



DIVISION OF FORESTRY PESTICIDE USE GUIDELINES

January 2022



INTERNAL POLICY FRAMEWORK INFORMATION – GUIDELINES

These guidelines are a procedural document of the Division of Forestry. This page summarizes relevant internal policy information.

Document approved by:

Forrest Boe

Digitally signed by Forrest Boe
Date: 2022.01.25 08:10:20 -06'00'

Director, Minnesota Department of Natural Resources, Division of Forestry

Title of Guidelines	Pesticide Use Guidelines
Supersedes	Pesticide Use Guidelines, 2016
Document Owner	Mike Reinikainen, Silviculture Program Coordinator
Related Department Policies.....	<u>Operational Order 59</u>
Related Division Procedures.....	<u>Aerial Pesticide Aviation Plan</u> <u>Regeneration Monitoring: Procedures and Standards</u>
Effective Date (last revision).....	January 25, 2022
Last Maintenance Update	January 25, 2022
Next Review Date	December 31, 2026

ACKNOWLEDGEMENTS

We would like to thank the revision team of Paul Dubuque, Sascha Lodge, and Mike Reinikainen and many DNR staff who provided review and support in development, including:

- Lori Barrow
- Tim Beyer
- Forest Eidbo
- Lori Knosalla
- Dave Larson
- Deb Pitt
- Karla Sandstrom
- Dave Sopoci
- DNR Pesticide Committee

Introduction	5
Goal	5
General Pesticide Policies	5
Personnel Responsibilities	5
Pesticide Program Coordinator (PPC).....	5
Aerial Forest Management Coordinator (AFMC)	6
Forest Management Helicopter Coordinator (FMHC)	6
Region Program Leader (RPL).....	6
Area Program Leader (APL)	7
Pesticide Project Proposer (PPP)	8
Area Forest Supervisor.....	8
Training and Licensing	9
Division Personnel	9
Vendors.....	9
Volunteers.....	9
Pesticide Use Project Planning.....	9
Integrated Pest Management.....	9
Pesticide Use Approval.....	10
Review of Sensitive Sites and Features	10
Approved Pesticides	11
Environmental and Social Risk Assessments.....	11
Characteristics to Consider During Pesticide Selection	12
Managing Movement of Pesticides in the Environment	12
Minimizing Impacts to Non-target Species.....	13
Approved Application Methods.....	14
Herbicide Tank-Mixes.....	15
Buffer Strips.....	15
Notification of Pesticide Treatment.....	16
Cooperative Projects.....	17
Other DNR Divisions and Other Public Agencies.....	17
Operational Requirements.....	18
Personal Protective Equipment (PPE)	18
Procurement	18

Handling.....	19
Transport	19
Storage.....	19
Spills and Spill Management.....	20
Pre-work Conference with Vendor	20
Weather Specifications.....	21
Reporting and Monitoring.....	22
Pre-treatment Regeneration Survey.....	22
Post-treatment Monitoring.....	23
Pesticide Use Reporting	23
Nursery and Tree Improvement Operations	24
Nursery Personnel Responsibilities.....	24
Nursery Policies.....	25
Nursery Reporting	26
Appendices	27
Appendix A. Training Handouts	27
Appendix B. Planning.....	27
Appendix C. Proposal	28
Appendix D. Notification.....	28
Appendix E. Implementation.....	28
Appendix F. Reporting.....	29
Appendix G. Monitoring.....	29
Appendix H. Cooperative Spraying	30

Introduction

The Minnesota Department of Natural Resources (MNDNR), Division of Forestry (FOR) Pesticide Use Guidelines has been developed as required by the DNR's Operational Order 59, Pesticides and Pest Control, dated February 23, 2018. **Pesticide label instructions are the authoritative source for legal application of pesticides and must be strictly followed unless the Operational Order or Division Guidelines are more restrictive.**

Goal

The goal of the FOR's pest management activities is to implement a safe and effective program to protect and improve Minnesota's forest resources. The core integrated pest management (IPM) principle for the DNR is to control pests without relying solely on pesticides. To comply with Minnesota Statutes, section [18B.063](#), the DNR will use IPM techniques to manage public lands, waters, and facilities.

General Pesticide Policies

Use or prescription of pesticides on state lands and in the state nursery or tree improvement areas will follow these standards:

- [MNDNR Operational Order 59 – Pesticides and Pest Control](#)
- [Pesticide Labels](#) and [Safety Data Sheets \(SDS\)](#)
- [Environmental and Social Risk Assessments \(ESRAs\)](#)
- [Minnesota Forest Resources Council Site Level Forest Management Guidelines](#)

Personnel Responsibilities

The following section identifies the responsibilities for implementing FOR's pesticide program at each of the administrative levels – statewide, region, and areas. Nursery and tree improvement responsibilities are covered under Nursery and Tree Improvement Operations

All statewide program coordinators and consultants, as well as region and area program leaders are responsible for proper pesticide applications within their programs. Unless specified, programs will assume all levels of responsibility. All handlers and applicators must stay current with pesticide training.

Pesticide Program Coordinator (PPC)

PPC role is the duty of the silviculture program coordinator. The PPC:

- Remains current on federal, state, and agency issues and policies as well as pertinent guidelines, legal requirements, and label updates that affect the use of pesticides.
- Sees that current guidelines and policies are appropriate and meet the needs of the Division. Coordinates guidelines and policy revisions.
- Maintains and approves additions to the list of [FOR's Approved Pesticides and Application Methods](#).
- Maintains a list of licensed pesticide applicators and tracks recertification needs.
- Secures funding so that pesticide applicator licensing and training requirements are met.

- Monitors training opportunities and informs personnel of relevant training sessions.
- Collects the statewide pesticide application summaries for all applications for all programs.
- Prepares FOR's annual pesticide use summary, and submits to Operations Services Division by March 31 of each calendar year.
- Prepares environmental documents and responses to legislative or legal inquiries or actions.
- Ensures [Environmental and Social Risk Assessments \(ESRAs\)](#) are completed for all pesticides approved for use on certified lands.
- Represents the Division of Forestry on the MNDNR Pesticide Use Committee.

Aerial Forest Management Coordinator (AFMC)

AFMC role is the duty of the silviculture program coordinator. AFMC responsibilities are detailed in the [Aerial Pesticide Aviation Plan](#).

Forest Management Helicopter Coordinator (FMHC)

FMHC responsibilities are detailed in the [Aerial Pesticide Aviation Plan](#).

Region Program Leader (RPL)

RPL role is the duty of respective regional program specialists for Lands, Roads, Silviculture, and Terrestrial Invasive Species programs.

Technical Assistance

- Provides guidance and technical assistance as requested and in review of proposals.
- Remains current with pesticide issues to be in compliance with pertinent guidelines, legal requirements, and labels.

