

# **Forest Cover Stratification and Milestone Declarations**

**Version 1.4**

**August 14, 2007**



**BRITISH  
COLUMBIA**

**Ministry of Forests and Range**

**Forest Practices Branch**

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# Introduction

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This document is meant to be supporting material for discussions related to forest cover stratification and milestone declarations. These discussions are occurring as a result of updates to the Forest Planning and Practices regulation.

This document focuses on four main topics:

- The Policy for forest cover stratification
- The Policy for milestone declarations
- The application of those Policies, and
- Examples of the policies in practice

Appendix A contains a copy of the approved amendments to the Regulation.

## Policy for Stratification

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- The unit for declaration of milestone events will remain the Standard Unit.
- Stratification is a tool that helps to measure the distribution of regeneration within a Standards Unit. Issues associated with stratification relate to stocking.
- The intent of this policy is to support stocking which is well distributed across the SU while allowing flexibility to deal with specific conditions or circumstances that result in a portion of an SU being under stocked.
- Changes to the regulation apply to areas under the FPC or as a default under FRPA. The default under FRPA would cover areas where stratification has not been specifically covered in the FSP.
- SUs under the FPC have been and will continue to be managed for target levels as required by regulation (FPC SPR s 11 and FPC THSPR s 40). Further, stocking levels established under FRPA are considered to be of a high standard consistent with the approval tests of the FPPR. This policy assumes that the high standard of reforestation currently undertaken in the province will continue.

## Examples of Stratification

Within a standards unit, stratification and creation of additional forest cover polygons and associated forest cover attributes must occur:

- If there is a stratum that is below the required minimum stocking standard at the regeneration or free growing time frames;

For the purpose of FPPR s 86 within a standards unit, stratification and creation of additional forest cover polygons and associated forest cover attributes should occur, for example:

- If there is more than a 20% difference in leading species composition.
  - For example PI8Sx2 must be separated from PI5Sx5;
- If there is a switch in the leading species.
  - For example Fdc8Cw2 must be separated from Cw6Fdc4;
- If the species composition changes from a mixed species stand to a pure stand.
  - For example: Fdc10 must be separated from Fdc6Hw2Cw2;
- If there is a stratum that has more than 10,000 stems per hectare;
- If the site index based on the leading inventory species in adjacent strata have a change of more than 3 metres;
- If crown closure changes by more than 10%.

## Minimum Stratum Size

- Minimum stratum size is 1 ha.
- The intent is to not consider long tendrils or amorphous thin amoeba-like units as being separate polygons, therefore:
  - An understocked area is defined as an area where stocking levels are less than the minimum specified and is a minimum of 1 ha in size.
  - An understocked area must be at least 20 m wide throughout its length and at least 20 m from the nearest understocked area. If it is less than 20 m from the nearest understocked area they are considered contiguous.

## Milestones

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This section highlights key points related to Milestone Declarations.

- Licensees may make declarations that they have achieved milestones under FRPA 107 now including provisions under FPPR 97.1 that the obligation has been met to the extent that is practicable.
- Under the new FPPR 46.11(1), the obligation associated with that milestone must be achieved on every hectare within the standard unit.
- A licensee may declare (under 46.11(2)) that the obligations in a standard unit have been met even if there are one or more patches that do not meet the applicable standard as long as
  - The patches are less than 1ha (applicable to both regen and FG milestones)
  - At free growing, mappable patches between 1 and 2 hectares are also acceptable if the total area occupied by the patches does not exceed 5% of the Standard Unit area.

## Differences in requirements between Regen and Free Growing Obligations

With the amendments to the FPPR there is a critical difference between meeting obligations at regen delay and at free growing. Essentially the regulation will allow for more flexibility in meeting obligation at the free growing assessment as compared with the regeneration assessment. Specifically:

- 46.11 (2) (a) is applicable to obligations at both the regen milestone and the free growing milestone
  - It indicates that at the time of assessment patches in the SU that do not meet the obligation are acceptable providing they are less than 1 ha.
- 46.11 (2) (b) is applicable to the obligations at the free growing milestone only
  - It indicates that at the time of free growing assessment, patches between 1 and 2 ha may exist and the obligation will still be considered to be met as long as those patches don't exceed 5% of the area of the standard unit.

