Integrated Pest Management Plan

SUSTAINABLE VEGETATION CONTROL ON FACILITIES, RIGHTS-OF-WAY, AND ASSOCIATED INFRASTRUCTURE

NorthRiver Midstream

IPMP CONFIRMATION NO. 893-0002-25-30

EXECUTIVE SUMMARY

This Integrated Pest Management Plan (IPMP) is an integral component of NorthRiver Midstream's (NorthRiver) long-term commitment for a successful Integrated Vegetation Management (IVM) Program. The integrated vegetation management (IVM) program has been in operation for several years, and this is only a continuation of current vegetation control practices.

> *"Where the terms of the easement permit, vegetation on rights-of-way shall be controlled to maintain clear visibility of the pipeline from the air and provide ready access for maintenance crews."*

Vegetation management objectives are achieved using Integrated Vegetation Management (IVM) principles by selecting treatments that most effectively target problem vegetation while minimizing impacts to the surrounding environment. IVM techniques used within the NorthRiver shared corridors of the BC Pipeline include prevention, physical controls, mechanical controls, and herbicide treatments which are organized into site specific programs to ensure effective, economical, and environmentally safe treatments.

As a responsible operator, NorthRiver maintains or controls vegetation within its facilities as well as on its pipeline rights-of-way for operational, regulatory and safety reasons. Vegetation within or adjacent to facilities may restrict system operations and reliability. Managing vegetation allows NorthRiver to:

- Conduct monthly aerial inspections of rights-of-way to inspect for operational concerns or third-party impacts to the pipelines.
- Allow access for pipeline maintenance activities.
- Helps ensure personnel and public safety.
- Reduces the risk of fire hazards.
- Management of invasive weeds.

Both federal and provincial legislation contain sections pertinent to vegetation management operations. The IPMP may also be reviewed by several higher-level planning authorities including any local Land Use Plan managers and the Pest Management Regulatory Agency.

To be effective, an invasive weed program must operate in cooperation with many other individuals, agencies, and land managers since weed infestations occur across many land uses. Weed management is most effective when the multi-jurisdictional coordination includes all adjacent landowners and land users ensuring effective prevention of spread and overall control can be achieved.

Both federal and provincial legislation contain information required and pertinent to this "Integrated Pest Management Plan". Many individuals, organizations, companies, and vegetation experts have cooperated in providing information or sources for this IPMP document. This IPMP document is essentially a set of best practices and guidelines compiled from knowledgeable and experienced industry and government personnel. It is intended to provide the owner, operator, and contractors with advice regarding the specific topic. It was developed under the collaboration between staff and consultant. The recommendations set out in this IPMP are meant to allow flexibility and must be used in conjunction with competent IPM practices and judgment. It remains the responsibility of the user of the IPMP to judge its suitability for a particular application. If there is any inconsistency or conflict between any of the recommended practices contained in this IPMP document and the applicable legislation requirements, the legislative requirements shall prevail. Every effort has been made to ensure the accuracy and reliability of the data and recommendations contained in this IPMP.

TABLE OF CONTENTS

1.0 INTRODUCTION

Integrated Pest Management (IPM) is a long-standing, science-based, decision-making process that identifies risks from pests and pest management related strategies. It coordinates the use of pest biology, current environmental information, and newly innovative and available technology to prevent unacceptable levels of pest damage by the most economical means, while maintaining the least possible risk to people, property, resources, and the environment.

1.1 System Overview

This system is comprised of gas gathering and processing infrastructure consisting of facilities connected by pipeline rights-of-way.

This IPMP covers vegetation management activities that relate to its Field Services and Midstream operations. Operations are within the Peace River Regional District boundaries as well as the Northern Rockies Regional Municipality. It runs adjacent to, and within boundaries of, Fort St. John, Dawson Creek, Fort Nelson, as well as other smaller townships and communities within these regions. See Appendix 1 for a map overview.

1.2 Vegetation Management Requirements

As a responsible operator, NorthRiver must maintain or control vegetation within its facilities and on its pipeline rights-of-way for operational, regulatory and safety reasons, including:

Facilities

- Vegetation within or adjacent to NorthRiver facilities may restrict system operations and reliability, increase fire risks, compromise public and employee safety and contribute to invasive species spread.

Rights-of-Way

- Vegetation restricts aerial inspection - NorthRiver relies on helicopters to patrol the vast areas of pipeline rights-of-way along its system to inspect for operational concerns or third-party impacts to the pipelines.
- Maintaining access for pipeline maintenance - large vegetation impedes access for emergency or routine repairs vital to safe pipeline operations.
- Ensuring personnel safety - in remote locations rights-of-way are often the only safe landing areas for helicopters in the event of an emergency.
- Ensuring public safety - by clearing brush and trees on rights-of-way, the pipeline route is made visible to the public, reducing encroachment and possible damage by third parties.
- Reduction of fire hazards - clearing large vegetation off rights-of-way reduces heat generated on top of the pipeline in the event of a large fire. A well-maintained pipeline right-of-way also acts as a firebreak to reduce the risk of a forest fire spreading.
- Management of invasive weeds - vegetation targeted by NorthRiver includes invasive weeds growing along its rights-of-way which are legislated as noxious under the provincial *Weed Control Act* or are non-legislated but are highly invasive and have the potential to significantly impact operations.

This Integrated Pest Management Plan (IPMP) utilizes Integrated Pest Management principles that involve the selection of treatments, which most effectively target specific plant species while minimizing impacts to the environment. Since the specific objective of this IPMP is to target vegetation growing within facilities and along rights-of-way, this document may use the term Integrated Vegetation Management (IVM).

PEST MANAGEMENT PLAN INTENTIONS

To Mitigate Fire Hazards
To Insure Public & Personnel Safety
To Allow Proper Access to Facilities & Right-of-Way
To Control and Manage Invasive Plant Species
To Protect and Maintain a Healthy Environment
To Comply with Safety & Environmental Legislation

1.3 Term of Integrated Pest Management Plan

Amendments to the *Integrated Pest Management Act & Regulation* include provisions to allow pesticide uses along with other treatment methods to be authorized under a single, comprehensive IPMP. This newly revised 5-year IPMP will replace NorthRiver's current program that covers IVM techniques for Field Services and Midstream operations; the term of this revised IPMP is March 6th, 2025 to March 6th, 2030.

The NorthRiver IPMP is required to ensure:

- Compliance with the *Integrated Pest Management Act & Regulation*,
- Public awareness of, and input into, NorthRiver's vegetation management program,
- Responsible use of herbicides,
- Effective implementation of integrated vegetation programs (using a combination of manual, mechanical, biological, and chemical techniques) that consider land uses and environmentally sensitive areas and minimize the sole reliance on herbicides.

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2.0 INTEGRATED PEST MANAGEMENT BEST PRACTICES

Integrated vegetation management programs should be proactive and integrated, using several approaches to reach a final goal. There are many tools available within vegetation management, such as cutting, mowing, biological, and cultural, herbicides can also be used in conjunction with one of these options or on its own. All options available have a place in helping to manage invasive plants, weeds, shrubs and trees in utility, roadsides, forestry, pipeline, and other vegetation control programs. Each individual site requires a unique set of vegetation management tools, and solutions to address specific challenges.

2.1 STEWARDSHIP

NorthRiver is committed to providing good stewardship and sound environmental practices for its employees, contractors, and neighbor's. Through these practices NorthRiver can ensure knowledge of the safest products, vegetation management options, and the goals and objectives of the program to its employees, the public, and communities.

The following are key components of good stewardship.

- Help provide training to employees, Indigenous communities, and Contractors.
- Educating industry and the public about the importance of vegetation management.
- Help identify, record and report invasive plants.
- Minimize disturbance and retain native plant communities, when possible.
- Ensure NorthRiver and contractors' equipment are clean when leaving a construction site, so not to distribute weeds.
- Be part of a coordinated effort and collaboration with weed committees and Regional Districts.
- Encourage recycle programs.

2.2 VEGETATION MANAGEMENT STRATEGIES & PRACTICES

NorthRiver will manage vegetation in and around its facilities, access roads, associated infrastructure, and rights-of-way in a professional manner using, but not limited to, the following strategies and practices.

- Vegetation will be managed based on site information including, but not limited to, vegetation inventories, species growth rates, vegetation response to treatments, fish and wildlife resources, land ownership, and present and potential uses of the land.
- Employees and contractors will be properly trained in, and knowledgeable of, vegetation management processes and can identify and contribute to opportunities for continuous program improvement.
- A complete spectrum of vegetation management techniques will be considered, with the best method applied in each situation.
- A consistent approach to contracting will be established to ensure the ongoing availability of competent, efficient, and competitive contractors is maintained.

- Vegetation management will be managed to foster the use of leading-edge techniques and the optimization of resources. Programs will be implemented in a consistent manner, with consideration of individual site variables.
- All programs will be monitored and evaluated to identify opportunities and a basis for improvements year over year.
- All vegetation control projects will have monitoring programs to ensure compliance.
- Keep all communications open to the public. Open communication can significantly enhance the public's understanding of the link between safety, reliability, and vegetation management.

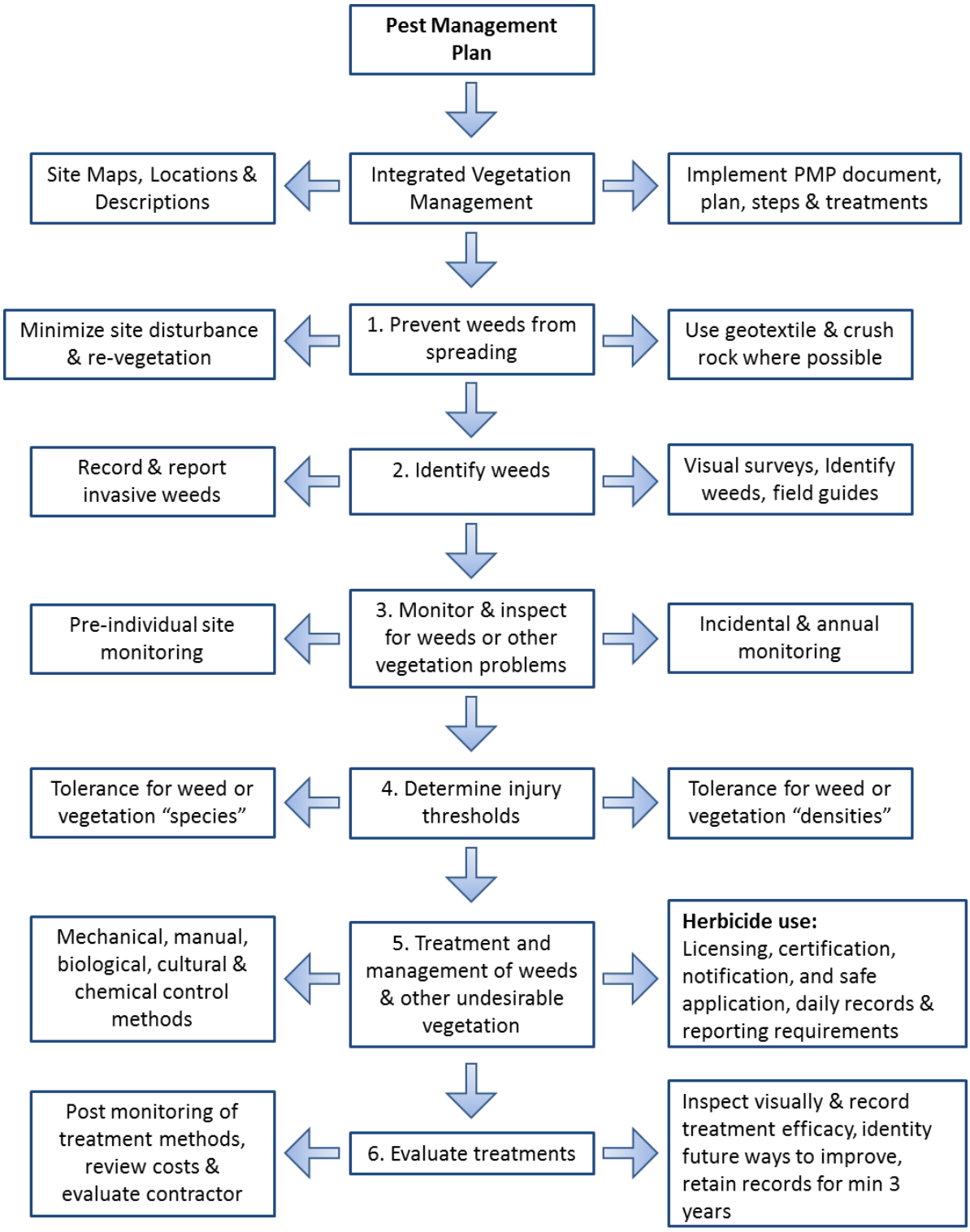
2.3 Prevention, Planning Strategies & Practices

Vegetation management for NorthRiver often depends on system design, location, building requirements and preventative measures aimed directly at stopping the initial growth of undesirable vegetation and invasive weeds. These measures are reviewed and considered at the design and construction stages. Prevention measures are the first step in reducing the reliance on herbicides and many other non-herbicide control methods.

The following diagram (Figure 1) describes NorthRiver's integrated pest management program for the control of undesirable vegetation and invasive weeds, as per Section 58 of the *Integrated Pest Management Regulation*. The following sections are each described in various sections of this IPMP.

- Prevention – Section 58(2)(a)
- Identification – Section 58(2)(b)
- Monitoring – Section 58(2)(c)
- Injury thresholds – Section 58(2)(d)
- Treatment options – Section 58(2)(e)
- Evaluation – Section 58(2)(f)

FIGURE 1: IMPLEMENTING THE NORTHRIVER INTEGRATED PEST MANAGEMENT PLAN



3.0 PROBLEMATIC VEGETATIVE SPECIES

Why do we have vegetation management?

Effectively managing undesirable vegetation can contribute to worker and public safety, benefiting agriculture, industry, private land, and the economy. Non-native species such as invasive weeds impact biodiversity and are costly to provinces, the federal government, private landowners & users, communities, and industry. Responsible integrated vegetation management is critical in establishing safe work areas, complying with regulations, maintaining infrastructure, and preserving agricultural land and natural resources in BC and Canada.

3.1 Herbaceous Vegetation

Herbaceous grass and broadleaf species most frequently establish in areas with thin gravel cover or exposed subsoil. The dry, gravel surfaces typical of NorthRiver facilities provide disturbed conditions where weeds frequently establish. Control of herbaceous vegetation is also required along access roads, through cracked asphalt, at edges of buildings, around equipment, on fence lines, pipeline corridors, and many other managed areas.

3.2 Trees and Brush

3.2.1 Conifer and Deciduous Trees

Tall-growing tree species growing on NorthRiver rights-of-way must be maintained or controlled for operational and safety reasons. Around facility fencing tree species can encroach into the sites as well as become hazards when dead or declining.

Tree species of concern may include the following,

Deciduous Trees

- Balsam Poplar (*Populus balsamifera ssp. balsamifera*)
- Black Cottonwood (*Populus balsamifera ssp. trichocarpa*)
- Choke Cherry (*Prunus virginiana*)
- Douglas Maple (*Acer glabrum*)
- Mountain Alder (*Alnus tenuifolia*)
- Paper Birch (*Betula papyrifera*)
- Sitka Alder (*Alnus viridis ssp. sinuata*)
- Trembling Aspen (*Populus tremuloides*)
- Willows (*Salix spp.*)

Coniferous Trees

- Black Spruce (*Picea mariana*)
- Hybrid White Spruce (*Picea glauca x engelmannii*)
- Interior Douglas-Fir (*Pseudotsuga menziesii var. glauca*)
- Lodge Pole Pine (*Pinus contorta var. latifolia*)
- White Spruce (*Picea glauca*)
- Balsam Fir (*Abies balsamea*)

Coniferous trees are generally easier to manage in comparison with deciduous species on pipeline rights-of-way. Most deciduous trees are considered pioneering species since they are the first tree species to colonize cleared disturbed sites. The shade tolerant species are strong competitors exhibiting survival characteristics such as fast growth rates, regrowth following injury (re-sprout or coppicing) and the ability to establish on disturbed soils. In comparison, coniferous trees generally do not re-sprout after cutting.

