



**Minnesota Department of Natural Resources  
Division of Fish and Wildlife  
PESTICIDES AND PEST CONTROL  
GUIDELINES**

**Contact:** Division of FAW, Wildlife Section, Suzann Willhite, 651-259-5235  
Division of FAW, Fisheries Section, Mike Halverson, 651-259-5209

**Effective Date:** May 2, 2008

**Supersedes:** 1991 Section of Wildlife Pesticide Use Guidelines  
2003 Fisheries Guidelines for Operational Order No. 59

---

## **INTRODUCTION**

The Minnesota Department of Natural Resources, Division of Fish and Wildlife (FAW) 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:

“This operational order sets forth policy and procedures for pest\*<sup>1</sup> control, pesticide\* procurement, handling, storage, use, disposal and record keeping. This applies to all pest control\*, pesticide use and pesticide management by employees and outside groups\* on Department of Natural Resources (DNR) administered lands or in public waters. Personal use pesticides such as insect repellants are exempt from this operational order.”

“Disciplines of...Fish and Wildlife...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.”

---

<sup>1</sup>Words followed by an asterisk are defined in Op Order 59, Glossary, Appendix A. They are asterisked the first time they appear in the text.

# Contents of Division of Fish and Wildlife Pesticide Guidelines

- I. GENERAL PESTICIDE POLICIES
  - Goals and Objectives
  - Personal Protective Equipment
- II. PERSONNEL
  - Responsibilities
- III. TRAINING
  - Training Requirements
- IV. RESTRICTED-USE PESTICIDES
  - Policy
  - Definition
- V. PLANNING
  - Pesticide Use Approval Process
  - Natural Heritage Database Review
    - Policy
    - Procedure
  - Prohibited Use Pesticides on Certified State Forest/WMA Lands
    - Policy
    - Procedure
  - Buffer Strips
  - Notification Requirements
    - Posting of Treatment Areas
    - Local public notification of pesticide treatments
    - EQB notification
    - Notification of adjacent landowners
  - Cooperative projects
    - Policy
    - Cooperative Projects with Other DNR Divisions and Agencies
  - Administering DNR Applications Contracts and Agreements
  - Non-Pesticide Pest Control Application Considerations
  - Pesticide Application Considerations
    - Project Proposals
    - Application Methods
    - Post Treatment Monitoring
    - Labeled Applications
    - Use of Certain Soil Mobile Herbicides
- VI. OPERATIONS
  - Weather Specifications
    - General Specifications
    - Ground Broadcast Applications with Motorized Equipment
    - Spot Spraying & Granular Applications
    - Aerial Broadcast of Liquid Applications
  - Aerial Operations
    - General Aerial Application Requirements
    - Emergency Situations
  - Structural or Facility Pests Control Procedures
  - Storage Procedures
  - Pesticide Application Recordkeeping
- VII. APPENDIX
  - A. MN Natural Heritage Data Request Form Website Link.
  - B. Pesticide Program Forms
    - FAW Pesticide Use Proposal/Approval (NA-00092-FAW)
    - FAW Pesticide Application Report (NA 00081-FAW)
    - FAW Annual Pesticide Application Summary (NA 00080-FAW)
    - Annual Pesticide Inventory (MR Form)
  - C. Fisheries / Aquaculture Information Website Links
  - D. Prohibited Use Pesticides on Certified State Forest/WMA Lands List

## **I. GENERAL PESTICIDE POLICIES**

Pesticide applications on state lands will use as operational standards the following:

- Operational Order 59 – Pesticides and Pest control
- Division of Fish and Wildlife Pesticide Guidelines
- Pesticide Labels
- Material Safety and Data Sheets (MSDS) for each pesticide and adjuvant being used or recommended.
- Fish hatcheries that operate under an NPDES permit will follow National Pollution Discharge Elimination System (NPDES) permit requirements.

### **Goals and Objectives**

The goal of the Division of Fish and Wildlife pest management actions and efforts are to implement a safe and effective program to protect and improve Minnesota's fish and wildlife resources. Land management objective dictates whether or not we use a pesticide.

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

### **Personal Protective Equipment (PPE)**

Product labels specify PPE. All personal protective equipment (PPE) specified on the product label must be provided by the discipline and used by the employee. All applicators must wear: long pants, long sleeved shirts, eye protection, chemical-resistant gloves, and approved footwear. Additional safety equipment required for powdered Rotenone applicators includes powered air purifying respirators and chemical suits.

