# FOREST RESEARCH REPORT

Nova Scotia Department of Natural Resources

# Pre-Treatment Assessment (PTA) Methods and Tools

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## Background

In 2011, the government of Nova Scotia announced a natural resources strategy after comprehensive citizen, stakeholder and technical expert engagement (NSDNR, 2011).   This strategy calls for "Apply(ing) the Code of Forest Practice (CFP) on publicly and privately owned woodlands". Applying the CFP is one of the actions necessary to move towards an ecosystems approach to forest management (NSDNR, 2012).

The **Code of Forest Practice** consists of three elements:

• The Framework Document that outlines the general principles of the code,

• Guidebooks that lists more detailed code guidelines, and

• Technical Manuals that provide tools for implementing the guidelines.

Some examples of technical manuals are:

• Forest Ecosystem Classification (FEC) for Nova Scotia (Neily et al., 2013)

• Nova Scotia's Forest Management Guide (2018)

**Contents**

**February, 2018**
**DRAFT**

# Pre-Treatment Assessments

One of the key guidelines of the Code of Forest Practice (CFP) concerns Pre-treatment Assessments and states:

> *1.2.2 The provincial FEC, an extension of the ELC, will be the stand level operational guide for applying ecosystem-based management.*
> *1.2.3 Areas planned for silviculture treatments, including timber harvest, will have a pre treatment assessment (PTA) prepared that describes site, and forest conditions.*
> > *1.2.3.1 The PTA will serve as a basis for stand level management plans.*
> > *1.2.3.2 Stand level management plans will be compatible with the eco district plan*

As is stated in these guidelines, a PTA that includes FEC, site and forest condition information is a required element in implementing ecosystem-based management (EBM). Before a harvest operation is carried out, stand-level details on the site such as vegetation type, soils type, ecosite and windthrow hazard along with stand characteristics such as basal area, species, tree diameter, tree height, quality and existing regeneration must be collected. Information on special wildlife and geological features is also required. This information will enable prescribing appropriate treatments, specific to stand attributes and avoid a "one-size fits all" system of forest management.

To help meet the objectives of CFP Guideline 1.2.3, a system was developed to identify the required elements of pre-treatment assessments (PTA). This PTA system was first published as part of the Tolerant Management Guide (McGrath, 2007) to gather the information necessary to prescribe appropriate harvest treatments for specific ecosystems and stand conditions. This report introduces the tools to collected PTA and report PTA data for use in harvesting plans or in making claims for silviculture funding.

# Methods

PTA data is required for planning harvests on crown land or to obtain funding for partial harvesting treatments under the private land program administered by the Association for Sustainable Forestry (ASF). Specific requirements for these programs can be found at:

Nova Scotia Crown Land – Standard Operating Procedures for Development and Approval of Crown Land Harvesting and Silviculture Plans (NSDNR, June 20, 2016)

ASF program - http://www.asforestry.com/

In general, the following procedures are followed:

- Stand, site and ecosystems data required (PTA data) to determine prescriptions in the Nova Scotia Forest Management Guide is collected.
  - o Nova Scotia's Forest Management Guides (FMG)
    https://novascotia.ca/natr/forestry/programs/timberman/pta.asp
- The PTA detailed and summarized data is provided to approval agency along with prescriptions
- The PTA data and prescription is subject to review and audit as necessary by approving agency

The data needed to support a distinct prescription for as small as a two-hectare portion of a harvest block will be collected. At most this will require one sample point every hectare and at minimum 1 point every 2 hectares. Small stands will require a minimum of 3 points collected. The entire block must be walked to identify conditions within the block that require distinct treatments. The measurement locations (points) must be flagged and coordinates recorded using GPS. The PTA point locations and block/section boundaries are to be submitted as GIS shape files.