Project Review and Approval

- Reviews and approves or denies ground and aerial pesticide proposals submitted by the areas. Approves proposals in consideration of type of treatment, target species, crop species, and land-features that support pesticide.
- Ensures that the area program leaders have approved the necessary project proposals.
- Ensures that proposers have completed the [Natural Heritage](#), [High Conservation Value 4](#), and National Wetland Inventory reviews, and the review is documented on project proposal.
- Confirms that pesticides and application methods are on the list of [FOR's Approved Pesticides and Application Methods](#)

Contract Development and Administration

- Develops and administers as project manager the regional ground herbicide application contracts.
- Coordinates the procurement of herbicides and surfactants when contracts specify that the state will supply them.
- Coordinates contracted work with the area program leaders.
- Coordinates cooperative projects with other divisions, agencies, and governments.

Notification

- Provides approved signs to area program leaders.
- Coordinates with regional information officer and other RPLs to provide standard format

for area news release.

- Notifies the region forest manager, regional safety administrator, and contract administrator (if it is someone else) as soon as RPL has knowledge of an incident or misapplication.

Monitoring and Reporting

- Ensures that pesticide use information on FOR-administered lands, including leases, in the region has been entered into the appropriate program database for annual reporting purposes.

Area Program Leader (APL)

APL role is the duty of respective area program specialists for Lands, Roads, Silviculture, and Terrestrial Invasive Species programs. For aerial pesticide projects, APL responsibilities are detailed in the [Aerial Pesticide Aviation Plan](#) as the duties assigned to the area silviculture team/agency representative.

Technical Assistance

- Stays current with pesticide issues to be in compliance with pertinent guidelines, legal requirements, and labels.
- Provides guidance and technical assistance as requested.

Project Review, Approval, and Administration

- Reviews and approves or denies all projects proposed at the area before submitting to the region for area, regional, or state-wide contracting.
- Ensures that the proposer has completed the [Natural Heritage](#), [High Conservation Value 4](#), and National Wetland Inventory reviews and the review is signed off on the project proposal forms.
- Confirms proposed project practices are compatible with site objectives as well as policy and practices of adjacent ownerships (e.g., Forest Service, Tribal Government).
- While the project develops, ensures all time-sensitive, site-specific arrangements have been made for completion of the project following the [Pesticide Project Checklist](#).
- Confirms that pesticides and application methods are on the list of [FOR's Approved Pesticides and Application Methods](#). If either is not on the list, approval from the PPC is required.
- Ensures that soil texture and organic matter are determined and documented for sites where soil mobile herbicides are prescribed.
- Serves as area's project supervisor or will delegate role to appropriate area staff.
- Orients vendor or volunteers to project sites in the area or ensures another area project supervisor is available to orient vendor upon beginning work in the area.
- Ensures ongoing projects are inspected for safety and completion of work and ensures compliance with specifications. Has the ability to stop contract work if safety is compromised or if work is not compliant with contract specifications.

Notification

- Ensures that timely notification occurs locally and to neighboring landowners. Works with the region information officer when press releases are used as notification.
- Ensures all broadcast spray sites, both ground and aerial application, are posted with signs.
- Follows chain of command in reporting onsite incidents or applications not following

specifications.

Monitoring and Reporting

- Ensures that all required data for pesticide applications on FOR-administered lands in the area have been entered into the appropriate program database.
- Collects appropriate application records, maintains copies at the area level, and furnishes copies (except for aerial applications) to the RPL as required.
- Ensures post-treatment monitoring is scheduled and completed and recorded in the database identified by the program.

Pesticide Project Proposer (PPP)

Project Planning

- Initiates all projects on the program approved form template, and provides a GPS based shape file that is collected after the timber harvest is complete, and identifies all reserves, and buffers.
- Ensures proposed project practices are compatible with site objectives as well as policy and practices of adjacent ownerships (e.g., Forest Service, Tribal Government).
- For broadcast application, assures that the boundary of the treatment area is flagged and that reserves and buffers are likewise flagged in an alternative color ribbon.
- Identifies vegetation management needs.
- Considers alternatives to pesticide use before choosing to use a pesticide, including considering a 'no action' alternative.
- Prescribes treatments that are silviculturally sound and that are in compliance with pertinent guidelines, legal requirements, and labels.
- Ensures pesticides selected for use are on the list of [FOR's Approved Pesticides and Application Methods](#) and has an [Environmental and Social Risk Assessment \(ESRA\)](#) on file.
- Completes the [Natural Heritage](#), [High Conservation Value 4](#), and National Wetland Inventory reviews.
- Works with APL to ensure all activities included on the [Pesticide Project Checklist](#) are completed prior to key project deadlines.

Project administration

- Provides adequate time to supervise the contract including conducting a pre-application meeting, check-ins, and final inspection. In some cases (e.g., variable weather conditions) full-time, on-site supervision may be required for sensitive sites and rights-of-way applications.
- Monitors environmental conditions to ensure application within DNR and label requirements, whichever is more stringent.

Monitoring and reporting

- Ensures that proper application records are completed by the contractor or by MNDNR applicators for sites not contracted.
- Works with APL to schedule post-treatment monitoring.

Area Forest Supervisor

- Ensures personnel who prescribe, apply, and handle pesticide have required training and necessary personal protective equipment (PPE) and emergency response equipment as required by the product label and these guidelines.

Training and Licensing

Division Personnel

To help ensure pesticides are used effectively and safely, there must be at least one licensed applicator (with category A and J licenses) in each administrative area. The area supervisors should work with program leaders to determine the staff that will be licensed. Additional personnel may be licensed at the discretion of the area supervisors. The licensee is responsible for following instructions on the [Renewal Application Form](#) and ensuring that the annual license fee is paid on time. Biennial training costs will be covered by central office. Training and licensing costs for nursery positions will be covered by the nursery.

FOR personnel involved with pesticides must have received FOR approved and administered training prior to handling or applying pesticides.

FOR personnel applying or handling pesticides need to be in contact with a licensed applicator (licensed applicator needs to be on duty and available by phone or radio) or be a licensed applicator. In both cases handlers and applicators need FOR approved training as well. Non-licensed personnel are limited to spot application of pesticides.

Pesticides cannot be applied by anyone under the age of 18.

Vendors

All vendors or employees of vendors applying pesticide must be licensed with Minnesota Department of Agriculture as commercial pesticide applicators with license categories A and J.

Volunteers

These guidelines apply to volunteers as they apply to FOR personnel. It is expected that volunteers have completed a [Volunteer Agreement Form](#) and have completed FOR approved training.

Pesticide Use Project Planning

Integrated Pest Management

Integrated Pest Management (IPM) is an ecosystem-based strategy for managing pests that focuses on long-term prevention of pests through a combination of methods, such as habitat manipulation, biological control, and modification of cultural practices. Pesticides are used only after all non-chemical treatment methods have been evaluated and monitoring indicates that they are needed. Pesticide treatments are made with the goal of controlling only the target pests. Pest control strategies are selected and applied in a manner that minimizes risks to human health and the environment. The core IPM principle for MN DNR is to control pests without relying solely on pesticides.