## **II. PERSONNEL**

The following section identifies the responsibilities for implementing the FAW pesticide program at each of the administrative levels – Statewide, Region, Area.

### **Responsibilities**

#### **Statewide Responsibilities**

##### Discipline Pesticide Coordinators

Wildlife Management Section: Wildlife Operations & Development Consultant (Suzann Willhite).

Fisheries Management Section: Fisheries Habitat & Development Coordinator (Mike Halverson).

- a. Remains current on regulatory changes that affect the use of pesticides, and works with state and federal regulators to ensure that the FAW 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, coordinates their revision.
- c. Secures funding so that licensing and training requirements are met.
- d. Monitors external training opportunities and informs licensed personnel of relevant training sessions.
- e. Prepares required environmental documents and responds to legislative or legal inquiries or actions with input from the field staff.
- f. Coordinates intra and inter-departmental review.
- g. Coordinates proposal review and notifications to central office staff for “Special Projects” such as sensitive and restricted-use pesticide application projects.
- h. Archives the sensitive and restricted-use herbicide application records.
- i. Archives the statewide Annual Pesticide Application Summary Form NA 00080-02 **by February 1 of each calendar year.**

### **Regional Responsibilities**

#### Regional/Assistant Regional Manager

- a. Understands and is knowledgeable about Area pesticide needs and goals.
- b. Certification and licensing are not required.
- c. Ensures and verifies that the Area or Program staff complete proper training as needed.
- d. Ensures that the Areas have prepared the necessary project proposals.
- e. Checks and approves FAW Pesticide Use Proposal/Approval Form submitted by the Areas, which may include field reviews.
- f. Ensures that the Areas have completed the Natural Heritage Data Base review as described in the Planning Section. When necessary, assists the Areas in determining appropriate project parameters when the Natural Heritage Database review reveals a potential impact to a sensitive species.
- g. Coordinates cooperative projects with other Region disciplines.
- h. Provides guidance and technical assistance as requested.
- i. Provides standard format for news release.
- j. Directs preparation of Environmental Quality Board (EQB) Notice for restricted-use aerial applications of pesticides
- k. Determines with Area staff when “Special Projects” such as sensitive and restricted-use pesticide application projects need Central Office review, notification or approval.
- l. Collects and reviews the Annual FAW Pesticide Application Summary Form submitted by each Area on pesticide use information on Fish and Wildlife-administered lands in the Region, **by January 15 of each calendar year** so that the forms can be archived in the Central Office.

### **Area Responsibilities**

#### Area Supervisor/Application Site Lead Worker

**Person responsible for the specific pesticide application and directs the on-site activities associated with the specific pesticide application to ensure that the work is conducted in a safe manner, consistent with project goals, product labels, department Operational Order #59 and discipline guidelines. This person will be the responsible party for the treatment site.**

- a. Area Supervisor or Application Site Lead Worker must be certified and licensed by Dept of Agriculture. Area Supervisor does not need to be certified/licensed if they are not the Application Site Lead Worker.
- b. Ensures and verifies that the Application Site Lead Worker, contractor, cooperators, volunteers and DNR applicators complete proper training.
- c. Initiates, reviews and approves all Area FAW Pesticide Use Proposal/Approval Forms.
- d. Examines alternative treatments.
- e. Determines with Regional staff when “Special Projects” need Central Office review, notification or approval.
- f. Identifies vegetation/pesticide management needs (rights of way, noxious weeds, etc).
- g. Makes prescriptions that are biologically sound and that are in compliance with pertinent guidelines and legal requirements.
- h. Makes all site-specific arrangements for completion of the project. These include:
  - identifying boundaries and buffer strips
  - monitoring vegetation and treatment conditions
  - notifying contractors and cooperators of the location and boundaries of all sites
  - posting and timely removal of necessary signs
- i. Reviews Natural Heritage Database review. See procedures for Natural Heritage Database review.
- j. Notifies adjacent residents and landowners when appropriate.
- k. Ensures that timely news releases are distributed if appropriate.
- l. Ensures all treated sites, both ground and aerial application, are posted as outlined in the Notification Requirements Section.
- m. Notifies the State Duty Officer and Regional Manager as soon as there is knowledge that an incident or misapplication has occurred.
- n. Ensures that soil texture and organic matter are determined and documented for sites where soil mobile herbicides are prescribed.
- o. Monitors weather conditions.
- p. Provides on site monitoring during the application period for general use pesticides by Section employees.
- q. Provides start up supervision and monitoring for general use pesticide and continuous presence for sensitive application period for contractors.
- r. Ensures that the contractor, cooperators and DNR applicators complete proper application records.
- s. Completes FAW Pesticide Application Report Form.
- t. Completes all pesticide application project effectiveness assessments (post treatment monitoring).
- u. Collects and summarizes all pesticide use information from FAW Pesticide Application Report Forms on Fish and Wildlife-administered lands in the Area, ***by January 1 of each calendar year to the Regional Coordinator*** so that the Annual FAW Pesticide Application Summary Form can be reviewed and archived by the Region and Central Office. Maintains copies of all records in the Area office.