## Obligations met to the extent that is practicable

A new section has been added to the FPPR: s97.1 Declaration: Obligations met to the extent that is practicable

- If a stocking standard requirement is not achieved but the obligation holder considers that the obligation has been met to the extent that is practicable they may submit a free growing declaration to the district manager which includes
  - a statement of the extent to which the obligation has not been met,
  - a statement that the person did not contribute, in any manner, to not meeting the requirement, and
  - a rationale of why it is not practicable to fully meet the obligation

- This declaration may be made without amending the applicable stocking standards for the area.
- This section works in combination with section 46.11
  - Section 46.11 provides flexibility within which the obligation is, by definition, fully met;
  - Section 97.1 provides that a person may be relieved of an obligation, even where it has not been fully met.
- FPPR s 97.1 empowers the DM to reject a declaration if satisfied that, having regard to the circumstances and conditions applicable to the cutblock, it is in the public interest to continue to try to fully comply with the free growing requirement. It is incumbent on the DM to consider all factors when determining if the standard has been met to the extent practicable and it is a benefit to society to continue to pursue reforestation of the site, including growth and yield implication on the standard unit or cutblock as a whole

## Practicable vs Practical

Section 97.1 of FPPR uses the term ‘practicable.’ This term is often confused with the term ‘practical.’

- Practicable means that which might be done, practiced, or accomplished; that which is feasible or performable in the circumstances; or that which is actually possible (e.g. capable of being carried out”).
- Practical means that which might be done considering there is generally limited time, budget, resources, and other factors (e.g. use in practice). The practical options would be a subset of the practicable options.
- From a hierarchical point of view, if you look at all of the possible solutions given unlimited time, budget, resources, environmental conditions, etc, only a subset of all the solutions would be practicable. Similarly, only a subset of the practicable solutions would be practical

## Application of Stratification and Milestone Policy

As stated in section 46.11 (2) (b) of the Forest Planning and Practices Regulation (FPPR) it may be acceptable to declare an SU free growing with 1.0-2.0 ha of that SU carrying less stocking than the applicable stocking standard. Such a condition occurs when the stocking standards are met for the SU and when the area of lower stocking is less than 5% of the standard unit. These one to two hectare types must be reported as described in section 86 (3) (iii) of the FPPR. To satisfy this requirement, field personnel will need to collect and summarize silviculture and inventory data for submission. While not a legal requirement, under existing approved ministry survey procedures, surveyors would typically establish a five-plot minimum in a stratum. As it is not the intent of these regulatory changes to produce more onerous procedural requirements, it is suggested that surveyors produce a silviculture and inventory label based on either visual observation or any number of plots as determined necessary to produce accurate results.

# Guidance on tracking within RESULTS

The following provides interim procedure on how declarations on these areas are to be reported within RESULTS until a formal process is developed in the next major release.

Declarations are made into RESULTS on-line or via electronic submission (ESF). When applying s. 46.11 (2)(b) and s.97.1, comments tied to a specific standard unit(s) may be submitted with the FG declaration. We recommend that a comment statement such as "Declaration meeting requirement of FPPR s.46.11(2)(b)" would confirm that the area not meeting the stocking standards meets the tests as specified in the regulation or "Declaration of obligation met to the extent practicable as per FPPR s. 97.1" for those areas where the obligation has not met the requirements of FPPR s 46.11 but meets the tests of FPPR 97.1.

The attached RESULTS milestones screen is an illustration of a successful ESF transmission showing both the declaration component & the comment.

**RESULTS325 - Milestones**

[Back](#)

Compliance Date Indicator: HARVEST 9 rows returned

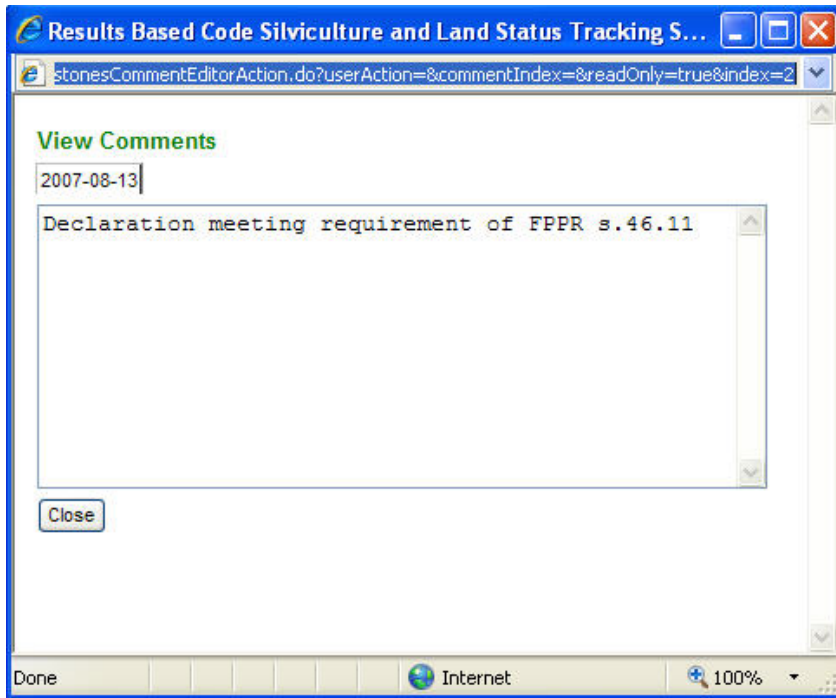
SU	SU Area	Declaration Type	Due Early	Due Late	Declared			Submission Date	Update	Undeclare
					Date (YYYY-MM-DD)	User ID	Cmt			
1	25.2	Post Harvest	0	0			No		Update	Undeclare
1	25.2	Regeneration	0	6	1999-07-01	CCDOUCET	No	2003-06-17	Update	Undeclare
1	25.2	Free Growing	11	14	2007-01-01	IDRMTSOI	Yes	2007-08-13	Update	Undeclare
2	1.3	Post Harvest	0	0			No		Update	Undeclare
2	1.3	Regeneration	0	3	1999-07-01	CCDOUCET	No	2003-06-17	Update	Undeclare
2	1.3	Free Growing	8	11			No		Update	Undeclare
3	2.9	Post Harvest	0	0			No		Update	Undeclare
3	2.9	Regeneration	0	3	1999-07-01	CCDOUCET	No	2003-06-17	Update	Undeclare
3	2.9	Free Growing	8	11			No		Update	Undeclare