The following deciduous species are an example of trees of concern on NorthRiver pipeline RoW due to their strong ability to colonize cleared, disturbed sites and tendency to re-sprout following cutting:

Trembling Aspen

Balsam Poplar

Black Cottonwood

Paper Birch

Alder sp.

Willow sp.

3.2.2 Woody Shrubs

Woody shrubs species (brush) commonly establish on NorthRiver rights-of-way.

These may include native species such as:

- Black Huckleberry (*Vaccinium membranaceum*)
- Black Twinberry (*Lonicera involucrata*)
- Common Snowberry (*Symphoricarpos albus*)
- High-Bush Cranberry (*Viburnum edule*)
- Prickly Rose (*Rosa acicularis*)
- Red Raspberry (*Rubus idaeus*)
- Saskatoon (*Amelanchier alnifolia*)
- Soopolallie (*Shepherdia canadensis*)
- Thimbleberry (*Rubus parviflorus*)

Control of shrub species may be selectively prescribed depending on their growth location in the right-of-way relative to the pipeline(s). Established shrub species may provide effective low growing competition against the establishment of tree species on the edges of the right-of-way while brush must be maintained over and alongside pipeline(s). NorthRiver encourages low growing shrub growth within rights-of-way.

3.3 Invasive Weeds

The spread of invasive weeds is one of greatest issues compromising native plant and animal communities within B.C. Most invasive weeds are introduced alien plant species from other countries, which have the capacity to establish quickly and easily on new sites. Infrequently, a plant species native to certain regions of B.C. spreads to other regions of the province outside of its typical range, exhibiting invasive characteristics in its new environment. Invasive plants normally have no natural predators or pathogens to reduce their vigor and spread. Invasive plants are commonly very aggressive plants capable of quickly colonizing areas and replacing desirable indigenous plant communities. After habitat destruction, they are the second greatest threat to the diversity of natural resources within B.C. They contribute to losses of agricultural productivity while adversely affecting ecological processes in some of the province's most valuable and productive wildlife and recreational habitats.

Invasive weeds cause large impacts within B.C. Preventing spread is critical since controlling infestations costs ranchers, farmers, conservations groups, utility companies, foresters, transportation, and governments millions of dollars each year.

Specific impacts of invasive alien plants include:

Economic Impacts

- Reducing yield and quality of agricultural crops, and value of marketable livestock
- Decreasing land values
- Increased maintenance costs to private, public land and utilities
- Destroying recreational opportunities and beauty of the landscape

Environmental Impacts

- Increasing soil erosion and stream sedimentation
- Impacting natural grasses and wildflowers, including rare and endangered species
- Destroying natural habitat for wildlife, birds, and domestic animals
- Destroying habitat for fish and other aquatic organisms
- Increasing wildfire hazards

Social Impacts

- Compromise water quality
- Endanger public health and safety
- Toxicities to humans, pets, livestock, and wildlife
- Carriers of disease and harmful insects
- Reduce visibility on transportation corridors

3.3.1 Noxious Weeds

Certain invasive weed species are legislated within British Columbia as "noxious" within the provincial *Weed Control Act*. The Act defines a noxious weed as "a weed designated by regulation to be a noxious weed and includes the seeds of the noxious weed". The Act states: "Every occupier shall control, in accordance with the regulations, noxious weeds growing or located on land and premises, and on any other property located on land and premises, occupied by him." This means that landowners, private companies, utility companies, regional districts and municipalities, and provincial government agencies or anyone else in physical possession of land all have a responsibility to manage weeds in the province.

TABLE 1: WEEDS CLASSIFIED AS INVASIVE WITHIN THE OPERATING AREA

Common Name	Scientific Name
Common Burdock	*Arctium minus*
Canada Thistle	*Cirsium arvense*
Common Tansy	*Tanacetum vulgare*
Cleavers	*Galium aparine*
Green Foxtail	*Setaria viridis*
Kochia	*Kochia scoparia*
Knapweed(s)	*Centaurea sp.*
Cheatgrass	*Bromus tectorum*
Oxeye Daisy	*Leucanthemum vulgare*
Quackgrass	*Agropyron repens*
Russian Thistle	*Salsola kali*
Tartary Buckwheat	*Fagopyrum tataricum*
White Cockle	*Silene latifolia*
Wild Mustard	*Sinapis arvensis*
Perennial/Annual Sowthistle	*Sonchus sp.*
Scentless Chamomile	*Matricaria perforata*
Field Scabious	*Knautia arvensis*
March Plume Thistle	*Cirsium palustre*
Night-Flowering Catchfly	*Silene noctiflora*
Orange/Yellow Hawkweed	*Hieracium sp.*
Wild Parsnip	*Pastinaca sativa*
Yellow Toadflax	*Linaria vulgaris*
Comfrey	*Symphytum officinale*

Fact sheets, guidebooks, and websites to aid in the identification and management of noxious weeds are available through the Invasive Species Council of BC & the Peace River Regional District. Website links to aid in the identification of noxious weeds are listed below.

https://www.bcinvasives.ca
https://prrd.bc.ca/services/invasive-plants/
https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/animals-and-crops/plant-health/weeds

3.3.2 Prevention of Noxious and Invasive Weeds

NorthRiver is committed to the prevention of spread of noxious weeds on and around its operating areas. Personnel will be provided appropriate training on the identification and removal of noxious weeds. Any observed infestations that cannot be treated or hand pulled immediately will be reported to NorthRiver field supervisors and/or the vegetation manager (NorthRiver Environmental Specialist). See Section 4.5.3 for more information on the management of noxious and invasive weeds.

3.3.3 Non-Legislated Invasive Weed Species

Other invasive weed species are not designated as noxious under the *Weed Control Act* but may have spread to areas of the province outside of their native range, this movement can cause negative impacts. These may be labelled as 'Weed Alert' species by the BC Ministry even though they are not listed currently on Provincial or regional noxious weed lists. The control of these nuisance weeds can be controversial since they may provide a benefit or not cause an impact to some land users while negatively impacting others. Management of certain weed species may be required if they prove to be highly invasive or significantly impact NorthRiver operations.

4.0 VEGETATION MANAGEMENT PLANNING

4.1 Integrated Vegetation Management

Integrated Vegetation Management (IVM) involves using several techniques in combination to control vegetation on rights-of-way, facilities, and associated infrastructure. A repetitive cycle dependent on mechanical cutting, and the resulting re-sprouting, often results in increasing density of tall growing species, therefore requiring multiple visits to a specific location or site. Increased site visits increase the footprint on the environment. However, with the site-specific use of herbicides in combination with physical control methods (especially for right-of-way treatments), it is possible to establish a stable, low-growing plant community that will not restrict access or obscure the identification and location of pipeline and infrastructure markers and

warning signs. Selection of techniques will depend on the species to be targeted, treatment timing, land use and environmental sensitivity. Since a wide variety of vegetation species and invasive weeds may grow in one area, a single technique is not always suitable to treat all species. An IVM approach combining various techniques is generally most effective when tailored to the vegetation concerns and conditions at each site. Preventive measures are implemented during site construction to ensure site conditions will discourage vegetation and weed growth. Physical controls include manual and mechanical treatments, such as hand pulling, cutting, slashing, and mowing.

4.2 Vegetation Management Objectives

Federal and Provincial Legislation, public concerns, operations, safety and aesthetic or crop values to adjacent landowners dictate the need for NorthRiver to control vegetation on their facilities, pipeline rights-of-way, and other associated infrastructure. NorthRiver vegetation management objectives are to prevent the growth of problem vegetation which may impede site access and cause unnecessary risks to infrastructure as well as to routine maintenance and safety checks. Overgrown vegetation may restrict system operations and reliability, increase the potential for fire hazards, and compromise public and employee safety.

While achieving the above objectives, NorthRiver will:

- Be committed to building mutually beneficial long-term relationships with Indigenous Communities, landowners, and stakeholders who reside near or conduct activities near the company's system.
- Follow the principles of IVM and consultation that are premised on due diligence, increased understanding, and awareness.
- Be dedicated to the health and safety of all people and animals that have contact with our systems and to the maintenance of a clean and healthy environment.
- Maintain a safe pipeline corridor that will allow for routine and effective aerial pipeline monitoring, the implementation of an effective emergency response plan, and will work to control the spread of invasive and noxious weeds.
- Design and implement a program that integrates all components of vegetation management: manual, mechanical, biological, cultural, preventative, and herbicide treatment.
- Identify and understand stakeholder interests to design and implement a program that respects sensitive areas and existing uses.
- Minimize long term impacts on the environment, while accommodating other resource users.
- Reduce the chances of plant or tree roots damaging pipeline coating.
- Reduce fire hazards.

4.3 Pre and Post Treatment Monitoring Program

[IPMR Sec. 58 (2)(c) & 69 (1) & (2)]

This section of the IPMP describes the monitoring program that will be employed for evaluating the effectiveness of the pesticide use on pest populations and the environment. This includes effects on organisms other than the targeted species. The information collected in this program must

include a description of the following along with other pertinent information regarding the monitoring program.

- The monitoring methods,
- The frequency of monitoring,
- The data that will be collected.

4.3.1 Pre-Treatment Monitoring

[IPMR Sec. 58 (2)(c)]

Pre-treatment monitoring should contain enough information to ensure treatments are necessary. NorthRiver field personnel or consultant/contractor can collect the information. The pre-monitor information may include or exceed the following:

- Location and name of site,
- GPS or location identification,
- Audit time and date completed,
- Size of area,
- Type of pest to be monitored,
- When is optimum time for treatments, month/time of day,
- How to consider and mitigate unreasonable adverse effects on-site,
- Which non-target species may be at risk, and on site,
- Any environmental concerns and/or features of the site or area,
- Size and/or abundance/density of vegetation,
- Vegetation species on site,
- Type of treatment required, and why,
- Site photos can be attached to the report.

Prior to and during vegetation application or treatments, contractors are required and perform a practice of traveling on foot or vehicle in front of vegetation treatment crews, they mark, map, and notify the crews of any riparian areas or other environmental features that require protection from treatments or the removal of vegetation. These additional assessments ensure an extra level of protection for the environment.

4.3.2 Post-Treatment Monitoring

[IPMR Sec. 58 (2)(c)]

NorthRiver staff, consultants or contractors will conduct post-treatment site monitoring following vegetation management treatments. Herbicide efficacy is determined during assessments by observing levels of desiccation and chlorosis of treated plants. These reports will be kept and be available for review by the Ministry of Environment if required. Post-monitoring reports will include the following.

- Location and name of site,
- Name and contact information of the assessor,
- Date of site visit,

- Type of treatment performed (herbicide, mechanical, etc.)
- Vegetation species on site,
- Treatment efficacy,
- Environmental concerns and/or features of the area,
- Size and/or abundance/density of vegetation,
- Any non-target damage from treatments,
- If present, were PFZ and NTZ protected and maintained,
- Were the goals and objectives of the program met,
- Any damage that has occurred or may be caused by the undesirable vegetation,
- Site photos can be attached to the report,
- Other site features that the assessor deems relevant may be included in post monitoring visits.

4.4 Injury/Treatment Thresholds

[IPM Reg. Sec. 58 (2)(d)]

A treatment threshold is a level of unwanted/target vegetation that once exceeded requires vegetation management action. Injury thresholds will vary since vegetation control is more critical for certain areas than others. In some instances, the level of surface vegetation coverage cannot be used to determine if the injury threshold has been reached. An example is for rights-of-way: the likelihood of a tall tree or other brush species compromising the integrity of the pipelines must be reviewed and this will determine if threshold has been reached. As a result, the level of control required is determined by a combination of / or a single concern below:

- Density of the present vegetation
- Species of present vegetation (invasive weeds, trees, or brush)
- Pertinent regulatory requirements
- Landowner interests
- Public or employee safety
- Associated environmental features

FACILITY Injury/Treatment Thresholds

This is a level of unwanted vegetation (expressed as a percentage of the total area) that once exceeded, vegetation management action is required. If problem vegetation is left above selected thresholds, it could pose a threat to safety, and cause increased environmental damage and fire risks.

Area of Interest in Facilities	Threshold (% unwanted vegetation)
Adjacent to any equipment and buildings	0% unwanted vegetation cover
Vehicle Parking Areas	5% unwanted vegetation cover
Vacant areas within facilities not occupied with equipment	5% unwanted vegetation cover
Outside facility fences, and on access roads/corridor	Site specific evaluation

RIGHTS-OF-WAY Injury/Treatment Thresholds

In the case of rights-of-way and associated or adjoining infrastructure, there is no tolerance for any type of vegetation that has the potential of degrading the pipeline or any of its infrastructure. The traditional percentage-based threshold model may not be applicable, therefore the decision to

initiate treatments is based on the presence of target vegetation that could compromise or destroy the integrity of any pipelines or associated equipment, injure adjacent croplands, or have other negative environmental impacts. Treatment decisions may also consider public safety, species growth rates, social, economic, regulatory, and environmental considerations.

The IVM program will be implemented as follows:

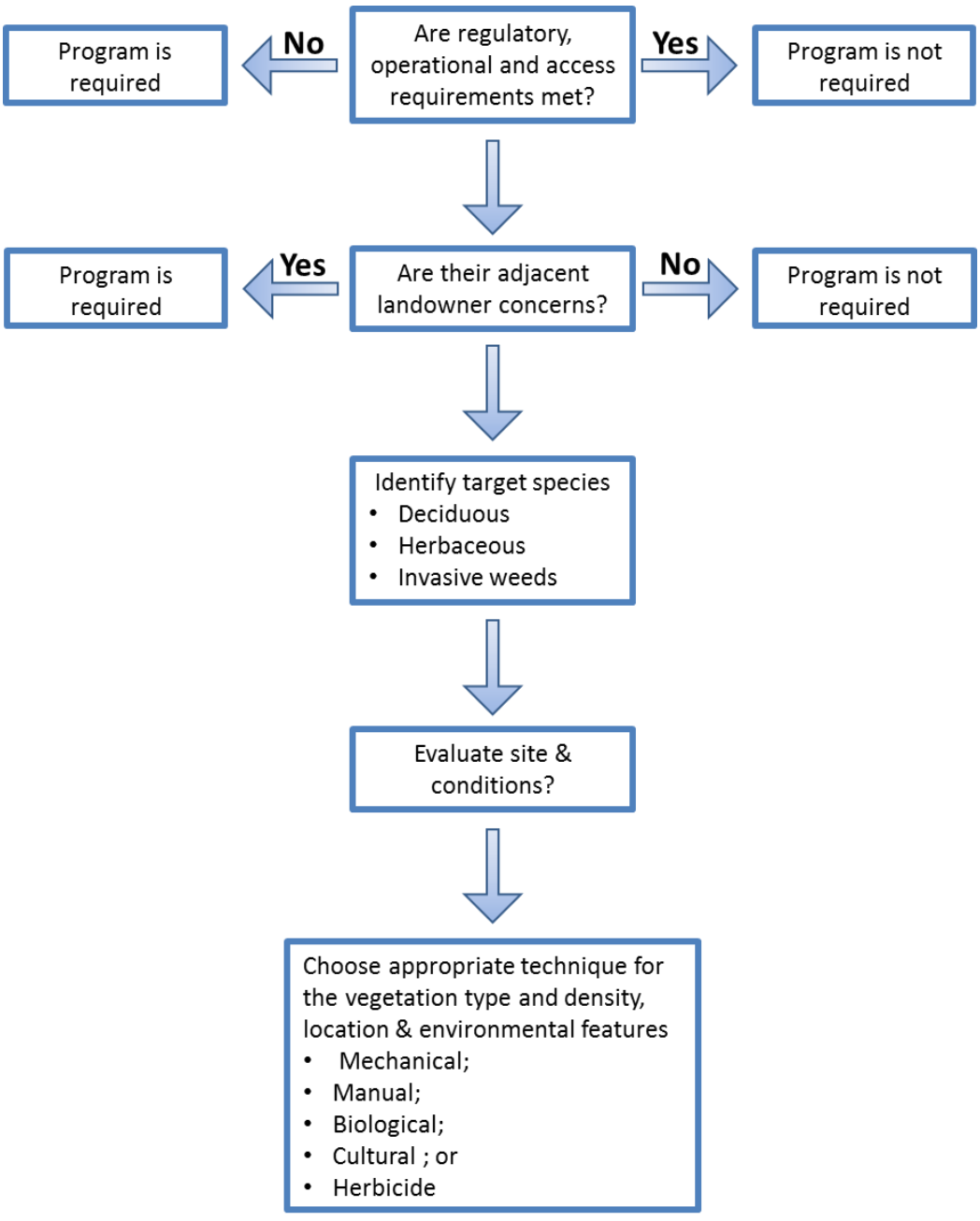
- Will allow the natural growth of at least 50% of the right-of-way width, while still maintaining an access path along the right-of-way,
- Priority treatment areas will be mowed,
- At least once per kilometer site lines will be reduced by utilizing methods such as zigzags in access trails or leaving vegetation strips at high ground and road crossings,
- Mowing will be performed generally during the winter months when rights-of-way are accessible to the heavy-duty mowers,
- Disturbance to the low growing vegetation will be minimized,
- No herbicides will be used on rights-of-way except for in cases of invasive weed control,
- Implementation will focus on shifting vegetation conditions and growth on rights-of-way, thereby reducing environmental risk and treatment cost.