## Cruising Instructions

- Take between 1 and 2 prism points every 2 hectares with a minimum of 3 points for small stands. Enough data must be collected to enable prescribing a unique prescription on a 2-hectare portion of a block.
- Evenly distribute these points throughout the stand.
- Use a BAF 2 prism.
- Flag location of PTA sample points and GPS locate position
- Tally trees into 5 cm Dbh classes by Species, AGS/UGS and product class (where the PTA program is being used to submit volume estimates). Where more refined estimates of volume and prescriptions are desired tallying in 2 cm DBH classes may be preferred.
- In the area surrounding the sample point, estimate the regeneration stocking to 2.4 m spacing to established (greater than 30 cm tall and less than 10 cm Dbh) and acceptable

(trees flat topped, stunted or damaged to the point where they will not produce merchantable stems after release are considered not acceptable). Regeneration must be estimated for:
- o All commercial species combined (red pine, jack pine, white pine, balsam fir, red spruce, white spruce, black spruce eastern hemlock, sugar maple, red maple, yellow birch, white birch, white ash, red oak, aspen, eastern larch)
- o Long-Lived Intermediate to Tolerant (LIT) Species combined (red spruce, eastern hemlock, white pine, sugar maple, yellow birch, white ash, red oak, white spruce (non old-field or coastal sites, red maple (Tolerant Hardwood sites)
- Determine the ecosystem characteristics represented by the sampling point including vegetation type and soil type. Soil augers or soil pits do not need to be dug at every point. A soil auger sample or soil pit must be dug to verify soil type wherever stand conditions would indicate a change (e.g. soil moisture, rockiness etc). Soil type must be recorded at every sample point to verify whether it has changed or not and whether the soils have been examined using an auger or by digging a pit.
- Determine wind exposure represented by sample point from the wind exposure map https://novascotia.ca/natr/forestry/programs/timberman/pta.asp. Verify rating.
- Determine height at each sample point
- o At least one tree height representing the tree of average basal area.
- o In addition, if volume estimates are required, take at least one height, from the tree of average basal area (average co-dominant tree) for each product class at each point (e.g. pulpwood, studwood, sawlog).
- After the entire stand has been cruised and PTA data collected, an estimate of the following items must be recorded.
- o Stand maturity
- o Patchiness of stand
- o Willingness to risk blowdown
- o Previously Treated?
- o In some situations:
- ▪ Species of regeneration desired (TH)
- ▪ AGS of leave patches (TH)
- ▪ Beech regeneration stocking (TH)
- ▪ Restoration desired (IH)
- ▪ Stand age over 50 years old? (SP)
- ▪ Seed source stocking of red pine, red oak and white pine (SP)

**Summary Information Required for Prescription**

The following information will be calculated and averaged for each section.  This information is used in the forest management guides to determine recommended prescriptions.  These data are calculated and presented in standard format by the PTA program.  The PTA program summary includes the prescription obtained from the NSDNR Forest Management Guides.

- Block & Section Id
- Location
- Number of sample plots
- Area of stand
- FEC vegetation type [Forest Ecosystem Classification | novascotia.ca](Forest Ecosystem Classification | novascotia.ca)
- Future FEC vegetation type
- FEC soil http://www.gov.ns.ca/natr/library/forestry/reports/Soil-Types.pdf
- Wind exposure, http://www.gov.ns.ca/natr/library/forestry/reports/Soil-Types.pdf
- Windthrow hazard http://www.gov.ns.ca/natr/library/forestry/reports/REPORT91.pdf
- Whether the stand was previously treated (PCT, Plantation, CT, Selection Harvest)
- Growing Stock - Total Basal Area ($\geq$ 10cm Dbh)
- Basal Area of **A**cceptable **G**rowing **S**tock  (all trees)
  http://www.gov.ns.ca/natr/library/forestry/reports/REPORT91.pdf
- Species composition by basal area in %
- % Long-lived Tolerant (LT) Species by basal area (rS, eH, sM)
- % Long-lived Intermediate to Tolerant (LIT) Species by basal area (rS, eH, wP, sM, yB, wA, rO, wS (non Old Field and Coastal sites, rM (Tolerant Hardwood sites)
- Basal Area by Diameter class (Dbh).  < 10 cm Dbh, 10-20 cm Dbh, $\geq$25 cm Dbh and $\geq$35 cm Dbh. Usually collected in 5 cm Dbh classes.
- Regeneration stocking at 2.4 m spacing for acceptable and established trees of all commercial species (rS, eH, wP, bF, eL, rP, jP, NS, bS, wS sM, yB, wA, rO, lA, tA, rM, wB) at least 0.3m tall and less than 10cm Dbh.
- Regeneration stocking at 2.4 m spacing for acceptable and established trees of Long-lived Intermediate to Tolerant (LIT) species (rS, eH, wP, sM, yB, wA, rO, wS (non Old Field and Coastal sites)) at least 0.3m tall and less than 10 cm Dbh.
- Maturity (Immature, Mature, Overmature)
- Special Wildlife/Biological features
- Harvest/Silviculture Prescription
- Prescription details

# Tools

## PTA program

To help in the efficient collection, management, compilation and submission of required PTA data a software program called PTA has been developed.  The PTA program allows required information to be submitted in standard formats.  It also allows for easy sharing of PTA information between various organizations using common tools and terms.  This program makes all compilations necessary and produces standard tables for Crown Harvest plan submissions.