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Text comments can be entered online or via ESF and may accompany the declaration and confirm the application of FPPR s.46.11 or FPPR s 97.1.



# Regeneration Delay Examples

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## Regeneration delay example: 1 SU, Patch > 2ha

Stratum	Governing SU	Stratum Status	Size
A	1	Met/exceeded Stocking Standard	37.9
B	1	Failed to meet/exceed Stocking Standard	2.1
C	N/A	WTP	5



### **SU1 (40.0ha) has not achieved the Regen Delay Milestone**

- Stratum A meets SU stocking standards, but
- Stratum B does not meet SU stocking standard and
  - Exceeds 2 Ha
- Survey and Report on Strata A and B



## Regeneration delay example: 1 SU, Patch >1ha and < 2ha

Stratum	Governing SU	Stratum Status	Size
A	1	Met/exceeded Stocking Standard	38.9
B	1	Failed to meet/exceed Stocking Standard	1.1
C	N/A	WTP	5

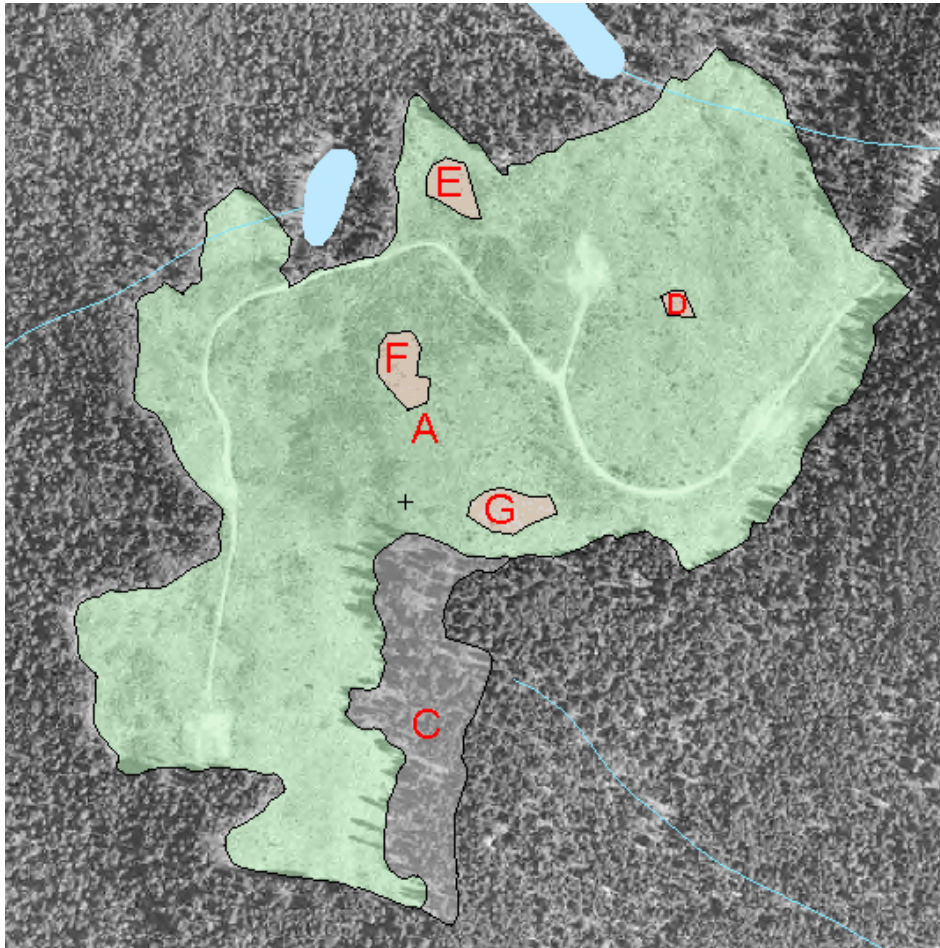


### SU1 (40.0ha) has not achieved the Regen Delay Milestone

- Stratum A meets SU stocking standards and
- Stratum B does not meet SU stocking standard and is
  - Greater than 1 ha
- Survey and Report on Strata A and B.

