the BC *Forest Range Practices Act*	• Locations of community watersheds are verified by accessing information from the Ministry of Environment or local governments • Pesticides will not be stored within a community watershed for more than 24 hours prior to their use, and removed from the community watershed within 7 days of their use, unless they are stored in a permanent structure • NTZs are maintained around all lakes and other water bodies consistent with those listed in Section 5.1 • A 100-meter NTZ will be maintained upslope from all licensed water intakes within the community watershed, except when failure to treat weeds could compromise public or worker safety. In those cases, NTZs are consistent with those listed in Table 12 • Pesticide use will be discontinued if pesticide residues or pesticide breakdown products are detected at a community watershed water intake, and further use will not be undertaken until the BC Ministry of Health has been satisfied that all required measures have been implemented to preserve water quality • Prior to the use of pesticides, community watershed maps will be consulted to determine if pesticide treatments are within a community watershed or are within 100 meters upslope of any water intake, or 30 meters downslope of any water intake. These are available on the provincial interactive mapping site "*BC Water Resources Atlas*" (http://maps.gov.bc.ca/ess/hm/wrbc/)
Domestic and Agricultural Water Sources, including water intakes and wells	• Domestic and agricultural water sources, including water intakes and wells, will be protected by adhering to the PFZs and NTZs listed in Table 12 • A visual survey will be done to determine if there are wells present not identified by accessing information from the Ministry of Environment or local governments

Groundwater Sources, Surface Water Intakes	• Efforts will be made to identify groundwater sources (watersheds, wells, surface water intakes) in advance of treatment by using the best available information from the Ministry of Environment and from local governments • Visual surveys will be conducted in areas adjacent to proposed treatment sites to determine the presence of domestic or agricultural surface water
Riparian Areas, Wildlife, Wildlife Habitat, and Species at Risk	• A minimum 15-meter NTZ will be maintained around riparian areas when cleaning or fueling application equipment and refilling pesticide dispensing equipment • Prior to control measures being implemented, the boundaries of any required PFZ or NTZ shall be established and marked • Appropriate precautions shall be taken when applying pesticides in critical wildlife habitat areas
Protection of Food Intended for Human Consumption	• Where possible, areas containing food plants for human consumption shall be located, NTZs of appropriate width established around these areas for their protection, and treatment notices posted at public access points to proposed treatment areas advising of treatments. • In addition, all pesticide use under this PMP will be undertaken in a manner that minimizes the possibility of any negative impact on these environmentally sensitive areas. Appropriate precautions that may be taken during weed control operations to avoid contaminating these areas include providing increased buffer zones during herbicide applications or using alternative, non-chemical methods of control where possible. • In the vicinity of certified organic farms, it is the responsibility of the grower to maintain a 25 ft buffer zone between their organic crops and power poles as recommended by the Certified Organic Associations of British Columbia (Production Operation Policies and Management Standards)
Monitoring Weather Conditions	Weather conditions will be monitored prior to and periodically during pesticide applications. Wind speed and direction, precipitation, temperature and sky conditions (clear, overcast, cloudy, partly cloudy) will be recorded for foliar herbicide applications using backpacks or handguns. Temperature, precipitation, frost and dew conditions will be recorded for stem, bark, wick/wipe-on and stump applications. Pesticide applications will be shut down if: • The maximum temperature stated on the herbicide label is exceeded • The wind speed and/or direction cause the application of herbicide to drift and/or miss the weeds • It begins to rain, increasing the chances of excessive runoff and leaching

Procedures for Pre-Treatment Inspections and Identifying Treatment Area Boundaries	• A pre-treatment inspection shall be completed prior to pesticide use to protect environmentally sensitive areas and to establish treatment area boundaries. During this inspection, the location of environmentally sensitive areas shall be located and mapped. • A pre-treatment meeting/discussion shall be held and crew members shall be instructed in the flagging/marking requirements (which may include the use of Riparian Zone and PFZ flagging tape), as well as the methodology and procedures for herbicide application and handling and the posting of treatment notices by the contractor at locations that meet regulatory requirements
Private & Public Property	• In areas such as on or adjacent to parks, schools, daycare centers, lawns, landscaped areas, flowerbeds, or domestic animals on agricultural lands, all pesticide use will be undertaken in a manner that minimizes the possibility of any negative impact on these sensitive areas. • Treatment notices will be posted at locations that meet regulatory requirements

6.0 Operational Information

Appendix H provides details on the operational information/practices that are required to be included in a PMP, including:

- Qualifications and responsibilities of persons applying herbicides;
- Procedures for safely transporting herbicides *[IPMR Section 58(3)(a)(i)];*
- Procedures for safely storing herbicides *[IPMR Section 58(3)(a)(ii)];*
- Procedures for safely mixing, loading and applying herbicides *[IPMR Sections 58(3)(a)(ii) and (iii)];*
- Procedures for the safe disposal of empty herbicide containers and unused herbicides *[IPMR Section 58(3)(a)(iv)];*
- Procedures for responding to herbicide spills *[IPMR Section 58(3)(a)(v)];* and,
- Identification of each pesticide that will be used under the plan, the manner of its application, and the type of equipment required for each manner of application *[IPMR Section 58(3)(c)].*

7.0 Reporting, Notification and Consultation

7.1 Reporting

Accurate record keeping allow FortisBC and the Administrator, *Integrated Pest Management Act,* to monitor the quantity of pesticides used, and to ensure compliance with the *Integrated Pest Management Act and Regulation,* the commitments made in this PMP, and the contents of the Pesticide Use Notice. FortisBC will ensure that each of the required records described below are maintained.

7.1.1 Confirmation Holder Use Records

Each contracting firm that applies pesticides for FortisBC must maintain daily records of herbicide use.