Pesticide Applicator

**DNR personnel, commercial applicator, or volunteer directly applying pesticides.**

- a. Receives proper training prior to applying pesticide.
- b. Monitors weather and application conditions.
- c. Applies pesticide as proposed in FAW Pesticide Use Proposal/Approval Form.
- d. Completes FAW Pesticide Application Report Form.

e. Provides input on pesticide application project effectiveness assessments (post treatment monitoring).

### **III. TRAINING**

#### **Training Requirements**

To insure pesticides are used effectively and safely, personnel must keep abreast of changes in labeling, prescribed uses, and new products—both pesticides and adjuvants. Pesticides may not be applied by anyone under the age of 18. The cost involved in training and license fees will be covered by the discipline.

#### Restricted-Use Pesticides Training

All employees who use restricted-use pesticides on DNR administered lands or in public waters must have a MN Dept of Agriculture Non-Commercial Pesticide Applicator Certification of Training in all appropriate categories. Before becoming certified and licensed for the first time, everyone must take and pass a test administered through the County. First time testing is free. Certified personnel must attend a biennial re-certification workshop, or re-test on a biennial basis through the County (\$75 per category after the initial test).

#### Non Restricted-Use Pesticide Training

All personnel who; are a primary source for pesticide application information, initiate FAW Pesticide Use Proposal/Approval forms, and/or conduct staff pesticide training must have a MN Dept of Agriculture Non-Commercial Pesticide Applicator Certification of Training in at least the “Core” category (previously called “General ground”), or the equivalent. Other Area staff may receive this training at the discretion of the Regional Manager or Area Supervisor. Testing and certification requirements are the same as for Restricted-Use Pesticides.

#### Annual Training Requirements

All personnel involved in pesticide application, storage or handling will be required to participate in an annual DNR approved training session. Volunteers must have undertaken training equivalent to the annual DNR approved training. Annual training sessions may take place in a variety of forms and formats, as long as all topics listed below are adequately addressed and presented. A DNR instructional CD or written materials will be provided, on request, to aid in training pesticide applicators on the following topics (Parks has developed a training CD, however, there is a need for standardized department wide training):

#### General Standards of Pest Control and Pesticide Application

- User safety
- Equipment maintenance and use
- Chemical handling and disposal
- Label information
- Material Safety Data Sheets (MSDS)
- Record-keeping
- Employee Right to Know (ERTKA) training

#### Environmental Standards for Protection of Non-target Organisms

- Recognition of pests and non-target organisms

- Application techniques
- Optimum weather conditions
- Chemical persistence and movement
- Potential risks to the environment

## **IV. RESTRICTED-USE PESTICIDES**

### **Policy**

All employees who use restricted-use pesticides on DNR administered lands or in public waters must have a MN Dept of Agriculture Non-Commercial Pesticide Applicator Certification of Training in all appropriate categories. (M. S. 18B.34 subd. 1.a.)

### **Definition**

FAW defines the term “use” in the above policy on restricted-use pesticides as “handling open containers”.

## **V. PLANNING**

### **Pesticide Use Proposal/Approval Process**

According to Op Order #59, before any pesticide is purchased and/or applied, a Pesticide Use Proposal/Approval form must be completed and approved. Approval is given by the Area Supervisor, Regional/Assistant Regional Manager, or FAW Section Chief depending on project category.

The “FAW Pesticide Use Proposal/Approval Form” is listed in **Appendix A** and available on the DNR intranet “forms” page under FAW.