## Regeneration delay example: 1 SU, Patches less than 1ha

Stratum	Governing SU	Stratum Status	Size
A	1	Met/exceeded Stocking Standard	37.8
C	N/A	WTP	5
D	1	Failed to meet/exceed Stocking Standard	0.3
E	1	Failed to meet/exceed Stocking Standard	0.6
F	1	Failed to meet/exceed Stocking Standard	0.6
G	1	Failed to meet/exceed Stocking Standard	0.7

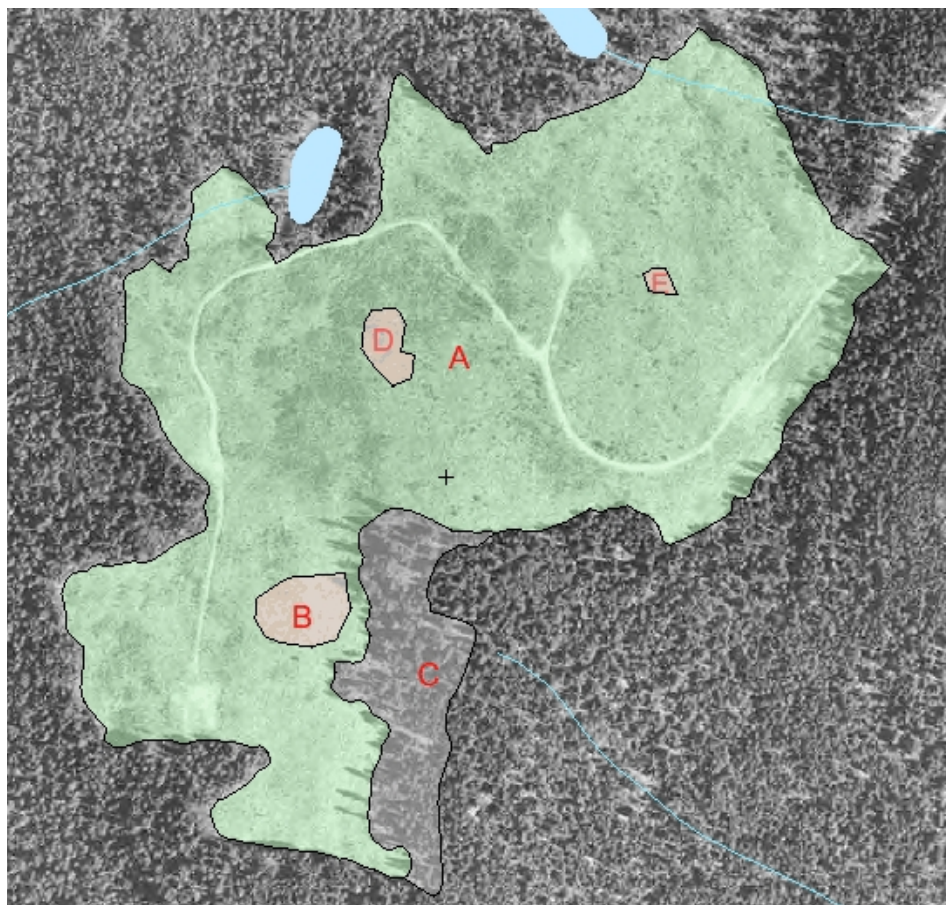


### SU1 (40.0ha) has achieved the Regen Delay Milestone

- Stratum A meets SU stocking standard and
- Strata D, E, F, G do not meet SU stocking standard and are
  - Less than 1 ha (note these are below the minimum stratum size so they would not normally be stratified.)
- Since Strata D, E, F, and G do meet minimum stratum size requirements they will be lumped with Stratum A. Note that as the number of patches similar to D, E, F and G become more numerous it will become increasingly difficult to meet the statistical requirements.