Section 37(1) of the *Integrated Pest Management Regulation (IPMR)* describes the requirements for these records. The following records must be kept for each treatment location and day of use:

- The date and time of the pesticide use;
- The name of the pest targeted by the use or the purpose of the pesticide use;
- The trade name of each pesticide used and its registration number under the federal Act;
- For each pesticide used, the method and rate of application and the total quantity used;
- The prevailing meteorological conditions including temperature, precipitation and velocity and direction of the wind, these conditions should be measured at the beginning of each day before starting treatment, re-measured if obvious changes in environmental conditions occur throughout the day, and re-measured at the end of any treatment day; and,
- A record for each piece of the holder's pesticide application equipment that requires calibration showing when the equipment was calibrated and the data upon which its calibration was based.

7.1.2 Annual Report for Confirmation Holders

In accordance with Section 39 of the IPMR, FortisBC will provide to the Regional Administrator, *Integrated Pest Management Act,* the following information for a calendar year by January 31 in the next calendar year for operations conducted under this PMP during the calendar year:

- The name and address of the confirmation holder, and their confirmation number;
- Trade name and active ingredient of the pesticide(s) applied, including their PCP numbers;
- Total area treated; and,
- Quantity of each active ingredient applied.

7.2 Notifications

FortisBC commits to providing the following notifications with respect to this PMP:

7.2.1 Notification of PMP Confirmation

FortisBC will, within 7 days of the plan confirmation date, make available, for the term of the confirmation, a copy of the confirmation and the PMP with relevant maps at their local offices to allow inspection by the public.

7.2.2 Annual Notice of Intent to Treat

As per section 42 of the IPMR, for the purpose of an annual Notice of Intent to treat, FortisBC will prepare and retain a detailed map showing the treatment locations for the applicable calendar year, which indicate the following for each treatment location:

- The proposed treatment areas; and
- The geographic features that require a pesticide-free zone or a no-treatment zone.

FortisBC will forward, in writing, to the B.C. Ministry of Environment, at least 21 days prior to treatment in each year during which the PMP is in effect, an Annual Notice of Intent to Treat (NIT) for the following year. This NIT will identify:

- Name and business location of confirmation holder;
- Proposed treatment areas;
- Proposed treatments;
- Pesticides proposed for use and their method of application; and,
- The total area proposed for treatment.

7.2.3 Requests to Amend the PMP

FortisBC will forward, in writing, to the Ministry of Environment, amendments requested for the PMP. Amendment requests to add new application techniques or similar changes will not require further public advertising or Indigenous consultation, provided that the amendment request is within land owned or controlled by FortisBC**.** Amendments to add new active ingredients will require further public advertising and/or Indigenous consultation.

7.2.4 Notification of Contraventions

Section 72(1)(d) of the IPMR requires that a confirmation holder give written notice to the administrator on a contravention of the *IPMA* or IPMR that involves the release of a pesticide into the environment. FortisBC commits to abiding by this requirement.

In addition, FortisBC has implemented contractor guidelines to ensure compliance. Failure of the contractor to observe the following requirements may be cause for contractor dismissal:

- Violation of the requirements of the *IPMA* or the IPMR;
- Mixing of chemicals in inappropriate locations such as near environmentally sensitive zones;

- Failure to use adequate personal protective equipment when required by the product label;
- Application of treatment chemicals within prohibited zones;
- Improper cleanup or reporting of spills;
- Application of pesticides by uncertified personnel without appropriate supervision;
- Improper disposal of unused chemicals or containers;
- Improper equipment calibration;
- Application of pesticides under inappropriate or unsafe conditions;
- Failure to properly complete and submit daily operating logs or records; or,
- Handling, storing, mixing, transporting, or applying pesticides in a manner that violates product labels**.**

7.2.5 Posting of Treatment Notices

Prior to treatment, notification signs will be posted on land being treated with herbicides. The applicator is responsible for posting notification signs according to regulatory requirements.

Signs will be clearly visible and legible from each approach to the treatment area used by public/employees/contractors to access the treatment area or at locations where due diligence would seem to require them. Signs may not be removed for at least 14 days after the herbicides have been applied.

For each treatment location, the applicator will maintain a record of where notices were posted.

7.3 Consultations

7.3.1 Public Consultation Plan

Prior to submitting a Pesticide Use Notice to the Ministry of Environment for PMP confirmation, FortisBC will carry out a consultation process with the public and individuals adjacent to FortisBC property potentially significantly affected by the PMP.

The objectives of conducting consultations when this PMP is at the draft stage are:

- To increase public awareness of the PMP process and of the principles of Integrated Pest Management which are embodied in the PMP;
- To ensure that the public have an opportunity to identify concerns, and for FortisBC to address those concerns, before the PMP is finalized and submitted and a Pesticide Use Notice submitted for confirmation;
- To ensure a transparent and accountable review process for the PMP;
- To educate the public on the need to manage problem vegetation, noxious weeds and invasive plants; and,
- To explain how the planning process that is described in the PMP recognizes the need to protect human health and the environment.

The public will be consulted of the PMP development via notices in local community newspapers throughout the FortisBC service area. As per Section 61(1) of the IPMR, at least 45 days before submitting a Pesticide Use Notice, the first of 2 notices, at least 40 cm^2 in size, will be published within a 2-week period in newspapers circulated in the various communities (or nearest communities).

Communities or individuals adjacent to FortisBC property potentially significantly affected by the PMP will be directly forwarded written notice of the development of this PMP, prior to submitting a Pesticide Use Notice as per Section 61(2) of the Regulation.

During the public consultation process, the draft PMP will be accessible to the public in various locations, as stated in the public notifications.

7.3.2 Public Consultation Report

FortisBC will prepare a Public Consultation Report that contains:

- A summary of public consultations, including the names and addresses of those who provided input, the nature of their concerns and/or recommendations, and the FortisBC response to the input from the public; and,
- A list of newspapers in which notification of the pending PMP submission appeared, along with the publication dates and a photocopy or tear sheet of a representative advertisement.