Treatment thresholds to meet regulatory requirements:
Onshore Pipeline Regulation, *OGC* and *BC Wildfire Regulation* are examples that have a mandate for vegetation management in certain areas or for certain circumstances. However, these legislative bodies do not specify quantitative standards (such as thresholds) based on the amount of vegetation present. To keep compliant with legislation NorthRiver will ensure they have appropriate treatment thresholds based on field assessments of their facilities & rights-of-way.

4.4.1 Treatment Decision-Making Matrix

The following flowchart describes the process with which a NorthRiver representative will make vegetation management decisions. This is an important step to ensure that the protection of the environment and safety of workers are carefully considered in all decision-making processes.

Figure 2: Decision-making Matrix



4.5 Vegetation Management for each Type

4.5.1 Managing Herbaceous Plant Types

Treatment Techniques

Vegetation management techniques used at NorthRiver facilities for herbaceous plants are classified as preventive, physical, natural, and chemical. Preventive measures are implemented during facility construction or operations and maintenance to ensure that site conditions discourage weed growth. Physical controls include manual (weed eating, hand pulling, selective slashing, pruning and mechanical (mowing)) treatments. Chemical control includes the choice of several herbicides recommended for control of herbaceous weed and grass species.

Preventative Measures

Preventive measures aimed at stopping the initial growth and spread of weeds are an important component of the IVM program at NorthRiver facilities. These measures are incorporated into station and building designs prior to construction and are implemented during regular operational and maintenance activities. Suitable surface materials are installed to the correct thickness and should be clean of soil fines which provide growth medium for new plants to establish. Gravel (crushed rock) over geotextile or mulch are the predominant surfacing materials within NorthRiver stations.

Several measures taken when installing and maintaining surface materials will reduce long-term vegetation management requirements.

- Install clean gravel of suitable thickness when upgrading stations, thick gravel reduces a weeds ability to penetrate down to underlying subsoil.
- Control vegetation prior to upgrading gravel.
- Upgrade areas of low gravel created by vehicle traffic, construction, or maintenance activities.
- Minimize snow clearing to vehicle driveways and around piping, replace and regrade all snow clearing damage.
- Repair cracks in asphalt and concrete which are susceptible to plant growth.
- Utilize landscape fabric and mulches in landscaping around facilities to reduce the growth of weeds.

Physical Control Measures

Weed Trimmers & Mechanical Trimmers are commonly used and can be used on graveled areas, rights-of-way, productions sites, and along access roads. A two-step procedure within graveled areas combining weed eating with herbicide application effectively manages weed growth while removing organic matter. Weeds are cut down, raked (along with dead organic matter), bagged and removed off site for disposal. Cut portions of vegetation at the surface may then be treated with herbicide is conditions allow.

Hand Pulling technique is for managing sporadic infestations of weeds growing on gravel and landscaping areas or in PFZ/NTZ's. Hand pulling is effective on smaller size infestations and with certain species. Some species are difficult to hand pull, especially if the plants are young (eg. Juvenile grass species) making timing critical for these situations. Any soils exposed after hand pulling should immediately be covered with gravel.

Pruning involves the removal of selected herbaceous species encroaching alongside facilities using proper arboriculture practices. Removals of larger herbaceous plants may be required adjacent to facilities to improve site safety, security, and fire control.
Selective Slashing removes vegetation using tools such as brush saws. Herbaceous vegetation is most commonly found encroaching outside of fence lines and on rights-of-way. Selective slashing of certain herbaceous species should be combined with herbicide treatments to reduce re-sprout.

Reducing Surface Organic Matter
Leaves, needles, cones, branches, and other organic debris deposited or blown onto station gravel from adjacent trees and shrubs should be cleaned up and disposed of as they decompose and provide growth medium for new weed establishment. A regular fall cleanup on station gravel will help reduce weed growth.

Reducing Selected Organic Matter at Fence line
Vegetation will be maintained immediately outside of fences and along access roads.

- Large trees and shrubs deposit organic debris into stations, impact station security (improve access over fence), create safety and fire hazards (if overhanging too close to equipment), and will overgrow access roads inhibiting site access.
- Low vegetation grows through and entwines in chain link fencing and provides a seed source for new weed growth on station gravel.
- Heavy vegetation growth can provide cover for other pests and overgrown vegetation will impact site aesthetics.

4.5.2 Managing Trees and Brush (Coniferous and Deciduous)

Treatment Techniques
The control of tree and brush species is essential along the majority of NorthRiver pipeline rights-of-way and around facilities. Control strategies used to manage woody species will vary depending on the species, size, and vicinity to managed lands. Mechanical (mowing), manual (slashing), and herbicide controls are the main IVM techniques utilized to manage tree and brush species.

The IVM program for controlling woody vegetation will be implemented in this IPMP according to the following procedures:

- Vegetation conditions on all rights-of-way will be assessed by NorthRiver staff during regular aerial and ground operational and safety inspections.
- Long-term treatment schedules and budgets will be projected according to the priority treatment areas to ensure that only efficient and cost-effective treatments are implemented.
- Manual treatments will be used to control problem vegetation on steep slopes and in Environmentally Sensitive Areas (ESAs).
- Problem woody vegetation on all other sections of NorthRiver's rights-of-way will be treated mechanically/manually.
- Suitable buffer zones (no clear zones) will be maintained around PFZ's and ESA's (such as wetlands, berry picking areas, mineral licks etc).

Manual and Mechanical Controls

Selective Slashing is a manual vegetation management technique involving the removal of vegetation using hand tools including brush saws, chain saws, axes, and machetes. This technique can be used selectively to remove problem vegetation without disturbing adjacent competitive vegetation.

Mowing and Blading are the traditional tools for managing pipeline right-of-way vegetation. Within remote areas, undesirable woody vegetation is cut with wheel or track-mounted heavy-duty cutters (rotary or flail) attached to skidders. Past mechanical treatments on NorthRiver rights-of-way have involved using combinations of hydro-axe, hand slashing, and scraping/mowing.

Natural Controls

Plant Competition is one of the cheapest and most useful weed control practices. A well-established, low-growing mat of grass and forbs will commonly prevent growth of woody vegetation. Plant competition can also be effectively utilized by leaving shrub species on right-of-way edges away from the pipeline(s). The perimeter shrub layer will effectively out-compete large canopy tree suckers growing along the edges of the right-of-way permitting better aerial visibility for inspections.

Herbicide Control

For all herbaceous and woody brush/trees (within facilities) the selection of a particular herbicide is generally determined by the following:

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

Herbicides approved for NorthRiver IPMP are of low toxicity and are categorized by the selectivity of the product, application method, duration in which the herbicide is retained within the soil and environmentally safe. Many selected herbicide products may have the identical active ingredients but are issues a distinctive PCP number, these are considered equivalent and may be used under this IPMP (see Table 2).

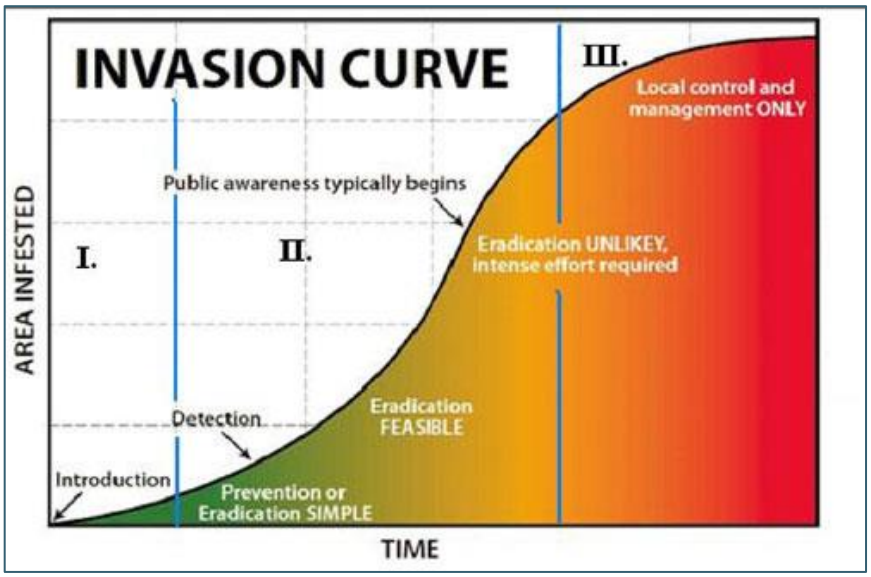
4.5.3 Managing Invasive and Noxious Plant Species

NorthRiver aims to work with regional weed committees and adjacent landowners to set priorities in a co-operative manner. The priority with which invasive weeds on NorthRiver rights-of-way and facilities will be controlled under this IPMP will depend on the invasive weed species of concern and the level of infestation in an area. Both factors must be considered to prioritize whether weed control treatments are required. Control of a specific weed species in an area already heavily infested may be of low priority, while control of the same weed species in a newly infested area may be critical to prevent further spread. The table below details priorities given under this IPMP to control specific weed species in areas where infestation of a weed species is high and in newly invaded areas. High infestation areas are sites where a given weed species has established over several growing seasons and is present on properties other than the rights-of-way or facilities.

Vegetation management control is often driven by OGC inspections and the presence of noxious and/or invasive weeds.

Priority	Purpose or Intent	Objective
1 High Risk	To stop the spread of newly invasive weeds threatening currently un-infested, highly susceptible areas. This priority also includes sites that are threatening a large neighboring economic base, such as seed and other high value crops., or that may have a large area of 'ecologically at risk' habitat in the region. The goals of this treatment program should be a line of containment and in some cases complete eradication, which might be determined by the species type and location.	Containment or eradication of all targeted invasive plants.
2 Moderate Risk	Invasive plants that pose a moderate risk to invasion and spread into undisturbed sites. These plants pose a threat to 'ecologically at risk' areas within the region. The programs' objective is to stop the enlargement of sites in highly susceptible areas. Must have a reasonably good expectation of control.	Containment (level of treatments dependent on level of control on adjacent lands) not managed by NorthRiver.
3 Low Risk	Invasive plants that pose a low to moderate risk of invasion and spread into undisturbed sites	Often some level of containment will be completed if required and adjacent landowners / managers are making attempts to stop further spread.

FIGURE 3: PHASES OF NOXIOUS WEED INVASION WITH PROGRESSION OVER TIME. IMAGE: HTTP://BLOGS.OREGONSTATE.EDU/H2ONC/TAG/INVASIVE-SPECIES/



Invasive Species Treatment Techniques

Commitment to preventing the spread of noxious and invasive weeds is a top priority of NorthRiver. Information/training to identify plants will be provided to any personnel working in the field, and the following policies will be followed.

- Any observed infestations (that cannot be immediately hand pulled) should be reported to the vegetation manager (NorthRiver Environmental Specialist).
- Prior to leaving weed-infested areas the vehicle driver should inspect the undercarriage for weeds. There is a risk of weed spread any time driving off road into rights-of-way. This is especially important for taller growing species such as Perennial sow thistle, Scentless chamomile, and Canada thistle.
- Surfaces disturbed during construction or weed removal should be seeded to a perennial vegetation cover. Only certified clean seed, free of noxious weeds should be purchased.
- Mitigation to minimize spread of noxious weeds when transporting soil.
- Weed plant material removed from infested sites during vegetation management activities, construction activities, and vehicle inspections must be properly disposed of. Cut plants with mature seed heads should be bagged and sealed prior to disposing in local landfills.

Physical Controls

NorthRiver regularly utilizes mowing to maintain vegetation along their pipeline rights-of-way. Mechanical control is usually coordinated at a local level and at times may be in conjunction with herbicide treatments or biological release site locations to improve invasive weed control. Smaller invasive weed infestations may be controlled using manual hand removal or weed eating. A Contractor under direction from the NorthRiver regional office carries out mowing and brushing work in the northeast region of B.C.

Hand Removal and Manual Cutting

NorthRiver uses hand pulling and hand cutting of selective invasive weed plants or weed eating of small weed infestations specifically for:

- New sites with only a few weed plants where it is advantageous to stop seed spread,
- Sites close to water, wells, and other riparian areas,
- Sites with concern regarding damaging adjacent plants,
- Sites where biological control is not an option,
- Sites, where feasible, that may have significant local landowner opposition to the use of herbicide,
- Site conditions which preclude the use of herbicide treatment, or the use of herbicide (window of opportunity) is not present at the time of treatment (i.e. conditions such as weather or plant growth are not within herbicide control parameters),

NorthRiver recognizes that the amount of time or area covered by hand pulling or weed eating is hard to verify precisely and can only be estimated, due to the nature and method of treatment.

Hand Pulling

Mowing

Mowing/cutting is the predominant technique used for managing right-of-way vegetation on pipeline rights-of-way. Mowing can be detrimental to invasive weed control and can, in some cases, enhance infestations. Although mowing usually reduces seed production, invasive weeds are commonly resistant to mowing because of growth habit and the ability to produce secondary flowering below the original cutting height. Mowing with severe plant or partial plant pickup and redistribution and continual soil disturbance can also lead to spread and increased infestations. To improve and enhance existing mowing practices, NorthRiver has worked with mowing contractors to work towards having the existing mowing standards and practices reflect the objectives of invasive weed control strategies.

Natural Controls

Establishing Competitive Vegetation

Invasive weeds tend to be highly competitive in less-than-ideal conditions for most native plants. The most susceptible areas for weed invasion are disturbed soils following construction or vegetation management activities. These soils should be re-seeded to a perennial, vegetation cover with grasses and legumes soon after to provide a competitive cover to protect against invasive weed establishment. If it is an area to be bare of vegetation it must have proper substrate immediately installed post-disturbance. Herbicide treatments may be required in combination with reseeding or planting to effectively inhibit growth of aggressive weed species while allowing time for desirable, competitive vegetation to establish.

Seeding Disturbed Areas

Invasive weed species commonly invade dry, disturbed soils. All disturbed areas (whether from construction or removal of invasive weeds) must be re-seeded as soon as possible following the disturbance.

Throughout planning, construction, maintenance, and abandonment requirements under the BC Energy Regulator (BCER) are strictly followed. These regulations include a component for re-seeding back to native species. All abandoned sites, as well as other projects are re-seeded to native species appropriate to the specific area. A priority will be given to low-growing native plants that create ground cover which supports erosion control, while staying consistent with vegetation management goals and objectives.