## Overview of PTA6 Program Capabilities
- Runs on any Windows® XP, 7, 8 or 10 computer or tablet with a minimum 5.6 Inch screen size with 1024x600 resolution.
- Provides template for entering required PTA data
- Provides compilations necessary for inclusion in crown harvest plans in standard format
- Includes File Management Utilities to organize data
- Includes ability to organize plot data into blocks and sections
- Determines recommended prescription per the Nova Scotia Forest Management Guides
- Compiles volumes by product using Honers Volume tables with the ability to tailor wood specifications
- Ability to read PTA data collected with previous versions of the PTA program by using the Pta4to5 utility
- Ability to read PTA data collected with version 5.  Automatically translated when read by PTA vs 6

The PTA program can be found and downloaded at no cost from the Nova Scotia Provincial web site at the following link: http://novascotia.ca/natr/forestry/programs/timberman/pta.asp.
Installation instructions are also found on this web site.

### Tally Sheets

For those without access to field data collectors, PTA data can be collected on tally sheets (provided in Appendix II).  The data collected on the tally sheets can be entered into any Windows office computer with the PTA program installed.  Substantial time will be saved by eliminating the need for manual compilation and production of standard submissions.

In Appendix I a case study shows an example of PTA data collected and the resultant prescription and summary.

# References

**NSDNR**.  August, 2011, The Path We Share, A Natural Resources Strategy for Nova Scotia 2011-2020. Report DNR 2011-01.  79 pp.  http://novascotia.ca/natr/strategy/

**NSDNR**.  August 2012.  Nova Scotia's Code of Forest Practice, A Framework for the Implementation of Sustainable Forest Management, Guidelines for Crown Land. Report FOR 2012-3.  33 pp. http://www.gov.ns.ca/natr/forestry/reports/Code-of-Forest-Practice.pdf

**Neily, P., K. Keys, E. Quigley, S. Basquill and B. Stewart.**  2013.  Forest Ecosystems Classification for Nova Scotia (2010).  Renewable Resources Branch, Nova Scotia Dept. of Natural Resources.  Report FOR 2013-1.  452 pp.
Part I: Vegetation Types: http://novascotia.ca/natr/forestry/veg-types/
Part II: Soil Types: http://www.gov.ns.ca/natr/library/forestry/reports/Soil-Types.pdf
Part III: Ecosites: http://www.gov.ns.ca/natr/library/forestry/reports/Ecosites.pdf

**McGrath, T**.  2018.  Nova Scotia's Forest Management Guides.  Forest Research Report No. 100.  Timber Management Planning Section, Nova Scotia Dept. of Natural Resources, Truro Nova Scotia.  Report FOR 2018-1.  158 pp.
https://novascotia.ca/natr/forestry/programs/timberman/pta.asp

**NSDNR.**  1998.  Forestry Field Handbook.  Forest Research Section, Nova Scotia Dept. of Natural Resources, Truro, Nova Scotia.  43 pp. Forestry Field Handbook | novascotia.ca

**NSDNR**. Pre-Treatment Assessments.  Timber Management | novascotia.ca.

# Appendix I.

# Pre-Treatment Assessment (PTA) Case Study

Pre Treatment Tree Assessment Tally Sheet    Date:_**June 25, 2008**__ Prism Factor:_**2**__ **********_**SAMPLE**_**********