7.3.3 Indigenous Communities Consultation Plan

In addition to the objectives for public consultation outlined in Section 7.3.1, FortisBC will consult with Indigenous communities to avoid infringement on Indigenous rights, treaty rights, or cultural values during the vegetation management program. Consultation is also undertaken to request authorization to undertake pesticide applications on federal reserve lands.

FortisBC not only has an obligation to consult with Indigenous communities, it must also attempt to address their concerns and accommodate their cultural interests. Consultation processes must take into account the BC Treaty negotiation process, and current litigation actions by Indigenous communities respecting Indigenous land use or sovereignty. Both of these major issues can have an impact on the FortisBC vegetation management program.

In light of the above sensitivities and special concerns, FortisBC is committed to establishing and maintaining positive relationships with Indigenous communities through meaningful and respectful consultation.

In conducting these consultations with Indigenous communities, FortisBC will refer to the procedures outlined in the August 2011 publication entitled *"Draft Guidelines for IPM Proponents Conducting Consultations with First Nations"*, published by the BC Ministry of

Environment, and/or any additional publications that have been recently introduced by the Ministry of Environment & Climate Change Strategy.

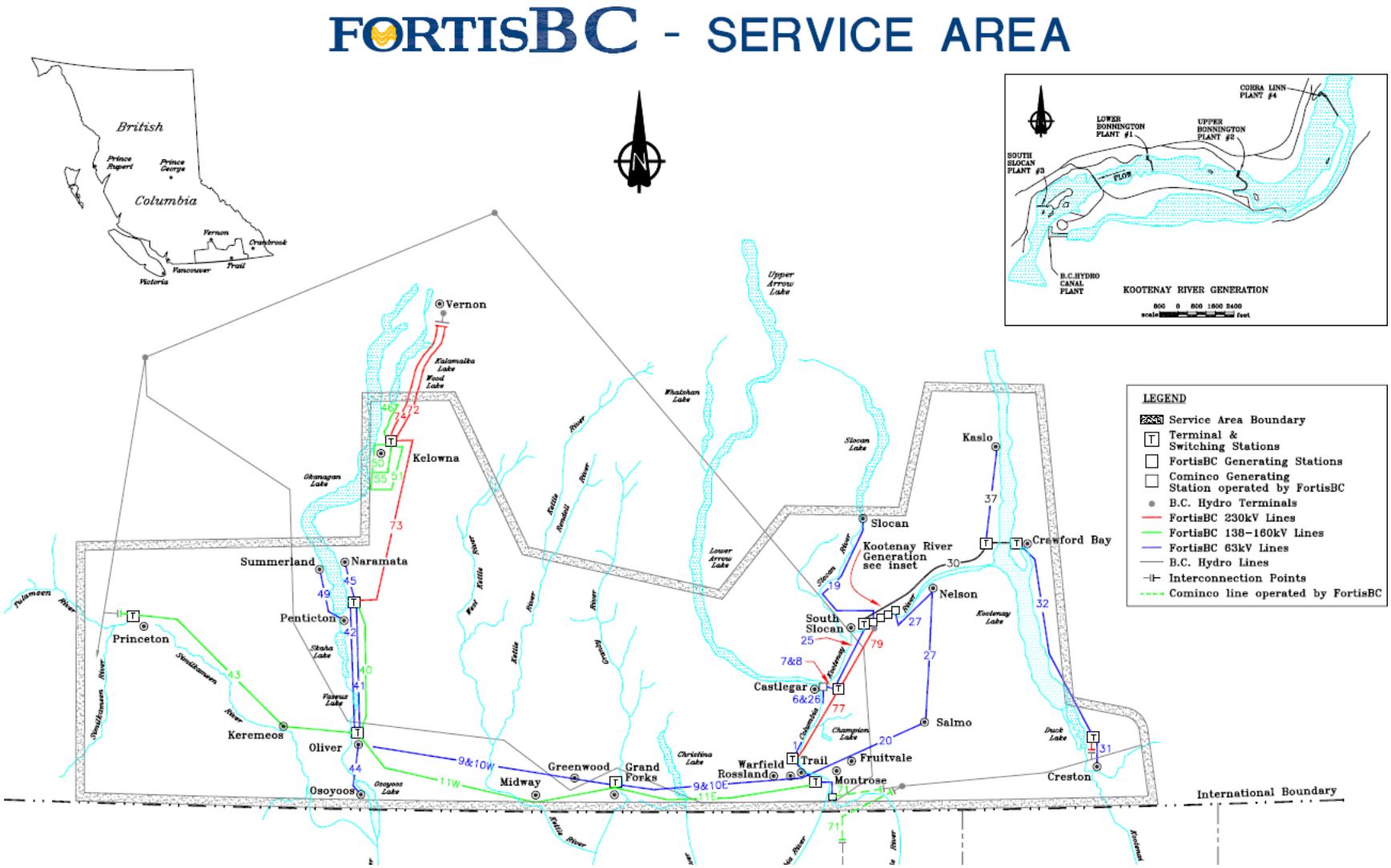
The FortisBC Indigenous consultation plan is outlined below:

- Develop a draft pest management plan (this document) that incorporates all related government policies, procedures, standards and information into a single, comprehensive planning document that incorporates the principles of integrated pest management as the basis for decision making options;
- Deliver an introductory letter including information regarding the PMP and program, and make the PMP available to Indigenous communities, inviting their input into the development of the plan and provide them a copy of the PMP draft and maps if they request to review them, and if desired meet with them in person;
- Provide the Ministry of Environment a summary of consultation with Indigenous communities, including the names and addresses of those that provided input, the nature of their concerns and/or recommendations, and the FortisBC response to the input from the Indigenous communities; and,
- Indigenous communities will receive three contact efforts, unless they have had prior contact and questions have been satisfied.
- Submit a Pesticide Use Notice to the Ministry of Environment confirmation of the PMP

7.3.4 Indigenous Communities Consultation Report

In order to facilitate Ministry consideration of the adequacy of Indigenous community consultation and of the FortisBC response to any issues raised, FortisBC will prepare a report that describes the consultation process and outcomes. This report will be submitted to the Administrator, *Integrated Pest Management Act,* in conjunction with the submission of the Pesticide Use Notice application.