FOR applies IPM when planning vegetation management projects by following these principles:

- Consider the use of non-pesticide control options such as mechanical controls (e.g., disc trenching or mowing), biological controls (e.g., spotted knapweed weevils), and cultural controls (e.g., season of operation) before choosing a pesticide control measure. A 'no action' alternative will always be considered as the default action.
- Consider the benefits and costs of various control methods. Costs should include potential damages to beneficial and non-target species, the environment, and human health.
- Monitor pesticide application results, evaluate effectiveness, and determine if future changes can be made to reduce overall pesticide use.

Pesticide Use Approval

Before any pesticide is applied, its use must be approved by appropriate staff. Only pesticides on [FOR's Approved Pesticides and Application Methods](#) with [Environmental and Social Risk Assessments \(ESRAs\)](#) in place may be used on certified lands. Use for reforestation and invasive species control projects require completion and approval of a [Reforestation Project Proposal](#) form. All other uses require completion and approval of the generic [Pesticide Use Proposal Form](#) (NA-00092-04) by appropriate area program leads. Other uses documented by the more generic form include but are not limited to roadside spraying, and the use of ready-to-use pesticides (RTU) for spot treatment of invasive species as encountered across a larger geographic area.

Pesticide use information must be recorded in the appropriate database (e.g., SRM) and project proposal forms and records of application will be retained with the area site records for at least 10 years per [MN DNR retention policy](#).

Review of Sensitive Sites and Features

Sensitive sites include the following and require attention in project planning to minimize and mitigate negative impacts.

Natural Heritage Information System (NHIS) Review

All pesticide use will be reviewed at the area level for potential impacts to endangered and threatened species as recorded in the NHIS database available in Quicklayers.

Possible outcomes may include: determination of no impact and project proceeds; modification of application (e.g. timing, location) to avoid impact; or determination that no application is possible on the site.

NHIS review prior to pesticide applications on current and former state nursery sites (Badoura and General Andrews) is not required. NHIS review is required on tree improvement sites not located on either of the current or former state nursery sites; this review will be coordinated with the tree improvement program coordinator.

High Conservation Value 4 (HCV 4) Review

FSC has a number of High Conservation Value categories that need to be considered when managing certified forest land, including the HCV 4 category that applies to critical ecosystem services like the production of drinking water. The HCV 4 designation applies to both Wellhead

Protection Areas and Drinking Water Supply Management Areas, both of which can be located in Quicklayers. Like NHIS review, both should be reviewed early in project planning. If your project area intersects HCV 4 features, the following recommendations should be followed:

- Contact the local Wellhead Protection Manager and become familiar with the Wellhead Protection Plan (see contact list in [High Conservation Value 4 Critical Ecosystem Services: Drinking Water](#))
- Avoid the use of chemicals known to contaminate groundwater
- Avoid placement of fueling and chemical mixing sites in these areas
- Regenerate sites promptly and avoid conversion to non-forest

Surface Water Review

Surface water is considered to be open water, including type 3, 4, or 5 wetlands. Project proposers should verify wetland types on or adjacent to treatment with a site visit and by viewing the National Wetland Inventory (NWI) layer on Quicklayers. Apply appropriate buffers based on the pesticide selected and the type of wetlands present.

Approved Pesticides

The PPC will annually review the list of [FOR's Approved Pesticides and Application Methods](#). If a project proposes use of unapproved pesticides or application methods, the PPC can approve use after ensuring an [Environmental and Social Risk Assessment \(ESRA\)](#) is completed. Prior to proposing use of an unapproved pesticide, consider the following:

- **Evaluate alternatives.** Is there a proven effective alternative to using pesticide? Is there an approved pesticide that would likely be effective in your situation?
- **Check for conflicts with departmental policy, statute, or rule.** Does the use of the active ingredient conflict with other department policy (e.g., protecting pollinators) or law? Under no circumstances should staff use pesticides listed as "prohibited" on the [FSC Lists of Highly Hazardous Pesticides](#) (FSC-POL-30-001a EN)."

Environmental and Social Risk Assessments

Pesticide use must incorporate the guidance in the Minnesota DNR's [Environmental and Social Risk Assessments \(ESRAs\)](#). ESRAs for the primary pesticides used for terrestrial invasive species control and vegetation management are to be used by staff in developing management prescriptions, reforestation project proposals, or pesticide use approvals. ESRAs specify which formulations are available and approved for staff use. ESRAs have mitigation strategies for how to minimize environmental and social risks (e.g., damage to non-targets species, employee safety) associated with the use of each pesticide. It is important that staff familiarize themselves with the mitigation strategies for those pesticides that they use and follow the mitigation strategies in the course of their work.

Pesticides should not be used if there is not a final ESRA for that pesticide and formulation. If staff want to use a pesticide that does not have a final ESRA, they should contact the PPC. The PPC will evaluate the need for the pesticide, determine if an ESRA should be produced, and, as needed, draft and finalize an ESRA.

Under no circumstances should staff use pesticides listed as "prohibited" on the [FSC Lists of Highly Hazardous Pesticides](#) (FSC-POL-30-001a EN).

Characteristics to Consider During Pesticide Selection

Pesticide selection will achieve management objectives while minimizing impacts to humans and the environment by considering the following characteristics.

Selectivity: Some non-selective pesticides kill any pest given a certain dose, while selective products control only targeted pests or stages of pest development. Choose pesticides that have minimal effects on the environment and on organisms other than the target pest.

Persistence: Some pesticides remain active in the environment more than one growing season, providing continued control. Persistent compounds may impact groundwater, accumulate in animal and plant tissues, or remain in the soil for years. Consider the impacts of persistence on the target and the environment.

Volatility: The degree to which a substance changes from a liquid or solid state to a gas at ordinary temperatures defines its volatility. Select a product with low volatility to minimize the risk of drift onto non-target areas.

Adsorption: Adsorption describes how a pesticide is held or bound to a surface by physical or chemical attraction. Select a product with a high adsorption coefficient as it adheres to organic matter in the plant and soil, and is less mobile in the environment.

Solubility: The ability of a pesticide to dissolve in a solution, usually water, defines its solubility. Products with low solubility are less likely to migrate from the application site.

Toxicity: Toxicity is the degree or extent to which a pesticide or its formulation is poisonous to non-target species. Consult the [Environmental and Social Risk Assessments \(ESRAs\)](#) to evaluate toxicity to humans, aquatic systems, plants, and animals. Whenever possible, select a product with minimal toxicity.

Managing Movement of Pesticides in the Environment

Applicators or handlers should follow the pesticide label or FOR guidelines, whichever is stricter.

Managing Movement of Pesticides in the Air

- Select spray equipment and calibrations that reduce drift and evaporation.
- Droplet size plays a major factor in volatilization, drift, leaf adhesion, and product effectiveness.
- When possible, use pesticides with no or low volatility at all temperatures to reduce spray drift potential.
- Consider using adjuvants that prevent drift and evaporation and that minimize volatilization.

- Measure wind speed and direction before, during, and after the application. Follow wind specifications outlined in Operations section.
- Do not spray when the wind is blowing towards a sensitive area, unless an effective buffer zone has been established.
- Do not spray when temperature and humidity conditions are favorable for evaporation and translocation of pesticide to non-target species.