Three defined categories of projects are identified as: 1) “Non-Restricted Use” that are routine program applications, 2) “Restricted Use - Routine” that are considered routine and predictable in terms of future treatment, and 3) “Restricted Use - Special Projects” such as, all Rotenone applications, all aerial application and sensitive areas where public concern may lead to controversy.

1) “Non-Restricted Use” (or formerly “Program Projects”) are prepared and approved annually by Area, including:

- Experimental treatments
- Site preparation
- Insect and disease control
- Chemical fish removal
- Noxious Weed Control Program
- Forest Opening Maintenance Program
- Woody Cover Development and Maintenance Program
- Prairie/Grassland Management Program
- Agricultural Program
- Property Maintenance Program
- Invasive Species Control Program
- Walleye Pond - Copper Sulfate

2) “Restricted Use - Routine” are prepared and approved annually by Area and approved by the Region, including:

- Any of the above projects except those identified as “Special” below.
- Large quantity purchases where storage may be an issue.

3) “Restricted Use - Special Projects” are prepared and approved annually by Area, Region, and FAW Section Chief, including:

- All aerial applications
- All Rotenone applications
- Sensitive areas where public concern may lead to controversy.

Pesticide Use Proposal/Approval Steps (*Electronic signatures are allowed and encouraged for timely processing.*)

- 1) Area Supervisor /Application Site Lead Worker originates the Pesticide Use Proposal/Approval Form. Keep a copy of the form in the originating Area.
- 2) Regional/Assistant Regional Manager reviews and/or approves Pesticide Use Proposal/Approval Form, depending on the category of use and archives the information in the Regional Office.
- 3) Region staff will forward “Restricted Use - Special Projects” to Central Office FAW Section Chiefs (copy FAW Program Consultant) for review and approval. Special projects are archived in the Central Office.
- 4) Central Office FAW staff will return signed form to originating office as notification of approval/denial. Originating Area will maintain records on file.

## **Natural Heritage Database Review**

### Policy

All pesticide use including ground and aerial herbicide, gopher control, fish control, and insect and fungi control projects will be reviewed at the Area level for potential impacts to rare species and native plant communities. It is the responsibility of the Area/Application Supervisor to insure that the review is done prior to the project proposal/approval form leaving the Area. See **Appendix B** for Minnesota Natural Heritage Information System (NHIS) Data Request Form.

Possible outcomes may include: 1) determination of no impact and project proceeds; 2) modification of application (e.g. timing, location) to avoid impact; or 3) determination that no application/no project is possible on the site.

Natural Heritage Database review prior to herbicide applications to previous cropland is not needed.

### Procedures

Review will be carried out by comparing the site locations with locations of rare species and native plant communities from the Natural Heritage Rare Features database. The Areas will be responsible for securing a current copy (less than 1 year old) of the Natural Heritage Rare Features data for their work area to be used in this review. The Ecological Resources’ Regional Plant Ecologists may be contacted to discuss the formats in which data can be received and the steps the Areas should take to secure a current copy.

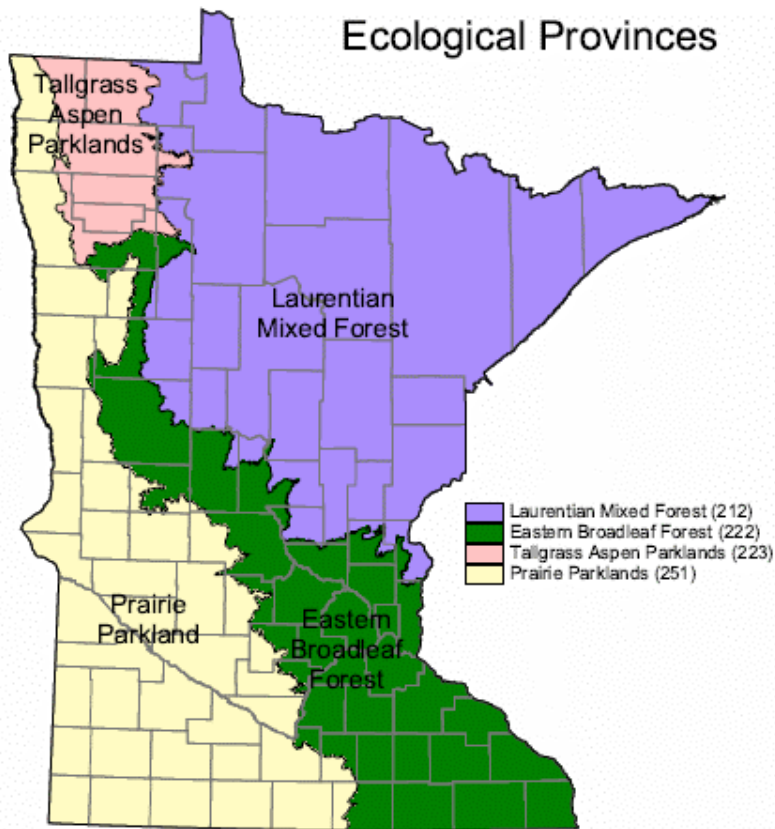
The Area/Application Supervisor will sign off on the Pesticide Use Proposal/Approval forms at the appropriate location verifying that a review was completed and no rare species locations met the review criteria outlined in the following paragraph.