Appendix A FortisBC Service Area



Appendix B Types of Problem Vegetation at Facilities

The location within the facility dictates which vegetation will be of most concern.

Herbaceous Broadleaves and Grasses

Herbaceous broadleaf and grass species are the most frequent types of weeds growing within and immediately adjacent to substations and switching stations, and in other areas where the crushed rock or gravel base is very thin and there is exposed subsoil. Herbaceous broadleaf weeds and grasses are frequently found along access roads, in gravel compounds and pole yards, at the edge of buildings, and growing through cracks in asphalt or concrete, including dams at generation sites. Many of the herbaceous broadleaf weeds are also designated as noxious under the BC *Weed Control Act.*

Woody Vegetation

Woody tree species and shrub species are most problematic when they encroach on the perimeter of fences or are found in areas where their presence limits visibility or access to a site. They may present a safety hazard if they blow down into an electrical facility, can present a fire hazard if they are overhanging too close to sensitive equipment, can impact site security by providing easier access over security fencing, and can deposit organic debris into stations which increases weed growth.
Evergreen and deciduous trees are commonly found adjacent to FortisBC facilities. Manual removal and/or pruning are effective non-chemical methods for the management of evergreen trees.
Many deciduous trees and shrubs, however, can re-sprout extensively from the areas where cuts have been made, thereby greatly increasing future management efforts. Deciduous re-sprout can usually only be effectively controlled by the application of an herbicide to the cut surfaces immediately after cutting. A combination of manual and herbicide application to the cut surfaces is also often necessary to manage those woody trees and shrubs that sucker following cutting.

Noxious Weeds / Invasive Plant Species

Noxious and Invasive Plant Species can negatively impact agriculture, where they can displace or reduce the quality and quantity of crop and forage species. They can also out-compete native plant species, thereby reducing biodiversity and wildlife forage. It is for these reasons that these weeds are designated as noxious under the authority of the BC *Weed Control Act.*

Noxious weeds have been identified and found throughout FortisBC**'s** service area, including within a number of their facilities, and on properties adjacent to these facilities.

Appendix C Properties / Specifications of Pesticides Proposed for Use Under This PMP

Active Ingredient	Common Name	Application*	Soil Residual Activity**	Selectivity***
2-4-D	2,4-D Amine	Foliage Post-emergent	Low	Selective
Aminocyclopyrachlor	Navius / Truvist	Foliage; Post-emergent	Moderate	selective
Aminopyralid	Clearview / Milestone	Foliage; Post-emergent	Low	Selective
Chlorsulfuron	Telar XP / Truvist	Foliage; Pre & Post-emergent	Moderate	Non-Selective
Dicamba	Banvel II	Foliage; Post-emergent	Low	Selective
Flumioxazin	Torpedo / Payload	Soil; Pre-emergent	Moderate	Non-selective
Glyphosate	Vantage XRT / Weed Master	Foliage and cut surface; Post-emergent	Low	Non-selective
Triclopyr	Garlon XRT	Foliage, Basal	Low	Selective
Imazapyr	Arsenal Powerline	Foliage & cut stump Pre and post-emergent	Moderate	Non-selective
Indaziflam	Esplanade	Soil; Pre-emergent	Moderate	Non-Selective
Metsulfuron-methyl	Clearview Navius VM	Foliage; Post-emergent	Moderate	Selective
Pyroxasulfone	Torpedo	Foliage and soil; Pre and post-emergent	Moderate	Non-selective
Salfluefenacil	Detail / Heat	Foliage and soil;	Moderate	Non-Selective
Diflufenzopyr	Overdrive	Post-emergent	Moderate	Selective
MCPA Amine	MCPA	Foliage Post-emergent		Selective
Picloram	Tordon 22K	Foliage; Post-emergent	High	Selective
Clopyralid	Lontrel 360	Foliage Post-emergent	Moderate	Selective

* Post emergent refers to treatments made after the vegetation has emerged through soil surfaces and pre emergent refers to treatments before the vegetation has emerged through the soil surface.

** LOW generally refers to residual soil activity of up to 40 days, MODERATE for residual soil activity of up to one year and HIGH for residual soil activity of greater than one year.

*** Herbicides that control all vegetation are termed non-selective, while those that control certain types of vegetation (e.g., only grasses or only broadleaf) are termed selective.

NOTE: For Right of Way treatments triclopyr is predominantly the herbicide that is likely to be used based on past practice by FortisBC.

Appendix D Minimum Clearance Specifications and Limits of Approach

Clearance to Distribution Lines (under 60 kV) Initial Clearing/New Construction

Overhead Clearance	No vegetation overhang is permitted
Side Clearance	* 6 meters from the conductor for 3-phase primary * 5 meters from the conductor for 1-phase primary * 3 meters from the conductor for secondary (1 m from customer service lines)
Under Clearance	Remove all undesirable tree species in the clearance zone. When removal is not possible, achieve a clearance that is the greater of: * 3 meters from the neutral conductor, or * 1.2 meters from joint use contacts

Clearance to Transmission Lines (60 kV and over)

Overhead Clearance:	No vegetation overhang is permitted
Side Clearance from SRW Centerline:	Optimum No trees capable of falling on lines (all voltages) Statutory Right-of-Way (SRW) 60 kV - 16 meters 138 kV – 17 meters 170 kV - 19 meters 230 kV - 32 meters Minimum 60 kV - 5 meters 138 kV - 7 meters 170 kV - 10 meters 230 kV - 12 meters *3 m from all structures, guys and push braces
Under conductor clearance	Remove all tall growing target species. Where removal is not possible, minimum 5 meters clearance, optimal 8 meters.