Loc:_**Milton**____Co:__**Queens**_____ BL:__**1**___ST:__**1**___ # Plots:___6____ Cruiser:___**TM**_____ Page:_1__ of _1___

| Sp | RS | | | | | | EH | | | | | | WP | | | | | | RM | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TC | UU | AU | UP | AP | US1 | AS1 | UU | AU | UP | AP | US1 | AS1 | UU | AU | UP | AP | US1 | AS1 | UU | AU | UP | AP | US2 | AS2 | US3 | AS3 |
| Dbh | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | 1 | | | | | |
| 10 | | | 1 | | | | | | 3 | | | 1 | | | | | | | | | | | | | | |
| 15 | | | | | 3 | | | | 2 | | | | | | | | 2 | 1 | | | 1 | | | 1 | | |
| 20 | | | | | 3 | 4 | | | | | 1 | | | | | | 1 | | | | | | | 1 | | |
| 25 | | | | | | 6 | | | | | 1 | 8 | | | | | 2 | | | | 1 | | | | | |
| 30 | | | | | | 2 | | | | | 2 | 11 | | | | | | 9 | | | | | | | | |
| 35 | | | | | 1 | 1 | | | | | 2 | 6 | | | | | | 10 | | | | | | | | |
| 40 | | | | | | | | | | | 1 | 10 | | | | | | 12 | | | | | | | | |
| 45 | | | | | | | | | | | 3 | 3 | | | | | 1 | 6 | | | | | | | | |
| 50 | | | | | | | | | | | 2 | 5 | | | | | | 6 | | | | | | | | |
| 55 | | | | | | | | | | | | | | | | | | 1 | | | | | | | | |
| 70 | | | | | | | | | | | 2 | | | | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | 1 | | | | | | | | | | | | | | |
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Pre-Treatment Site Assessment Tally Sheet.  Loc:____Milton_____ Co:___Queens_____Block:_QU0800012_____Section:__A___

| Plot | ST | VT | EX | BD | MAT | PT | WET | TF | WT | WF | Patch | Regeneration | Heights/age/notes |
|------|-----|------|-----|-----|------|-----|------|-----|------|------|--------|-------------------|--------------------|
| 1 | 2 | SH3 | M | 2 | M | N | _ | _ | _ | _ | U | 50% (all) 5% (LL) | |
| 2 | 2 | SH3 | M | 0 | M | N | _ | _ | – | – | M | 50% (all) 50% (LL) | 1 |
| 3 | 3 | SH1 | M | 0 | M | N | _ | _ | – | – | U | 0 % | 2 |
| 4 | 2 | SH3 | M | 1 | M | N | _ | _ | – | – | U | 80% (all) 80% (LL) | |
| 5 | 2 | SH3 | M | 0 | M | N | _ | _ | – | – | U | 10% (all) 10% (LL) | |
| 6 | 2 | SH3 | M | 0 | M | N | _ | _ | – | – | U | 0% | |
| | | | | | | | | | | | | | |
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Comments: *1: on Knoll 2: In Depression*

## Sample Cruise Summary & Prescription

Based on the sample cruise, the stand characteristics are as follows:

Vegetation Type……………………………..<u>SH3</u> – Red spruce-Hemlock/Wild lily-of the-valley (50%)
Long Lived Species…………………………<u>**97 %**</u> (Eastern Hemlock=45%, White Pine = 36%, Red Spruce = 15%)
Tolerant Species……………………………..<u>**61%**</u> (Eastern Hemlock=45%, Red Spruce = 15%)
Total Growing Stock (≥ 10cm Dbh)………..<u>**48 m²/ha**</u>
Sawlog Stock (≥ 25 cm Dbh)……………......<u>**38 m²/ha**</u>
Acceptable Growing Stock (all trees)'''''….<u>**37 m²/ha**</u>
Windthrow Hazard…………………………<u>**Low**</u> (Moderate Exposure, Soil Type = ST2, Fresh, Medium to Coarse-Textured)
Uniform Distribution………………………..<u>**83%**</u>

**Recommended Stand Prescription per Tolerant Softwood and Mixedwood Guide based on cruise summary above:**

***Individual Tree Selection***

# Figure 1.  Sample output of PTA Computer Program.

Harvest Plan Summary                                                                 Date:  February 2, 2018