If the Area review determines that there is a rare species or native plant community occurring on or immediately adjacent to the pesticide application site, the Area/Application Supervisor should consult with the Regional Nongame Specialist if the rare feature is an animal or the Regional Plant Ecologist if the rare feature is a plant or native plant community to discuss concerns and appropriate actions to take.

After discussion with the Nongame Specialist/Plant Ecologist, the rare species or native plant community 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. The Pesticide Use Project Proposal/Approval form should then be sent to the Regional/Assistant Regional Manager for any further review/action.

### **Prohibited Use Pesticides on Certified State Forest/WMA Lands** Policy

The DNR, and its cooperators and contractors, may not use any of the listed hazardous pesticides on the certified State Forests and WMAs it manages in the Ecological Provinces of: Laurentian Mixed Forest, Eastern Broadleaf Forest and Tallgrass Aspen Parklands. This restriction does not apply to the Prairie Parkland Ecological Province.



### Procedure

The Area/Application Supervisor will be responsible for reviewing the Ecological Province data and determining when this restriction will apply to pesticide applications. See **Appendix D** for Forest Stewardship Council's Highly Hazardous Pesticide List.

## **Buffer Strips**

Buffer strips must be considered when a potential exists for pesticide to transfer off intended site or due to concern for human presence and activity.

## **Notification Requirements**

### Posting of Treatment Areas

All sites treated with a pesticide must be posted as prescribed by the product label, including restricted entry intervals (REI), if required, and in a manner that intercepts entrants to the treatment site with DNR Sign NRM 8.6.12 “Pesticide Treatment Site”. According to Op Order #59, public notice will be given when and where aerial applications of pesticides will take place on DNR-administered lands or in public waters. Additional posting may be done in high use areas or in other special situations. Public notification is not required for directed, hand applications of herbicides such as cut stump treatment, injections, basal bark applications, and spot gun applications.

### Local public notification of pesticide treatments

“Special” pesticide applications projects determined by the Area/Application Supervisor and Regional/Assistant Regional Manager to be in the public interest need to provide adequate public notification by publishing an article in local newspapers, which cover the area where application(s) will occur.

### Environmental Quality Board (EQB) notification

An EQB notification should also be prepared for any **aerial** application of restricted-use pesticides and any Rotenone applications.

### Notification of adjacent landowners

Notification of adjacent landowners must occur for all Rotenone projects.

## **Cooperative Projects**

### Policy

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. Each agency or discipline is responsible for direct payment of their portion of the contract. Pesticide use will be documented and recorded as required in Operational Order #59. ***The Area must submit the Pesticide Application Report prior to January 15 following the year of the application.***

### Cooperative Projects with Other DNR Divisions and Other Public Agencies

Projects originating from other Divisions of the DNR will be subject to the DNR Operational Order #59 Pesticide and Pest Control Guidelines of the land-administering discipline. Other public agencies are required to incorporate the FAW guidelines into cooperative projects. FAW personnel will provide assistance but not on-site supervision, and would jointly approve cooperative projects with other agencies. 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.

