

**Minnesota Department of Natural Resources
Division of Forestry
PESTICIDE USE GUIDELINES**

*Replaces: December, 1997 Herbicide Use Guidelines
and July 1, 2005 Interim Pesticide Use Guidelines*

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INTRODUCTION

The Minnesota Department of Natural Resources, Division of Forestry's Pesticide Use Guidelines have been developed as required by the Department's Operational Order 59, Pesticides and Pest Control dated October 5, 2004. The Operational Order states as a policy:

“Disciplines of...Forestry...are required to develop and maintain discipline guidelines to accompany this operational order. The guidelines contain procedures specific to each discipline that are necessary to implement this operational order.”

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1.0 GENERAL PESTICIDE POLICIES – DoF

Using pesticides on state lands, in the state nurseries, and prescribing pesticides for use on private lands will use as operational standards the following:

- Operational Order 59 – Pesticides and Pest control
- Division of Forestry Pesticide Guidelines
- Pesticide Labels
- Material Safety and Data Sheets (MSDS) for each pesticide and adjuvant being used or recommended
- Forest Resources Council Site Level Forest Management Guidelines

The goal of the Division of Forestry’s pest management actions and efforts are to implement a safe and effective program to protect and improve Minnesota’s forest resources.

Decision to control pests will consider the following three alternatives:

- No control action.
- A control action that does not use a pesticide.
- A control action that does employ a pesticide.

Control actions will be selected based on:

- Public safety
- Potential adverse impacts to the environment
- Ability to accomplish the planned objectives
- Ability to protect the resource
- Cost to not control the pest
- Cost of the control action

To help to insure pesticides are used effectively and safely, the following positions will possess and maintain a non-commercial pesticide license:

- Forest Management Aerial Program Leader
- Forest Management Aerial Operations Coordinator
- Forest Management Helicopter Manager
- Regional Silviculture Program Leader
- Regional Forest Health Specialist
- Area Silviculture Program Leader
- Area Roads Program Leader
- Area PFM Program Leader
- Nursery Supervisor
- Nursery Staff at the discretion of the Nursery Supervisor

The cost involved in training and license fees will be covered by the Central Office for the above listed positions EXCEPT for the nursery positions.

Additional personnel may be licensed at the discretion and direction of their supervisors.

2.0 PERSONNEL

The following section identifies the responsibilities for implementing the DoF's pesticide program at each of the administrative levels – statewide, region, Areas. Nursery responsibilities are covered under Nursery Operations, 5.0.

2.1 Responsibilities

Statewide Responsibilities

2.1.1 Silviculture, Lands, and Roads Supervisor (SLRS)

- a. Remains current on regulatory changes that affect the use of pesticides, and works with state and federal regulators to ensure that the DoF position is represented and well understood.
- b. Sees that current guidelines and policies are appropriate, and meets the needs of the Division. If guidelines and policies are not appropriate or up to date, SMLS coordinates their revision.
- c. Secures funding so that licensing and training requirements are met, as well as distributes available funds to accomplish program projects.

- d. Monitors external training opportunities and informs licensed personnel of relevant training sessions.
- e. Prepares any required environmental documents as well as responses to legislative or legal inquiries or actions.
- f. Prepares and archives the annual pesticide use summary by February 1 of each calendar year.
- g. Archives a copy of pesticide application records.
- h. Stays current with pesticide issues to be in compliance with pertinent guidelines, legal requirements, and labels.

2.1.2 Forest Management Aerial Program Leader (FMAPL)

- a. The FMAPL oversees and coordinates the aerial herbicide (and aerial seeding) program(s).
- b. Solicits aerial herbicide projects from the Regions and from the other cooperating agencies. Provides project originators with the format for a site data summary spreadsheet, which details the information required for each site. See Pesticide Application Report, NA-00081-01.
- c. Develops and administers the aerial herbicide contract following project input. Distributes a copy of the project summary to the FMAOC and FMHM's, all Areas, and cooperators.
- d. Prepares EQB Notice for aerial applications of herbicides.
- e. Approves any sites to be added to the contract, after it is awarded, and initiates any supplemental agreements.
- f. Organizes the projects into contract periods based on types of projects (site prep or release) and types of herbicides.
- g. Ensures that a site location map for each contract period is produced and available for route planning. Ensures that an electronic file of treatment site GPS coordinates is created and transmitted to the FMAOC.
- h. Organizes a pre-application cooperators' briefing for all cooperators, to be held at least two weeks prior to contract activation.
- i. Coordinate the procurement of herbicides and adjuvants.
- j. Insures necessary agreements are secured and signed by cooperating agencies.
- k. Reviews post-application project summary, ensures the contract is paid in full, and forwards a copy of the aerial pesticide application records to the SLRP Supervisor.
- l. Stays current with pesticide issues to be in compliance with pertinent guidelines, legal requirements, and labels.

2.1.3 Forest Management Aerial Operations Coordinator (FMAOC)

- a. Provides input to Areas and Regions for all aerial **pesticide** applications, and coordinates aerial **pesticide** applications.
- b. Specific aerial herbicide contract responsibilities:
 - Creates a suggested route for each phase of the aerial herbicide contract.
 - Resource orders all equipment, radios, and supplies for the operation so that the job can be completed safely, efficiently, and effectively.
 - Leads discussion at the pre-application cooperators' briefing to ensure that interagency coordination, routes, personnel needs, and contract language are all

understood.

- Ensures herbicides are delivered to each strategic location so they are readily available for use.
- Co-ordinates production of electronic files for application in the field.
- Completes a pre-use inspection of the vendor's records and equipment, then coordinates contract activation.
- Ensures that electronic files of treatment site are downloaded into the aircraft's GPS system.
- Completes a Helispot Worksheet with Project Site Information. See Appendix 6.3.7.
- Secures maps of the project area and completes the Aerial Seeding/Spray Field Sheet and/or the Helispot Worksheet with project information forms, whichever is appropriate. See Appendix 6.3.8.
- Completes Herbicide Volume Mixing Chart for project. See Appendix 6.5.
- Ensures an effective emergency response system is in place.
- Reviews electronic spray data from helicopter to ensure helicopter GPS is functioning properly and advises contractor of changes to be made.
- Ensures that all contracted sites are treated.
- Monitors and communicates the progress of the contract and is available to solve problems as they arise.
- Meets with contractor immediately following completion of contract to secure equipment, radios, supplies, and to ensure records are complete.
- Prepares a project summary and ensures that all documentation is submitted to the FMAPL.

c. Provides technical assistance for aerial applications of pesticides involving Department of Forestry personnel, projects, and lands.

d. Stays current with pesticide issues to be in compliance with pertinent guidelines, legal requirements, and labels.

