

FOREST INVESTMENT PROGRAM

Forest Nutrient Management Standards



November 2024



Ministry of
Forests

OVERVIEW

This document contains the standards that must be followed for all Forest Nutrient Management activities funded under the Forest Investment Program (FIP). This document is in addition to the Forest Investment Program General Standards.

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1 Definitions

1.1 In this document, the following words shall have the following meanings.

“buffer zone” means an area established between an area to be fertilized and an area which must not be fertilized or have fertilizer enter it.

“contingency plan” means a plan prepared in accordance with Article 4 of this document, to be implemented in the event of a fertilizer spill, accident, or misapplication.

“designated fish stream” are fish streams that are classified under Forest Planning and Practices Regulations (FPPR), Part 4, Division 3, 47 (2).

“forest professional” means a Registered Professional Forester or a Registered Forest Technician.

“no treatment zone” means an area within which no fertilization is prescribed.

“water quality limits” means the limits set out in Forest Planning & Practices Regulation s.63.

1.2 **Terms not defined in this document are as defined in the Forest Investment Program General Standards.**

2 Personnel & Equipment

Aircraft pilots

- 2.1 Pilots for the fertilizer application must, in addition to holding valid commercial pilot's licenses and any required federal/provincial licenses and certificates, have demonstrated ability and experience in applying fertilizer in forest situations. No pilot may make an operational flight without direct supervision unless he or she has successfully applied fertilizer to a minimum of one thousand hectares of forest land under the supervision of experienced pilots.
- 2.2 If substitution of a pilot is required, the substitute must meet the ministry standards. The substitute pilot must carry out a reconnaissance flight of the work areas prior to the commencement of fertilizer application.
- 2.3 The project supervisor must not be the pilot for the operation.

Inspector's Qualifications

- 2.4 All work must be inspected by a person (the "Inspector") who is:
 - (a) A forest professional who will sign and professionally seal reports for the work;
 - (b) experienced and competent in conducting inspections of fertilizer operations;
 - (c) familiar with the treatment plans and work plans for the work areas; and
 - (d) not engaged in the direct conduct of the fertilizer operations.

Aircraft and Equipment

- 2.5 The aircraft and specialty equipment and services used in fertilizer application must have all necessary approvals and certificates in good standing and must be equipped and operated in accordance with the laws and regulations of Canada and the Province of British Columbia.
- 2.6 Aircraft carrying persons employed by or acting as agents of the province must have the appropriate approvals as determined by the aircraft's flight manual and certificate of airworthiness.

3 Fertilizer

Provision of Fertilizer

- 3.1 Types and quantities of fertilizer must be approved by FIP before application. All fertilizer will be purchased by FIP unless otherwise authorized.

Handling and Storage of Fertilizer

- 3.2 Equipment and supplies at the work area or loading site must be secured to prevent unauthorized access to the fertilizer, to protect against the elements and to maintain product

integrity.

- 3.3 Fertilizer must be loaded into the dispensing equipment only in locations where if fertilizer is spilled it will not enter a surface waterbody (meaning any above ground water such as a running ditch, stream, or lake). Loading must occur a minimum of 10 meters from any surface waterbody, except for road ditches that do not feed directly into a fish-bearing waterbody.
- 3.4 Tanks, buckets, and other dispensing equipment must not be washed in or near streams, rivers, wetlands, or lakes.

4 Pre-Operations Requirements

Work Plans

- 4.1 Where any of the following is not specified in a prescription for fertilization it must be specified in a work plan as defined in the FIP General Standards:
 - (a) by treatment unit
 - i the type and total amount of fertilizer to be applied,
 - ii the fertilizer application rate,
 - iii the application method,
 - iv the season or timing of application;
 - (b) a written fertilizer operations plan which must include
 - i the location of helicopter landings, airstrips, and loading sites,
 - ii a schedule of fertilizer application to the work areas,
 - iii aircraft ferrying routes between the staging areas and the work areas that minimize flights over major aquatic systems and to avoid human residences,
 - iv the location of buffer zones around watercourses, waterbodies, no treatment zones, or other specified areas to be avoided, sufficient to ensure fertilizer does not enter them,
 - v a water quality monitoring plan, if required by FIP, to the water resource of the work area,
 - vi The requirement, if any, to mark boundaries of the work areas or buffer zones,
 - vii radio frequencies to be used during operations,
 - viii the visual signal system to be used for emergencies (e.g., smoke bombs, vehicles, lights and flags),
 - ix the need for and methods of controlling public access,
 - x disposal procedures for fertilizer containers, bags and other waste material;
 - (c) a contingency plan in the event of fertilizer spill, accident or misapplication which must include, but is not limited to:
 - i a description of the types of spill or events requiring immediate action,
 - ii the names and telephone numbers of emergency contacts,
 - iii water quality monitoring to be instituted in the event of a spill or misapplication in or near a water body,
 - iv accident clean up procedures, and