## Regeneration delay example: 1 SU, Various Patches

Stratum	Governing SU	Stratum Status	Size
A	1	Met/exceeded Stocking Standard	38.0
B	1	Failed to meet/exceed Stocking Standard	1.1
C	N/A	WTP	5
D	1	Failed to meet/exceed Stocking Standard	0.6
E	1	Failed to meet/exceed Stocking Standard	0.3



### SU1 (40.0ha) has not achieved the Regen Delay Milestone

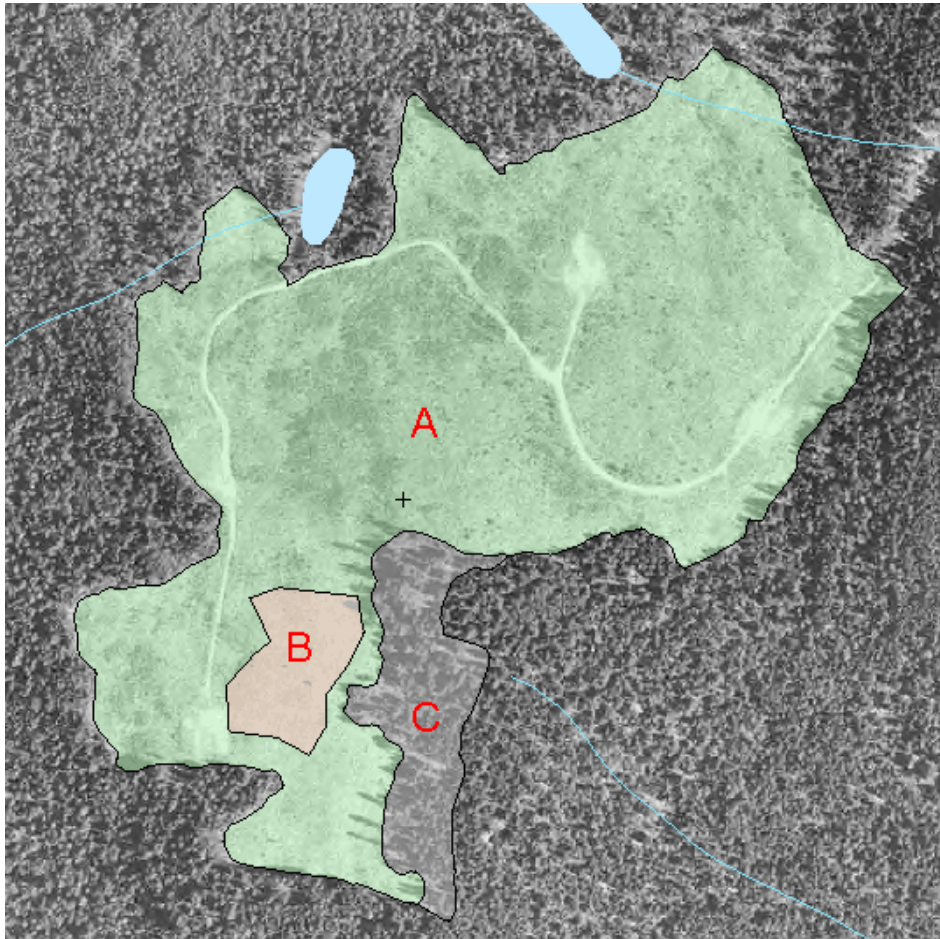
- Stratum A meets SU stocking standard and
- Stratum B does not meet SU stocking standard and
  - Is greater than 1 ha
- Strata D, E do not meet the SU stocking standard and
  - Are less than 1 ha each (note these are below the minimum stratum size so they would not normally be stratified.)
- Strata D and E will be lumped with Stratum A. Survey and Report on Strata A and B.

# Free Growing Examples

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## Free growing examples: 1 SU, Patch > 2ha

Stratum	Governing SU	Stratum Status	Size
A	1	Met/exceeded Stocking Standard	37.9
B	1	Failed to meet/exceed Stocking Standard	2.1
C	N/A	WTP	5



### SU1 (40.0ha) is Not FG

- Stratum A meets SU stocking standard, but
- Stratum B does not meet SU stocking standard and
  - Exceeds 2 Ha
- Survey and Report on Strata A and B

## Free growing examples: 1 SU, Patch > 1ha and < 2ha

Stratum	Governing SU	Stratum Status	Size
A	1	Met/exceeded Stocking Standard	38.9
B	1	Failed to meet/exceed Stocking Standard	1.1
C	N/A	WTP	5