2.1.4 Forest Management Helicopter Manager (FMHM)

The FMHM administers the aerial **herbicide** contract in certain assigned geographic boundaries or time periods, which are assigned annually. The FMHM must be a MN DNR Forestry certified Helicopter Manager and must hold a pesticide applicator's license for both general and forest spraying. The FMHM must be available to work 16 - 18 hour days for up to one week and must be ready to respond within one day of notification.

The FMHM will be provided with a 4 x 4 pick-up, equipped with a topper and DNR Forestry radio to be used as a chase truck. This vehicle will be used to transport field and personal gear, extra herbicides, and to transport the crew.

a. Specific aerial herbicide contract responsibilities:

- Establishes a plan for movement from site to site for the day.
- Communicates this plan with the crew and the next two Area/Agency contact persons so they are adequately prepared.
- Ensures that adequate fuel for vehicles, pumps, and helicopter has been obtained.

- Ensures adequate water and herbicides are available and have been obtained.
 - Tests radios and ensures spare batteries are available.
 - Ensures that the flight and duty limitations of the contract are adhered to.
 - Completes all required records and provides completed records to the FMAPL including Daily log of projects completed, Flight and Duty Log, and Herbicide Use Log.
 - Ensures that a safety briefing is provided for all helicopter passengers and those working on the helispot.
 - Locates helispots and ensures they are field checked by a qualified helicopter crewmember for compliance with helispot construction standards. See section 4.2.3.
 - Ensures that loads do not exceed allowable payload of the helicopter, as determined by an interagency load calculation form.
 - Suggests and coordinates overnight accommodations for the helicopter crew.
 - Monitors weather and ensures that flights are approved by the Area/Agency representative prior to take-offs.
 - Controls access to and all movement around the helispot.
 - Obtains and reviews maps of the project area, the Aerial Seeding/Spray Field Sheet and/or the Helispot Worksheet with project information forms, whichever is appropriate from FMAOC. See Appendix 6.3.8.
 - Coordinates the transfer of the chase truck to/from neighboring FMHM's.
 - Ensures that all records of acres and project sites are accurate, legible, complete, and confirmed with the contractor's records prior to handing off with the next FMHM.
 - Ensures that flight data from helicopter GPS system is downloaded at the end of each day
 - Reviews emergency response plan and provides input to the FMAOC.
- b. Provides application assistance, as requested, for aerial applications of pesticides involving Department of Forestry personnel, projects, and lands.
- c. Stays current with pesticide issues to be in compliance with pertinent guidelines, legal requirements, and labels.

Regional Responsibilities

2.1.5 Region Silviculture Program Leader (RSPL) and/or Regional Forest Health Specialist (RFHS)

- a. RSPL/RFHS: Ensures that the Areas have prepared the necessary project proposals.
- b. RSPL/RFHS: Checks and approves pesticide proposals submitted by the Areas, which may include field reviews.
- c. RSPL/RFHS: Ensures that the Areas have completed the Natural Heritage Data Base review as described in section 3.2, and the review is signed off on the project proposal forms. When necessary, assists the Areas in determining appropriate project parameters when the Natural Heritage Database review reveals a potential impact to a sensitive species.

- d. RSPL:** Develops and administers Regional ground herbicide application contracts. Coordinates the procurement of herbicides and surfactants for these contracts when the contract specifies that the State will supply them.
- e. RSPL/RFHS:** Coordinates the acquisition of any required/requested aerial photography.
- f. RSPL/RFHS:** Coordinates cooperative projects with other Region disciplines.
- g. RSPL:** Coordinates contracted work with the ASPL(s).
- h. RSPL/RFHS:** Provides guidance and technical assistance as requested.
- i. RSPL/RFHS:** Provides standard format for news release. See appendix 6.4.
- j. RFHS:** Prepares EQB Notice for aerial applications of pesticides other than herbicides.
- k. RSPL:** Insures that pesticide use information on Forestry-administered lands in the Region has been entered into SRM so that the annual pesticide application summary NA 00080-02 can be completed by the Central Office by January 15 of each calendar year.
- l. RSPL/RFHS:** Stay current with pesticide issues to be in compliance with pertinent guidelines, legal requirements, and labels.

Area Responsibilities

2.1.6 Area Silviculture Team (AST)

- a.** Initiates all projects.
- b.** Identifies vegetation management needs (regen sites, rights of way, noxious weeds, etc). Silvicultural projects will require documentation on the DOF regeneration site inventory form.
- c.** Makes prescriptions that are silviculturally sound and that are in compliance with pertinent guidelines, legal requirements, and labels.
- d.** Examines alternative treatments.
- e.** Collects GPS traverse of each site to be treated.
- f.** Makes all site-specific arrangements for completion of the project. These include:
 - locating and maintaining helispots
 - marking boundaries and buffer strips
 - monitoring vegetation conditions
 - showing contractors the location and boundaries of all sites
 - posting and timely removal of signs
- g.** Monitors the mixing of the pesticide solution on all aerial applications to ensure that the proper products and rates are use and that label instructions are followed.
- h.** Completes all **pesticide** application project effectiveness assessments (post treatment monitoring). See section 3.6.3.
- i.** Stays current with pesticide issues to be in compliance with pertinent guidelines, legal requirements, and labels.

Ground Applications

- a.** On most ground applications, AST members need not be present on the site at all times. However, full-time, on-site supervision is required for sensitive sites and rights-of-way herbicide applications.
- b.** AST members must provide adequate time to supervise the contract.
- c.** AST members must monitor weather conditions.

d. AST members must ensure that proper application records are completed by the contractor or by DNR applicators for sites not contracted.