Managing Movement of Pesticides in the Soil

- Use pesticides with low water solubility to reduce potential for leaching to groundwater.
- Use pesticides with high soil adsorption coefficient to reduce potential for leaching to groundwater.
- Determine the depth to groundwater in your area of application and consider protective practices in vulnerable areas.
- Consider soil texture, permeability and slope. Limit pesticide application on coarse textured soils (such as where sand, loamy sand, or sandy loam soils make up more than 25% of the area of application).
- Any precautions on the label, such as soil moisture, soil saturation, depth to water table, soil conditions, etc., should be followed to govern the use of soil active herbicides.
- If a pesticide label requires soil sampling, refer to the following protocol [Collecting Composite Soil Samples](#).
- Consider managing harvest slash and orienting subsequent mechanical site prep parallel to the contour of steep slopes as to limit slope-induced movement of pesticides.

Managing Movement of Pesticides in Non-target Water

- Do not mix and load pesticides near wells, lakes, streams, rivers, or storm drains.
- Evaluate surface water drainage on your application site and consider mitigation measures, such as buffers, if needed.
- Delay pesticide applications if heavy rain is forecast within 24 hours to prevent runoff.
- Unless using pesticides and surfactants labeled for use over water, buffer zones should be created that limit applications in riparian zones, adjacent to wetlands, or on seasonally saturated soils.
- Incorporate best management practices when projects occur within wellhead protection areas or drinking water supply management areas.

Minimizing Impacts to Non-target Species

- Evaluate the potential impacts of surfactants or adjuvants used in combination with active ingredients on non-target organisms.
- Review [Operational Order 130](#) for guidance on minimizing impacts to pollinators.
- All pesticide projects must undergo a [Natural Heritage Information System \(NHIS\) review](#) prior to application to ensure that they will not harm endangered or threatened species or rare native plant communities. The PPP should check a current version of the NHIS to determine whether there are any known locations of rare features near the proposed pesticide application.
- Refer to the pesticide label's Environmental Hazards section for toxicity information on non-target species and pollinating insects.

Approved Application Methods

Pesticide applications can be made either by approved aerial or ground methods. Refer to the list of [FOR's Approved Pesticides and Application Methods](#) for details on pesticide characteristics to consider when planning a project.

Aerial Broadcast

Aerial application has a number of operational advantages: treatment is faster, provides more uniform coverage, and allows access to more remote sites. On the other hand it tends to have more pre-treatment logistical needs, and the risk of spray drift is higher. It may be the only practical option on large areas, sites with poor access, sites with too tall of competition, or where ground conditions limit mobility. If you are planning an aerial spraying project review, FOR's [Aerial Pesticide Aviation Plan](#) for specific operational and logistical procedures. Some planning elements to remember include:

- Helispots will **not** be located on nonindustrial private forestlands with the exception of private gravel pits if written permission is obtained.
- Sites having large numbers of residual trees or snags may be more effectively and safely treated with a ground application. Snags and residual trees:
 - o should be called out as navigational hazards as they are sometimes hard for the pilot to see
 - o cause the helicopter to fly higher, thereby increasing the potential for drift
 - o may intercept spray solution so that treatment effectiveness is reduced
 - o may be damaged or even killed by the herbicide application

Ground Broadcast, Strip, or Spot

Ground applications should be considered for specific management concerns, such as treating invasive plants, controlling non-target impacts, treating areas with high public sensitivity, treating small or irregular sites, or where management is constrained by overstory retention. Ground applications can either be contracted or done by FOR personnel. Spot treatment can be carried out by trained volunteers. However, using a contractor is strongly preferred for all application types. For more information see the list of [FOR's Approved Pesticides and Application Methods](#)

Spot pesticide application can be carried out by licensed commercial applicators, licensed FOR applicators, or FOR applicators that have received FOR approved training and are in direct contact with a licensed applicator.

The [Buckthorn Blaster™](#) is a hand-held tool designed for easy and safe application of herbicide to cut stumps of shrubs and trees. It is commonly used for invasive shrub management. It holds only a small amount (4 oz.) of herbicide in a narrow plastic bottle, and herbicide is only released when pressure is applied to the foam applicator tip by pushing it against a cut stump. These features prevent any drift or overspray of herbicide and limit most safety concerns around herbicide use (care and proper PPE will be used while re-filling the Buckthorn Blaster). Due to these characteristics, MNDNR allows any staff member who has completed the online ELM training on Buckthorn Blaster use to use the tool in the field without a pesticide license. Follow all PPE, safety,

and storage requirements discussed in the ELM training. Contact FOR terrestrial invasive species program coordinator with any questions about Buckthorn Blasters.

Herbicide Tank-Mixes

In situations where one herbicide does not meet all the vegetation management goals on a site, tank mixes can be more effective. Many tank mixes are listed on the product labels and may be used where appropriate.

An applicator can sometimes effectively apply different herbicides or tank mixes on separate portions of a single site, although the site size and application method can affect the feasibility and cost.

Tank mixes are allowed unless specifically forbidden on the label, as long as each individual herbicide is labeled for the specific use (e.g. forestry, release, rights-of-way, etc.) and the maximum rate of each herbicide is not exceeded. Similarly, crop tree species can be treated with herbicides, even if not listed on the label, as long as the specific use is on the label for other species. In both cases, the applicator assumes the risk for any damage or poor efficacy that may occur. Chemical companies are not responsible for off-label applications. Off-label applications should not be recommended to private landowners.

Buffer Strips

One tool commonly used to minimize conflict with sensitive features during broadcast pesticide application includes buffering or leaving an untreated strip. Buffer strips are generally not required for localized, directed spraying such as spot spraying, cut stem, or basal spray applications. However, buffer strips must be considered when a potential exists for transfer of an herbicide through the root system. On sites determined to be sensitive by area and region personnel due to human presence and activity, consideration should be given to increasing buffer strip widths.

Adjacent Ownerships

Buffer strips will be used to separate treatment areas from other land ownerships and residences.

For broadcast applications, a 300-foot buffer strip must be maintained next to an occupied permanent dwelling, unless a lesser distance is approved in writing by the property owner.

The standard buffer strip width for all other forestland applications is 100 feet. These strip widths are based on 0-5% slope and should be increased for increasing slopes.

Exceptions are as follows:

- When label directions are stricter requiring a buffer greater than the 100-foot buffer.
- When the concern for translocation of more mobile pesticides are of great concern on slopes that may result in runoff.
- For other public ownerships and for private industrial lands, no buffer strip is required if the plan to treat up to the property line is approved by the owners or their representatives, in writing, prior to the application. Written approval can be an email correspondence but

should include both the project proposer's request and the landowner's response. Written approval must be kept on file at the area level as part of the archived project records.

- For all non-industrial private lands, no buffer strip is required if the plan to treat up to the property line is approved by the landowner or their representative in writing.

