PURPOSE

Spruce Beetle (SBB) ground based surveys are conducted to gather and report information which will assist forest managers in planning and treatment decisions related to the SBB activity in the area and to aid in the overall management of SBB activity in the Region.

Ground detection and assessment of damage by Spruce Beetle could will utilize a STAR PROBE ground survey procedure for sites with identified points of less than 10 infested trees, (as determined from aerial surveys). Surveys will be focused on identified GPS locations. In general, ground surveys collect the following information: (a) Verify presence and severity of Spruce Beetle infestations, (b) Determine the boundaries and size (ha) of infestations, (c) Assess basic stand characteristics to estimate merchantability, susceptibility and risk of the remaining stand, (d) Assess access, operability and integrated resource management issues, (e) Assess the necessity to obtain further information or take other action, (f) Provide treatment recommendations, which incorporate all the above issues.

SPRUCE BEETLE STAR PROBE GROUND SURVEY PROCEDURES

GENERAL

(a) The Contractor shall perform surveys for each area listed in the Schedule B only during those periods where field conditions are suitable for the type of survey work.

(b) The Contractor must submit a Work Plan Schedule, which outlines how the specific areas listed in the contract will be completed within the term of the contract. The Company will provide the initial outline for the contractors Work Plan Schedule and reserves the right to request changes to this Work Plan Schedule. Once the contract has been initiated, the Company will co-ordinate a continued work schedule. The Work Plan Schedule must incorporate planned submission of completed work in "batches" to allow for Quality Assurance assessment to be conducted in a timely manner.

SAMPLING SPECIFICATIONS FOR STAR PROBE GROUND SURVEYS

GENERAL

(a) Digital information identifying the location of GPS points identified from the detailed aerial survey will be provided. A GPS point is associated with a "fading" and/or a red tree.

(b) The probe line shall run from a known point (POC) to the GPS infestation. Any new infestations containing current attack trees found along the line shall be documented as a new infestation on separate field cards, mapped and added to the database. New Infestations: all contract requirements apply to the new infests including GPS coordinates, mapping, and database updates

(c) Once the GPS survey point is located, establish a plot centre at the epicentre of the infested area (wherever possible). Select an uninfested tree as the plot centre. Record the GPS location of the plot centre as well as the positional accuracy. A minimum of four lines in the cardinal directions (N, S, E, W) will be established. Beginning at plot centre a recce line straight out to the N from plot centre for a distance of 100m will be established. All infested trees within sight will be assessed and marked

digitally on a handheld GPS or tablet. Potentially infested trees within sight must be assessed by a qualified spruce beetle surveyor. If no live attack (codes 1-4) are detected, the line terminates at 100m and a new line beginning at plot centre, in one of the remaining cardinal directions is established. If there is no live attack detected after completion of the four lines, the surveyors move to another point and establish a new star probe. If there is live attack, the line continues 100m past the last live attack tree. (i.e. if the last live attack was found at the 77m mark, the total line length is 177m) the maximum line length will be 200m. Any live attack noticed during the survey past this point is noted. In addition, lines in the inter-cardinal directions within that and the adjacent quadrant are established utilizing the same convention as mentioned above. Should a star probe exceed 25 infested (live) trees, either on the walk to or within the probe itself the surveyors will begin a new survey utilizing the hybrid method.

All infested trees discovered during the probe, must be marked with paint or ribbon, up to the maximum of 25 trees.

(d) All new infestations containing current attack trees found along the access line shall be GPS'd, documented separately, mapped, and added to the infestation summary and database.