2.1.7 Area Silviculture Program Leader (ASPL)

- a. Checks and approves all **pesticide** proposals at the Area level. This includes the Natural Heritage Database review and signature authority. See procedures for Natural Heritage Database review in section 3.2.2.
- b. Collects appropriate application records, maintains copies at the Area level, and furnishes copies (except for aerial applications) to the RSPL/RFHS as required.
- c. Ensures that all required data for pesticide applications on Forestry-administered lands in the Area have been entered into SRM. Data entry for the preceding year's applications must be completed by January 15 of each calendar year.
- d. Ensures that the AST tasks listed under AST responsibilities are completed.
- e. Notifies adjacent residents and landowners. See section 3.4.
- f. Ensures that timely news releases are distributed. See appendix 6.4 for news release example.
- g. Ensures all treated sites, both ground and aerial application, are posted as outlined in section 3.3.3.
- h. Notifies the RSPL/RFHS as soon as ASPL has knowledge of an incident or misapplication.
- i. Ensures that soil texture and organic matter are determined and documented for sites where soil mobile herbicides are prescribed. See section 3.5.8.
- j. Stays current with pesticide issues to be in compliance with pertinent guidelines, legal requirements, and labels.

2.1.8 Area Forest Supervisor

- a. Ensures that the appropriate personnel who prescribe or apply herbicides have a pesticide applicator license/certification in the appropriate categories.

2.2 Training and License Renewal

To be most effective, personnel must keep abreast of changes in labeling, prescribed uses, and new products—both pesticides and adjuvants. All licensed personnel must attend a biennial recertification workshop, and attendance at these recertification workshops will help in keeping licensed personnel up to date. It is also recommended that personnel that are not licensed but are involved in pesticide applications and decision making under the oversight of licensed personnel, also attend pesticide education sessions periodically.

3.0 PLANNING

3.1. Pesticide Use Approval

Before any pesticide is purchased and/or applied a Pesticide Use Approval form must be completed. An example of this form can be found in Appendix 6.3.1.

See Nursery Operations, 5.2 for an exception to individual Pesticide Use Approval forms.

Pesticide Use Approval information should be archived by

- Storing the paper form in the originating Area, and
- Archiving the information in SRM.

3.2 Natural Heritage Database Review

3.2.1 Policy

All pesticide use including ground and aerial herbicide, gopher control, and insect and fungi control projects will be reviewed at the Area level for potential impacts to rare species and rare plant community occurrences as tracked in the Natural Heritage Rare Features database. It is the responsibility of the Area Silviculture Program Leader (ASPL) to insure that the review is done prior to the project leaving the Area. See 2.7.1.a.

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/no project is possible on the site.

Natural Heritage Database review prior to pesticide applications in the state nurseries is NOT required.

3.2.2 Procedures

Review will be carried out by comparing the site locations with locations of rare species and rare plant communities from the Natural Heritage Rare Features database. The Areas will be responsible for using a current version (less than 1 year old) of the Natural Heritage Rare Features data for their work area to do this review. The Ecological Services' Regional Plant Ecologists may be contacted to discuss the formats in which data can be received and the steps the Areas should take to have access to current data. See Appendix 6.1 for contact information.

The ASPL will sign off on the Pesticide Use Proposal/Approval project proposal at the appropriate location verifying that a review was completed and no rare species or rare plant community locations met the review criteria outlined in the following paragraph.

If the Area review determines that there is a rare species or rare plant community occurring on or immediately adjacent to the pesticide application site, i.e., when viewed in FIM, the polygon associated with the Heritage element overlaps the treatment area, the ASPL should consult with the Regional Silvicultural Program Leader and the Regional Nongame Specialist if the rare feature is an animal or the Regional Plant Ecologist if the rare feature is a plant or plant community to discuss concerns and appropriate actions to take. See Appendix 6.1 for contact information.

After discussion with the Nongame Specialist/Plant Ecologist, the rare species or plant community polygon should be noted on the project proposal and drawn on the project map along with any changes in the project due to the occurrence of the rare feature.

3.3 Buffer Strips

3.3.1 Requirements

The provisions of this section apply to all **pesticide** broadcast applications, both ground and aerial. 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 a herbicide through the root system (flashback).

On sites determined to be sensitive by Area and Regional personnel due to human presence and activity, consideration should be given to increasing buffer strip widths.

3.3.2 Buffer Strips Adjacent to Other Ownerships for Broadcast Applications

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

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. This does not apply to the right-of-way applications.

The standard width for all other buffer strips is 100 feet. Exceptions are as follows:

- When label directions exceed the 100-foot minimum.
- 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. The written approval must be kept on file at the Area level.
- 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 his/her representative in writing and is also approved by the Region on a case by case basis, not by Region policy. The landowner's written approval must be kept on file at the Area level. A copy of the letter must be a part of the archived project records.

For forestlands, a 100-foot buffer strip is required.

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, the DOF shall identify and post the property boundaries as a no-spray area.

3.3.3 Buffer Strips Adjacent to 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 and/or ditch bank labeled herbicides.

3.3.4 Terrain

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

3.4 Notification Requirements

3.4.1 Public notification

3.4.1.1 Local public notification of pesticide treatments

Public notification is required for all broadcast pesticide applications (except rights-of-way treatments) and should occur no earlier than 1 month prior to the start of the pesticide treatment window. Notifications should be made by publishing articles or paid notices in local newspapers, which cover the area where application(s) will occur.

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

Notification is not required for application of deer repellants.

Areas are responsible for preparing the news releases as described under AST responsibilities. See news release and paid notice formats in Appendix 6.4.

3.4.1.2 EQB notification

An EQB notification should also be prepared for any **aerial** application of pesticides.

- FMAPL prepares a notice for the aerial herbicide contract.
- RFHS prepares a notice for insect and disease treatments.

3.4.2 Notification of adjacent residents and landowners

Residents and/or landowners **within ¼ mile of treatment areas** must be contacted in writing prior to all pesticide treatments. This notification requirement also applies to any right-of-way treatment.

3.4.3 Posting of Treatment Areas

All sites treated with pesticides must be posted.

Only properly filled out DoF-approved signs found in the DNR Sign Manual are to be used. All signing must be done by DNR employees.

Signs should be left in place until the end of the growing season or until the herbicide treatment is no longer visible. In all cases, all signs will be removed by leaf drop.

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.

- Where the site borders a summer access route, 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. Postings on trails and roads should show the approximate distance and direction to the project area. Additional posting requirements are at the discretion of the ASPL.
- Regardless of distance from summer access routes, additional signing should be considered in areas of high public use, such as berry picking areas in season, 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 ASPL.