For rights-of-way applications, buffers to other land ownerships are not required. If the property owner requests that the state not spray their property, FOR shall identify and post the property boundaries as a no-spray area.

Surface Water

Buffer strips adjacent to surface water will be a minimum of 100 feet on broadcast applications, unless the label or the site-level guidelines specify greater distances. Surface water is considered to be open water, including types 3, 4, or 5 wetlands. This requirement does not apply to aquatic or ditch bank labeled herbicides. Broadcast applications should not occur over snowpack.

Treatment Proposed by Neighboring Landowners

Buffering is encouraged when application is occurring on lands adjoining State Forest land, particularly where herbicide application could impact forest cover or rare sensitive features. APLs or area forest supervisors can give permission for other landowners to spray to the property boundary.

Notification of Pesticide Treatment

Adjacent Residents and Landowners Notification

Residents and landowners within 1/8 mile of treatment areas must be contacted in writing prior to all broadcast pesticide treatments. This notification requirement also applies to any right-of-way treatment. See example letter format in [Appendix D.3](#).

Local Notification

Public notification is required for all broadcast pesticide applications (except rights-of-way treatments) and should occur no earlier than one month prior to the start of the pesticide treatment window. Notifications should be made by the area working with the regional information officer to issue a news release or by publishing articles or paid notices in local newspapers that cover the area where application(s) will occur. Areas may send joint news releases or notices to papers that cover more than one area. See news release and paid notice formats.

Notification is not required for application of deer repellants, or for directed, spot applications of herbicides such as cut stump treatment, injections, basal bark applications, and spot gun applications.

Statewide Notification

An Environmental Quality Board (EQB) Notification should be prepared for any aerial application of pesticides. Publication should occur at least 2 months prior to the anticipated application start date. See [EQB website](#) for publication schedule and contact information.

- AFMC prepares a notice for the aerial herbicide contract
- Region forest health specialist prepares a notice for insect and disease treatments

Signing of Treatment Areas

All sites treated with pesticides must be signed. Only properly filled out [FOR-approved signs](#) are to be used. All signing must be done by MNDNR personnel. At minimum, signs should be left in place until the end of the re-entry interval (REI) as directed on the pesticide label or for two-weeks, whichever is longer. It is encouraged to leave signs up longer in areas where the public gathers edible forest products. The exception to this signing requirement would be the use of the Buckthorn Blaster dauber.

For all applications EXCEPT rights-of-way:

- Sites within 1/4 mile of any summer access routes (any road, trail or route open to motorized travel during non-frozen periods of the year) must be posted at the boundary of the treatment area. The boundary will be posted at all points of access by summer access routes. Signs should be placed often enough so that a sign is visible from any point on the adjacent road or trail.
- On sites more than 1/4 mile from any summer access routes, postings can occur at trails or winter roads accessing the treatment sites rather than boundary posting. Additional posting requirements are at the discretion of the APL.
- Regardless of distance from summer access routes, additional signing should be considered in areas of high public use, such as berry picking areas, mushroom and other edible forest products, and any other types of sensitive sites.

For rights-of-way applications, minimum signing will include:

- The beginning and ending points
- Intersections with other summer access routes. See definition above.
- Intersections with non-motorized summer-use trails can also be considered for posting at the discretion of APL.

Cooperative Projects

Other DNR Divisions and Other Public Agencies

Cooperative projects with other agencies or disciplines are encouraged as treatment costs tend to decrease as the size of the project increases. However, cooperative projects should be planned so that they do not delay the timely completion of FOR's sites. Projects will be subject to the pesticide use guidelines of the land-administering discipline. Other divisions are encouraged to incorporate FOR guidelines into their projects.

Ground applications

Requests for participation in ground application contracts should be referred to the RPL for herbicide projects, or regional forest health specialist for pesticide projects not involving herbicides, who will evaluate the feasibility and handle the specifics of the cooperative agreement.

Aerial applications

Proposals for participation in all aerial spraying contracts to apply pesticides should be referred to the AFMC.

Each agency or discipline is responsible for direct payment of its portion of the contract. Helicopter operations will be under the direction and control of FOR, and cooperating agencies are expected to follow FOR helicopter safety and operations guidelines. FOR personnel will provide assistance but not on-site supervision, and do not have approval authority for the practices of other agencies' projects.

A Joint Powers Agreement must be developed prior to cooperative projects with counties and tribal governments.

Cooperative Projects with Private Landowners

Cooperative projects with industrial private landowners or non-industrial private landowners may be accomplished by the state contractor at the same time as state contract work. The state can facilitate such work. However, these sites will not become part of the DNR contract, and DNR personnel will take no direct responsibility. DNR personnel will not apply pesticides on non-DNR administered lands.

The APL, FMHS, and AFMC should be made aware of this work to facilitate planning and the timely completion of state work.

In the case of an insect or disease outbreak when the Commissioner has declared a zone of infestation, [M.S. §89.53](#), assistance may be provided to NIPF landowners as permitted by [M.S. §89.55](#). See [Appendix H](#) for more details on Bt spraying on state land bordering private lands.

Operational Requirements

Always follow label specifications when more restrictive than these guidelines.

Personal Protective Equipment (PPE)

The pesticide label tells you how to handle and apply the product safely. The minimum PPE specified on the product label will be provided by your supervisor and must be used. PPE can include a variety of items such as footwear, coveralls, aprons, respirators, eyewear, face shields, and gloves. PPE can minimize the potential for pesticide poisoning through skin, lung, eye, or mouth exposure. Handlers and applicators should have an adequate supply of water readily accessible to permit decontamination with soap and water. Washing with soap and water should always be done before handling or consuming food and drink. It is the responsibility of the handler and applicator to follow the PPE requirements specified on the product label.

Procurement

Procurement of pesticides should only occur after approval of the appropriate project proposal. Where possible, solicit contracts that include the contractor both purchasing and applying the

pesticide. When ordering pesticide, select quantities and container sizes that reduce handling and storage and carryover of surplus pesticide. Before ordering pesticide for a project, check short- and long-term storage inventories for product.

Handling

Required PPE as indicated on the label must be used whenever pesticides are handled to avoid physical injury and to reduce the potential for exposure. Current product labels and Safety Data Sheets (SDS) of pesticides must be on the treatment site and available for reference while handling, storing, or transporting pesticides.

Transport

An SDS and product label for each pesticide must accompany the pesticides being transported, and the vehicle operator must understand the nature and hazards of pesticides being transported.

A spill kit adequately matched to the volume and type of pesticides being handled or applied must accompany the pesticides regardless of the volume being transported. Spill kits may be obtained through the DNR Warehouse or consult with regional Management Resources (MR) for assistance.

Pesticides may not be transported in the passenger compartment of vehicles. Pesticide containers being transported must be secured to prevent spills and puncturing of containers. Leaking or unsealable containers may not be transported unless they are placed in a larger secondary container that will contain the product. If the label of the original container is no longer visible, a specimen label for the product must be attached to the protective container in a readily accessible and visible location.