| Block ID | Section | Location | Licensee | Ref ID | County | Coll. Date | # Plots | Area (ha) | Current VT | % | Future VT | Soil Type ST | % | Exposure EX | % | Windthrow Hazard VH | % | Prev Treated? | GS m2/ha | AGS m2/ha | LT % | LIT % | Species Composition % | BA by Dbh Size Class (cm) <10 | 10-20 | >=25 | >=35 | Est/Acc Regen % All Comm | LIT | Maturity | Wildlife / Geology | Prescription FMG | Use | Notes | Sp/Bf Logs | Pulp | Pine Logs | Pulp | Other SW Logs | Pulp | HW Logs | Pulp | Road Const (m) | SMP | Private Land? | Sensitiv Feature |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AP068019 | A | dalhousie crossing | | | AP | 2/28/2016 | 18 | 30.1 | SH5 | 33 | | ST2-S | 44 | MS | 94 | L | 100 | N | 31.7 | 12.1 | 44.2 | 65.9 | 36rS12bS1fwP10rO9rM8eH7bF5 | 0 | 19.2 | 12.4 | 4.9 | 98.3 | 0 | Mature | O | OR | OT | clearcut | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| AP068019 | B | dalhousie crossing | | | AP | 2/28/2016 | 13 | 27.2 | SH2 | 38 | | ST2-G | 77 | MS | 46 | L | 92 | N | 49.5 | 21.1 | 60 | 86.1 | 36eH24rS20wP7rM5rO2tA2wB | 0 | 26.6 | 22.9 | 11.1 | 100 | 0 | Mature | O | IS | | i agree w | 466 | 109 | 562 | 67.4 | 624 | 267 | 0 | 273 | 0 | | | |
| AP068019 | C | dalhousie crossing | | | AP | 2/28/2016 | 1 | 1.2 | SP9 | 100 | | ST2-S | 100 | S | 100 | L | 100 | N | 40 | 18 | 15 | 85 | 60wP15rS10rO10tA5rM | 0 | 14 | 26 | 18 | 100 | 0 | Mature | | CT | OT | small se | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| AP068019 | D | dalhousie crossing | | | AP | 2/28/2016 | 3 | 4.3 | SP4a | 100 | | ST2-S | 100 | S | 100 | L | 100 | N | 18.7 | 4.7 | 0 | 28.3 | 57bS29wP1fM4bF | 0 | 16.7 | 2 | 0.7 | 86.7 | 0 | Mature | O | OR | ST | area is re | 33.8 | 71.7 | 60.5 | 11.4 | 0 | 0 | 0 | 14.6 | 0 | | | |
| AP068019 | E | dalhousie crossing | | | AP | 2/28/2016 | 11 | 21.4 | SP9 | 45 | | ST2-S | 45 | MS | 100 | L | 91 | N | 30.9 | 10.4 | 26.5 | 79.9 | 35wP26rS19rO10bS5bF3rM1wB | 0 | 18.5 | 12.4 | 6.9 | 96.4 | 0 | Mature | O | OR | OT | seedtree | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| AP068019 | F | dalhousie crossing | | | AP | 2/28/2016 | 3 | 6.6 | SP4a | 67 | | ST2-S | 67 | S | 67 | L | 100 | N | 24 | 4.7 | 0 | 36.3 | 61bS33wP3bF3rO | 0 | 17.3 | 6.7 | 2 | 80 | 0 | Mature | O | OR | ST | area is re | 45 | 165 | 188 | 10.5 | 0 | 0 | 0 | 11.6 | 0 | | | |
| AP068019 | G | dalhousie crossing | | | AP | 2/28/2016 | 2 | 2.3 | SH3 | 50 | | ST2-S | 50 | M | 50 | M | 50 | N | 23 | 3 | 65.2 | 69.6 | 48rS26bF17eH4rM4wS | 0 | 7 | 16 | 11 | 100 | 0 | Mature | | OR | | | 144 | 37.6 | 0 | 0 | 39.3 | 9.09 | 0 | 8.57 | 0 | | | |
| AP068019 | H | dalhousie crossing | | | AP | 2/28/2016 | 15 | 29.9 | MW4 | 73 | | ST2-S | 60 | S | 80 | L | 93 | N | 24.1 | 2.3 | 2.9 | 13.3 | 40bF28rM13bS7wP3tA3rS2rO2 | 0 | 18.7 | 5.5 | 2.1 | 94 | 0 | Mature | O | OP | OT | clearcut | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| AP068019 | I | dalhousie crossing | | | AP | 2/28/2016 | 12 | 20.8 | MW4 | 50 | | ST2-S | 58 | S | 75 | L | 92 | N | 23.3 | 1.3 | 5.6 | 15.9 | 31bF29rM19bS7wP6rS4tA3rOw | 0 | 18.2 | 5.2 | 2 | 93.3 | 0 | Mature | O,ST | OP | OT | clearcut | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |

**Codes:**

**Exposure:**
E = Exposed
ME = Moderately Exposed
M = Moderate
MS = Moderately Sheltered
S = Sheltered

**Windthrow Hazard:**
L = Low
M = Moderate
H = High

**Maturity:**
Imm=Immature
Mat=Mature
Ovr=Overmature

**Wildlife/Geology:** special wildlife and geological features by Category (specify location)
SP = Seepage
S = Springs
ST = Streams
V = Vernal Pools
C = Caves
K = Karst
O = Rock Outcrop/Boulder fields
R = Ravine

CT = Cavity Trees (trees > 20 cm Dbh with existing cavity of size suitable for nesting)
M = Mast (oak, beech or witch hazel with mast)
N = Nests (raptors, heron colonies)
D = Deer Wintering Areas
W = Wildlife Concentrations
U = Unique Features (Specify in comments).
SR = Species at Risk/Concern (http://www.gov.ns.ca/natr/wildlife/biodiversity/species-recovery.asp)

**SMP:**
AM = American Martin
BEN = Bald Eagle Nest
BFL = Boreal Felt Lichen

CL = Canada Lynx
HC = Heron Colonies
MM = Mainland Moose

DVA = Deer Wintering Areas
WT = Wood Turtles

**Sensitive Features:**
(Within or adjacent to the Block)
B = Boundary Lines
C = Camps/Cabins/Dwellings
H = Heritage/Cultural Sites
O = Old Forest Features
P = Power Lines
R = Research Trials/PSP
S = Sensitive Species Habitat
T = Trails, Portages
W = Watercourse

**Prescription:**
CR = Crop Tree Release
CT = Commercial Thinning
GS = Group Selection
HB = Forestry Field HandBook
IS = Individual Tree Selection
LG = Let It Grow
OP = Overstory Removal & Plant
OR = Overstory Removal
OT = Other (use description)
OV = Overstory Removal & Weed
PC = Precommercial Thinning
SA = Salvage
SH = Shelterwood
. SP = Patch Shelterwood
. SS = Strip Shelterwood
. SU = Uniform Shelterwood
ST = Seed Tree

**Species:**
AE = American Elm
AHw = Any Hardwood
Ald = Alder
ASw = Any Softwood
bA = Black Ash
bCh = Black Cherry
Be = Beech
bF = Balsam Fir
bP = Balsam Poplar
bS = Black Spruce
cCh = Choke Cherry
eC = Eastern White Cedar
eH = Eastern Hemlock
EJL = European X Japanese Larch
eL = Eastern Larch/Tamarck

EuL = European Larch
gB = Grey Birch
hlB = Heart-leaf Birch
Iw = Ironwood
JEL = Japanese X European Larch
JL = Japanese Larch
jP = Jack Pine
lA = Largetoothed Aspen
mtA = Mountain Ash
mtM = Mountain Maple
nS = Norway Spruce
pCh = Pin Cherry
rM = Red Maple
rO = Red Oak
rP = Red Pine

rS = Red Spruce
Ser = Service Berry
SkS = Stika Spruce
sM = Sugar Maple
SP = Scotch Pine
stM = Striped Maple
tA = Trembling Aspen
wA = White Ash
wB = White Birch
wH = Witch Hazel
Wil = Willow
wP = White Pine
wS = White Spruce
yB = Yellow Birch

**Descriptions:**
**VT:** FEC vegetation type          **ST:** FEC soil type          **Treat?:** Previously treated (Plantation, PCT, CT)          **GS:** Growing Stock (trees ≥ 10 cm Dbh class)          **AGS:** Acceptable Growing Stock (all trees)          **Tol:** % tolerant species (RS,SM,EH)          **LL:** % Long Lived Species (RS,SM,EH,WP,YB,WA,RO)          **Species:** Species by % BA          **DBH Size Class:** Basal area by diameter class in cm
**Est/Acc Regen:** Established/ Acceptable regeneration stocking at 2.4 m spacing, > 0.3 m tall and < 10 cm Dbh class for (i) all commercial and (ii) long-lived (LL) species          **Est. Volume Removed (tne):** Estimated volume to be removed in tonnes by logs and pulp, Sp/Bf= Spruce and Fir, Pine= White and Red Pine; Jack Pine in "other SW", SW=Softwood, HW=Hardwood
**Road Const:** New road construction or significant road upgrade required. Indicate metres and include shapefile of proposed activity if road required          **Private Land:** Permission Required to Cross Private Land?