3.5 Cooperative Projects

3.5.1 Cooperative Projects with Other DNR Divisions and Other Public Agencies

Cooperative projects with other agencies or disciplines are encouraged because costs are reduced through the economy of scale. However, cooperative projects should be planned so that they do not affect the timely completion of the Division's sites.

- Ground applications: Requests for participation in ground application contracts should be referred to the Regional Silviculture Program Leader 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: Requests for participation in all aerial contracts to apply pesticides should be referred to the Forest Management Aerial Program Leader (FMAPL.)

Each agency or discipline is responsible for direct payment of its portion of the contract.

Projects originating from other Divisions of the DNR will be subject to the pesticide use guidelines of the land-administering discipline. These agencies are encouraged to incorporate the DoF guidelines into their projects. Helicopter operations will be under the direction and control of the DoF, and cooperating agencies are expected to follow DoF helicopter safety and operations guidelines. DoF 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 should be developed prior to cooperative projects with public agencies, i.e., counties.

A Memorandum of Agreement should be developed prior to cooperative projects with tribal entities.

3.5.2 Cooperative Projects with Industrial Private Landowners

Cooperative projects with industrial private landowners such as Forest Capital Partners, Potlatch, UPM, etc., 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.

Appropriate field and Central Office personnel should be made aware of this work to facilitate planning and the timely completion of State work.

3.5.3 Cooperative Projects with NIPF Landowners.

DoF employees shall not apply pesticides on NIPF lands, or act as an agent for either the landowner or as an applicator. Therefore, applications on NIPF lands should not occur as part of a state land pesticide contract.

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.

3.5.4 Good Neighbor Policy

Division of Forestry's "good neighbor policy" will allow the spraying of Bt to control Forest Tent Caterpillar on state forest lands bordering private lands. See Appendix 6.5 for additional details of this policy.

3.6 Pesticide Application Considerations

3.6.1 Herbicide Project Proposals

In most cases the regeneration site inventory is to be completed before the project proposal is developed. A copy of the most recent site inventory must be attached to the project proposal when it is submitted to the RSPL.

For site preparation, preference should be given to treatment the second growing season after harvesting. This delay provides more time for target vegetation to sprout leading to more effective control long-term control.

If treatment is required during the growing season immediately following harvesting, a tentative project proposal should be prepared and submitted. The regeneration site inventory then must be completed by the AST and reviewed by the RSPL at least two

weeks before the start of the herbicide treatment window. The RSPL reserves the right to drop the project from the contract if the site inventory is not completed in time or if there is a question of need to treat the site based on the site inventory data.

3.6.2 Application Methods

Pesticide applications can be made either by helicopter or by ground methods. Helicopter application has a number of advantages: it is usually more cost effective, faster, and provides more uniform coverage. Application by helicopter may be the only practical option on large areas, sites with poor access, or where ground conditions limit mobility.

Ground applications should be considered for specific management concerns, such as treating areas with high public sensitivity, retention of live overstories, and to avoid small potholes, wildlife islands, and similar sensitive areas.

Wherever practical, mechanized application equipment (ground or aerial) should be used. Even under controlled conditions it is difficult to apply the proper rate of chemicals using backpack sprayers, centrifugal spreaders, spotguns, etc. Backpack sprayers, for instance, may generate a fine mist that can create substantial problems through drift.

Ground applications can either be contracted or done by Division of Forestry personnel. However, using a contractor is preferred.

All DoF employees involved with pesticides must have received employee right-to-know training prior to handling and applying any pesticide.

All personal protection equipment (PPE) specified on the product label must be provided and used.

Pesticides can not be applied by anyone under the age of 18.

3.6.3 Post Treatment Monitoring

3.6.3.1 Herbicides

Spring herbicide applications will be checked during the late summer of the same year of treatment. Summer and fall herbicide applications will be checked during the summer of the following year.

Survey results will be documented using the standard Regeneration Survey form. For this purpose, the only parts of the form that need to be completed are to update the map, to record whether or not the crop trees are free to grow, and to 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 controlled on 90% of the acres prescribed for treatment.

All monitoring surveys will be completed by September 1st, annually, and be submitted to the ASPL. The ASPL will summarize the surveys and report the results to the RSPL by November 1st, 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.

The results of the surveys of all aerially applied sites should be shared with the FMAPL and the FMAOC. Survey results can be used to identify aerial application issues. The RSPL should use the ground survey results to evaluate the regional ground application program and make adjustments as appropriate.

3.6.3.2 Pesticides Other Than Herbicides

Unlike herbicide applications, the use of insecticides, pheromones, repellants or fungicides is an uncommon occurrence and is usually tailor-made for the site and current circumstances. Acceptable levels of management/control will vary by purpose, so each proposal will need to have custom-made documentation, and custom-made monitoring and evaluation processes. Consequently, there are only a few generalities that can be made about monitoring.

Each pesticide project proposal that is initiated by the Division should indicate its own:

1. Purpose/ objectives including why a pesticide was selected (eradication of pest, pest population reduction, host damage prevention, repel pest population, mating disruption, etc).
2. Treatment schedule and timing.
3. Monitoring schedule: This can vary from a few weeks (Bt spray) to 2 years (mating disruption).
4. Evaluation method: Appropriate for pesticide, pest, host and management timeline.
5. Annual report of pesticide use is due to the ASPL, RSPL and RFHS by September 1st of each year.
6. Final evaluation is due 6 weeks after the end of the monitoring schedule. Reporting is the same as above.

3.6.4 Labeled and Tank-Mix Applications

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.

The EPA and MDA will permit use of any tank mix 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 these off-label applications.

Off-label applications should not be recommended to private landowners.

3.6.5 Use of Certain Soil Mobile Herbicides

Soil mobile herbicides such as Hexazinone (Velpar and Pronone), Imazapyr (Arsenal and Chopper), Metsulfuron methyl (Escort), Picloram (Tordon, Pathway and Access), and Tebuthiuron (Spike) can be broadcast on a site only if

- at least 75 percent of the treatment area contains soil having loamy sand or finer texture; and
- a minimum of two percent organic matter is incorporated in the top six inches of soil, excluding the litter layer.

Any precautions on the label, such as soil moisture, soil saturation, depth to water table, soil conditions, etc., should also be used to govern the use of soil active herbicides .

No soil mobile herbicides will be broadcast applied unless the above two criteria and any label restrictions are followed.