Clearance for Distribution Lines (Under 60 kV) for Radial Circuits to Mountain Repeaters

Overhead Clearance	No vegetation overhang is permitted
Side Clearance	Optimum: 16 meters Minimum: 5 meters

Appendix D continued

Clearance to Distribution Lines (under 60 kV) for Existing Construction

Overhead Clearance	**3 meters from the conductor**
Side Clearance	5 meters from primary conductor for deciduous species 3 meters from the primary conductor for coniferous species
Under Clearance	Remove all undesirable tree species in the clearance zone. When removal is not possible, achieve a clearance that is the greater of: 3 meters from the neutral conductor, or 1.2 meters from joint use contacts

Limits of approach for utility arborists

Voltage range	A. Insulated tool limit for certified utility arborists		B. Work limit for certified utility arborists		C. Work limit for apprentice utility arborists	
Phase to phase	**Metres**	Feet	**Metres**	Feet	**Metres**	Feet
Over 750 V to 20 kV	**0.3**	1	**0.9**	3	**3**	10
Over 20 kV to 30 kV	**0.5**	1.5	**1.2**	4	**3**	10
Over 30 kV to 75 kV	**0.9**	3	**1.5**	5	**3**	10
Over 75 kV to 250 kV	**2.1**	7	**3**	10	**4.5**	15
Over 250 kV to 325 kV	**2.6**	8.5	**4.5**	15	**6**	20
Over 325 kV to 550 kV	**3.7**	12	**6**	20	**6**	20

(source: https://www.worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs-regulation/part-19-electrical-safety)

Appendix E Physical Control Methods and Techniques Near Power Lines

Pre-Mow Slashing

Pre-mow slashing (also called brushing) is the removal (cutting to ground) of all vegetation that will eventually grow into lines. It is particularly appropriate for rural ROW. With customer permission, brushing may be extended into private property adjacent to the ROW to improve long-term line security. Brushing can be accomplished with a variety of specialized mechanized equipment.

Pre-mow slashing involves the use of mechanized equipment to cut down all problem vegetation on a right-of-way in preparation for mowing. In preparation for mowing, pre-mow slashing must achieve the following:

Vegetation must be removed to maintain clearance standards;

- All fence lines, power poles, guy wires, telecommunication pedestals, signs, stumps greater than 15 cm in diameter, and any other obstructions must be removed for a minimum distance of 1 meter on all sides;
- Within clearance areas, trees with a diameter of 10 cm or more at breast height must be cut down, unless otherwise directed;
- All trees that are dead, weak, diseased, top heavy, rotten or leaning towards the line will be cut down;
- Stumps will be cut flat and no taller than 10 cm from the ground;
- Steep slopes, ditch banks and other areas inaccessible to mowing will be slashed, and the debris piled for disposal;
- All slash will be placed in areas accessible to the mower, and not within 1 meter of hazardous obstacles such as rocks and stumps greater than 15 cm in diameter, or in hazardous areas such as steep ditch bottoms; and,
- Debris will not be piled in environmentally sensitive areas such as in runoff areas, creek beds, or other areas prone to spring flooding.

Mowing

Mowing is the use of mechanized mowers such as tractor-mounted mowers, grade all or hydro axes, to remove all vegetation from a ROW. With mowing, all vegetation is cut to the ground, leaving a level ROW. This technique facilitates the subsequent application of herbicide to deciduous vegetation to control re-sprouting. Well-timed and properly performed mowing can inhibit the re-growth of deciduous vegetation for several years. Mowing is less labour intensive, less expensive and is less hazardous to workers than hand slashing.

Mowing is not selective. Desirable species of vegetation are cut as well as the undesirable species. Because mowing mulches the brush using high speed, flail type action, this can spread

debris and leave the right-of-way unsightly. Mowing may also open up the seedbed, allowing undesirable species to sprout from seed. Mowing is also limited by terrain.

Mowing is seasonably effective. Mowing after the spring flush of growth through late summer will inhibit growth better than mowing done at other times of the year. This is particularly important in areas where the problem vegetation is deciduous, and follow-up selective herbicide treatment is not possible. Mowing must be done to cut stubs as close to the ground as possible, which may necessitate the expense of mowing an area several times to reduce the stumps to ground level.

For maximum effectiveness, mowing should be followed in subsequent years by the selective use of herbicides by spot treatment, or wipe-on application to individual stems, to control re-sprouting. An alternative to herbicide use would be to plough and reseed or replant with desirable, low-growing vegetation that will inhibit the growth of undesirable vegetation. This may not be practical or economical for large areas but may be useful on private property adjacent to a ROW where grass, crops, native shrubs and bushes, and landscape trees and shrubs can be planted and maintained by the private landowner.

Hand Slashing

Hand slashing involves the use of chain saws, brush cutters, or other hand-held equipment to remove undesirable vegetation. Hand slashing can be species-specific, enabling desirable vegetation to be left. The remaining desirable vegetation will inhibit the growth of tall growing species and give the area a more landscaped look.

Hand slashing is compatible with the species-specific spot application of herbicides used to control re-sprouting of deciduous vegetation, single stem treatments or small patches of problem vegetation. The major disadvantage of hand slashing is that re-growth is not inhibited as well as it is by mowing. The eight considerations listed under brushing and pre-mow slashing are all applicable to hand slashing. For maximum effectiveness, hand slashing, like mowing, should be followed immediately or within 1 year by the selective use of herbicides.

Pruning - Collar Cuts

When removing a lateral branch from a stem or limb, or when reducing an upright to a lateral, the final cut must be made at the correct place in order to minimize danger to the tree and prevent re-sprouting. These cut lines are indicated by the branch collar and by the branch bark ridge. Proper cuts will minimize decay and promote closure of the cut. When removing a branch, cuts will be made as close as possible to the branch collar, taking care not to remove or injure the collar. Injury to the collar destroys a major defense system of the tree and also leads to excessive sprouting. When cutting a stem, cuts will be made close to, and on an angle with, the branch bark ridge. Stubs will not be left, as they are entry points for rot-causing fungi. Pruning cuts will not be painted, as this does not stop rot. There is no set angle for a correct cut. The size and shape of the collar will determine

the position and angle of the cut. Cuts will always be made where branches meet other branches or the trunk. Making cuts between nodes (internodal) leads to excessive sprouting and to the development of cracks and rots, which are the major causes of branch and trunk failure. When branches are properly pruned, rings of living tissue will form around the cut after one growing season. Incomplete rings of tissue indicate improper cuts and may lead to decay.