Native plants that may be considered are:

- Kinnikinnick (*Arctostaphylos uva-ursi*)
- Twin Flower (*Linnaea borealis*)
- Naked Miterwort (*Mitella nuda*)

Native grasses to be considered are:

- Hair Bentgrass (*Agrostis scabra*)
- Apline Sweet Grass (*Anthoxanthum monticola*)
- Common Sweet Grass (*Anthoxanthum hirtum*)
- American Sloughgrass (*Beckmannia szygachne*)
- Bluejoint Reedgrass (*Calamagrostis canadensis*)
- Timber Oatgrass (*Danthonia intermedia*)
- Poverty Oatgrass (*Danthonia spicata*)
- Tufted Hairgrass (*Deschampsia cespitosa*)
- Canada Wildrye (*Elymus albicans*)
- Blue Wildrye (*Elymus glaucus*)
- Slender Wheatgrass (*Elymus trachycaulus*)
- Altai Fescue (*Festuca altaica*)
- Alpine Fescue (*Festuca brachyphylla*)
- Northern Mannagrass (*Glyceria borealis*)
- Abreviated Bluegrass (*Poa alpina*)
- Glaucus Bluegrass (*Poa glauca*)
- Few-flowered Bluegrass (*Poa paucispicula*)
- Nuttall's Alkaligrass (*Puccinellia nuttalliana*)

Biological Controls

The release of biological control agents for management of noxious weeds has been extensively used within B.C. since the early 1950's. The agents (predominately insects) are searched out (normally from a noxious weed native environment) and screened to ensure they will attack and weaken only the targeted species. They reduce the vigor of the weed species and suppress the plants' competitive ability against desirable plant species.

Biological control insect release is normally only used for management at large sites with a high density of noxious weeds, such as fields and areas that include adjacent property where there is a cooperative effort to control weeds. The size of the weed stand must be large enough to support the insect population, and the site itself must be suitable habitat for the insect species. This method is expensive and labor intensive and is not usually effective in eliminating weed populations. However, it is effective in reducing growth and spread of weeds when used in combination with other IVM techniques (prevention, physical controls, seeding, and herbicide applications). Currently there are several biological control agents available in Canada for the control of invasive weed species. These control agents are now in use and distributed under Ministry programs and on private and provincial land. A list of currently approved bio-control agents within BC can be viewed at the following website:

https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/invasive-species/biological-control

4.6 Herbicide Use and Approved Products

4.6.1 Herbicide Control Measures

NorthRiver's general policy is towards spot and selective treatment of herbicide; as opposed to treating entire rights-of-way or sites, to effectively target problem vegetation while minimizing impacts to other more desirable vegetation species. Contractors are encouraged to use herbicides that are site or species specific and to rotate active ingredients to minimize the risk of herbicide resistance.

Pre-emergence – Is the application of herbicide to the surface where weed growth is imminent. Rainfall to activate the herbicide is usually required 7-10 days after treatments. If pre-emergent herbicides are used after weeds have emerged control may be limited with low success rate. Best results are obtained with this method when conditions for weed seed germination are good.

Post-emergence – This herbicide application is applied after the plant species has sprouted and growth has begun. Leaf stage is generally required to provide good control of target species. Small weeds are generally easier to control but this is still a need of enough leaf surface for the product to adhere to.

Adjuvant - An adjuvant is any substance added to a spray solution to modify and enhance the effectiveness of the herbicide. Adjuvants are an important part of the spray solution and if not used may negatively affect the degree of weed control obtained. Some products have adjuvants formulated into the product while other products require that the user add the adjuvant. The selection of adjuvants is often key to obtaining the right balance between maximizing weed control and minimizing crop injury. In some cases, the rate of adjuvant varies depending on weather conditions, crop stage, weed species, water quality, etc. Some herbicide labels recommend specific adjuvant products, and some recommend general types of adjuvants. Always use adjuvants as directed on the product label.

Surfactants – are the largest class of adjuvants, a surfactant is used to enhance herbicide penetration into the waxy cuticle layer on the leaf surface to increase the sprays penetration through the leaf.

Herbicide Resistance – Resistance of plant species to specific herbicide active ingredients is a growing concern. Some best practices to delay or prevent weeds from becoming resistant are:

Use products that have multiple modes of action in the same product that are both controlling the same weed species. There are many products available with many different modes of action.

- When feasible don't use glyphosate alone. With increasing use of glyphosate for weed control in Canada, some resistant weeds such as kochia and Canada fleabane are often not being controlled. These two weeds among many others are existent on NorthRiver managed properties. Another example is to use another mode of action, like a group 4 product such Sightline that controls kochia to improve bare ground mixtures.
- Use effective products at the recommended rate. Cutting rates can lead to faster development of resistance by allowing weeds to escape and go to seed. The best method of containing resistant plants is to prevent them from reproducing. The use of multiple modes

of action on key weeds will provide more effective control and will delay the onset of resistance to your managed areas.

4.6.2 Approved Herbicide Products

For all sites where herbicides are to be applies, containment and treatment areas are determined for each vegetative plant species. Where it is safe to apply herbicides, targeted plants are treated with herbicides with the intent of eliminating all plants of that species. No one person may apply herbicides more than 1.5m from a targeted plant or weed species (IPM Reg 77(1)). High residual herbicides are not selected for sensitive sites where there is a potential for soil movement, shallow aquifers, or a high concentration of coarse textured soil. (See Table 2 for approved herbicide products).

Table 2: Approved Herbicides, properties, and uses

Active Ingredient	Where Applied	Soil Residual Activity*	Selectivity (toxicity to non-target Species)
Glyphosate	Plant Foliage	Low	Non-Selective
Aminopyralid	Plant Foliage	Low	Selective
Imazapyr	Plant Foliage & Soil	Moderate	Non-Selective
Metsulfuron-methyl	Plant Foliage & Soil	High	Selective
Picloram	Plant Foliage & Soil	High	Selective
Triclopyr	Plant Foliage/Stem or Stump	Low	Selective
Dicamba	Plant Foliage	Low-moderate	Selective
Chlorsulfuron	Plant Foliage	Moderate	Selective
Diflufenzopyr	Plant Foliage	Low	Non-Selective
2,4-D	Plant Foliage	Low	Selective
MCPA	Plant Foliage	Low	Selective
Aminocyclopyrachlor	Plant Foliage	Low	Selective
Indaziflam	Pre-emergence	Moderate	Selective
Pyroxasulfone	Plant Foliage & Soil	Moderate	Non-Selective
Flumioxazin	Plant Foliage & Soil	Low	Non-Selective
Clopyralid	Plant Foliage	Low	Selective
Propyzamide	Pre-emergence & roots	Moderate	Selective
Saflufenacil	Plant Foliage & Soil	Moderate	Non-Selective
Acetic Acid	Plant Foliage	None	Non-Selective

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

Glyphosate - The active ingredient glyphosate is effective for controlling re-sprouts of certain deciduous tree species. Herbicide is applied to the cut stump immediately after slashing. Hack and squirt in the cut frill of a tree in a liquid formulation is also used. Glyphosate is also used for herbaceous and invasive weed species. Glyphosate is non-selective and has no, or very little, residual activity in soil. It binds tightly to all types of soils independent of the levels of organic matter, silt, clay, and soil ph.

Aminopyralid - Aminopyralid controls several noxious & invasive weeds, such as Canada thistle, knapweed and a wide spectrum of other species. Aminopyralid is found in the herbicide products Sightline, ClearView & Milestone. It is generally applied to plant foliage.

Imazapyr - the active ingredient imazapyr is herbicide used to control for most broadleaf weeds and annual and perennial grasses. It is to be applied post-emergence once the plants have had time to sprout. This herbicide is translocated throughout the plant and plant growth stops almost immediately after application. Imazapyr is found in the herbicide product Arsenal, is moderately residual and can last in the soil for season long control of certain perennial plants.

Metsulfuron-methyl - The active ingredient metsulfuron-methyl is found in several herbicide products, which include ClearView, Sightline, Navius VM & Escort, the latter is a dry-flowable granule to be mixed with water for the use of a selective herbicide for post-emergent control of annual and perennial weeds, invasive plants and shrubs by foliar application, on rights-of-way and non-crop industrial sites such as compressor stations, tank farms, pumping stations, etc.

Picloram - The active ingredient picloram is a selective herbicide commonly used to treat broadleaf tree and shrub species on utility rights-of-way. Its effectiveness is largely attributed to its selective nature. Grass species are generally tolerant to this active ingredient and broadleaf weeds can be selectively treated without damaging surrounding grasses. The active ingredient picloram is found in the herbicide products Tordon 22k & Tordon 101. Picloram attaches to organic matter in surface soil layers, which restricts its movement deeper into the soil. It can persist for several years under certain soil conditions providing long-term control against unwanted vegetation.

Triclopyr - The active ingredient triclopyr is generally used for brush control. Considered selective, it is effective for control of deciduous trees and brush, leaving grasses unaffected. Triclopyr has very little soil residual activity and rapidly degrades in soil microorganisms and sunlight. It generally takes 10-46 days to break down in soil depending on soil type, moisture, and temperature. Although the herbicide does not bind to soil as tightly as glyphosate, once triclopyr moves into the soil, there is generally little movement. The herbicide tends to stay in the upper 30 cm of the surface soil layers following rainfall where it undergoes degradation. Triclopyr is found in the herbicide product Garlon XRT.

Dicamba - The active ingredient dicamba is a selective, post-emergent herbicide generally used to control herbaceous broadleaf invasive plants; however, it is also used for some brush species. It has low to moderate soil residual activity and provides a wide spectrum of broadleaf control on rights-of-way and rangelands, as it does not affect established grasses. Dicamba is found in several herbicide products such as Vanquish, Overdrive & Banvel.

Chlorsulfuron - The active ingredient chlorsulfuron is found in the herbicide product Telar and is a non-selective herbicide for post-emergent control of annual weeds by both foliar and root uptake, on rights-of-way and non-crop industrial sites. This active ingredient is also used in the herbicide product Truvist as a wetable granule and is mixed in water and applied by ground application for control of broadleaf weeds including many terrestrial and riparian invasive and noxious weeds.

Diflufenzopyr - The active ingredient diflunfenzopyr is found in the herbicide product Overdrive and is a selective herbicide for post-emergent control of annual and perennial weeds, invasive plants,

and shrubs by foliar application. Effective control for use on rights-of-way and non-crop industrial sites.

2,4-D - These are phenoxyacetic compounds. This group of herbicide covers a great number of materials, which are hormone compounds that are selective depending upon rate and species. They are formulated to rapidly penetrate the waxy covering of plants. As a group they are of low toxicity to humans and animals and are found in many herbicide products including Tordon 101. 2, 4-D persists in soils for an average of only 1-4 weeks. The addition of 2, 4-D in combined products extends the control spectrum to cover a greater number of woody vegetation species.

MCPA - The active ingredient MCPA is most often used in agricultural applications but also in the treatment and control of noxious and invasive weeds in and around oil & gas lease sites that are often adjacent to cropland. It controls many broadleaf weed species and has low residual activity in the soil.

Aminocyclopyrachlor - The active ingredient aminocyclopyrachlor is found in the herbicide products Truvist and Navius VM. Products of this nature are most widely used for the treatment of noxious and invasive weeds as well as many other broadleaf weeds. Navius VM is also used for the control of brush and woody plants on rights-of-way, roadsides, industrial sites and other non-crop areas.

Indaziflam - The active ingredient Indaziflam is found in the herbicide product Esplanade SC. This herbicide product is used for pre-emergent control of annual grasses and broadleaf weeds in non-crop areas such as utilities, rights-of-way, industrial sites, and roadsides. Its best control is to apply to sites prior to weeds germinating and needs to be applied only once per season. Mixing this active with glyphosate can enhance its performance and provide a wide spectrum of weed control.

Clopyralid - The active ingredient clopyralid is a selective herbicide, which controls difficult noxious weeds such as knapweed, Canada thistle, perennial sow thistle and scentless chamomile. Clopyralid is found in the herbicide products Transline and Lontrel 360 which selectively control broadleaf weeds without damaging surrounding grasses. Clopyralid breaks down within soils over several months.

Flumioxazin & Pyroxasulfone – These active ingredients are found in the non-selective herbicides Torpedo or Fierce, which control difficult invasive weeds such as ragweed, Canada thistle, Canada fleabane, perennial sow thistle, scentless chamomile, and many others. It is used in non-cropland areas and is good for bare-ground control in the oil and gas sector.

Saflufenacil – This active ingredient is found in the product Detail, which provides residual pre- and post-emergence broadleaf weed control. It is used on rights-of-way, utilities, and other non-agricultural sites.

Propyzamide – This active ingredient is found in the product Kerb SC, is used as a pre-emergent working through root contact. This active ingredient is especially useful for control of hard-to-treat grass species (specifically one of the only active ingredients to selectively treat the Foxtail species) and can be used on cropland and rights-of-way. Moderately residual in soil.

Acetic Acid – Munger Vinegar Plus controls several weed species and a wide variety of grass species. The herbicide Munger Horticultural Vinegar Plus is for use in industrial vegetation

management sites, rights-of-way, driveways, patios, sidewalks, etc. It is used to control vegetation with no harmful residue in the soil making it a useful product in sensitive areas.

Recommended label rates will be used to selectively target each invasive weed, herbaceous, deciduous, or coniferous species. Additional information about these active ingredients or products, including their labels and safety data sheets (SDS), can be accessed at these websites:

https://www.cropscience.bayer.ca/

https://www.corteva.ca/en/products-and-solutions/industrial-vegetation-management.html

https://pestweb.ca

4.6.3 Herbicide Benefits and Limitations

Herbicides are an integral part of any integrated pest management program. When used in conjunction with mechanical and manual methods, herbicides enhance these components adding to their effectiveness. Most vegetation management methods are often not effective to maintain a weed free environment when used individually.

Herbicides have been used throughout North America for over half a century on industrial sites, railways, highways, and pipelines as well as largely within agriculture. Many alternatives have been explored, researched, and developed over the years with some success for new technology, however, herbicides remain as one of the most efficient options when providing vegetation management within IPM programs. Throughout programs the goal is to get to a place of maintenance, with less reliance on herbicides.

Herbicides proposed for use under this IPMP are selected based on lowest hazard to health and the environment, effectiveness, selectivity, and the lowest risk to non-target species. NorthRiver remains committed to using the lowest possible application rates for all vegetation management where it is deemed necessary. By including various active ingredients under this IPMP, it allows NorthRiver and its contractors to use specific herbicides for a species thus reducing overall use of product in the long-term.

Using the correct active ingredient in each specific case helps to reduce the need for repeat applications. Many weed species, particularly annuals, produce thousands of seeds in their life cycle and can become resistant to certain active ingredients if used too often and at improper rates. Weed resistance to herbicides is an ongoing issue and the use of varying active ingredients can reduce this issue.

Just as two or more techniques (manual, mechanical, herbicide) may be used to control vegetation, at times two herbicide products, with varying active ingredients, can be used in a mix. This can reduce the amount of product used by limiting the application rates as the two products work in conjunction. Using herbicides with various modes of action together can ensure successful treatments while minimizing the chance of herbicide resistance. Mixing herbicides is always done by following label recommendations.

4.7 METHOD SELECTION

Integrated vegetation management involves a decision-making process that looks at the various treatment options available for any particular vegetation complex or site-specific area. This process ensures the most suitable, effective, environmentally safe, and cost-effective method(s) are to be selected for a particular treatment. The following criteria outline the decision-making process.

- Is there a safety concern?
- Is there an environmental concern if not treated?
- Is there an environmental concern if treated?
- Is there an increased fire risk?
- Are there short or long-term benefits if treated or left un-treated?
- Are there short or long-term impacts of the treatment considered?
- Is the target plant species an operational concern or a legislative concern?
- Is there an option for non-herbicide treatments available?
- Is the expected efficacy reasonable for this type of treatment?
- Is the treatment choice cost effective?
- Is there a traditional land use of Indigenous Communities concern?
- Is there a public or landowner concern?
- Is the area in proximity or adjacent to Organic Farming?