Leases and Cooperative Farming Agreements (CFA)

Leases and CFA's will be subject to the DNR Operational Order #59. FAW personnel will provide assistance to the lessee/cooperator but not on-site supervision for applications. Pesticide use will be documented and recorded as required in Operational Order #59. *The lessee/cooperator must submit the Pesticide Application Report prior to January 15 following the year of the application, or prior to expiration of contract, whichever comes first.*

**Administering DNR Applications by Contract and Agreement**

Pesticide applications on FAW administered lands or public waters by non-DNR persons or entities may be permitted via contract with a commercial applicator. The contracted treatment will have prior approval through the FAW Pesticide Use Proposal/Approval Form. The Purchased Service Contract with the applicator will include: the pesticide to be used, application method, cost, rate of application, and delivery of a FAW Pesticide Application Report, in addition to other contract language (effective date, completion date, etc) required. Operational Order #59 states that the vendor must submit the Application Report within 30 days of the date the pesticide was applied or prior to expiration of contract, whichever comes first.

**Non-Pesticide Pest Control Application Considerations**

Integrated Pest Management (IPM) considers and implements a combination of biological, mechanical, and chemical control methods, that will maximize effectiveness of control, minimize effects on non-target species and monitor the effectiveness of control practices over time. Cost effectiveness of treatments is also an important consideration. Non-pesticide and pesticide controls may be used in concert with, and as part of IPM for a particular pest problem. Evaluation of non-pesticide and combination controls will be a qualitative assessment similar to pesticide control evaluations. The process for proposal, approval and use of a non-pesticide pest control method (biological, cultural, mechanical) will be the same as for pesticide pest control including use of the FAW Pesticide Use Proposal/Approval Form where appropriate. All control methods need to be documented.

**Pesticide Application Considerations**

Application Methods

Pesticide applications can be made either by aircraft or by ground methods. Application by aircraft 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, and to avoid small potholes, wildlife islands, and similar sensitive areas.

Ground applications can either be contracted or done by FAW personnel. It is recommended that wherever possible, experienced contractors be used as they usually have the best equipment and expertise to complete the job.

### Labeled 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.

### Use of Certain Soil Mobile Pesticides

Soil active 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 active herbicides will be broadcast applied unless the above two criteria and any label restrictions are followed.

### Use of Piscicides

Lakes treated with a flowing outlet must be temporarily dammed until piscicide has detoxified or the outflow treated and detoxified as per label directions.

## **VI. OPERATIONS**

### **Weather Specifications**

#### 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 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 application of soil-active herbicides will be conducted when surface puddling or runoff is anticipated prior to incorporation.

#### Ground Broadcast Applications with Motorized Equipment

Liquid applications, using motorized equipment with boom or cluster nozzles, will meet the following restrictions:

- a. Wind.** For spray systems with booms and nozzles oriented towards the ground and located within 4 feet of the ground, constant wind speed at nozzle height will not exceed 10 mph ***and gusts will not exceed 15 mph.***

**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 evaporation may occur and pesticide effectiveness may be reduced.

**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 (soil-active herbicides) or the label indicates chemical will be rainfast in less than 4 hours.

**e. Inversions.** Inversion conditions may exist when wind speeds are less than 2 mph. Application Supervisor should exercise caution when wind speeds are less than 2 mph and if inversion conditions do occur, spraying should be terminated.

**f. Dew.** 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 and a delay in application until the dew lessens may be warranted.

### Spot Spraying & Granular Applications

There are no specific weather specifications for directed liquid treatments for spot applications 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.

### Aerial Broadcast of Liquid Pesticides

Aerial applications will meet ground weather restrictions except as follows:

**a. Wind.** Constant wind velocity cannot exceed 5 mph at the spray treatment site or at the heliport 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. Application 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. Turbulence.** When air turbulence, inversion conditions or morning fog occur, spray patterns can be adversely affected. The Application Supervisor under these conditions should exercise caution.

## **Aerial Operations**

### General Aerial Application Requirements

Flights over population centers should be avoided. A GPS traverse is required for all aerial 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 aircraft's navigation system, reconnaissance pre-spray over-flights, with Fish and Wildlife personnel accompanying the pilot, are seldom required. If such a flight is deemed necessary by the Application Supervisor on the site, it should take place shortly before spraying.

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

Well-located and maintained landing sites are necessary for efficient and safe aerial herbicide applications. Proper planning will minimize the potential for equipment damage or pesticide spills. See Division of Forestry Pesticide and Pest Control Guidelines for more detailed information on aerial applications.