# Appendix II

## Blank Tally Sheets – Definitions Follow Tally Sheets

| Pre-Treatment Tree Assessment Tally Sheet   Date:_____   Prism Factor:_____ | | | | | | | | | | | | | | | | | | | | | | | | | Page:___ of ____ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Loc:_____Co:_____ BL:_____ST:_____ # Plots:_____Cruiser:_____ | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sp | | | | | | | | | | | | | | | | | | | | | | | | | Sp |
| TC | | | | | | | | | | | | | | | | | | | | | | | | | TC |
| Dbh | | | | | | | | | | | | | | | | | | | | | | | | | Dbh |
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# Pre-Treatment Tree Assessment Tally Sheet

**Sp=** Species, **Dbh=**Diameter (at breast height) classes

**TC**=Tree Codes**:** Depending on the information required from the PTA, a one letter Tree Code may be sufficient (U=UGS or A=AGS). When product information is desired, the second letter code can be used to calculate volume by product.

**Softwoods:**

**1st letter U or A:**

 **U**- Unacceptable Growing Stock (UGS) - will not make a sawlog or studwood quality stem in the future, or has stud or sawlog quality stem now, but tree will degrade in quality within 15 years.  If tree vigor is low due to reasons such as broken/dead top, insect/disease damage, small crown etc., (which make it a poor candidate to leave growing as a future crop tree) it should be called UGS.

 **A** - Acceptable Growing Stock (AGS) - will make a studwood or sawlog quality stem in the future or is one now and will still have studwood or sawlog quality 15 years in the future.

**2nd letter C, P or S:**

**C** - Cull - Does not have any merchantable products in the stem at present, **P** - Pulp – Existing pulp log, **S1** – Softwood Sawlog – Existing Studwood or better

**Hardwoods:**

**1st letter (U or A):**

 **U**- Unacceptable growing Stock (UGS) - will not make a sawlog quality stem in the future, or has sawlog quality stem now, but will degrade in quality within 15 years. If tree vigor is low due to reasons such as broken/dead top, insect/disease damage, small crown etc., (which make it a poor candidate to leave growing as a future crop tree) it should be called UGS.

 **A** - Acceptable Growing Stock (AGS) - will make a sawlog quality stem in the future or is one now and will maintain or improve in quality by the next harvest.

**2nd letter (C, P, L or H):**

**C** - Cull - Does not have potential for any merchantable products, **P** - Pulp - Potential for Pulp log at best,

**S2** - Low Grade Sawlog – Existing low grade sawlog (must have better than pallet log potential) – G 3

**S3** - High Grade Sawlog – Existing high grade sawlog (high end sawlog or veneer log) – G2 or better

**<u>Examples</u>**

**UC** - Unacceptable growing stock without current merchantable products

**AC** – Acceptable growing stock without current merchantable products

**UP** - Unacceptable growing stock with current pulp product

**AP** – Acceptable growing stock with current pulp product

**US2** - Unacceptable growing stock with current low grade hardwood sawlog quality stem now but will degrade by the next harvest.

**US3** - Unacceptable growing stock with high grade hardwood sawlog quality stem now, but will degrade by the next harvest.

**AS2** - Acceptable growing stock with existing low grade hardwood sawlog quality stem - will not degrade by the next harvest.

**AS3** - Acceptable growing stock with existing high grade hardwood sawlog quality stem - will not degrade by the next harvest.

**US1** - Unacceptable growing stock with studwood or sawlog quality softwood stem, but will degrade by the next harvest.

**AS1** - Acceptable growing stock with studwood or sawlog quality softwood stem - will not degrade by the next harvest.

| Pre-Treatment Site Assessment Tally Sheet.  Loc:_____ Co:_____Block:_____Section:_____ |||||||||||||||
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Plot | ST | VT | EX | BD | MAT | PT | WET | TF | WT | WF | Patch | Regeneration | Heights/age/notes |
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Comments:

# Pre-Treatment Site Assessment Tally Sheet:

## Codes

**ST-** FEC soil type (Neily et al., 2013)

**VT-** FEC vegetation type (Neily et al., 2013)

**EX –** Exposure: **E** = Exposed; **ME** = Moderately Exposed; **M** = Moderate; **MS** = Moderately Sheltered; **S** = Sheltered