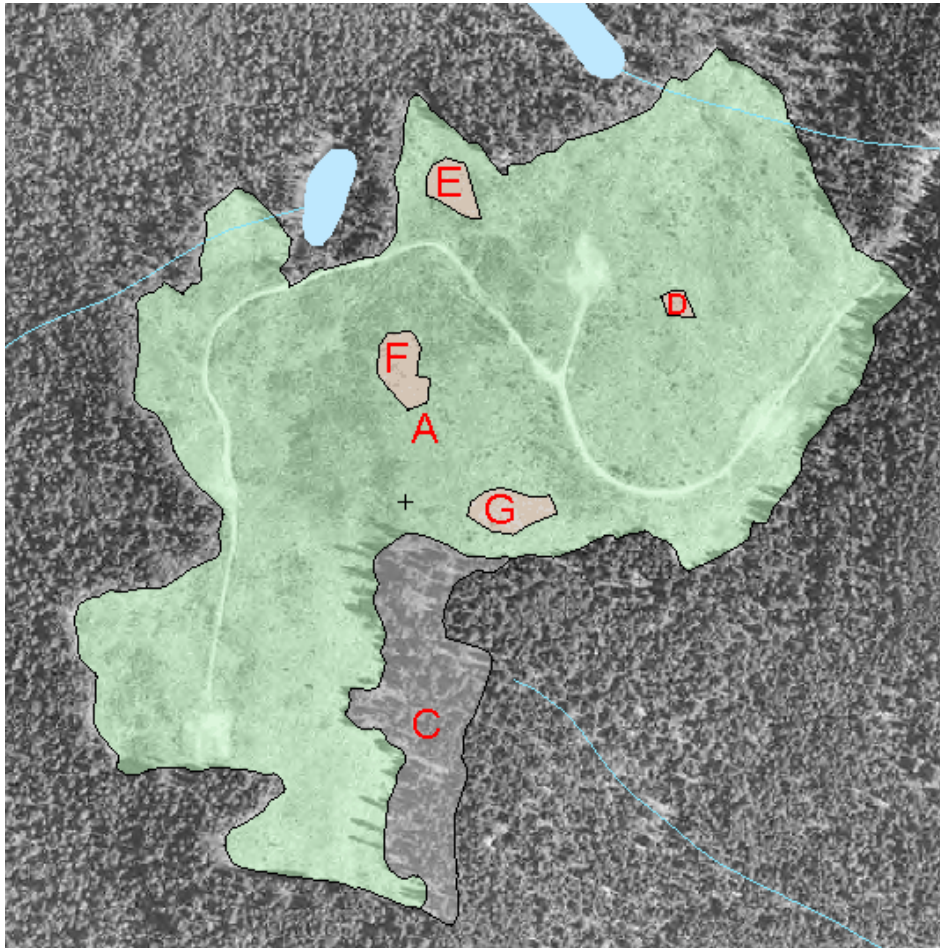


### SU1 (40.0ha) is FG

- Stratum A meets SU stocking standard and
- Stratum B does not meet SU stocking standard but is
  - Greater than 1 ha, and
  - Does not exceed 2 ha, and
  - Does not exceed 5% of SU1
- Survey and Report on Stratum A and B. The survey intensity on B may be quite light.

## Free growing examples: 1 SU, Patches less than 1ha

Stratum	Governing SU	Stratum Status	Size
A	1	Met/exceed Stocking Standard	37.8
C	N/A	WTP	5
D	1	Failed to meet/exceed Stocking Standard	0.3
E	1	Failed to meet/exceed Stocking Standard	0.6
F	1	Failed to meet/exceed Stocking Standard	0.6
G	1	Failed to meet/exceed Stocking Standard	0.7



### SU1 (40.0ha) is FG

- Stratum A is meets SU stocking standard and
- Stratum D, E, F, G do not meet SU stocking standard and are
  - Less than 1 ha (note these are below the minimum stratum size so they would not normally be stratified.)
- Since Strata D, E, F, and G do meet minimum stratum size requirements they will be lumped with Stratum A. Note that as the number of patches similar to D, E, F and G become more numerous it will become increasingly difficult to meet the statistical requirements.

## Free growing examples: 1 SU, Multiple Patches

Stratum	Governing SU	Stratum Status	Size
A	1	Met/exceeded Stocking Standard	38.0
B	1	Failed to meet/exceed Stocking Standard	1.1
C	N/A	WTP	5
D	1	Failed to meet/exceed Stocking Standard	0.6
E	1	Failed to meet/exceed Stocking Standard	0.3