#### Emergency Situations

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

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

#### **Structural or Facility Pests Control Procedures**

Structural or facility pest control should be consistent with IPM practices and does need a FAW Pest Control Proposal/Approval Form and a FAW Pesticide Application Report consistent with similar procedures for non-structural applications. This applies to contracted pesticide applications as well as applications by FAW staff. The Application Supervisor will initiate pest control at that facility or structure.

Pesticide use involving spot spraying of wasps, ants, flies and other insects, or trapping of mice for public safety does not require completion of a Pest Control Proposal/Approval Form or FAW Pesticide Application Report. These pesticides can be used as needed. The total amounts used of these products are to be included in the FAW Pesticide Application Summary.

#### **Storage Procedures**

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

#### **Pesticide Application Recordkeeping**

Any forms that are required Department-wide and not listed below are listed in Operational Order #59. The forms listed below can be found in **Appendix A** of this document and on the DNR intranet "forms" page.

#### FAW Pesticide Use Proposal/Approval Form (NA-00092-FAW)

All projects involving the use of any kind of pesticide should use this form for approval and for archiving pre-treatment information. A map should also be submitted with the Pesticide Use Approval Form. Program or routine pesticide treatment projects can be addressed on one form for a number of sites. Special or One- Time Application Projects each require a separate form. The Area Supervisor/Application Site Lead Worker will prepare the form. The Area Supervisor will review and approve the proposal form. Program, Special and One- Time Application Projects forms will be sent to the Region for review/approval. If needed, Special and One- Time Application Projects forms will be sent to the Central Office Discipline Pesticide Coordinator for review/approval.

Copies of these approved forms are kept in the Area where the pesticide treatment is made.

FAW Pesticide Application Report (NA-0081-FAW)

To be used during and after each 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. This form, or equivalent, documents each pesticide application and will be used to prepare the FAW Annual Pesticide Application Summary Form (below). Originals of these forms are kept in the Area where the pesticide treatment is made.

FAW Annual Pesticide Application Summary (NA-00080-FAW)

This form summarizes the Pesticide Application Report Form for the calendar year. Each Area office must submit this summary to the Region by January 1st of each year. Each Region must submit to the Discipline Pesticide Coordinator in the Central Office by February 1<sup>st</sup> of each year. This form will be archived by the Discipline Pesticide Coordinator in the Central Office.

Annual Pesticide Inventory (MR Form)

The Area/Application Supervisor in charge of the storage building or area where the products are stored must conduct an annual on-site inventory of pesticides. The Area/Application Supervisor completes the Pesticide Inventory for all pesticides stored on-site and submits the form to Regional Management Resources representative and retains a copy at the Area office.

**Post Treatment Evaluation and Monitoring**

Pesticide effectiveness will be checked in a timely manner after treatment. Survey intensity is up to the Area Supervisor, but must be sufficient so that the person conducting the survey can map any parts of the site where target species were not successfully controlled. The FAW Pesticide Application Report Form should include the total number of acres and sites treated.

Rotenone treatments will be monitored with netting to check the extent of the kill.

## **VII. APPENDIX**

### **Appendix A. FAW Pesticide Use Forms**

[http://intranet.dnr.state.mn.us/fish\\_wildlife/forms/index.html](http://intranet.dnr.state.mn.us/fish_wildlife/forms/index.html)

FAW Pesticide Use Proposal/Approval (NA-00092-FAW)

FAW Pesticide Application Report (NA 00081-FAW)

FAW Annual Pesticide Application Summary (NA 00080-FAW)

Annual Pesticide Inventory (MR Form)

Application and Permit to Apply Toxicants to Waters of the State (NA-01543-03)

Rehabilitation Proposal Worksheet (NA -01540-02)

Rotenone Calculation Spreadsheet

### **Appendix B. Minnesota Natural Heritage Information System (NHIS) Data**

**Request Form.** An electronic copy of the form is available at the DNR's web site –

[http://files.dnr.state.mn.us/eco/nhnrp/nhis\\_data\\_request.pdf](http://files.dnr.state.mn.us/eco/nhnrp/nhis_data_request.pdf) For Natural Heritage data

use training and access information contact the Regional Plant Ecologist.

### **Appendix C. Fisheries / Aquaculture Information Links**

**FDA/CVM Approved Drugs for Use in Aquaculture**

[www.fda.gov/cvm/drugsuseaqua.htm](http://www.fda.gov/cvm/drugsuseaqua.htm)

**Guide to Drug, Vaccine, and Pesticide Use in Aquaculture** (last updated April, 2007) that is a good reference. The publication provides current information on federally regulated drugs, vaccines, and pesticides that may be used in aquaculture production and in aquatic sites according to product label directions.