Department vehicles transporting 1,001 pounds or more of formulated pesticides must be placarded for transportation of hazardous substances as per [49 CFR 172.504c](#). The regional MR supervisor can be contacted for information on placarding requirements.

Storage

Instructions on the label and the Safety Data Sheet must be followed for product storage.

Both short-term (less than a year or frequently used) and long-term storage (greater than a year or infrequently used) of pesticides can occur. Generally, storage areas must be isolated from areas used for human activity, not near a body of water or subject to flooding, and must have sufficient holding capacity to handle leaking or spilled pesticides. Storage areas should be capable of being well ventilated before human entry is made into the area. Do not store near an open drain or within 150 feet of a well.

Both types of storage should be located on the ground floor and isolated and separate from all employee use areas. Pesticides should never be stored near eating facilities, restrooms, food or feed, seed, fertilizer, equipment, supplies, materials, or any other items that may be contaminated or adversely affected by fumes, evaporation, or possible leakage of the pesticide. The storage area should be dry, kept above freezing temperatures, secure, locked, signed (e.g.,

"Danger – Pesticides Keep Out!") and free of clutter, such as used containers. Store pesticides in original container or acceptable service container. Secondary containers must be clearly labeled with trade name, common name, EPA registration number, and signal word(s).

In addition to the previously mentioned specifications, long-term storage should be constructed to facilitate cleanup of spills and ventilated to prevent buildup of toxic or flammable vapors and dust.

Spills and Spill Management

[Minnesota Statutes, section 115.061](#) requires an employee handling or spraying pesticides to take immediate action to control, contain, clean up, and report any spill that may cause pollution (e.g., petroleum, hydraulic fluids, and pesticides). Spills greater than five gallons must be reported to the **State Duty Officer (800-422-0798)**. Minnesota has no minimum for reportable quantities. If in doubt, report a spill.

Onsite emergency equipment needed in case of spills includes a vehicle for emergency transportation, a mobile radio, contact information for the nearest medical facilities near the application site(s), and copies of the pesticide label and data sheet.

A spill kit must be available on site. Recommended spill kit contents include an emergency change of clothing, potable water for routine washing and for washing the entire body in an emergency (10 gallons minimum for one worker or handler, 20 gallons for two or more workers or handlers, one gallon minimum per worker or handler), soap, absorbent pads, paper towels, neutralizer (kitty litter, floor dry), small scoop or shovel, trash bags, PPE (non-reactive gloves and splash proof eye protection), duct tape, 10' by 10' tarp, and emergency and state duty officer contact numbers.

If a spill occurs:

- 1) Shutdown equipment, close off valves, and seal containers.
- 2) Notify others working in the area of any hazards. Call 911 if there is an immediate threat to life or property.
- 3) Use appropriate PPE and initiate immediate containment by using absorbent pads or a dry neutralizer such as kitty litter. Spread materials around the perimeter of a spill to limit any expansion. Refer to the Safety Data Sheet for additional control and disposal measures and contact the State Duty Officer at 651-649-5451 or 800-422-0798.
- 4) Contact project supervisor and regional forest manager.

It is the responsibility of all contractors to take immediate action when a spill occurs. Please be observant of spills during routine inspections. Review safe control and containment procedures with onsite supervisors, as needed.

Pre-work Conference with Vendor

Before work on an awarded project begins, a meeting must occur between the contractor and the DNR contract supervisor or delegated representative to review, among other things: the defined work area, terms of the contract (e.g., work delays, work days, weather conditions

contract modifications, garbage, and payment), equipment required and its condition, herbicide application requirements, materials, safety compliance, identifying lead workers, contract supervision, on-site pesticide storage, communication with the public, and other special requirements.

Weather Specifications

Because weather conditions have the potential to adversely affect pesticide coverage, placement, and efficacy, the following weather guidelines should be followed. Not meeting any one weather factor will be cause for suspension of the pesticide application until all weather factors are within the guideline limits.

Aerial Broadcast of Liquid Pesticides

Wind – Constant wind velocity cannot exceed 7 mph at the spray treatment site or at the helispot if the spray treatment site is inaccessible. When gusting wind conditions occur maximum gust should not exceed 10 mph. Project supervisors should exercise good judgment and extreme caution when variable wind conditions exist. Wind speeds should be measured as close to the height of pesticide release as possible.

Avoid spraying when the wind speed is still or very light (0-3 mph). Under these conditions, inversions may be present which can enable spray to drift over large distances. Changes in wind direction are also more likely during periods of low wind speed.

Temperature – The temperature shall not be less than 35°F (and remain above 35°F for 5 days) or more than 90°F, when appropriate to the pesticide being used. No applications will be conducted when the soil is frozen or snow is on the ground. The exception to this is cut surface treatments and basal bark applications.

Relative humidity – Relative humidity less than 40% should raise a caution, and the project supervisor may consider temporarily halting the operation until the humidity rises above 50%. Under low humidity conditions, some pesticides may evaporate, and effectiveness may be reduced. Because the action of a helicopter's rotor blades can influence wet bulb readings, relative humidity readings should be made where or when rotor wash is not a factor.

Precipitation/moisture – Spraying should be terminated if foggy weather is forecast within 2 hours or rain is forecast within 4 hours except when chemical activity is accentuated by moisture, for example, soil-active herbicides. No application of soil-active herbicides will be conducted when surface puddling or runoff has occurred or is anticipated prior to treatment.

Heavy dew on target vegetation may lead to less control than desired. This is especially true for glyphosate herbicides. The application supervisor should exercise caution when heavy dew is present. A delay in application until the dew lessens may be warranted.

Turbulence – When air turbulence occurs, spray patterns can be adversely affected. Turbulence indicates an unstable air mass, and occurs when there are gusty winds, thermals, or downdrafts

associated with a cumulus buildup. One indicator of an unstable air mass is the presence of “dust devils.” Under these conditions, the application supervisor should exercise caution.

Drought – Prolonged drought can cause target species to go dormant and reduce treatment success. Herbicides should be applied during conditions that promote active plant growth.

Slopes – On steep slopes, use judgment in determining the potential for movement of herbicides through overland flow and soil erosion. Where necessary, expand buffer strips or consider alternative treatments.

Ground Broadcast Applications with Motorized Equipment

Liquid applications using motorized equipment with boom or cluster nozzles will meet aerial broadcast weather restrictions (listed above) except as modified below:

- When appropriate drift retardants are used with cluster nozzles, constant wind speed at nozzle height will not exceed 8 mph and gusts will not exceed 10 mph.
- When a low drift nozzle system such as a Radiarc® or similar system is used, maximum wind speed at nozzle height will be 10 mph.
- For spray systems with booms and nozzles oriented towards the ground and located within 4 feet of the ground, maximum wind speed at nozzle height will be 10 mph.

Ground Broadcast Applications with Backpack Sprayers

When a backpack sprayer is used to broadcast apply pesticides, maximum wind speed will be 10 mph during the application. Environmental conditions appropriate to ground broadcast applications with motorized applications listed above will be followed. Calibration is critical to successful application. See the [portable spray calibration](#) tip-sheet for calibration instructions.