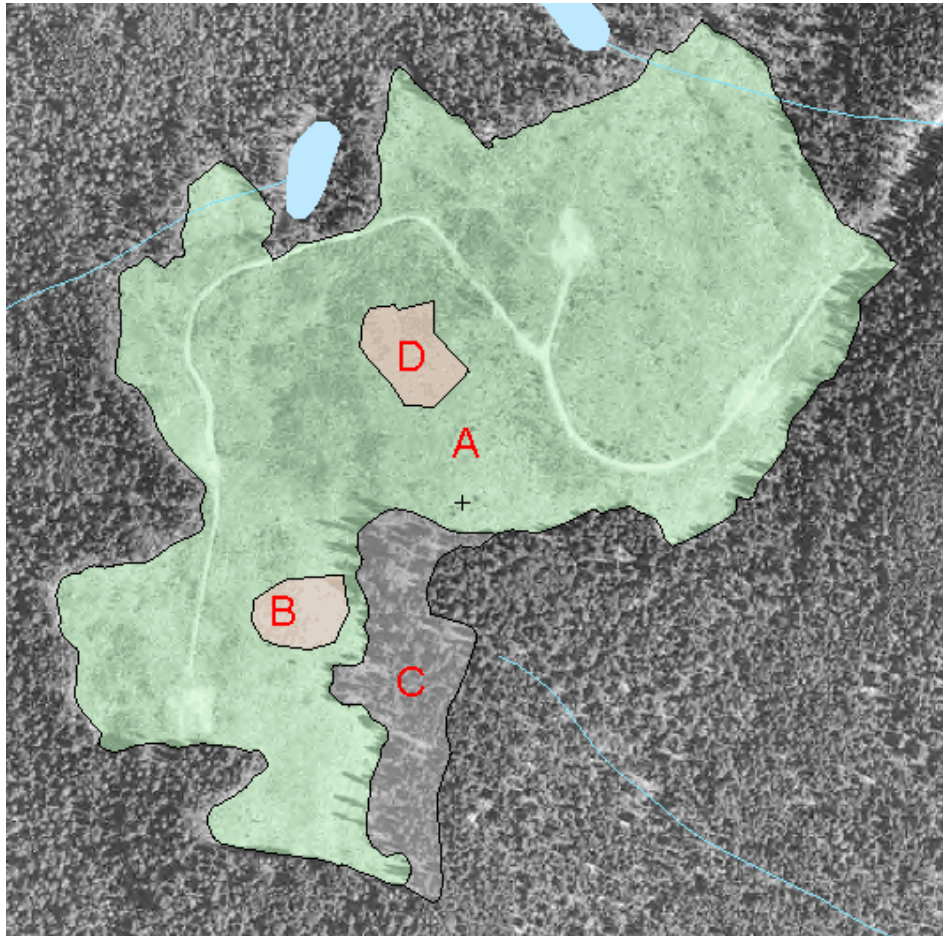


### SU1 (40.0ha) is FG because

- Stratum A meets SU stocking standard and
- Stratum B does not meet SU stocking standard but
  - Is greater than 1 ha, and does not exceed 2 ha and
  - Does not exceed 5% of the SU area
- Strata D, E do not meet the SU stocking standard and
  - Are less than 1 ha each (note these are below the minimum stratum size so they would not normally be stratified.)
- Strata D and E will be lumped with Stratum A. Survey and Report on Strata A and B. The survey intensity on B may be quite light.

## Free growing examples: 1 SU, Patches 1ha> and < 2ha

Stratum	Governing SU	Status	Size
A	1	Met/exceeded Stocking Standard	37.6
B	1	Failed to meet/exceed Stocking Standard	1.1
C	N/A	WTP	5
D	1	Failed to meet/exceed Stocking Standards	1.3