The link to this guide is: <http://aquanic.org/jsa/wgqaap/drugguide/drugguide.htm>

**Appendix D. Prohibited Use Pesticides on Certified State Forest/WMA Lands**  
**Forest Stewardship Council's highly hazardous pesticide list**

The DNR, and its cooperators and contractors, cannot use any of the following pesticides on the certified state forests and WMAs it manages; *all other pesticides can be used*. All of the DNR's certified lands lie within the following ECS Ecological Provinces: Laurentian Mixed Forest, the Eastern Broadleaf Forest, and the Tallgrass Aspen Parklands. Contact Forestry Division for more information – 651-259-5261.

Acrolein	Dicrotophos		Phosphamidon
Aldicarb	Dieldrin	Isoxaben	Propaquizafop
Aldrin	Dienochlor	Isoxathion	Propetamphos
Allyl alcohol	Difenacoum		Propyzamide
Alpha-cypermethrin	Difethialone	Lamba-cyhalothrin	
Aluminium phosphide	Diflubenzuron	Lead arsenate	Quintozene
Amitrole	Dimethoate		
Atrazine	Dinoterb	Mancozeb	Simazine
Azinphos-ethyl	Diphacinone	Mecarbam	Sodium arsenite
Asinphos-methyl	Diquat dibromide	Mercuric chloride	Sodium cyanide
Benomyl	Disulfoton	Mercuric oxide	Sodium fluoroacetate
Blasticidin-S	Diuron	Metam sodium	Sodium fluoroacetate, 1080
Brodifacoum	DNOC	Methamidophos	Strychnine
Bromadiolone	Edifenphos	Methidathion	Sulfluramid
Bromethalin	Endosulfan	Methiocarb	Sulfotep
Butocarboxim	Endrin	Methomyl	
Butoxycarboxim	EPN	Methoxychlor	Tebufenozide
Cadusafos	Epoxiconazole	Methylarsonic acid (monosodium methanearsenate, MSMA)	Tebupirimfos
Calcium arsenate	Esfenvalerate	Methylbromide	Tefluthrin
Calcium cyanide	Ethiofencarb	Mevinphos	Terbufos
Captafol	Ethion	Mirex	Terbumeton
Carbaryl	Ethoprophos	Monocrotophos	Terbutylazine
Carbofuran			Terbutryn
Carbosulfan	Famphur	Naled	Thallium sulfate
Chlordane	Fenamiphos	Nicotine	Thiodicarb
Chlorethoxyfos	Fenitrothion		Thiofanox
Chlorfenvinphos	Fipronil	Omethoate	Thiometon
Chlormephos	Flocoumafen	Oryzalin	Toxaphene (Camphchlor)
Chlorophacinone	Fluazifop-butyl	Oxamyl	Triadimenol
Chlorothalonil	Flucythrinate	Oxydemeton-methyl	Triazophos
Chlorpyrifos	Flufenoxuron	Oxydemeton-methyl, Metasystox	Trifluralin
Coumaphos	Fluoroacetamide	Oxyfluorfen	
Coumatetralyl	Formetanate		Vamidothion
Cyfluthrin	Furathiocarb	Paraquat	
Cypermethrin		Parathion	Warfarin
DDT	Gamma-HCH, lindane	Parathion-methyl	
Deltamethrin		Paris green	Zeta-cypermethrin
Demeton-S-methyl	Heptachlor	Pendimethalin	Zinc phosphide
Diazinon	Heptenophos	Pentachlorophenol	
Dicamba, dma salt	Hexachlorobenzene	Permethrin	2,4-D, 2-ethylhexyl ester
Dichlorvos	Hexazinone	Phenylmercury acetate	2-(2,4-DP), dma salt (= dichlorprop, dma salt)
Dicofol	Hydramethylnon	Phorate	2,4,5-T, 3-Chloro-1,2-propanediol

List created on June 14, 2007. Listed pesticides taken from "FSC Guidance Document, FSC Pesticides Policy: Guidance on Implementation, FSC-GUI-30-001 V2-0 EN, May 2007". FSC banned pesticides v1.doc Andrew Arends 1