See *Collecting Composite soil Samples* in Appendix 6.6 or contact Dan Hanson at Resource assessment in Grand Rapids to receive help in determining the amount of soil organic matter.

4.0 OPERATIONS

4.1 Weather Specifications

4.1.1 General Specifications

Because weather conditions have the potential to adversely affect pesticide coverage, placement, and efficacy, the following weather guidelines should be followed. When label specifications are more restrictive than these guidelines, **THE LABEL SPECIFICATIONS WILL TAKE PRECEDENCE over these guidelines IN EVERY CASE.** Be certain that you are in compliance with the label.

Not meeting any one weather factor, will be cause for suspension of the pesticide application until all weather factors are within the guideline limits.

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.

No application of soil-active herbicides will be conducted when surface puddling or runoff is anticipated prior to incorporation.

4.1.2 Aerial Broadcast of Liquid Pesticides

a. Wind. Constant wind velocity cannot exceed 5 mph at the spray treatment site or at the helispot if the spray treatment site is inaccessible. When gusting wind conditions occur, the average gust should not exceed 5 mph, and the 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.

b. Temperature. The temperature shall not be less than 35°F or more than 85°F, when appropriate to the pesticide being used.

c. 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 of the pesticide solution 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.

d. Fog. 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.

e. 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 project supervisor should exercise caution.

f. Inversions. Inversion conditions may exist when wind speeds are less than 2 mph. Inversions can be recognized by observing a column of smoke. If the smoke appears to hit a “ceiling,” and moves downwind without mixing vertically, inversion conditions are present. If inversion conditions do occur, spraying should be suspended.

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

4.1.3 Ground Broadcast Applications with Motorized Equipment

Liquid applications, using motorized equipment with boom or cluster nozzles, will meet aerial weather restrictions 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.

4.1.4 Ground Broadcast Applications with Backpack Sprayers

When a backpack sprayer is used to broadcast apply pesticides, maximum wind speed will be 10 mph at the height of application.

4.1.5 Ground Directed Treatments & Granular Applications

There are no specific weather specifications for directed liquid treatments from backpack sprayers, spotguns, wicks, cut and dab, hack and squirt, and similar systems; and for granular applications. However, applications must comply with all label restrictions.

4.2 Aerial Operations

4.2.1 General Aerial Application Requirements

Helicopter flights over population centers should be avoided.

A GPS traverse is required for all pesticide application sites.

In most cases the GPS traverse will be sufficient to mark project boundaries. In some cases white plastic bags may be used in addition to the GPS traverse.

Since GPS traverses of each treatment site are loaded into the helicopter's navigation system, reconnaissance pre-spray over-flights, with forestry personnel accompanying the pilot, are seldom required. If such a flight is deemed necessary by the FMHM or the AST member on-site, it should take place shortly before spraying.

Division personnel may not be in the helicopter during the application of any pesticide.

Snags and residual trees may be a hazard in that they are sometimes hard for the pilot to see. In addition, they cause the helicopter to fly higher, thereby increasing the potential for drift. Residual trees may intercept enough of the spray solution so that treatment effectiveness is reduced, or they may be damaged or even killed by the herbicide application.

Sites having large numbers of snags and/or residual trees may be more effectively treated with a ground application. This determination should be made as part of ASPL and RSPL project review and approval.

The FMHM, the FMAOC, and the pilot have the final say as to whether or not a site is treated when the presence of snags, leave trees, or the site configuration pose an unacceptable risk to the applicator or may adversely affect pesticide coverage.

4.2.2 Equipment, Supplies and Radios

a. Communication Hardware

- 2, 210 channel handheld King radios (1 for Helicopter Manager and 1 for Mixmaster).
- 1 Handheld portable VHF-AM radio (KX-99) kit.
- 1 Hard hat with earphones and push-to-talk adapter
- 1 Mobile portable radio kit with antenna
- 1 Cell phone with remote antenna
- 1 Flight helmet
- 1 laptop computer

b. Field Gear

- 1 Belt weather kit
- 1 Anemometer with 20' telescoping pole
- 1 Nomex flight suit and gloves, with flight bag
- 1 Chest cooler
- 1 5 gallon water cooler
- 1 20 lb. fire extinguisher
- 1 Handheld anemometer with R.H. capability
- 2 Garmin MAP 76S GPS units, with 1 unit-to-unit data transfer cable and 1 unit-to-computer data transfer cable

c. Vehicles

- 1 Extended cab 4 x 4 pick-up with topper for chase truck, with a hazardous material spill kit, provided by DNR
- 1 Turbine powered helicopter with spray equipment, (see the contract for specifications) provided by the contractor.
- 1 Support/nurse truck with water, mixing, and jet fuel tanks, (see the contract for specifications) provided by the contractor.

d. Logbook

DNR Forestry telephone directory
Cooperating agency telephone numbers
Aviation Plan for Aerial Herbicide Program
Helispot Construction Standards Diagram
Sunrise/Sunset Tables
MSDS sheets
Copy of the contract
Herbicide Use Guidelines

Blank copies of the Daily Log and the Flight and Duty Log
Crash/Rescue Emergency Checklist
Aerial Spray Project Summary
MN Airport Directory
Herbicide Volume and Mixing Chart

4.2.3 Helispot Requirements

Well-located and maintained helispots are necessary for efficient and safe aerial herbicide applications. Proper planning will minimize the potential for equipment damage or pesticide spills. Design and maintenance of helispots need to include the following considerations:

- a.** Helispots will be located on state land whenever practical.
- b.** Helispots may be located on other public ownerships or on private industrial lands only when a helispot cannot be safely and feasibly located on state land. A letter documenting permission to locate a helispot on other public ownerships or on private industrial land must be obtained and filed at the Area level.
- c.** Under no circumstances will a helispot be located on nonindustrial private forestlands. However, private gravel pits can be used if permission is obtained in writing ahead of time.
- d.** Helispots will not be located where a possibility of direct contamination of open water exists, nor so located that the takeoff or approach pattern crosses over rivers or lakes in the immediate takeoff area.
- e.** Helispots must be accessible by a road suitable for a heavy, long wheelbase tank truck for delivery of materials. The helispot and access roads should be inspected for condition and obstructions shortly before spraying begins. Sites for alternate helispots should also be considered.
- f.** Avoid helispot sites with loose soil or sand, rocks or stumps, trees or brush in the takeoff area, or other site conditions that can damage equipment or increase the possibility of spills. When these conditions are encountered, alternate helispots should be considered.
- g.** There should be no tall brush or trees growing up to the edge of the takeoff pad. The takeoff path must be clear of any obstacles.
- h.** Helispots should be located as close to the project as possible. Reasons for an extended ferry flight are poor roads or because there is no available landing site due to the vegetation and/or topography on the site. Every effort should be made to limit the ferry to 3 miles or less, especially on sites greater than 10 acres in size. In certain situations, this is not possible due to land ownership and the lack of openings in these forested parts of the State.