NorthRiver recognizes the importance of implementing vegetation management work in an environmentally responsible manner. All vegetation management activities proposed in this IPMP will incorporate measures designed to protect the environment and sensitive areas described in this document. Extreme caution will be exercised when working around all waterbodies, streams, rivers, lakes, wetlands, and other environmentally sensitive areas such as agricultural lands, sensitive wildlife habitat and protected or sensitive species. When implementing IVM techniques (both non-chemical and chemical) under this IPMP, these treatments will be used judiciously and appropriately. Pesticide free zones (PFZs) will be maintained adjacent to sensitive areas when applying herbicides; suitable buffer zones will be maintained to ensure protection of riparian areas regardless of the treatment application.

Unless an adjacent property owner or manager agrees otherwise, an applicator must ensure that a no treatment zone (NTZ) between pesticide use, and the adjacent property is sufficient to prevent any release of pesticide spray or runoff onto the adjacent property. To determine whether a particular buffer is adequate an applicator must consider the following.

- Active ingredient and volatility of the pesticide formula to be applied,
- Application method,
- Soil conditions,
- Slope conditions of the site,
- Weather conditions/rainfall,
- Location (in relation to the treatment site), type, size, and use of a water supply intake or well,
- Any relevant geographic features.

All vegetation management activities proposed for use under this IPMP will incorporate:

- Strategies to protect community watersheds, and other domestic and agricultural water sources.
- Strategies to protect fish, wildlife, and their habitats, along with riparian areas.
- Strategies to prevent herbicide contamination of food intended for human consumption.

5.0 ENVIRONMENTAL PROTECTION

5.1 WATERBODIES

5.1.1 WATERBODIES DEFINITION

Under the Integrated Pest Management Act & Regulation the definition 'body of water' does not include a human-made, self-contained body of water or structure for water.

The federal *Fisheries Act* does not provide a direct definition for types of water bodies. The Act instead specifies under Section 35(1) that "No person shall carry on any work or undertaking resulting in the harmful alteration, disruption or destruction of fish habitat." The Act under Section 34 (1e) defines fish habitat as "spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes".

Under the *Fisheries Act*, regulated waterbodies will likely include all lands covered by water that may be standing or flowing including:

- Water classified as a stream or river,
- Water in a lake or wetland,
- Marine or estuarine water,
- Fish bearing water,
- Identified wildlife habitat feature,
- Water flowing directly into the above types.

High Water Mark - The area frequently wetted during a season of high water (usually where there is a break in terrestrial vegetation). A PFZ is measured horizontally from the high-water mark. If the high-water mark cannot be reliably identified (as in the case of puddles or small pools) the high-water mark is measured at the level of the water.

Free Standing - This is a body of water that is not draining into or away from another water source by direct overland flow and may include wetlands, bogs, and fens.

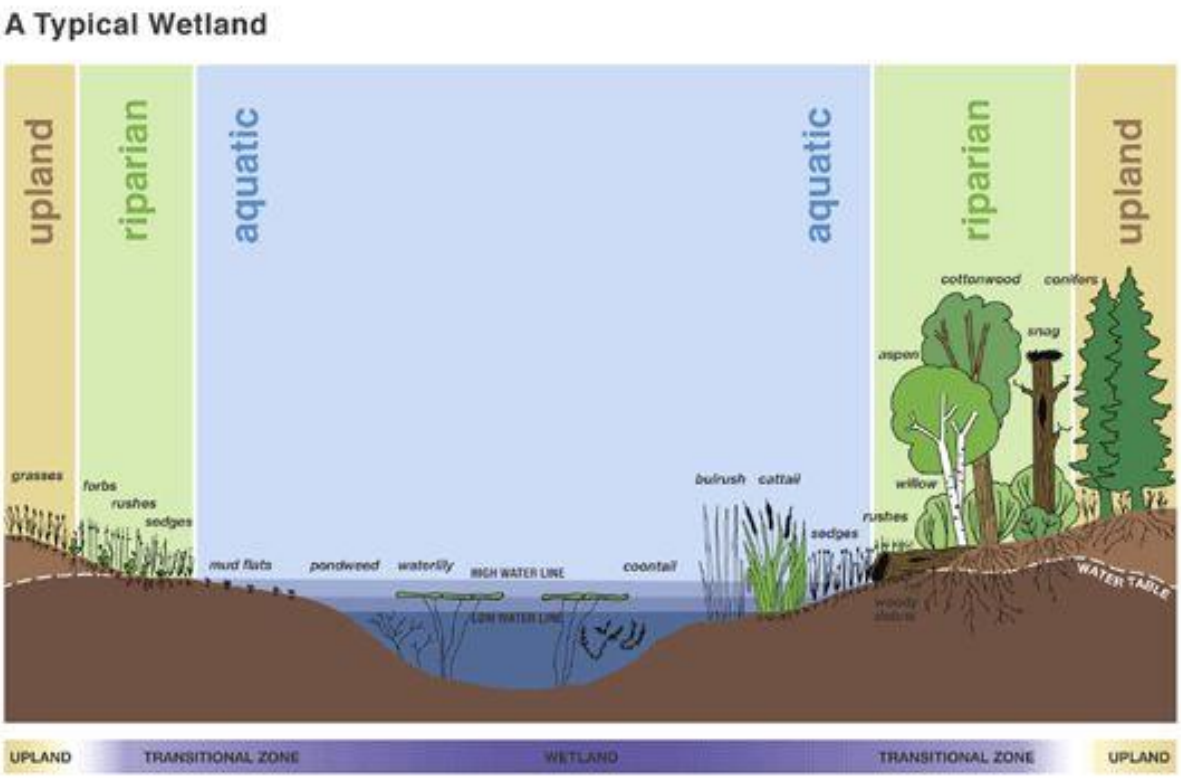
Temporary Body of Water - This is a wetted body of water that is only seasonally wet. A dry stream is not considered a body of water and may be treated if not fish bearing any time of the year. To identify signs of water flow, look for indicator plants that thrive in water. If a dry shallow depression contains plants that would not be present if the depression was wet for long periods of time, then it should not be considered a body of water.

Stream or River - Has the same meaning as under the *Forest and Range Practices Act*. It means a watercourse, including a watercourse that is obscured by overhanging or bridging vegetation or soil

mats that contain water on a perennial or seasonal basis, is scoured by water or contains observable deposits of mineral alluvium, and that has a continuous channel bed that is 100 m or more in length, or flows directly into:

- A fish stream, river or fish-bearing lake or wetland, or
- A licensed water works.

Wetland - Has the same meaning as under the *Forest and Range Practices Act*. A wetland is a swamp, marsh, bog, or other similar area that supports natural vegetation, which is distinct from adjacent upland areas. Wetlands are areas where a water table is at, near, or above the surface or where soils are water-saturated for a sufficient length of time.



For further details refer to Section 9 of the Government Actions Regulation, B.C. Reg 17/2004

5.1.2 Riparian Vegetation Management Area (RVMA)

[IPMR Sec. 58(3)(b)(ii)]

> Riparian zone is the areas or strip of land immediately adjacent to streams, rivers, wetlands, and other water bodies. A thriving riparian plant community is an integral component of fish habitat regulating water temperature, controlling erosion, and providing fish with cover and food. This Riparian Vegetation Management Area (RVMA) will be closely managed under this IPMP to ensure no unreasonable adverse impacts occur from any work performed within its boundaries.

A **Riparian Vegetation Management Area (RVMA)** provides distinct ecological benefits to fish and other wildlife.

- They support lush plant growth and stay green longer than other areas not alongside surface water.
- Root mats of grasses and shrubs shield soils from surface erosion while roots of larger trees help to maintain the structural integrity of the banks.
- Roots and organic debris also filter surface runoff, effectively removing suspended solids before they enter the stream channel.
- Large woody debris give fish places to hide from predators, contributes to stream bank stability, and increases the in-stream habitat diversity.
- Terrestrial insects drop from overhanging vegetation to provide fish with a direct source of food.
- Riparian areas provide a diversity of plant species which in turn support a broad variety of bird and wildlife species which have differing needs for food supplies, nesting and denning sites, shelter from weather extremes, and places to hide from predators.
- Riparian areas provide corridors for wildlife, by providing a sheltered route, which connects larger habitats together and gives them protection from predators.

5.1.3 Working in and Around the RVMA

When working in and around the RVMA with large machinery, handheld mechanical devices, or herbicide extreme caution must be taken.

Some critical measures to follow:

- Flag the RVMA boundary with flagging tape, particularly if mowing machinery is to be used in adjacent areas or if the waterbody is difficult to distinguish.
- Minimize disturbance to low growing vegetation.
- Do not leave debris below the waterbodies high water mark.
- Do not refuel chainsaws, machinery, or mix chemicals within the RVMA.

5.1.4 Pesticide Free Zones and No Treatment Zones

“**Pesticide Free Zone**” **(PFZ)** is an area of land which:

- Must not be treated with pesticide, and
- Must be protected from pesticide moving into it.

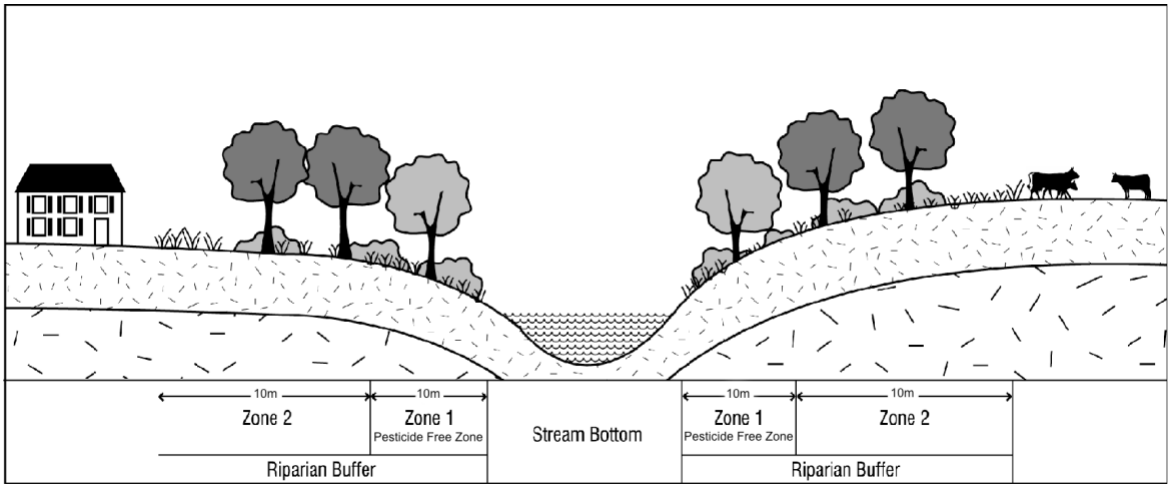
"**No Treatment Zone**" **(NTZ)** is an area of land which:

- is generally adjacent to a PFZ and is used as a buffer zone to protect the PFZ from any pesticides moving into it and must not be treated with pesticides.
- NTZs will be identified, marked/flagged prior to any herbicide application.

To establish the PFZ/NTZ, the distance will be measured from the high-water mark to the application zone. The following PFZ restrictions will be applied alongside all waterbodies for the purpose of this vegetation management program (see Section 5.1 for a definition of waterbodies and wetlands):

- **A 10m PFZ will be maintained along all water bodies, dry streams, and classified wetlands, except IPMR Sec.75 (3) (4) (5) (6) (7)**

- **A 30 m NTZ around a water supply intake or well used for domestic or agricultural purposes, including water for livestock or for irrigation of crops.**



The following PFZ Restrictions will be applied alongside all water bodies (see section 7.1.1 for definition of water body and wetlands).

A 30 m no-treatment zone around a water supply intake or well used for domestic or agricultural purposes, including water for livestock or for irrigation of crops, under the Integrated Pest Management Regulation, section 71(4), other exceptions may apply as follows,

A confirmation holder may be "reasonably satisfied" that a smaller NTZ is appropriate after a careful consideration of the following factors, if applicable:

- Chemical, physical, and toxicological characteristics of the pesticide,
- Application method proposed to be used,
- The location of the water supply intake or well in relation to the proposed treatment site,
- The size, and use of the water supply or intake,
- Current weather conditions,
- Soil conditions and type,
- Relevant geographic features,

A written record must be made of the rationale for reducing a no-treatment zone.

5.1.5 Strategies to Protect Community Watersheds

[IPMR Reg. Sec. 58(3)(b)(i)]

NorthRiver will ensure that community watersheds are protected under this IPMP. This section outlines strategies to protect not only community watersheds but also domestic and agricultural water sources from the effects of herbicide use. Extreme care will be taken around all waterbodies, water intakes and wells during the use of any herbicides.

Protection of community watersheds can be done by:

- Ensuring a 30m no treatment zone is maintained around a water supply intake used for domestic use,
- Ensuring a 100m no-treatment zone up-slope from a licensed community watershed intake,
- Not storing pesticides near community watersheds for more than 24hrs,
- Asking property owners where their wells and water intakes are located, this will help protect domestic and agricultural use,
- Using maps, if they are available, that show water intakes, and record the locations for future use,
- Using selective treatments in these areas to help reduce possible drift, leeching or runoff characteristics.

5.1.6 Water Protection Requirements for Specific Uses

Reg. Section	Permitted Application	NTZ/PFZ	Exception
All Applications			
71(3)	Domestic and agricultural wells and water intakes, including all methods and pesticides.	30m NTZ	NTZ may be reduced if reasonably satisfied that a smaller NTZ will ensure no pesticide enters well or intake (71(4) Reg)
Non-glyphosate Applications			
73(1)	Use of pesticides other than glyphosate along or around bodies of water, such as a classified wetlands or dry streams. Subject to all label conditions and application methods.	10 m PFZ	Glyphosate application
	Subsurface drainage intakes (facilities)	2m PFZ	No Herbicides
Glyphosate Applications			
71(3)	Non-potable wells and water intakes for facilities and rights-of-way	10m NTZ	
74(1)(c)	Along or around a body of water that is: • Not fish-bearing at any time of the year • Does not drain directly into a fish-bearing body of water	2m NTZ	

74(2)	Up to the high-water mark of a temporary free-standing body of water and dry stream, that is: • Not fish-bearing at any time of the year • Does not drain directly into a fish-bearing body of water	0m NTZ	
74(1) (a)	Along or around a waterbody or a classified wetland that is: Fish-bearing, or that drains directly into a fish-bearing waterbody, or along or around a dry stream that when wet is fish bearing or drains directly into a fish-bearing waterbody.	2m PFZ (Read product label prior to treatment)	
Noxious and Invasive Plant Management			
77(2)	Selective application of glyphosate to noxious weeds and invasive plants if the application is used between 1m and 10m above the high-water mark.	1m PFZ	

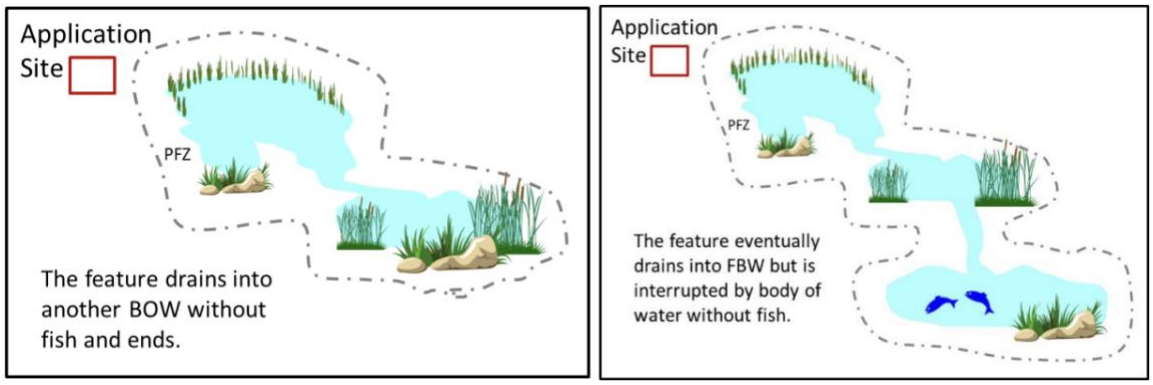
Drains Directly

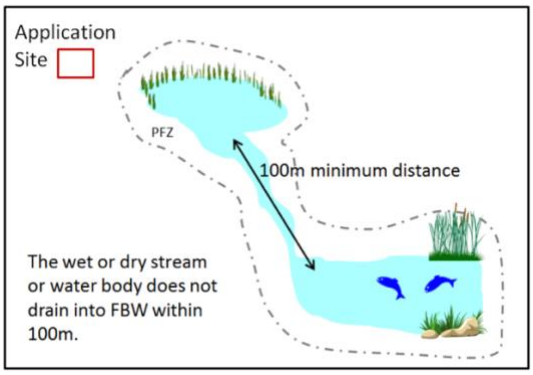
The terms "drains directly" and "does not drain directly" are not defined in the IPMR, resulting in a lack of consistent understanding of what the IPMR requires. The BC Ministry has introduced explanatory notes which describe how IPM field officers view the terms above.