Pruning - Three Point Cut

When cutting leaders or laterals of more than 2.5 cm, three cuts will be made in order to ensure that bark does not rip, and wood does not split. The first cut is a notch.

Directional Pruning

Directional pruning is the practice of removing appropriate limbs or laterals to encourage the tree or limb to grow in a desired direction. The use of proper cuts is essential to make this practice successful. Proper cuts will minimize re-sprouting and encourage directional growth, while improper cuts will encourage re-sprouting and defeat directional growth.

Crown Reduction

Crown reduction is the reduction of the crown of a tree to a smaller size. It involves cutting back the leaders and laterals to an appropriate crotch where the stem remaining is no less than one third of the size of the portion of stem removed. Crown reduction also employs directional pruning practices. With this technique, the smaller interior branches are generally left to provide form for the tree and adequate leaf area to sustain the tree. Crown reduction provides adequate clearance and minimizes re-growth. Directional pruning is employed to ensure that re-growth is directed away from the lines. In cases where tree removal is not possible, crown reduction using deep crotch pruning is the main procedure used for trees growing both under and beside the lines.

Through Pruning

Through pruning is a specialized form of crown reduction that uses proper cuts to allow the lines to pass through the center of the tree canopy. This technique is only applicable to deciduous trees and only where removal cannot be achieved. Through pruning involves the removal of the central leaders on trees growing under lines and the directional pruning of other branches to create a “V” in the center of the tree. This allows clearance for lines to pass through the tree.

Crown Raising

With crown raising, the lower lateral branches are removed to increase the branch to ground clearance. All laterals are removed at the main stem or limb. This type of pruning may be required to keep underground transformer boxes free of overhanging branches.

Side Pruning
Side pruning is a type of crown raising. All branches are removed from one side of the tree in order to achieve a 3 meter under clearance. This technique is only appropriate where removal is not practical or possible. In cases where the tree is a mature conifer, the lower long limbs that shade the ROW will be left. Deciduous trees will have all lower branches removed, except when their branch diameter exceeds 35% of the diameter of the trunk.

Under Pruning
Under pruning is another type of crown raising. With this technique, the canopy is raised to a level where adequate clearance is required above the lines. As under pruning leaves overhanging branches and a lopsided tree, this is not a preferred method of pruning. It is an acceptable technique for cedars and other stable branched species, but should not be used on alders, poplars or Douglas firs. Under pruning is generally used on larger or taller trees, especially when side pruning or removal is inappropriate or uneconomical.

Crown Thinning
Crown thinning is the reduction of canopy mass without significant reduction to the size of the tree or its profile. The use of this technique will allow for reduced wind resistance, less snow loading, less branch breakage, and reduced chance of blow down. The entry of sunlight into the inner crown will generally improve the health and stability of the tree. Using proper cuts, the crown is thinned by removing every second or third branch. This technique is appropriate for large trees with thick upper canopies such as cedars. When under pruning has been employed with large trees, additional protection may be achieved by thinning the balance of the crown.

Crown Cleaning
Crown cleaning involves the removal of deadwood, damaged or diseased limbs. Inappropriate interior branches are generally removed at the same time. Falling deadwood is frequently a cause of outages. Crown cleaning is generally done on larger, mature trees. The use of crown cleaning not only improves tree health, but substantially reduces its potential hazard.

Shearing
Shearing is the cutting back of all terminal buds to a common distance to create a hedge effect. This practice may be used on evergreens where removal is not possible. The creation of a hedge will only be allowed if the customer has agreed to maintain it on an annual basis in the future. Shearing may also be an acceptable option in cases where large mature coniferous trees have previously been sheared, re-growth is not vigorous, and clearances are more than is required for cycle maintenance. Creation of hedges should be to a height to encourage customer maintenance. Many conifers are suitable for privacy screening and can be trimmed for hedging. Ideally, hedges should be started as juvenile conifer trees and maintained.

**In all cases trees will be pruned for utility clearance for safety and reliability using utility arboriculture techniques and practices. Aesthetic pruning is not a priority with respect to system safety and reliability.

Appendix F Facilities Site Data Sheet and Management Plan

The Site Data Sheet and Management Plan is a document that contains detailed information on a particular site, such as its history, weed coverage, environmental concerns, etc. The Data Sheet also describes how integrated vegetation management activities will be carried out on the site and may include a detailed map of the facility.

Site Data Sheets and Management Plans have been developed for sites requiring integrated vegetation management, primarily substations. Site Data Sheets and Management Plans may be developed for smaller and lower priority sites on an as needed basis. Lesser sites for which a Site Data Sheet and Management Plan is not developed will have a prescription prepared prior to treatment. The prescription will contain the following:

- site sensitivities (nearby water bodies, pesticide-free zones, residual-free zones)
- current conditions (surfacing materials, list of weed species within and outside the facility)
- preventive measures that can be taken
- recommended treatment methods, procedures, and timing

SITE DATA SHEET & MANAGEMENT PLAN V.1 Sept 2009	
Site Name:	
Site Location (address or UTM coordinates):	
Type of Site (i.e., substation, pole yard):	
Is the site fenced? **YES NO**	**Size of Fenced area: _____square meters** **Size of Area Outside of Fence: _____ square meters**
Description of Vegetation Presence/Density within the Fenced Areas: **% Vegetation: _____%**	
Description of Vegetation/Presence Outside the Fenced Area: **% Vegetation: ____%**	
Is Area Landscaped? **YES NO** **Class: A B C**	
History of Vegetation Management Methods (Physical and Chemical):	
Slope:	
Drainage: **How, and to Where**	
Adjacent Land Uses: (i.e., agricultural, residential, industrial, commercial, recreational)	
Adjacent Site Sensitivities: (i.e., permanent and seasonal water bodies, community watersheds, residential areas, habitat or riparian areas, catch basins, potable and non-potable water intakes) ***NOTE: Must maintain NTZs and PFZs as per Integrated Pest Management Regulations**	