i. Helispots should all have wind indicators and pad markers, since often times the pilot will fly to the site using GPS coordinates and there will not be anyone at the site. These areas should all be field checked within 2 weeks of the project to ensure the roads are clear and the wind indicator and pad markers are in place.

j. Each landing area must have adequate room to land the helicopter both on the ground and on top of the nurse truck. The site and the access road must have the load bearing capacity to support the weight of a 60,000 lb. truck.

k. Minimum helispot specifications are as follows:

- 75' safety circle and approach/departure path width.
- 150' approach and 300' departure path length.
- 8:1 slopes for departure path (150' from pad to first 20' obstacle).
- Landing pad to have a minimum 40' diameter level surface with a maximum of 6" grass to prevent the helicopter's spray boom system from being damaged.
- If the site is not covered with grass, dust abatement may be required. This may require an additional person and a truck with water tank to work directly ahead of the operation.

The FMHM has the authority to disallow or discontinue the use of a helispot, if in their opinion the site is an unsafe environment for the operation.

In some areas, which have a history of a large forest development workload, it may be prudent to develop a permanent helispot. If these helispots are strategically located, they can be utilized on a regular basis. These helispots can then be kept on record at the local forestry office with the general name, legal description, and GPS coordinates for future use. Helicopter managers and helicopter crewmembers are an excellent resource to aid in helispot selection and development.

4.2.4 Helispot Operations

All agency personnel who may be at a helispot without a qualified helicopter manager will stay at least 100' back from the helicopter unless directed to approach by the pilot. Always approach from the front, down slope, and in full view of the pilot. Whenever the helicopter is on top of the nurse truck with rotors turning or is approaching/departing the site, all agency personnel will stay back at least 100'.

All loose items at the helispot must be controlled, such as cans, bags, paper, and pick-up box debris. These items can become a hazard when the operation is active.

Agency personnel will not be aboard the helicopter when the helicopter is landing or taking off from the nurse truck. Since this helicopter is operating in the "restricted" category, passengers are not allowed when the pilot is applying herbicide. Persons are only allowed aboard the helicopters that are "essential for the mission". Locating the site and providing a briefing for the pilot are essential elements for a successful operation.

Flights should not be initiated before sunrise or after sunset.

4.2.5 Flight Following

Flight following is accomplished with the VHF/FM radio on the local area frequency or designated Air-Ground frequency, 151.340. The FMHM or chase truck driver will maintain radio communication with the helicopter pilot and will know the general flight path, destinations and the estimated time of arrivals for each flight. Contact will be made at least every 15 minutes.

If radio problems prevent flight following, they must be corrected before operations continue.

If there is an extended ferry flight, the pilot can flight follow with a local forestry office or on the MIFC Air Net Frequency 172.375.

4.2.6 Personal Protective Equipment (PPE)

The Mixmaster will wear a hardhat with radio headset (provided by the State) while mixing and loading herbicide. Eye protection and rubber gloves must be worn along with any other PPE requirements on the product label.

All agency personnel within 100' of the helicopter, regardless of agency, **will wear**:

- Hardhat
- Eye protection
- Natural fiber or Nomex clothing
- Leather gloves and boots
- If assisting with herbicide mixing, rubber gloves and rubber boots must be worn.

All helicopter passengers, regardless of agency, will wear Nomex clothing (flight suit and gloves) flight helmet, and leather boots.

4.2.7 Emergency Situations

If an emergency or unplanned landing occurs, the FMHM will contact the appropriate authorities. If there is a need for medical assistance, the FMHM will use the cell phone to call 911. The FMHM will coordinate search and rescue operations with the County Sheriff's Office and will secure the scene.

If an herbicide spill occurs, the FMHM will follow the steps that are outlined in Operational Order 59.

5.0 Nursery Operations

5.1 Nursery Responsibilities

5.1.1 Nursery Program Coordinator

- a. Reviews and approves the annual Pesticide Use Plan for the nurseries.

5.1.2 Nursery Supervisor

- a. Approves pesticide use in the nursery.
- b. Ensures employees applying pesticides have proper licensing, training, and protective clothing.
- c. Ensures a summary of pesticides used for each calendar year is completed.
- d. Approves all pesticide projects and ensures records are maintained for each application.
- e. Sees that label changes on all pesticides used on the nursery are kept up-to-date.
- f. Provides right-to-know training to employees who work during the spraying season.
- g. Ensures all pesticide records are archived.

5.1.3 Nursery Staff

- a. Maintain training and/or attend workshops biannually if certified as a non-commercial applicator.
- b. Carry out projects assigned by the supervisor. Read pesticide labels and wear appropriate protective clothing/equipment.
- c. Record product used, date, location of application and product used. Record temperature, relative humidity, and windspeed. Forward this information to the supervisor.
- d. Restricted use pesticides must be applied by a licensed non-commercial applicator.
- e. 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.

5.2 Policies

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 Pesticide Use Proposal/Approval Form. This annual Pesticide Use Plan should be reviewed and approved by the Nursery Coordinator and the plan should be archived at the nursery originating the plan.

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

5.3 Procedures

5.3.1 Notification requirements

Notification of adjacent landowners by the nurseries prior to applying pesticides is not required.

Post 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.

5.3.2 Record Keeping

An annual pesticide use plan will be completed each year. See 5.2 Policies.

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, and the amount of product used). 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. Copies are submitted to the Silvicultural Lands and Roads Supervisor 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.

5.3.3 Pesticide Applications at the Nurseries

The nurseries routinely use a variety of pesticides including herbicides, insecticides, fungicides, rodenticides, and fumigants (soil sterilants).

Follow weather specification for applications as found in all of section 4.1. Pay particular attention to sections 4.1.3 Ground Broadcast Applications with Motorized Equipment and section 4.1.4 Ground Broadcast Applications with Backpack Sprayers.