A feature (lake, creek, marsh) **is not** directly draining to fish bearing water (FBW) if it flows into another body of water that is not fish bearing. This also includes where the second body of water eventually drains into a body of water that is fish bearing. The water feature **does not drain directly** if it converges with a stream or river before reaching the FBW. The confluence must be substantial volume to provide significant dilution and must occur at least 10m away from FBW. A stream **is not** considered directly draining if it converges with another stream of equal or lower classification at a distance greater than 10m before entering FBW.

NOTE: If further assistance is required, please review BC Ministry of Environment website on pesticides and pest management.

https://www2.gov.bc.ca/gov/content/environment/pesticides-pest-management
https://iscmv.ca/docs/EN__Directly_Draining.pdf





5.2 Strategies and Protection For Wildlife and Habitat

5.2.1 Strategies to Protect Sensitive Wildlife Habitat

[IPMR Sec. 58 (3)(b)(ii)]

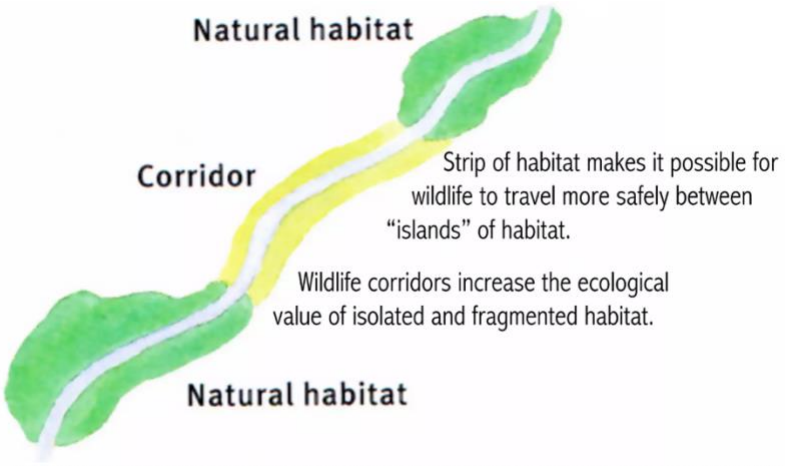
The herbicides used by NorthRiver in this industry are unlikely to have any direct toxic effect to wildlife and have been federally approved by the Pest Management Regulatory Agency (PMRA). Herbicide selections and control methods are very carefully considered, especially around water and environmentally sensitive areas to maintain individual ecosystems for wildlife. While treating, the structures and patterns of a natural forest setting must be retained to conserve wildlife populations, especially species at risk.

Additional steps that could be considered or reviewed:

- Identifying ungulate winter ranges and taking steps to protect these areas, when possible,
- Identifying significant wildlife trees and other habitat features,
- Identifying significant wildlife salt/mineral licks*,
- Checking vegetation for active migratory bird nests prior to work and using buffers or altering work timing to accommodate and protect these nests,
- Identify specific plant species that are highly used by wildlife and maintain where possible,
- Identify wildlife in the area that may require additional protection,
- Identification and protection of wildlife corridors (allow vegetation to remain around and between sensitive areas, to facilitate the movement of wildlife between these different habitats).

*a significant mineral lick means a naturally occurring mineral lick that is used at least annually by one or more ungulate species as evidenced by: 1. Well established trails/braided trail system leading to the lick, 2. Extensive excavation/trampling, and 3. Tracks, teeth marks, pellets, hair at lick site.

Figure 2: Mineral lick visited by Moose, https://media-cdn.tripadvisor.com/media/photo-s/06/3b/17/a6/young-s-guide-service.jpg



https://www.slideshare.net/cvconservationstrategy/biodiversity-basics-3597531

5.2.2 Strategies to Protect Sensitive Plant Species or Certified Organic Products

High value producing plants that have the potential to or are known to be consumed or collected by humans and other important native plant species are not targeted for treatment. Rare or endangered native plants that have been recognized will be protected from herbicide applications where practical. Indigenous Communities or other members of the public may identify these sites during higher level planning, consultation, or referral.

Species at Risk

Changes in the environment, either from human activity or other sources can affect us all or have unforeseen consequences for our ecosystem. By practicing wildlife conservation, we are protecting our own species. Environment Canada has developed 'Species at Risk' public awareness, research programs and detailed species at risk lists for all regions in Canada.

https://www2.gov.bc.ca/gov/content/transportation/transportation-infrastructure/engineering-standards-guidelines/environmental-management/reference-documents/environmental-regulatory-compliance/species-at-risk-federal-provincial

It is important to consider and be aware of these at-risk species in local areas where vegetation control programs could potentially cause negative effects to specific species and their habitats.

Pesticides are used extensively in modern agriculture, forestry, landscape, and various industrial uses. The Canadian Wildlife Service (CWS) conducts research on their impact on wildlife and provides advice to the Pest Management Regulatory Agency on their registration and use. Habitat used by wildlife is also essential for agriculture, forestry, and other competing interests. To accommodate all concerns, CWS may work with other agencies and groups to minimize the impact on critical wildlife habitat.

Jurisdictional boundaries

Federal Government

- Has jurisdiction over all SARA-listed species on federally owned land such as national parks, department of national defense lands, and Indigenous Communities' reserves lands.
- Has jurisdiction over migratory birds wherever they occur.
- Has jurisdiction over aquatic species wherever they occur.

Provincial Government

- Has jurisdiction over all other SARA species.
- Must protect listed species to at least SARA standards or the federal government may extend its jurisdiction and apply SARA through its "Safety Net" provisions.

SARA and Aboriginal People

- SARA requires cooperation and consultation with aboriginal people affected by a recovery strategy, action plan, management plan or critical habitat protection. This cooperation is extremely important to effective implementation on reserve lands, and land claims settlement regions.

5.2.3 Pesticide Contamination Prevention of Food Intended for Human Consumption or Livestock

[IPMR Sec. 58 (3)(b)(iii)]

All herbicides approved under this IPMP will be applied as per label requirements especially in areas actively producing crops for human consumption or crops that are grazed by livestock. NorthRiver's access roads and lease sites are often located near environmentally sensitive areas containing agricultural crops or domestic animals. Food intended for human consumption is sometimes grown or found within these areas. NorthRiver contractors shall attempt to locate areas where there is crop food intended for human consumption and take the appropriate precautions during vegetation management operations to avoid contamination of these areas. Increased buffer zones around these sensitive areas, timing of applications, methods of application or other alternatives may provide additional safety measures of vegetation management within these areas.

5.2.4 Environmental Protection of Pollinators

Pollinators, including bees, feed from flowers, transferring pollen in the process. Herbicides are developed to target a specific pathway in plants to control them, these target sites do not exist in lifeforms other than plants, including pollinators. Only herbicides listed under this plan will be utilized under this program and always according to label recommendations. When these herbicides are applied at the recommended rates, they have been found, through extensive research, not to be harmful to pollinators.

Controlling invasive species under this program, often with the help of herbicides, is beneficial in ensuring food stability for pollinators. As invasive species overtake an area, native species can be displaced. These native plants will be important species for the area's wildlife, grazers, and pollinators. Non-native invasive plants often flower only once annually, while many native plants flower throughout growing seasons, or at specific times throughout growing seasons, providing a continued food source for pollinators. By eliminating invasive plants from an area and allowing native species to re-establish pollinators, including bees, are provided sustainable foraging ground and a healthier habitat overall.

6.0 HERBICIDE APPLICATION & OPERATIONAL PRACTICES

6.1 PERSONNEL QUALIFICATIONS

Health and Safety in the workplace is a shared responsibility. Every NorthRiver employee, contractor and subcontractor shall be responsible and accountable to ensure his or her safety. All NorthRiver safety policies and procedures as well as any government safety regulations (WCB) will be strictly followed on all worksites. The transportation, storage, handling, application, and disposal of herbicides are governed by federal and provincial legislation.

The required practices and other pertaining information are detailed in:

- Workers Compensation Board of British Columbia (1999) Occupational Health & Safety Regulation – BC Regulation 296/97 as amended by BC Regulation 185/99 – Sections 6.70 to 6.109.
- Integrated Pest Management Act & Regulation.
- B.C. Ministry of Environment, Lands and Parks (1995) Handbook for Pesticide Applicators and Dispensers.
- B.C. Ministry of Forests (FRDA 006) Herbicide Field Handbook.
- Workers Compensation Board of British Columbia (1990) Standard Practices for Pesticide Applicators.
- Pesticide Labels on containers and Safety Data Sheets (SDS) sheets.

6.1.1 LICENSING & CERTIFICATIONS

All NorthRiver employees and contractors working with herbicides will follow safe handling practices including workplace requirements for Workplace Hazardous Materials Information System (WHMIS) labeling and worker education. Contractors applying herbicides under this IPMP must have a valid British Columbia Pesticide Control Service License. Applicators applying herbicides under this IPMP must be certified with a valid British Columbia Industrial Vegetation or Noxious Weed Applicators Certificate or have Assistant Applicator Training and be supervised by a certified applicator. The certified supervising applicator must remain at the treatment site while applications take place and can supervise no more than four assistant applicators at on time.

More information on categories and levels of certification can be found at the BC Government website.

https://www2.gov.bc.ca/gov/content/environment/pesticides-pest-management/certification-training/certificate-training-categories

Personnel Requirements

Signing Authority – This IPMP document will be signed by a qualified NorthRiver official to acknowledge a commitment to follow this plan as stated. Employees, consultants, and contractors working under this plan will comply with the requirements of legislation and standards.

Treatment Decisions – Decisions on treatments will be made, as part of this IPMP, by qualified staff or by individuals reporting directly to NorthRiver staff.

Contractor for Pesticide Application – Any contracting company hired to conduct vegetation management which includes herbicide application must possess a current *British Columbia Pest Control Service License*. The contractors name and service license number will be kept on file.

Applicators – An individual with a valid *British Columbia Pesticide Applicators Certificate* in the industrial vegetation/noxious weed category will direct and supervise all herbicide applications.

Layout – All herbicide layouts will be supervised and/or audited by an individual who possesses a valid *British Columbia Pesticide Applicators Certificate* or is proficient with the identification of pest and invasive plants, and understands strategies, procedures, objectives, standards, and pesticide control regulations.

Mixers – Herbicide mixing will be supervised or conducted by an individual with a valid *British Columbia Pesticide Applicators Certificate*.

6.2 Transportation of Herbicides

[IPMR Sec. 58 (3)(a)(i)]

The transport of herbicides is regulated by the federal *Transportation of Dangerous Goods Act (TDGA)* and the *British Columbia Integrated Pest Management Act & Regulation*.

The federal TDGA regulates the handling and transportation of poisonous substances, which may include some herbicides. At this time no herbicides covered under this IPMP fall within the federal Act. The *Integrated Pest Management Act & Regulation* (Section 7) also specifies certain transport procedures.

The following procedures will be followed while transporting herbicides for application under this IPMP.

- Limited amounts of herbicide concentrate will be carried in any one vehicle.
- Herbicide concentrate will only be carried in a secure, lockable, signed compartment.
- Herbicide concentrate will only be transported in original labelled containers.
- Herbicide concentrate will always be carried separately from food and drinking water, safety gear, and people.
- Spill-containment and clean up equipment will be carried separately from herbicides but in close proximity to the herbicide on each vehicle during herbicide transport and use.
- Appropriate documents such as operations records and any required Safety Data Sheets (SDS) will be carried in each vehicle during herbicide transport and use.

6.3 Mixing and Loading of Herbicides

[IPMR Sec. 58 (3)(a)(iii)]

Mixing of herbicides must be conducted with extreme caution at the time when concentrates are mixed with their carriers, such as water or other mixing agents.

A container used to prepare, mix, or apply a pesticide must not be washed or submerged in a body of water. If equipment is used to draw water from a body of water (or an irrigation system) into a container used to contain, prepare, mix, or apply a pesticide, a gap must be maintained between the pesticide and the equipment so that pesticide is prevented from entering the body of water or irrigation system.

6.4 Herbicide Storage

[IPMR Sec. 58 (3)(a)(ii)]

Herbicides will be stored in accordance with the Integrated Pest Management Act & Regulation and the Workers' Compensation Board document "Standard Practices for Pesticide Applicators."

Storage areas must be ventilated. "Ventilated" means that there must be, at a minimum, an opening that allows air to circulate. This can be an open window, roof or wall vent, gable-type vents, or a mesh door or window. Where passive ventilation is not sufficient, a mechanized system of ventilation is required.

As per Section 31, you must also notify the nearest fire department within 60 days after starting to store pesticides at a location. The following information must be provided: the pesticide manufacturer, distributor, formulator, wholesaler, and licensee.

Presently, NorthRiver requires that all pesticide application contractors:

- Purchase and store all herbicide,
- Have a proper storage facility that is a secured, lockable room vented to the outside and accessible only to those with authority to access, this storage room is equipped with necessary spill kit and first aid equipment in the event of spill, and precautionary signs on the entrance door,
- Material Safety Data Sheets must be available,
- Store herbicides separately from food intended for human or animal consumption,
- Mobile units that are used for herbicide treatment and short-term storage must have precautionary symbol on door, herbicides must be kept separate from passenger area of vehicle, lockable compartments containing herbicides must be locked at all times when unattended.

6.5 Containers and Residual Storage

[IPMR Sec. 58 (3)(a)(iv)]

The responsibility of herbicide container disposal associated with the vegetation control activity presently lies with the Contractor. The Contractor must triple rinse and then puncture empty herbicide containers to prevent their reuse.

These destroyed containers must then be disposed of at an appropriate landfill site. In most cases, herbicide distributors are accepting empty, clean containers for recycling. Options for returning containers are expected to increase as more distributors or manufacturers expand these types of programs. NorthRiver encourages all contractors to use a recycling program if available in their area. Any unused chemical must be returned to the storage facility in the original container for future use.

For more information on recycling programs in British Columbia please visit:
https://cleanfarms.ca/programs-at-a-glance/bc-programs-events/

6.6 Herbicide Application Methods

[IPMR Sec. 58 (3)(c)]

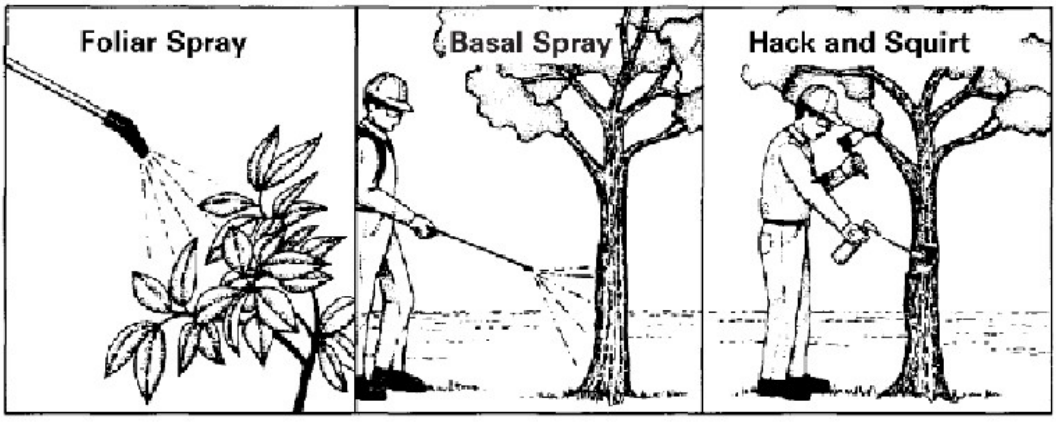
Various application methods can be utilized for vegetation control using herbicides under this program. Having variation in application methods ensures proper treatments in any and all situations.