Ground Spot Treatments & Granular Applications

Environmental conditions appropriate to ground applications listed in ground broadcast applications with backpack sprayers will be followed for directed liquid treatments from backpack sprayers, spotguns, wicks, cut and dab, hack and squirt, and similar systems and for granular applications.

Reporting and Monitoring

Pre-treatment Regeneration Survey

Reforestation pesticide application projects require a recent regeneration survey to be completed before the project proposal is developed. Regeneration surveys should be as recent as possible to fully capture both crop and target species composition so that proper herbicides can be prescribed.

For **release projects**, survey results should be documented using the standard [regeneration survey form](#). **Site prep projects** require at minimum an ocular regeneration survey that ranks the top three to five competition species including estimated stems per acre and stocking. A summary of the regeneration data must be included in the appropriate spot on the [reforestation project](#)

[proposal](#) when it is submitted.

For site preparation on most sites, treatment should occur the second growing season after harvesting. This delay provides more time for target vegetation to develop leading to more effective control.

If site prep treatment is required during the growing season immediately following harvesting, a project proposal should be prepared and submitted. The regeneration survey then must be completed at least two weeks before the start of the herbicide treatment window. The region program lead reserves the right to drop the project from the contract if the survey is not completed in time or if there is a question of need to treat the site based on the survey data.

Post-treatment Monitoring

For TIS program treatments, effectiveness monitoring protocol can be found in the [TIS Manual](#).

Early summer herbicide applications, usually **site prep treatments**, will be monitored during the late summer of the same year of treatment. Mid- to late-summer and fall herbicide applications, usually **release treatments**, will be checked during the autumn of the same year or early summer of the following year depending on the product used and competition targeted.

For post-treatment monitoring of **release sites**, use at minimum an ocular survey to update the pre-treatment [regeneration survey form](#) to reflect treated area, indicate whether or not the crop trees are free to grow, indicate level of damage to competition caused by treatment, and recommend the next action on the site.

Survey intensity is up to the forester, but must be sufficient so that the forester can map any parts of the site where target species were not successfully controlled. If post-treatment aerial photography is available, it should be used to help refine the map.

The standard for an acceptable level of treatment on an individual site is that target species are effectively removed or controlled on 90% of the acres prescribed for treatment.

All monitoring surveys will be completed by September 1 annually, and be submitted to the APL. The APL will summarize the surveys and report the results to the RPL by October 1 annually. This report should include the total number of acres treated, the total number of acres where treatment was not successful, the total number of sites treated, and the number of sites not meeting the 90% standard.

Pesticide Use Reporting

Following pesticide application, contractors, MNDNR applicators, and statewide or regional project supervisors must report to the area program lead at minimum the required information below as specified in statute [MN 18.B.37](#) (records must be legible):

- date of the pesticide use;
- time the pesticide application was completed;

- brand name of the pesticide, the United States Environmental Protection Agency registration number, and rate used;
- number of units treated;
- temperature, wind speed, and wind direction;
- location of the site where the pesticide was applied;
- name and address of the customer;
- name of applicator, name of company, license number of applicator, and address of applicator company

The [Pesticide Application Report NA-00081-01](#) or MDA's [Category J Pesticide Application Record template](#) should be used to record the necessary information.

Annually by January 31, pesticide use data will be submitted from each area through the appropriate program to the pesticide program coordinator.

Nursery and Tree Improvement Operations

The Badoura State Forest Nursery and former General Andrews Nursery sites are not on lands certified by Forest Stewardship Council (FSC) and Sustainable Forestry Initiative (SFI) and have variances in guidance and policy as listed below.

Nursery Personnel Responsibilities

Nursery Supervisors, Tree Improvement Program Coordinator, or Delegated Staff

Project Planning and Approval

- Develops the annual pesticide use plan.
- Develops and issues detailed work order for each project.
- Approves all pesticide projects and ensures records are maintained for each application. Record keeping includes display of a pesticide log in a location visible by all personnel as required by the Occupational Safety and Health Administration.

Technical Assistance

- Stays current with pesticide issues to be in compliance with pertinent guidelines, legal requirements and product labels.
- Keeps labels on all pesticides used on the nursery up-to-date.

Training

- Ensures personnel applying pesticides have proper licensing, training, and protective equipment.
- Provides employee-right-to-know training (ERTK) for all personnel.

Monitoring and Reporting

- Ensures a summary of pesticides used for each calendar year is completed and submitted to the PPC by January 31.
- Ensures all pesticide records are archived. The work order becomes the legal document because it contains all spray info, weather, locations treated, and applicator signature.

Nursery Staff

Training

- Maintain training and attend workshops biannually if licensed as a non-commercial applicator.
- Nursery staff required to use a respirator for soil fumigation must have an annual respirator fit test administered by trained personnel prior to pesticide application.

Project Administration

- Carry out projects assigned by the supervisor. Read pesticide labels and wear appropriate protective equipment.
- Record product used, date, and location of application. Record temperature, relative humidity, and wind speed. Forward this information to the supervisor.

Notification and Storage

- Must post treated fields with a bona fide sign
- Must label tanks and containers that have pesticide left in the tank or container after the employment shift

Application of Pesticides

- Restricted use pesticides must be applied by a licensed commercial applicator.

Nursery Policies

For the nursery, an annual pesticide use plan specifying pests to be controlled, control thresholds, pesticides required, and an estimate of pesticides needed should be completed in lieu of the reforestation project proposal or pesticide use proposal form. This annual pesticide use plan should be reviewed and approved by the State Forest Nursery Supervisor and the plan should be retained at the nursery.

Stockpiling of pesticides based on historic use or anticipated needs should not occur. Only pesticides needed during the current growing season should be purchased. Whenever possible, unopened surplus pesticides should be returned to the vendor.

Nursery Notification Requirements

Notification of adjacent landowners prior to applying pesticides at current and former State Forest Nursery sites is not required.

Sign sites when applying products with a restricted entry interval (REI).

Inform field crews to stay a minimum of 250 feet from the sprayed area during pesticide application unless the label requires a greater distance.

Pesticide Applications at the Nurseries

The State Forest Nursery routinely uses a variety of pesticides including herbicides, insecticides, fungicides, rodenticides, and fumigants (soil sterilants).

Follow weather specification for applications as found in the [Operational Requirements](#) section above. Pay particular attention to the section on [Ground Broadcast Applications with Motorized](#)

[Equipment](#) and on [Ground Broadcast Applications with Backpack Sprayers](#).

Pesticide Application at Tree Improvement Sites

Tree improvement sites include all seed orchards, research sites, and the greenhouse and shade house at General Andrews. Tree improvement sites that are not located on either of the current or former state nursery sites will follow all pesticide use guidelines. Management of tree improvement sites will be coordinated with the tree improvement program coordinator and the area supervisor of the area hosting the tree improvement site.

Nursery Reporting

An annual pesticide use report will be completed each year to summarize all pesticide application on FOR-administered lands.