Domestic Water Intakes and Wells: **YES NO** **(if yes, describe location and distance from fenced areas for each)**	
Prescription for Vegetation Management <u>Inside</u> Fenced Areas: (Refer to 2.4.3 for Treatment Thresholds)	
Prescription for Vegetation Management <u>Outside</u> Fenced Areas: (Refer to 2.4.3 for Treatment Thresholds)	
Sketch area (attach separate page if required)	

Appendix G Right of Way Post-Treatment Inspection Report

ROW Post-Treatment Inspection Report V.1 Oct 2009	
Site Name:	
Site Location (address or UTM coordinates):	
Date of Herbicide Treatment(s):	
Licensee Undertaking Herbicide Treatments:	
Service License #:	
Applicator(s) Applying Herbicides:	
Herbicide(s) Applied/Application Rate:	
Target Pest(s):	
Treatment Efficacy:	
Environmental Features Requiring Protection: (i.e., permanent and seasonal water bodies, community watersheds, residential areas, habitat or riparian areas, catch basins,	

potable and non-potable water intakes) ***NOTE: Must maintain NTZs and PFZs as per Integrated Pest Management Regulations**	
Environmental Protection Measures Taken:	
Domestic Water Intakes and Wells: **YES NO** **(if yes, describe location and distance from ROW)**	
Comments/ Recommendations:	

Appendix H Operational Practices in Pesticide Use

This appendix provides details on the operational practices, including contractor responsibilities, on the handling and transport of herbicides used for vegetation management at FortisBC facilities and on transmission and distribution ROWs.

Qualifications for Persons Applying Pesticides

The majority of pesticide use at FortisBC facilities and on transmission and distribution ROWs is carried out by outside contractors.

The transportation, storage, handling, application and disposal of pesticides are governed by federal and provincial legislation. All outside contractors and FortisBC personnel working with pesticides will follow safe handling practices including workplace requirements for Workplace Hazardous Materials Information System (WHMIS) labeling and worker education. The required practices for contractors and their workers are detailed in:

- Worker's Compensation Board of British Columbia (1998) *Occupational Health and Safety Regulation – BC Regulation 296/97 as amended by BC Regulation 185/99 – Sections 6.70 to 6.109;*
- B.C Ministry of Environment, Lands and Parks (1995) *Handbook for Pesticide Applicators and Dispensers*: and,
- Worker's Compensation Board of British Columbia (1990) *Standard Practices for Pesticide Applicators.*

Any individual or company (i.e., a contractor) that provides a service to FortisBC by applying commercial or industrial pesticides for vegetation management at FortisBC facilities or on transmission and distribution ROWs must have a valid B.C Pest Control Service Licence, and each supervising applicator must have a valid B.C. Pesticide Applicator Certificate in the Industrial Vegetation and Noxious Weed Category.

Under the B.C. *Pesticide Control Act Regulation,* a certified pesticide applicator can supervise up to 4 uncertified assistants, provided the assistants are within continuous auditory or visual range at all times while applying pesticides. Individuals must carry proof of their applicator certification with them when applying pesticides for inspection purposes.

Transportation of Pesticides

The transportation of pesticides will comply with all current legislation, federal and provincial, governing their transport. In addition, the following procedures will be followed while pesticides are being transported for application under this PMP:

- Limited amounts of pesticides will be carried in any one vehicle. The quantity will be no more than what is necessary for each project;

- Pesticides will be carried in a secure lockable compartment;
- Pesticides will be transported in original labeled containers;
- Pesticides will be transported separately from food and drinking water, safety gear and people;
- Spill containment and clean up equipment will be transported separately from pesticides, but in close proximity to them, on each vehicle during transport and use;
- Appropriate documents such as Pest Control Service Operations Records, material safety data sheets (MSDS), this PMP and the PMP approval document, will be available during transport and use of pesticides;
- All documents and placards will be carried in, or placed on, transport vehicles if required under the *Transportation of Dangerous Goods Act* or the *BC Pesticide Control Act*; and,
- All pesticide containers will be inspected for defects prior to transporting, and will be secured against spillage or unauthorized removal.

Spill Treatment Equipment

Spill treatment equipment will be ready and available at storage (including mobile storage), mixing and loading sites, and will include the following:

- Personal protective equipment, as recommended on the respective pesticide labels;
- Absorbent material such as sawdust, sand, activated charcoal, vermiculite, dry coarse clay, kitty litter or commercial absorbent;
- Neutralizing material such as lime, chlorine bleach or washing soda; and,
- Long handled broom, shovel, and waste-receiving container with lid.

Spill Response Planning

A copy of an approved spill response plan will be available at each work site. All personnel working on a project involving pesticides must be familiar with its contents. If contractors that work under this PMP have their own spill response plan, it must meet or exceed the contents of this plan.

The following procedures must be followed if a spill occurs:

- All personnel will be protected from pesticide contamination by wearing appropriate protective clothing and safety gear;
- Any person exposed to a pesticide will be moved away from the place of the spill and kept warm. First aid will be administered, if required;
- The source of the spill will be stopped;
- The spilled material will be stopped from spreading by creating a dam or ridge;
- The project supervisor will ensure operations cease until the spill is contained and the source is repaired,
- Absorbent material will be spread over the spill, if applicable, to absorb up any liquid;

- The absorbent material will be collected into garbage bags or containers, with the contents clearly marked;
- Contaminated soil or other material will be removed from the spill site and placed in garbage bags or containers;
- Where the pesticide involved in the spill results or may result in its release into the environment of a reportable quantity as defined by regulation, the person responsible for the product will immediately report it to Emergency Management BC by telephoning 1-800-663- 3456 or, where that is impractical, to the local police or nearest detachment of the R.C.M.P; and,
- An approved representative of the PMP holder will be notified of the details related to the spill as soon as is practical by the project supervisor.