Equipment

- Truck or heavy equipment mounted spray tank with power hose/nozzle
- ATV mounted spray tank with power hose/nozzle or Boomless nozzle
- Backpack sprayers
- Wick applicators

Methods

- **Ground foliar application** involves the use of a backpack or handgun sprayer to foliar treat smaller areas for the control of unwanted vegetation. Boomless nozzles to treat larger areas as a foliar treatment.
- **Wick application:** Roller device wetted with herbicide that is used for selective applications as a foliar treatment.
- **Cut stump application** involves the cutting of smaller diameter woody species with a power saw or hand tool and applying herbicide to the cut stump surface.
- **Hack and squirt application** involve making an incision or frills with a hand tool around the circumference on the woody species and injecting herbicide in the incision or frill.
- **Basal Bark Application** involves the outer surface of woody species from ground level up to approximately 30cm in height to be treated with a mix of triclopyr and isopar mineral oil.



Source: https://content.ces.ncsu.edu/crop-tree-management-in-north-carolina

6.7 Herbicide Equipment Calibration

[IPMR Sec. 58 (3)(b)(v)]

Contractor(s) will supply and maintain all equipment in good working condition with no leaks. Inspection and calibration of equipment will occur prior to commencement of vegetation control activities each year and:

- For each individual applicator using hand-held or backpack equipment
- When new equipment is to be used
- At the start of each treatment job
- Any time the application equipment is changed
- For each change in size or type of nozzle
- Any time the pesticide or formulation of a pesticide is changed

At any time, a NorthRiver representative may audit this information. All calibrations must be documented clearly by the contractor(s).

6.8 Monitoring Weather Conditions

[IPMR Sec. 58 (3)(b)(vi)]

Measurements will be made to record weather conditions prior to, and periodically during, herbicide applications. Wind speed and direction, precipitation, temperature, frost, dew, and sky conditions (clear, overcast, cloudy, partly cloudy) will be recorded for foliar herbicide applications using all methods of treatment.

Herbicide application will be shut down if:

- The maximum temperature allowable is exceeded.
- The wind speed exceeds the allowable speed and/or direction causes the treatment to miss the target which it is intended for.
- It begins to rain, increasing the chances of excessive runoff and leaching.
- Foliage is covered by ice or frost or if water is flowing on the foliage.

6.9 Treatment Area Identification

Areas scheduled for herbicide treatment will be assessed and subject to a ground layout in order to locate, identify, and mark all treatment areas including the following:

- Wells, wetlands, riparian areas, and associated Pesticide Free Zones (PFZ's),
- No Treatment Zones (NTZ's), and
- Significant geographic and wildlife features.

All areas marked will be clearly visible to the applicator and monitors for inspection. Pre-treatment layout will be conducted close to the time of treatment ensuring any markings will remain in their original location. Area layouts may be conducted with the use of photos, diagrams, compasses, and/or GPS and will be transferred to or referenced with maps.

These maps will be available to the Ministry of Environment (MoE) if requested, prior to any herbicide treatment. These maps or diagrams will be on site during treatment and the supervisor, and all applicators will have the opportunity to review the maps/diagrams prior to treatment.

6.10 Daily Operations Records

[IPMR Sec. 35 (1)(a)(l)]

Contractors & applicators applying herbicides for NorthRiver (see Appendix 2) MUST record and complete operations records daily. Operations records must include the following:

- If the application is performed as a service, the name and address for whom the service was performed along with the confirmation number or license number of licensee.
- Name and certification number of the pesticide applicator.
- Date and time of pesticide use.
- Treatment location.
- Name of pest targeted by the use or the purpose of the pesticide use.
- Trade name of each pesticide used and its registration number under the federal act.
- For each pesticide used:
    - Method of application
    - Application rate
    - Total quantity used
    - Treatment area and size
- Weather conditions:
    - Temperature
    - Precipitation/sky condition
    - Velocity and direction of the wind
- Monitoring methods and injury thresholds.
- Advice given for safe re-entry, crop utilization, and any other precautions that should be taken for exposure minimization.

These daily operations reports are to be sent to a NorthRiver representative during the treatment season at periodic intervals mutually agreed upon prior to the start of any treatments. NorthRiver will retain all records and maps of the treatment sites. Records must be kept at the business location identified on the license, permit, or pesticide use notice (as applicable) within 60 days of completion of the pesticide application (IPMR Sec. 83 (2)(b)).

6.11 Spill Response Plan

[IPMR Sec. 58 (3)(a)(v)]

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

The following procedures must be followed if a spill occurs.

- Protect all personnel from herbicide contamination by wearing appropriate safety gear.
- Move any exposed person(s) away from the place of the spill, keep the individual(s) warm, and provide first aid, if necessary.
- Stop the source of the spill if it is safe to do so.
- Identify the type of product spilled.
- Create a dam or ridge to stop spilled material from spreading.
- Determine the source, volume and area affected by the spill.

- Inform the project supervisor immediately of the spill.
- The project supervisor will ensure all personnel working on the project are aware that a spill has occurred and that cleanup procedures have commenced.
- The project supervisor will ensure all operations cease until the spill is contained and the source is repaired.
- Absorbent material will be used over the spill, if applicable, to absorb up any liquid.
- Absorbent material will be collected into garbage bags or containers, clearly marking the contents.
- Remove any contaminated soil or material from the spill site and collect in garbage bags or containers, again clearly marking contents.
- Contact NorthRiver on-site supervisor and receive instructions regarding reporting procedures and disposal of contaminated materials.

6.11.1 Spill Reporting Procedures

Spills will be reported to the Provincial Emergency Program in the proper sequence established by NorthRiver's "One Window Reporting for Federal and Provincial Incidents". The employee in charge is responsible for reporting spills. If the spill occurs in a location where immediate contact cannot be made, the report must be made as soon as possible. The spill response plan will be available in the pesticide transport vehicle and in each safety plan. The following table indicates who will be responsible for reporting spills.

Type of Spill	Reporting Responsibility	Report to Whom
Mix and Loading	Mixer or Loader	On-site Supervisor, Program and NorthRiver Representative / Field Service gas control
Pesticide Application	Applicator or Supervising Applicator	
All Spills	Project Supervisor	

Spill Contacts

The following numbers can be used 24 hours:

- FIRST CALL (NorthRiver Emergency) 1-844-667-8477
- Provincial Emergency Program 1-800-663-3456

The following numbers can be used for spill assistance:

- Medical Emergency..... 911
- Poison Control Centre 1-800-567-8911
- NorthRiver, Carl Reimer (Environmental advisor) 1-250-262-3456

6.11.2 Spill Kit and Equipment

An approved spill kit will be provided by the contractor and must be readily available at all mix and loading sites. The following protective gear and equipment should be available with all spill kits.

- Eye Protection / Eye Wash
- Coveralls
- Protective gloves
- Protective boots
- Plastic bags or container
- Shovels
- Roll of marking ribbon

- Spill absorbent or cat litter, absorbent pads, or similar material

6.12 Personal Protective Equipment (PPE)

Long-sleeved shirts, long pants, gloves, and boots are minimum requirements and should always be worn when working with pesticides (coveralls are recommended). The table below contains further recommendations. Addition PPE may be required depending on individual facility procedures.

Symbols: R = recommended, O = optional

Activity / Method	Water-resistance boots	Water-resistance gloves	Protective Coveralls	Hard Hats	Eye Protection
Pesticide Mixing	R	R	R	O	R
Cut-Stump	R	R	R	R	R
Hack-and-Squirt	O	R	R	R	R
Backpack	R	R	R	O	R
Power Hose Spray	R	R	R	O	R
Basal Bark	R	R	R	O	R

7.0 Operational Procedures

7.1 Annual Notice of Intent to Treat

[IPMR Sec. 42 (1)-(6)]

After vegetation and site assessments have been selected and 21 days prior to the commencement of treatments for the applicable calendar year, a written Notice of Intent to Treat (NIT) will be submitted to the administrator at the Regional Ministry of Environment office with the following information.

- Name and business location of confirmation holder,
- A description of the proposed area of treatment and map or diagram of that area including geographic features that may require pesticide free zones,
- Proposed pesticide uses and method of application, and
- The proposed total area of treatment in that calendar year.

NorthRiver will retain all records of site assessments, vegetation and invasive weed inventories, control treatments, methods, and activities.

A detailed map of the treatment area will be available for viewing within (3) business days of request by the administrator from the Regional Ministry of Environment office.

7.2 Inter-Agency Coordination

Vegetation management control programs are sometimes implemented in conjunction with other agencies (i.e. regional invasive weed control programs). These cooperative programs may be initiated by NorthRiver or led by other agencies with NorthRiver providing secondary assistance. NorthRiver may conduct its vegetation management efforts in communication and/or cooperation with other 'land occupiers'. Examples of inter-agency coordination may include annual meetings with range licensees, invasive weed committees, Indigenous Communities and Regional Districts.

7.3 Public Notification and Consultation

7.3.1 General Public

Notification

If a proposed pesticide use under an IPMP has the potential to significantly impact an individual or member of a community the confirmation holder must make reasonable efforts at least 45 days prior to submitting a request for a confirmation number (pesticide use notice) from the Ministry of Environment to contact and consult those individuals. This notification can include an advertisement within newspapers, online web-editions of news sources, or other methods within the proposed operating area. Notification must take place every 5 years, during the development of the IPMP.

"Significantly impacted" requires that a direct and demonstrable link be identified between the proposed pesticide use and a person's avocation, livelihood, water source, means of support, provided that the person cannot reasonably conduct their activities elsewhere. Notification only and not consent is required during this process.

Published Notifications

At least 45 days prior to submitting a request for a confirmation number from the Ministry of Environment, NorthRiver will publish (3) notices of their intent to submit an IPMP for review in local newspapers for a two-week period. Notification now includes online web editions of news sources within the regions to which the IPMP operating area applies. NorthRiver must receive questions/comments regarding the IPMP in writing within 30 days of the publications.

Signs Identifying Treatment Locations

Under Section 64 of the *Integrated Pest Management Regulation* a treatment notice must be posted on public land prior to implementing vegetation management treatments. This water-resistant sign (at least 550 cm^2) must be clearly visible and legible from approaching public to the treatment area. The number of signs posted at each site will be determined by factors including the size of the treatment site, access points and residential density.

Each herbicide treatment sign will specify:

- Title - "Notice of Herbicide Use" (Bold block letters),
- Proposed date and start time of application,
- Name of target pest,
- Confirmation (PMP) #,

- Pesticide active ingredient name and Pest Control Product Act Registration Number (P.C.P)
- Pesticide trade name,
- Common name of the herbicide active ingredient,
- Phone number at which a licensee or proponent can be reached for further information about the pesticides used, and
- Precautions that can be taken to minimize exposure to people entering the treatment area.

Signs should also be posted where due diligence would seem to require it, such as areas where the public may generally be expected to enter, walk, or stop, at access points on primary roads. For corridor treatments, postings should be done along the edge of the corridor where the treatment begins and where it ends, and on fenced facilities the sign may be placed on the entrance gate. Signs should remain posted for a minimum of 14 days post-treatment.

Property Owner Pesticide Notice

In addition to these site-specific treatment signs, if during the consultation an agreement is made to contact an individual prior to treatment then the individual must be notified in the agreed time and manner.

Organic Producers

NorthRiver understands that organic producers may be present within their operating area. Organic producers may be independent or belong to the Certified Organic Association of BC (COABC). NorthRiver applies the standards and restrictions for organic farming which includes no herbicide use on lands within a determined distance from an individual production area. NorthRiver will, where applicable, notify organic producers of treatments as well as will document when an organic producer informs of a specific location.

7.3.2 Indigenous Communities' Consultation

Indigenous Communities' consultation will follow policy and procedure provided by the Ministries of Aboriginal Relations, Ministry of Environment draft guidelines for Indigenous Community's consultation, *Integrated Pest Management Act & Regulation* and NorthRiver. Results of the consultation process with Indigenous Communities and NorthRiver and its agents will be documented and available for review in the consultation report.

When industry and government agencies develop plans for pest management activities that may potentially adversely impact Indigenous Communities right or title interests' consultation is necessary to ensure meaningful communication and relationships. NorthRiver has an obligation to consult with Indigenous Communities and must also attempt to address their concerns and accommodate their cultural interests. The consultation process must consider the BC treaty negotiation process, and current litigation actions by Indigenous Communities in respect to aboriginal land use or sovereignty. NorthRiver realizes there are sensitivities and special concerns that each individual Indigenous Communities may have. Therefore, NorthRiver is committed to establish and maintain positive relationships with Indigenous Communities throughout their operation. All correspondence with Indigenous Communities will be included in the consultation report to be submitted to the Ministry of Environment with the Pesticide Use Notice.

7.3.3 Consultation Requirements

A consultation report is included as an attachment to this IPMP, which documents the consultation process and conclusions. During development of an IPMP it is a requirement that the IPMP confirmation holder record and maintain a consultation summary outlining steps taken, and all communications made during the consultation process. The following information in the consultation report should include:

- Record of which publications notices were posted,
- Record of the dates in which the advertisement occurred,
- A summary of written and verbal responses by the public,
- A summary of written and verbal responses by the proponent,
- Summary on any public or private meetings held, and
- Any agreement made to an individual or group stating notification before pesticide use.

7.4 Annual Reporting

7.4.1 Annual Notification

[IPMR Sec. 39 (1)(2)(4)]

NorthRiver will forward in writing, an annual pesticide use report to the administrator prior to January 31st of the next calendar year for the work completed the previous year.

The Annual Summary of Pesticide Use Records for the previous year will include:

- Name and address of the confirmation holder,
- Herbicide trade name,
- Active ingredient (a.i.),
- Number of kilograms used, and total area treated,
- Methods used to apply pesticides,
- Methods of non-pesticide controls used, and estimated area treated, and
- Maps and/or descriptions of treated areas.