5.3.4. Pesticide Application at Tree Improvement Sites

Tree improvements sites include all seed orchards, experimental sites, and the greenhouse and shade house at General Andrews Nursery. In general, the guidelines are the same as those for pesticide applications in the nurseries.

6.0 APPENDIX

6.1 2006-7 Roster of Forest Management Aerial Program Personnel

Forest Management Aerial Program Leader

Bill Schnell, Grand Rapids, 218-999-7842

Forest Management Aerial Operations Coordinator

Keyth Wallin, Orr, 218-757-3274

Forest Management Helicopter Managers

Bill Schuster, Side Lake, 218-254-7989
Paul Moran, Finland, 218-353-7397
Rob Fasteland, Two Harbors, 218-834-6606
Doug Monshaugen, Warroad, 218-386-1304

6.2 Natural Heritage Data Consultation Contact List (March, 2005)

Natural Heritage data use training and access information: Regional Plant Ecologists

North - Janet Boe
Bemidji Regional Office
218-755-4421
janet.boe@dnr.state.mn.us

Central – Hannah Dunevitz Texler
Central Regional Office
651-772-7570
hannah.texler@dnr.state.mn.us

South – Ann Pierce
Rochester Area Office
507-280-5076
ann.pierce@dnr.state.mn.us

For consultation about potential impacts to rare plants and plant communities, contact Ecological Services Regional Plant Ecologists as above except in NE MN, contact:

NE MN - Sarah Hoffmann
Central Office
651/296-7863
sarah.hoffmann@dnr.state.mn.us

For consultation about potential impacts to rare animals, contact Nongame Specialists

NW - Katie Haws
Bemidji Regional Office
218-755-2976
katie.haws@dnr.state.mn.us

NE- Maya Hamady
Grand Rapids Regional Office
218-327-4518
maya.hamady@dnr.state.mn.us

Central- Steve Kittelson

Central Office
651-296-9662
steve.kittelson@dnr.state.mn.us

SE- Jaime Edwards
Rochester Area Office
507-280-5070
jaime.edwards@dnr.state.mn.us

SW- Lisa Gelvin-Innvaer
South Regional Ofc
507-359-6033
lisa.gelvin-innvaer@dnr.state.mn.us

6.3 Pesticide Use Forms

the actual forms are not included in the Appendix. Consult the sources for each form to obtain copies. Any forms that are required Department-wide and not listed in the appendix are listed in Operational Order #59.

6.3.1 Source: Intranet – Forms/Forestry

6.3.1.1 NA-038180-02 – Division of Forestry Herbicide Use Proposal/Approval

This form should be used for site preparation and release for project approval and to archive pre-treatment information.

6.3.1.2 Regeneration Survey (also available in SRM)

This form provides information for completing the Division of Forestry Herbicide Use Proposal/Approval form and should accompany that form when it is submitted for Area and Region review.

6.3.1.3 Notice of Herbicide Use

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

6.3.2 Source: Intranet – Forms/MR – Safety & Health

6.3.2.1 NA-00092-04 Pesticide Use Approval

All projects involving the use of any kind of pesticide EXCEPT for projects involving regeneration (site prep and release) should use this form for approval and for archiving pre-treatment information.

Examples of projects requiring this form include:

- Right of Way spraying
- Insect control
- Gopher control
- Noxious weed control
- Wildlife habitat maintenance projects

A map should also be submitted with the Pesticide Use Approval form.

6.3.2.2 NA-00081-01 Pesticide Application Report

To be used during applications to meet requirements of M.S. 18B.37, subd. 2 and to archive application conditions in case follow up evaluations need to be conducted.

6.3.2.3 NA 00080-02 - Annual Pesticide Application Summary

To be completed and archived by the Silviculture, Lands, and Roads Program Supervisor or the Division's Pesticide Coordinator by February 1 of each year. The report will be generated from data in SRM. Regional Silvicultural Program Leaders will insure that the data is complete for the previous calendar year by January 15 of the following calendar year.

6.3.3 Source: Forest Management Aerial Operations Coordinator (FMAOC)

6.3.3.1 Resource Management Helispot Worksheet with Project Site Information

For use by helicopter managers to record data on projects flown from each helispot.

6.3.3.2 Aerial Seeding/Spraying Field Sheet

For use by helicopter managers to provide a daily log of flight times and projects completed.

6.3.3.3 Herbicide Project Checklist

To be used by Area personnel to insure that all preparations, operations, and post operations steps are completed.

6.3.3.4 Herbicide Volume Mixing Chart

To be used by Area personnel to insure that the proper amount of herbicides and surfactant are mixed and loaded as per application rate and project acres.

6.4. Notification Examples

A news release or a paid public notice is to be used by each Area no earlier than 1 month prior to the start of the pesticide treatment window. The release or paid notice should be sent to the local newspaper(s). Areas may send joint releases or notices to papers that cover more than one Area.

6.4.1 News Release Format

NEWS RELEASE

FOR IMMEDIATE RELEASE

For more information, contact (NAME), DNR Forestry, (PHONE)

State Land Reforestation.

“Herbicides will be applied to approximately _____ acres of state land in the _____ Area to help establish new forests”, says _____ State Forester.

The (LOCAL) area will be doing (#) acres of aerial and (#) acres of ground applied herbicide vegetation control to establish new forests.

Herbicide applications will begin approximately _____ and end on approximately _____. All sites treated with herbicides will be signed so that the public will know when they are on a treated site.

_____ says “Minnesota has one of the country=s largest state forest systems and also one of the largest state forest tree planting programs in the nation. More than 8,000 acres of state forest lands are planted and seeded each year. This is equivalent to an area one-quarter mile wide by over 50 miles long.@

In the last 10 years the DNR has planted or seeded close to 90,000 acres, an area of state forest land equivalent to a strip one-quarter mile wide by 560 miles long, stretching from Minneapolis to Cincinnati, Ohio.@

Pines are the major species planted. Over the past 10 years, the DNR has planted over 5 million white pine on state lands to restore this valuable tree in Minnesota’s forested landscape. Many other native tree species are also planted. Oak and other hardwoods, for example, are widely planted in the state forests of southeastern Minnesota.

Trees are planted or seeded on state lands to reforest harvested areas, provide wildlife habitat, protect watershed values, and maintain the quality of state forests. Professional foresters determine the tree species appropriate for the site. Private contractors hired by the DNR do the actual planting.