**BD** - % of Basal Area Blowndown

**MAT** – Maturity: **I =** Immature, **M** = Mature, **O** = Overmature

**PT** – Previously treated? PCT or Plantation or Commercial Thinning: **Y** = Yes, **N** = No

**WET** – Non mapped wetlands: **V** = Vernal Pools, **S**= Springs, **ST** = Streams

**T.F.** – Topographic Features: **K**=Karst, **R** = Ravine, **O** = Rock Outcrop/Boulder fields, **C**= Caves

**W.T.** – Wildlife Trees: **CT**=Cavity Trees (trees greater than 20 cm dbh with existing cavity of size suitable for nesting), **N**=Nests (raptors, heron colonies), **M**= Mast (oak, beech or witch hazel with mast)

**W.F.** – Wildlife Features: **D**=Deer Wintering Areas, **W**=Wildlife Concentrations, **SR**=Species at Risk/concern (http://www.gov.ns.ca/natr/wildlife/biodiversity/species-recovery.asp), **U**=Unique features (specify in comments).

**Patch:** - is the area around the sample plot dominated by **M** - mature to over mature trees, **I** - Immature AGS , **R**- Advanced regeneration of preferred species, or **U**- Uniform mix of all age classes

**Regeneration:** Species, Cover (%), Average Height (m) e.g.: rS/30/0.3 - red spruce, 30% cover, 30cm tall

**Heights/ages**: Heights for volume calculations (Tree of average basal area) and/or Land Capability determination (breast height age and height of Dominant free growing trees)

**Post-Treatment Information Requirements – Selection**

In order to meet quality specifications for Selection Harvest the following information must be collected:

- Basal area remaining after harvest
- Basal area of trees damaged during harvest activities with exposed cambium exceeding 100 cm$^2$ (4"x4") in area, or with damage to more than 1/3 of the crown
- Basal area of Acceptable Growing Stock (AGS) after harvest.

**Instructions**

- Take 1-2 prism points every 2 hectares with a minimum of 3 prism points and a maximum of 25.
- Use a BAF 2 prism.
- Evenly distribute these points throughout the stand.
- When tallying basal area, do so by AGS, UGS and damaged trees (HD). If species specific information is necessary, also tally by species
- AGS - Acceptable Growing Stock
    - **Softwoods**: Trees that will make a studwood or sawlog quality stem in the future or has one now and will still have studwood or sawlog quality within 15 years. These trees must not have been scarred by harvesting activities with scars of exposed wood exceeding 100 cm$^2$ in area, or have greater than 1/3 of their live crowns damaged by harvesting activities.
    - **Hardwoods**: Trees that have the potential for producing sawlog quality logs of better than pallet quality and will not degrade within 15 years. These trees must not have been scarred by harvesting activities with scars of exposed wood exceeding 100 cm$^2$ in area or have greater than 1/3 of their crowns damaged by harvesting activities.
- UGS – Unacceptable Growing Stock
    - **Softwoods**: Trees that will not make studwood or sawlog quality stem in the future, or has stud or sawlog quality stem now but tree will degrade in quality within 15 years. If tree vigor is low due to reasons such as broken/dead tops, insect/disease damage, small crowns (< 1/3 live crown ratio) etc. which make it a poor candidate to leave growing as a future crop tree it should be called UGS.
    - **Hardwoods**: Trees that do not have the potential to produce a better than pallet quality sawlog or one with a sawlog now but that will degrade within 15 years. If tree vigor is low due to reasons such as broken/dead tops, insect/disease damage, small crowns (< 1/3 live crown ratio) etc. which make it a poor candidate to leave growing as a future crop tree it should be called UGS.
- HT = Average height in metres of the species tallied, only if required.
- HD = Trees with harvesting damage of exposed wood exceeding 100 cm$^2$ in area or crown damage exceeding 1/3 of the live crown
- Calculate the following: % and basal area of acceptable growing stock in m$^2$/ha, % and basal area that is damaged in m$^2$/ha

| Selection Post Treatment Cruise (8/2010) | | Location | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cruiser | | County | | Stand # | | Date Assessed | | | Treatment Year | | | Treatment Area | | | | | |
| | | Species | | | Species | | | Species | | | Species | | | Species | | | |
| Line | Plot | AGS | UGS | HT | AGS | UGS | HT | AGS | UGS | HT | AGS | UGS | HT | AGS | UGS | HT | HD |
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| Total (pg) | | | | | | | | | | | | | | | | | |
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