7.4.2 Amendments

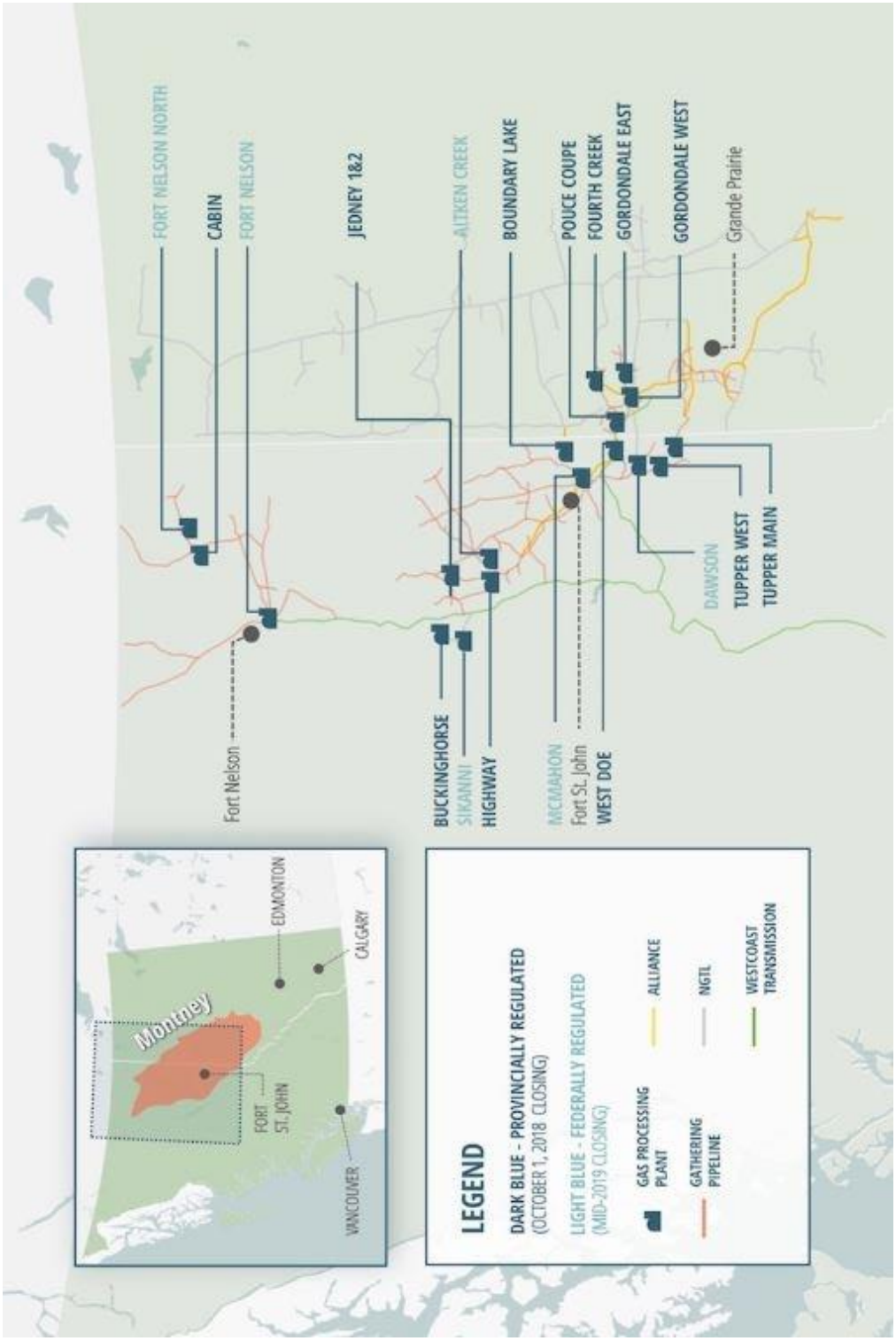
[IPMR Sec. 42 (4)(5)(6)]

NorthRiver will forward to the Administrator the appropriate information as per the *Integrated Pest Management Act & Regulation*.

- at least 2 days in advance if an amendment is needed to increase the area treated with herbicides by up to 10%, and
- at least 21 days in advance if an amendment is needed to increase the area treated with herbicides if greater than 10%. A new notice of intent to treat must be sent to the administrator under Section (42) Subsection (3) of the IPM Regulation.

Contact:
Administrator, Ministry of Environment,
9341 Stn Prov Govt
Victoria, BC
V8V 0C5

APPENDIX 1 - **MAP OF AREA OF OPERATION** *NORTHRIVER OPERATIONS IN BRITISH COLUMBIA*



APPENDIX 2 – DEFINITIONS

Annual
A plant that has an entire life cycle in one year, germinates, produces seed, and dies.

Biennial
A plant that has a life cycle of two years, germinates the first year and produces seed and dies in the second year.

Drift
The effect of wind on herbicide particles in the air, the force and direction of the wind will determine the direction and distance of herbicide drift.

Environmentally Sensitive Area (ESA)
An area that can be environmentally sensitive due to a variety of features, such as riparian areas, lakes, creeks, domestic wells, etc.

Herbicide
A type of pesticide, which is used to control problem vegetation and weeds, available in liquid, granular or solid formulation.

Integrated Pest Management (IPM)
Is a long-standing science based, decision-making process that identifies risks from pests and pest management related strategies. It coordinates the use of pest biology, current environmental information, and newly innovative and available technology to prevent unacceptable levels of pest damage by the most economical means, while maintaining the least possible risk to people, property, resources, and the environment.

Integrated Vegetation Management (IVM)
Involves the integration of various techniques and products into one program to control undesirable vegetation and invasive plants.

Land Manager
For private land, the owner or person with the exclusive right to the land. For Crown land, the government agency responsible for the land. Managers of the land are generally limited to tenants, livestock grazers, crop farmers, and forest and other tenure holders who have the authority to restrict access to the site. However, a manager can also be any user with a registered interest in the land (such as a woodlot licensee or Christmas tree farm operator who has the authority to restrict access to the land).

Leaching
When a liquid substance moves through the soil from its original location to other locations not intended.

Mode of Action
A herbicides mode of action refers to the way in which it affects a plant. Uptake of herbicides is by root, foliage, or stems. Herbicides used within this IPMP are carried along with other nutrients throughout the plant where they disrupt plant growth processes.

Monitoring

The collection, analysis, and interpretation of information to evaluate the progress of your vegetation and weed management strategies.

No Treatment Zone (NTZ)
Is an area of land that is generally adjacent to a pesticide free zone (PFZ) used as a buffer zone to protect the PFZ from any pesticides moving into the PFZ and must not be treated with pesticides. NTZs should be identified and marked/flagged prior to any herbicide application.

Perennial
A plant that lives for multiple years producing seeds multiple times.

Pest
Any undesirable organism that should be controlled to ensure safety and integrity of the operations. This includes weeds, defined under this IPMP as any undesirable plant, including grasses, brush, trees, noxious and invasive plants.

Pesticide Free Zone (PFZ)
An area defined by location near a waterbody, riparian, domestic well, or any other non-treatment area, this designated area cannot have any herbicide residue within its boundary once treatment has been completed.

Residual
The ability of herbicide to stay in the environment; a low, moderate, or high residual herbicide depends on how fast the herbicide is broken down in the soil or digested in an organism.

Rhizomes
An underground, horizontal stem that contains buds, nodes, and leaves that look like scales.

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

Toxicity
The degree a substance has negative effects on living organisms within an environment.

APPENDIX 3 – AVAILABLE TREATMENT CONTROL METHODS

Herbicide Treatment Methods

- **Basal Bark Application**: involves the outer surface of deciduous species from ground level up to approximately 30cm in height to be treated with a mix of triclopyr and isopar mineral oil.
- **Broadcast Granular**: involves the use of a granular spreader that will distribute the herbicide over the application area for control of weed species.
- **Boomless Nozzle**: A device, usually mounted on the back of an ATV, used for distribution of herbicide for ground application.
- **Cut Stump Application:** involves the cutting of smaller diameter deciduous species with a power saw or hand tool and applying herbicide to the cut stump surface.
- **Ground Foliar Application:** involves the use of a backpack sprayer with herbicide to foliar treat herbaceous and deciduous species selectively to plants or individual stems.
- **Hack & Squirt Application:** involves making an incision or frills with a hand tool around the circumference on the deciduous species and injecting herbicide in the incision or frill.

Non-herbicide Treatment Methods

- **Hand Pulling:** This technique can be used for managing and controlling sporadic weed infestations growing within fenced areas or on rights-of-way. Hand pulling is effective on certain sizes and species of weeds only if the infestations are of a manageable size.
- **Mowing**: The cutting of vegetation and grasses with a mechanical mower, this can reduce the vegetation to a manageable level and can help suppress undesirable weed species.
- **Pruning:** Pruning involves the removal of selected deciduous or coniferous species encroaching alongside facilities and rights-of-way using proper arboriculture practices such as chain saws or brush saws.
- **Slashing:** This is a manual or mechanical treatment for managing vegetation using tools such as brush saws and weed trimmers.
- **Weed Eating/Trimming:** A commonly used treatment for removing herbaceous vegetation growing on gravel areas, within cracks in asphalt or concrete, within landscaping and along access roads.
- **Biocontrol:** This type of control is usually regulated and used by the BC Ministry and in cooperation with such companies or regional districts.

APPENDIX 4 – FEDERAL AND PROVINCIAL LEGISLATION

Federal and provincial legislation, which contain sections pertinent to Crew Energy's vegetation management operations include but are not limited to the following.

Federal

Canada Seed Act provides guidelines for the content of noxious weed seeds in crop seed, and transportation of crop seed in Canada.

Canadian Environmental Protection Act contributes to sustainable development through pollution prevention.

Fisheries Act establishes criteria for the protection of fisheries and fish habitat from pesticides.

Food and Drugs Act describes restrictions on pesticide use on livestock forage and where humans will consume livestock.

Migratory Birds Convention Act describes the requirements to protect migratory birds from pesticides.

Pesticide Control Products Act summarizes the registration and availability of pesticides and prohibits application under unsafe conditions.

Pesticide Residue Compensation Act details possible compensation for farmers whose crops have been seized by the Health Protection Branch.

Species at Risk Act works to (a) prevent wildlife species (plants and animals) from becoming extirpated or extinct; (b) provide for the recovery of species at risk and (c) encourage the management of species to prevent them becoming at risk in the future.

Plant Protection Act describes the requirements for the introduction of bio-control agents into Canada.

Transportation of Dangerous Goods Act provides information regarding the storage and transportation of pesticides (and other dangerous goods).

Provincial

Environmental Management Act *(Bill 57-2003)* prohibits the introduction of wastes into the environment without a permit or approval of compliance. The legislation regulates activities such as transportation and storage of wastes, disposal of unused petroleum or herbicide (and pesticide) products, empty petroleum or herbicide containers and herbicide contaminated rinse water.

Forest and Range Practices Act requires all persons carrying out a forest or range practice to take authorized measures to prevent the introduction and spread of prescribed invasive plant species.

Heritage Conservation Act encourages and facilitates the protection and conservation of heritage property in BC.

Highways Act includes all public streets, roads, ways, lanes, bridges, trestles, ferry landings and approaches, and any other public ways**.** All roads, other than private roads, are deemed to be common and public highways subject to Section 4(3).

Fish Protection Act outlines the obligations to protect and restore fish habitat.

Water Act ensures the province water resources are protected, used, developed, conserved, managed, and controlled.

Weed Control Act outlines the obligation to control designated noxious weeds by the land occupier.

Wildfire Act outlines the obligations for users of crown land and must be adhered to. Industrial activities, "Except in prescribed circumstances, a person carrying out an industrial activity must not light, fuel or use an open fire in forest land or grass land within 1km of forest land or grass land. (See act & regulations for specific information).

Wildlife Act establishes criteria for the protection of wildlife and wildlife habitat.

Workers Compensation Act enforces the Industrial Health and Safety Regulations when carrying out herbicide (and pesticide) applications and other vegetation management activities.

Transportation of Dangerous Goods Act sets out regulations and standards for the movement of dangerous goods within the province.

Integrated Pest Management Act & Regulation regulates the sale, containment, transportation, storage, preparation, mixing, application, and disposal of pesticides. Regulates the application of pesticides for commercial and industrial use on all public and private land used for forestry, utilities, transportation, and pipelines.

Community Charter grants municipalities jurisdiction in relation to the environment, including jurisdiction over the control and eradication of alien invasive species within municipal boundaries. Gives location governments the authority to make by-laws covering pesticide use on residential or municipal lands.

APPENDIX 5 – SAMPLE DAILY OPERATIONS RECORD

Pesticide Use Record

FORM REFERENCE CODE: EPD-IPM-08.3

Complete a pesticide use record for every non-excluded pesticide that is used for each treatment location and day of use.

Pesticide use records must be kept for a period of three (3) years following the pesticide use and must be made available to the ministry upon request.

Please note that while a record of each pesticide use is required, the use of this specific form is voluntary. Many applicators choose to use their own systems to record the required information. This information is used to generate an annual use summary.

Abbreviations or codes may be used to complete this record if a key to the abbreviations and codes is attached to this form.

Authorization Number[1]			
Authorization Holder Name[2]			
Client Name[3] (if client holds an authorization)			
Client Authorization Number[3] (if applicable)			
Applicator Name			
Applicator Certificate Number			
Pesticide Use Details			
Date (YYYY/MM/DD)		**Start time**	
Land Manager or Client Name[4] (if client doesn't hold an authorization)			
Land Manager or Client Address[4]			
Treatment location[5] (address and/or description)			
Target Pest(s) or Purpose of Treatment			
Pesticide Trade Name			
PCP Number			
Application Rate (unit/area)		**Quantity Used** (undiluted pesticide)	
Application Method			
Precautionary Advice Given[6]			
Monitoring Method			
Injury Threshold			
Precipitation[7]		**Wind Speed**[7]	
Temperature[7]		**Wind Direction**[7]	

[1] Your Licence, Permit or PUN Confirmation number
[2] Name of Licence, Permit or PUN Confirmation holder
[3] Complete if pesticide application is for a Licence, Permit or PUN confirmation Holder. Use separate pages to record information for each different Licence, Permit or PUN Confirmation holder.
[4] Client name and address if pesticide is applied as a service, otherwise Property Owner/Manager name and address
[5] Include enough information to ensure that a person can determine exactly what was treated.
[6] Safe re-entry time, days to harvest and other advice given
[7] Record if pesticide application is outdoors.

Pesticide Use Record – Integrated Pest Management Regulation
EPD-IPM-08.3

Complete this page only if using second-generation anticoagulant rodenticides (SGARs). SGARs are rodenticides containing the active ingredient brodifacoum, bromadiolone, or difethialone.

Pesticide Use Details: Second Generation Anticoagulant Rodenticides (SGARs)	
Monitoring Results[8]	
Prevention Methods Implemented[9]	
Alternative Control Methods Used[10]	
Removal Date (YYYY/MM/DD)[11]	

[8] Record results of monitoring efforts, including rodent populations and rodent damage.
[9] Record measures taken to prevent rodents, such as structural exclusion and site sanitation methods.
[10] Record alternatives to SGARs that have been implemented, such as mechanical traps.
[11] Record the date the SGAR is removed from the treatment site.

APPENDIX 6 – SAMPLE PLANT MONITORING FORM

Monitoring Date:_____ Name of Monitor:_____

Location of Site (attached diagram if required):_____

Target Plant or Plant Complex	Growth Stage	Density/Percent Cover/ Height (as appropriate)	Exceeds Threshold ?

ENVIRONMENTAL CONSIDERATIONS

Soil type and moisture content: _____

Aspect: _____ Slope: _____

Water Sources or wells within 30 m of site YES NO
If yes, describe:_____

Bodies of water within 20 m of site YES NO
If yes, describe:_____

Other Environmental Features Requiring Protection YES NO
If yes, describe:_____

Recommendations for additional monitoring/treatment: _____
_____
_____

APPENDIX 7 – SAMPLE POST TREATMENT MONITORING FORM

Date of Treatment: _____ **Date of Post Treatment Evaluation** _____

Target Plants Treated (species or complexes): _____

Treatment Location (attach map or diagram if needed) _____

Total Area treated: _____

Non-Chemical Treatments Used: **YES** ☐ **NO** ☐

Treatment Method: _____

Pesticide Applied: **YES** ☐ **NO** ☐

Product Name	**Active Ingredient**	**PCP Number**	**Application Rate (L/ha)**
_____	_____	_____	_____

Application Method and Type of Application Equipment: _____

EVALUATION

Evaluation Site Location and Features (e.g., slope, aspect, soil type): _____

Applicator Observations at Time of Treatment: (e.g., equipment problems, uniformity of treatment, drift): ___

Post-treatment Data on Abundance of Pest Plants: (e.g., counts or estimates per unit area): _____

Pest Control Results: (e.g., reduction in % cover/density of unwanted plants compared to pre-treatment conditions): _____

Conclusions on Success of Treatment: _____

Recommendations to Improve Effectiveness: _____

Features/biota Examined for Non-target Impacts: _____

Environmental Impacts Observed: _____

Recommendations for Environmental Protection: _____