Completion of a detailed work order is required for each project. The work order lists the product to be applied, the application rate, the treatment area, and any special instructions. The applicator records required information on this form (i.e. temperature, relative humidity, wind speed, date project was completed, the amount of product used, applicator name, and applicator signature). This work order serves as official documentation of the application.

Completion of a pesticide use summary is required at the end of each growing season. A copy of the summary is submitted to the PPC, and kept on file at the nurseries.

Completion of a pesticide inventory is required each December. Copies are submitted to the region MR office, kept on file at the nurseries, and included in the Nursery Incident Response Guide.

Pesticide Use/Approval, Pesticide Use Report, and confirmation letters from adjacent landowners for spraying to property boundaries or staging equipment on property not owned by the State of Minnesota must be retained for 10 years.

Appendices

Below are resources and tools to support the duties outlined above related to training, project planning, proposals, notification, implementation, monitoring, reporting, and cooperative spraying.

Appendix A. Training Handouts

A.1 [Safety and PPE](#)

A.2 [Transport, Storage, Disposal, and Equipment Cleaning](#)

A.3 [Spills and Spills Management](#)

A.4 [Portable Spray Calibration](#)

Appendix B. Planning

B.1 [Shapefile Standards](#)

Instructions on electronic (GPS) file preparation and naming conventions for aerial treatment sites

B.2 [Approved Pesticides and Application Methods](#)

List of approved pesticides and applications. Any pesticide proposed for use on a project must be on this list by the time of application. Additions to the list require proper documentation to meet certification standards.

B.3 [Collecting Composite Soil Samples](#)

Instructions on how to collect soil samples and submit them for testing to determine organic matter content

B.4 [Helispot Construction Standards](#)

A diagram that illustrates construction standards for helispots that will be used by Type III helicopters

B.5 [Pesticide Project Checklist](#)

To be completed by the APL and PPP to ensure that all preparations, operations, and post-operations steps are completed. Checklist should be archived at the area with other project data.

B.6 [Aerial Pesticide Aviation Plan](#)

Includes complete information for all personnel involved in aerial spraying operations. The Pesticide Aviation Plan is made available to the contractor and is part of the contract specifications. The plan should be reviewed each season before applications begin.

[B.7 High Conservation Value 4 \(HCV 4\) Critical Ecosystem Services: Drinking Water](#)

List of Wellhead Protection Area and Drinking Water Supply Management Area local managers.

Appendix C. Proposal

[C.1 Reforestation Project Proposal](#)

This form should be used for site-specific pesticide use projects such as but not limited to site preparation and release or stand-level terrestrial invasive species (TIS) control. Answers to the red questions on this form are required when using pesticide. For TIS purposes the rest of the questions on the form should be filled out if they are relevant to the specific project.

[C.2 Pesticide Use Approval NA-00092-04](#)

Projects that are not site specific (e.g., use of buckthorn blaster, roadside spraying) should use this generic Pesticide Use Approval form.

Appendix D. Notification

[D.1 News Release Template](#)

A notification template designed for news releases developed in conjunction with the regional public information officer.

[D.2 Paid Public Notice Template](#)

A notification template designed for paid public notice for high profile projects requiring broader notification and developed in conjunction with the regional public information officer.

[D.3 Neighboring Landowner Letter Template](#)

A notification letter template designed for notifying landowners within 1/8 mile of broadcast pesticide application projects.

[D.4 Environmental Quality Board Template](#)

A notification template designed for advertisement in the Environmental Quality Board Monitor, a weekly newsletter.

[D.5 Notice of Herbicide Use Poster](#)

A poster used to sign sites that have been treated with pesticides.

Appendix E. Implementation

[E.1 Herbicide Volume Mixing Chart](#)

To be used by area personnel to ensure that the proper amount of herbicides and surfactant are mixed and loaded as per application rate and project acres. **This chart is overseen by and available from the FMHC.**

[E.2 Daily Log of Projects Completed](#)

A form used by the FMHC to log projects completed

[E.3 Aerial Flight Duty Record](#)

A form used by the FMHC to track daily flight and duty hours of the pilot and the support truck driver

[E.4 Management of Hazardous Material Spills](#)

A summary of what to do in the event of a spill, including contact phone numbers

Appendix F. Reporting

[F.1 Division Pesticide Use Summary](#)

To be completed, submitted to Operation Services Division by March 31 annually, and archived by the PPC.

[F.2 Aerial Herbicide Application Worksheet](#)

Can be used to document completed applications and conditions during application to meet requirements of [Minnesota Statutes, Section 18B.37](#).

[F.3 Pesticide Application Report NA-00081-01](#)

Can be used to document completed applications and conditions during application to meet requirements of [Minnesota Statutes, Section 18B.37](#).

[F.4 MDA's category J pesticide application record template](#)

Can be used to document completed applications and conditions during application to meet requirements of [Minnesota Statutes, Section. 18B.37](#).

Appendix G. Monitoring

[G.1 Regeneration Survey](#) (also available in SRM)

This form, designed to record crop tree and competition species density, stocking, and height data, provides information for completing the Reforestation Project Proposal Form or Pesticide Use Approval. It should also be used for post-treatment monitoring.

Appendix H. Cooperative Spraying

Bt Spraying on State Land Bordering Private Lands

FOR will allow the spraying of Bt to control forest insects, such as forest tent caterpillar (FTC), on state forest land bordering private lands. Spraying will only be done where private homes, buildings and high-use recreation areas are situated in such a way that spraying of only the private lands would not be effective in controlling the insect outbreak. Below are guidelines to implement the policy.

All proposals will be reviewed for compliance to these guidelines and the ability to prevent reinvasion of private lands from state or other adjacent land ownerships. Treatments under this policy must be well planned and structured for effectiveness to be approved.

This policy is applicable only on FOR administered lands and the following steps must be applied:

1. Landowners must submit a written request to the local area to allow spraying of state forestland bordering private land. List bid cost per acre, the number of state acres to be sprayed, and the total cost to the state. The area will review the request and decide whether or not to grant permission to spray. If the area approves, the State will pay for one application of Bt on State land not to exceed \$35.00 per acre.
2. Landowners must provide a plat book map showing private land to be sprayed, the 100 foot strip of state land, and the acreage. The state will only pay for a 100-foot strip. The landowners may be allowed to spray an additional 200 feet of state land at their expense.
3. Only Bt will be allowed to be used on state lands. Bt may not be sprayed directly to water or wetlands (swamps, bogs, marshes and potholes). Aerial application over such sites is permissible only if covered by a forest canopy. State land being sprayed must be predominantly hardwood cover type.
4. An unsprayed 100-foot buffer of state land will be left bordering any private land, which is not being sprayed.
5. Blocks of land to be sprayed must be a minimum of 25 contiguous acres. The amount of state land being sprayed must be less than half of the total acres being sprayed.
6. The state will not pay for the spraying of state lease lots.
7. The state will not pay for spraying of state lands after the average FTC is over one inch long.
8. The applicator must submit copies of all application and weather records to the area.
9. The area will submit the spraying invoices to the region.