Pesticide Storage

No vegetation management pesticides will be stored by FortisBC or by contractors at facilities owned or operated by FortisBC. All pesticides will be supplied by the contractor, who must follow, as a minimum, the storage requirements described below.

Pesticides stored on FortisBC property will be in accordance with the *Pesticide Control Act and Regulation* and the Worker's Compensation Board document "*Standard Practices for Pesticide Applicators".*

In summary, the storage area must:

- Be ventilated to the outside atmosphere;
- Be locked when left unattended;
- Be entered only by persons who are authorized to do so; and,
- Have a placard affixed and maintained on the outside of each door leading into the facility in which the pesticides are stored bearing, in block letters that are clearly visible, the words "WARNING – CHEMICAL - STORAGE -AUTHORIZED PERSONS ONLY ".

In addition, the person responsible for the storage area shall notify the appropriate fire department of the presence of the pesticide on the premises.

FortisBC has no direct control of the pesticide storage practices of its contractors while not under contract to them. These companies are still governed by the provisions of the BC Pesticide *Control Act and Regulation* with respect to storage by a Pest Control Service Licensee.

Some contractors may store pesticides for extended periods of time in vehicles when performing a number of pesticide treatments for FortisBC**.** The vehicle is considered to be a mobile storage unit. Persons responsible for the pesticide storage will ensure that all pesticides are stored in a locked canopy or similar arrangement, separate from the driver and personal protective gear.

Mixing and Loading Pesticides

All mixing and use of pesticides will be carried out by certified pesticide applicators in the appropriate category of certification, or by individuals directly supervised by a certified pesticide applicator in the appropriate category of certification.

Mixing of pesticides must always be conducted in a safe manner. Safety spill kits, spill response plans and first aid supplies will be present on site. Eye wash station(s) and protection clothing as recommended on the respective product labels shall be available on site. Product labels and MSDSs will be available on site to ensure that quantities of pesticides being mixed and used are consistent with label rates.

There will be no mixing or loading of pesticides within 10 meters of sensitive environmental features.

Pesticide Application Procedures/Conditions

FortisBC will ensure that the following conditions are adhered to for all application of pesticides under this PMP:

- Pesticide applicators will have access to current labels and Material Safety Data Sheets for the pesticide products they will be using;
- Applicators will inspect each site and plan application procedures before treatment begins;
- All pesticides will be applied using only trained and certified personnel who have the required application equipment and protective equipment;
- All pesticide will be applied at the lowest possible application rate that will do the job, and will not exceed the lesser of the pesticide label rate or the rate specified in this PMP;
- Pesticides will only be applied when there is clear evidence of a current or impending pest problem;
- Where possible, pesticides will be applied when target species are at their most susceptible stage;
- Pesticide products and application methods will be selected to maximize the degree of selectivity for the target pest and to minimize the degree of toxicity to non-target organisms, pesticide drift, bystander and worker exposure, and persistence in the environment;
- Pesticide use will be restricted to periods that minimize human exposure and adverse impacts to the environment. Due consideration will be given to the proximity of bystanders, workers, adjacent open windows, high foot-traffic areas and other local sensitive pesticide features. Where possible, pesticides will be applied during periods of low staff or public presence, in the early morning or evening, or on weekends if necessary;
- Unless other required by product labels, outdoor pesticide applications are restricted to conditions where wind speeds due not exceed 8 km/hr.; and,

- For outdoor pesticide use, applications will only occur during suitable weather conditions.

Protective Equipment

Protective clothing and equipment required during pesticide mixing, loading, application and disposal will conform with Workers' Compensation Board Occupational Health and Safety Regulations. Equipment such as protective clothing, headgear, eye and face protection, gloves, footwear and respiratory protection equipment must be used where required.

Bystander and Worker Protection/Pesticide Treatment Signs

All of the conditions listed above under pesticide mixing, loading and application are designed, in part, to protect bystanders and workers from exposure to pesticides. The notification requirements described in this PMP will be adhered to with respect to pesticide use. These conditions relate directly to bystander and worker protection.

At all sites scheduled for pesticide treatment, workers will be advised, either verbally or in writing, of the dates and locations of pesticide treatments, as well as advice or precautions to follow, as appropriate, to minimize their exposure.

Before pesticides are applied, signs will be posted at the treatment site on the day of application. The signs will remain posted for a minimum of 14 days after application. The signs will be visible from both within and outside each treatment area.

Notices will also be posted at all major entry points to sites that receive pesticide treatment. The notices will contain the following information:

- A description of the area to be treated;
- Date and start time of the proposed application;
- Pesticide product name(s) and active ingredient(s); and,
- Precautions, including any applicable re-entry times or conditions, needed for persons to minimize exposure to the pesticide(s) or residues.

Equipment Maintenance and Calibration

All pesticide application equipment used on FortisBC property will be clean, in good repair, and compatible and appropriate for the pesticide being used.

As a minimum, all pesticide application equipment will be calibrated once per year prior to use, and at regular intervals throughout the season of use. The frequency of calibration will be dictated by factors such as the formulation of pesticides used (e.g., abrasive formulations will

result in greater nozzle wear and will require more frequent calibrations), when changing pesticide products, and when nozzle output begins to vary.

Disposal of Pesticide Containers and Residual Pesticides

Disposal of empty containers shall to according to the manufacturer's instructions as noted on the product label or provincial instructions and recommendations that are detailed in the BC Ministry of Environment, Lands and Parks document "Handbook *for Pesticide Applicators and Dispensers "*(2005). As a minimum, empty pesticide container shall:

- Be triple rinsed or pressure rinsed;
- Be made so they cannot be reused by crushing, puncturing or damaging them; and,
- Be disposed of in a permitted sanitary landfill or other approval disposal site.