- v disposal of spill materials.
- (d) other scheduling requirements and conditions as deemed necessary by FIP.

- 4.2 A work plan must:
- (a) Show no treatment zones where they are needed to provide protection as required under sections 57 and 59 of the Forest Planning and Practices Regulation (FPPR).
 - (b) comply with FPPR 63 where fertilization is to take place in a community watershed.
 - (c) provide for water quality sampling in accordance with the best practices of the day

Safety

- 4.3 FIP delivery partner is responsible for understanding their rights and responsibilities to ensure a safe and healthy workplace.
- 4.4 Prior to the commencement of fertilizer application, helicopter landings and/or airstrips must be confirmed as safe for use by the fertilizer application aircraft and support equipment. Minor improvements may be made before or after commencement of operations without having to obtain the approval of the district manager. For the purposes of this section, minor improvements are defined as cutting and removing brush and non-crop trees less than 5 meters in height occupying landings or old roadbeds on an area not exceeding one tenth of a hectare.
- 4.5 If there is a need to fall snags or other trees on a work area to meet safety or operational requirements, a plan must be submitted to the district manager and necessary authorizations must be acquired prior to commencing operations.

5 Fertilizer Operations

General Requirements

- 5.1 Despite any requirement that is specified on a per hectare basis, all fertilizing requirements must be met throughout the entire work area, so that fertilizer is as evenly applied as possible.
- 5.2 The following documents must be on site at all times:
- a. a copy of these Forest Nutrient Management Standards;
 - b. material safety data sheets of the fertilizers being applied; and
 - c. the work plan.
- 5.3 The equipment, including vehicles for hauling fertilizer, must not cause unacceptable site disturbance to a work area or road.
- 5.4 Ministry of Forests employees or agents must not be permitted in an aircraft that is applying fertilizer.

- 5.5 Fertilizer must not be applied to a no treatment zone, a buffer zone or outside a treatment unit.

Buffer Zones

- 5.6 A minimum 10 metre buffer zone should be retained on the following identified water bodies, unless larger buffers are outlined in a prescription:
- (a) Lakes
 - (b) Wetlands
 - (c) any designated fish stream including any stream that can be identified, by the application pilot, as open water that flows directly into a designated fish stream.
- 5.7 In community watersheds the following no treatment zones are required in conjunction with any buffers outlined in, and in the absence of, any direction in a treatment prescription:
- (a) Radius of 100 meters around of a licensed waterworks.
 - (b) 10 meters around a perennial stream that is observable from the air.
- 5.8 Suitable buffers should also be established for research trials and private land. Leave at least a 100 meter buffer strip around residences and a 100 meter buffer strip adjacent to lands used for agriculture. This can be altered with documented approval from the landowner.

Notification of Operations Start-up

- 5.9 The delivery partner must notify the district manager of its intended commencement of operations within a community watershed at least five workdays in advance.
- 5.10 Public notification of nutrient applications may be required when working in areas of significant public use such as where work overlaps high recreation values including sites and trails. Where necessary, information signs and notices must be posted along trails and sites, and information shared with user groups regarding work.

Roads

- 5.11 Comply with the applicable access standards produced by FIP.
- 5.12 All regulatory and legislative requirements for doing works to roads including brushing, moving of equipment, minor road improvements or post treatment road deactivation work must be followed and appropriately permitted.
- 5.13 When fertilizing near a road, all necessary precautions must be taken to ensure the safety of road users. Where necessary, information signs must be posted along roads and traffic control persons supplied to coordinate traffic.

Requirement to Stop Operations

- 5.14 Fertilizer application operations must be stopped when:
- (a) there is inadequate daylight for safe application;

- (b) weather conditions arise which could adversely affect normal application patterns, safety of application, or treatment effectiveness;
- (c) a leak and/or spill of chemicals occurs (such as fertilizers, oils and fuel); or
- (d) there is a breakdown in ground-based communications;

until such time as the condition causing the stoppage changes or is rectified.