“This year, local DNR foresters have seeded about (#) acres and planted over (#) acres in the (LOCAL) Area during May,@ said (NAME), DNR forester. A Over (#) trees, predominantly pines and spruces have been hand planted on sites prepared during the past year.@

6.4.2 Paid Public Notice Format

Each year the Minnesota Department of Natural Resources, Division of Forestry reforests thousands of acres of forestland. A small percentage of the sites managed each year are treated with herbicide to control competing vegetation, either to prepare sites for subsequent tree planting or seeding, or to release young seedlings from overtopping trees and brush.

The (LOCAL) Area will be doing (#) acres of aerial and (#) acres of ground applied herbicide vegetation control to help establish new forests.

Herbicide applications will begin approximately _____ and end on approximately _____. All sites treated with herbicides will be signed so that the public will know when they are on a treated site.

6.4.3 Adjacent Landowner Letter Format

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

Division of Forestry
[Address]
[Phone Number]

[Name]
[Address]

Dear Neighbor:

Each year the Minnesota Department of Natural Resources, Division of Forestry reforests thousands of acres of forestland. To successfully accomplish this a variety of techniques and treatments are applied, often over a period of several years. A small percentage of the sites we manage each year are treated with herbicides to control competing vegetation, either to prepare sites for subsequent tree planting or seeding, or to release young seedlings from overtopping trees and brush.

We want to let you know that a site near your property will be treated with (a) herbicide(s) between the following dates: _____. The site is located at the following legal description: _____. The treatment will be done using the following equipment: _____.

A 100' untreated buffer strip will be maintained along our common property boundary [Delete previous sentence if not applicable.] I have enclosed a project map for your reference.

If you have questions or concerns about the prescribed treatment please feel free to contact the _____ Area office at [phone number] or your local DNR Forestry office for more information. Please refer to Project # _____. Thank you.

Sincerely,

Ima Forester
Area Silviculture Program Leader

6.5 Good Neighbor Policy

GOOD NEIGHBOR POLICY The Use of Bt to Control Insect Outbreaks

The Minnesota DNR - Division of Forestry's "good neighbor policy" will allow the spraying of Bt to control forest insects 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 Division of Forestry administered lands.

GUIDELINES

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.
2. Only Bt will be allowed to be used on state lands.
3. 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 at their expense.
5. An unsprayed 100-foot buffer of state land will be left bordering any private land, which is not being sprayed.
6. State will pay for one application of Bt on State land not to exceed \$35.00 per acre.
7. State land being sprayed must be predominantly hardwood coverype.
8. The state will not pay for the spraying of state lease lots.
9. 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.

10. The applicator must submit copies of all application and weather records to the Area.
11. The state will not pay for spraying of state lands after the average FTC is over one inch long.
12. The Area will submit the spraying bills to the Region.
13. The Area will review the request and grant permission to spray.
14. 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.

6.6 Collecting Composite Soil Samples

A composite sample is made by combining several subsamples from the same area in a site and then sending a portion to the lab. Soil tests can be no better than the sample. Therefore, proper collection of the soil sample is extremely important.

Divide the site into areas with uniform conditions

If there is more than one soil type or native plant community class on the site, a separate composite sample should be collected for each of them. Soil survey maps or field observations of significant differences in topography, surface soil texture, thickness of topsoil, soil drainage, vegetation, or native plant community class can be helpful to determine uniform areas.

Collecting subsamples

Within each area, collect a subsample for every 1 to 4 acres. Spread the subsamples evenly across the area. The more variable the soil, the more sub samples should be combined per area sampled.

A soil probe provides the quickest method for collecting sub samples if there aren't too many rocks (see Photo 1). Scrape away the duff, but not the topsoil, and push the probe all the way down. Pull the probe out and put the top six inches in a clean bucket, go to the next sub sample spot, repeat the process and put the next sub sample into the same bucket. Please record the topsoil thickness of each sub sample and calculate the average for the composite sample.



Photo 1. Soil probe with a sample.

A shovel or spade is also an acceptable tool for sampling. A putty knife and a 12-inch long ruler or a similar sized board with a mark six inches from one end will help do this. Scrape away the duff, but not the topsoil, and dig a small hole a bit deeper than six inches. Then take a one to two inch thick slice of soil from the side of the hole. Make sure that a uniform amount of soil is taken, both in width and depth, along the shovel blade (see Photo 2).



Photo 2. Keep the width of the soil slice uniform along the entire 6 inches

Tip the shovel blade until horizontal while holding the slice on the blade in an undisturbed condition and lay the shovel on the ground. Clean off the surface of the soil if needed. Lay a ruler on the soil face, the end flush with the top of the soil (see Photo 3).



Photo 3. Preparing to trim the sample

Use the knife to scrape away the excess soil not covered by the ruler (see Photo 4). Measure six inches down from the soil surface and discard any soil beyond that distance (see Photo 5). Put the sample in a clean bucket, go to the next sub sample spot, and repeat the process adding that sub sample to the bucket. Please record the topsoil thickness of each sub sample and calculate the average for the composite sample.



Photo 4. Trim away soil no covered by the ruler.



Photo 5. Trimming is complete, put the sample in a bucket.

Mix the subsamples

When subsampling is completed for an area, mix the composite sample in the bucket thoroughly and place about one pint into a box or a zip-lock bag. If the samples are wet, they should be air dried before putting in a container and sent to the Laboratory. Fill out a soil

sample information sheet for each composite sample. Complete the: a) “mail soil test report to” section (send it to your Region Silviculturist), b) the sample identification code, c) check the “Total organic matter” box in the “Check Tests Requested” section, and d) write the average topsoil thickness on the margin. Send the sample(s) and information sheet(s) to:

University of Minnesota
Soil Testing Laboratory
Room 135 Crops Research Building
1902 Dudley Ave
St. Paul, MN 55108-6089
Phone: 612 625-3101
FAX: 612 624-3420
email: soiltest@soils.umn.edu

Send a copy of the information form to the Region Silviculturist and send the results to them also.

6.7 Aviation Plan

Includes complete information for all personnel involved in aerial spraying and aerial seeding operations. The aviation plan is generally provided to the contractor and is part of the contract specs. The plan should be reviewed each season before applications begin. The FMAOC maintains and updates the plan and should be contacted to obtain the most current copy.