Leakage, Spills and Accidents

- 5.15 In the event of a fertilizer spill or misapplication to non-target areas (e.g. water bodies), operations must be stopped, and the contingency plan immediately implemented, including the duty to report.
- 5.16 Leaks and/or spills of chemicals (such as fertilizers, oils and fuel) must be cleaned up and disposed of in accordance with provincial laws and regulations prior to the resumption of fertilizer application.
- 5.17 Fertilizer spilled at the loading or worksite in the normal course of operations and not considered an emergency under the contingency plan must be cleaned up the same day.

Site Clean-up & Repair

- 5.18 Upon completion of fertilizer operations:
 - (a) all unused fertilizer must be removed from publicly managed land;
 - (b) fertilizer containers or bags and any other waste material, including flagging must be removed from provincial land and disposed of in accordance with the work plan;
 - (c) any damage to a work area or roads must be repaired, and returned to their prior state; and
 - (d) any remaining spilled fertilizer must be removed.

6 Inspection System and Payment Calculation

Fertilization Quality Inspection

- 6.1 The inspector must inspect the work daily in accordance with this section in a timely manner to ensure all work is performed to the FIP standards.
- 6.2 The inspector shall:
 - (a) visually check no treatment zones and water bodies for the presence of fertilizer, and
 - (b) undertake such checks and observations as necessary to be able to declare an area satisfactorily treated as described in the following section.

Determination of Satisfactory Treatment

6.3 Quality:

(a) Application Quality (AQ), Prescribed Rate (PR), Actual Applied Rate (AR).

$$AQ\% = 100 \times \frac{PR - |PR - AR|}{PR}$$

(b) Operational monitoring confirms through field and GPS data assessments that:

- i the fertilizer application system was properly calibrated,
- ii the required swath widths and volume delivery per hectare were achieved,
- iii compliance with the application procedures,
- iv water quality monitoring procedures carried out during application were appropriate to the stream and water resources of the work areas; and

(c) where a plan for water quality monitoring is implemented, water quality limits must not be exceeded for a period of up to three weeks following fertilization.

Payment

6.4 Recommended payment structure or as detailed in the signed contract.

(a) Full payment:

- i Where inspections indicate fertilizer application quality in a work area is at least 92.6%, the province may pay the full amount.
- ii In no case may the province pay more than 100% of the full payment.

(b) Payment reduction:

For low quality application where inspection indicates fertilizer Application Quality % (AQ%) in a work area is equal to or greater than 70%, but less than 92.6%, the Province may reduce the full payment by multiplying the full payment by the AQ% using the following formula:

$$\text{Payment \%} = (AQ\% \times 1.08) - \frac{((100 - (AQ\% \times 1.08))^2)}{8}$$

(c) No payment:

If the performance quality on all or a portion of a work area is less than 70% and, in the opinion of the province, cannot be improved to at least this level by reworking, the province may make no payment for the unsatisfactorily treated area. No payment for applications outside the work area.

Wasted Fertilizer

6.5 Payment may be reduced in an amount equal to the cost of fertilizer applied outside the prescribed treatment area, or as detailed in the signed contract.

6.6 In the event of a spill or loss or waste of fertilizer, payment may be reduced in an amount equal to the cost of the fertilizer spilled or lost, or as detailed in the signed contract.

7 Notification

Requirement to Notify the District Manager

- 7.1 A delivery partner must immediately notify the district manager, the administrator (if a recipient agreement holder), and FIP whenever:
 - (a) fertilizer has been applied, has entered, or is likely to enter a water body, a no treatment zone, or an area outside of a work area;
 - (b) fertilizer is spilled, other than minor spills in the normal course of operations and which are not considered under the contingency plan as requiring immediate action;
 - (c) a water quality limit has been exceeded; or
 - (d) an accident involving aircraft and equipment occurs.
- 7.2 Any notification under the previous section must be followed by written notice within one workday.
- 7.3 Where an aircraft is involved in an accident, delivery partner must also notify Transport Canada, contact numbers should be incorporated into the contingency plan.
- 7.4 Reporting must also be compliant with the Spill Reporting Regulation.