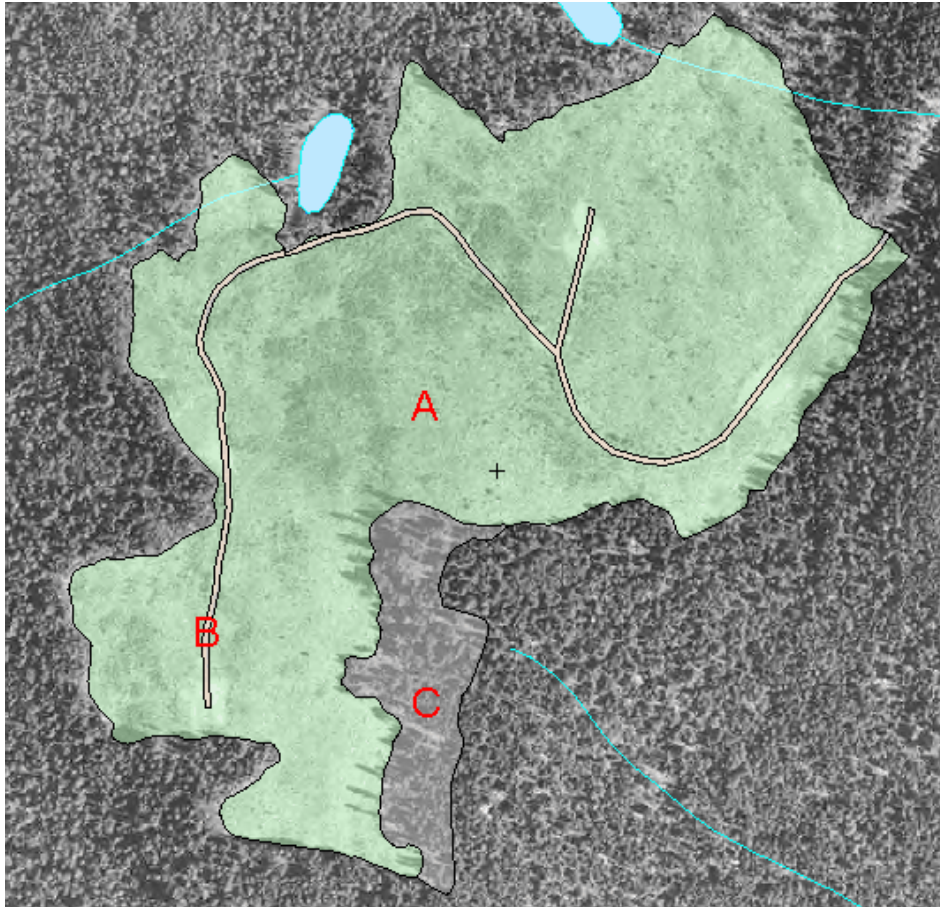
### SU1 (40.0ha) is Not FG

- Stratum A meets SU stocking standard and
- Strata B and D do not meet SU stocking standard and
  - Are greater than 1 ha, but do not exceed 2 ha, and
  - The total area of B, D, does exceed 5% of the area of SU1
- Strata B and D may be lumped together in a multi-polygon stratum if appropriate to do so. Survey and Report on A, B, and D (if not lumped).



## Free growing examples: 1 SU, 1 strip <20m

Stratum	Governing SU	Stratum Status	Size
A	1	Met/exceeded Stocking Standard	38.5
B	1	Failed to meet/exceed Stocking Standard	1.5
C	N/A	WTP	5

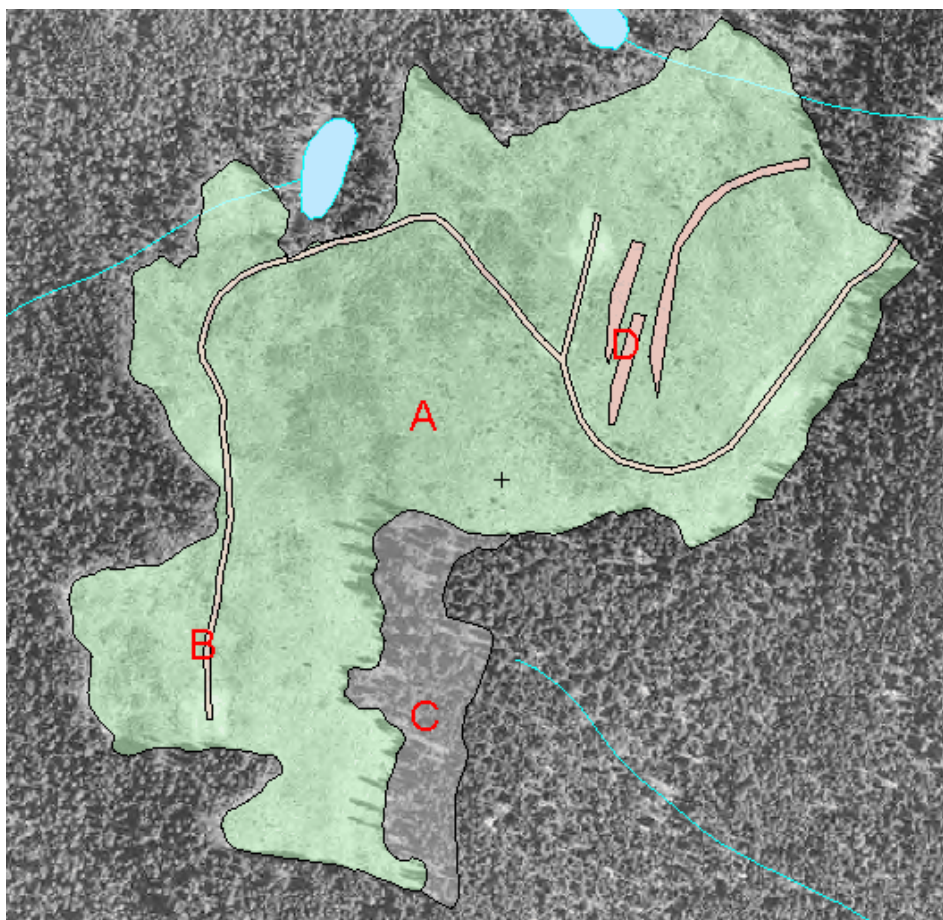


### SU1 (40.0ha) is FG

- Stratum A meets SU stocking standard and
- Stratum B does not meet SU stocking standard but is
  - Less than 20m wide (note this is below the minimum width requirement so it would not normally be stratified.)
  - Note that B is not the Road, but it a brushy stratum adjacent to the road.
- Because B does not meet the minimum stratum width it should be lumped with A. Survey and Report on Stratum A

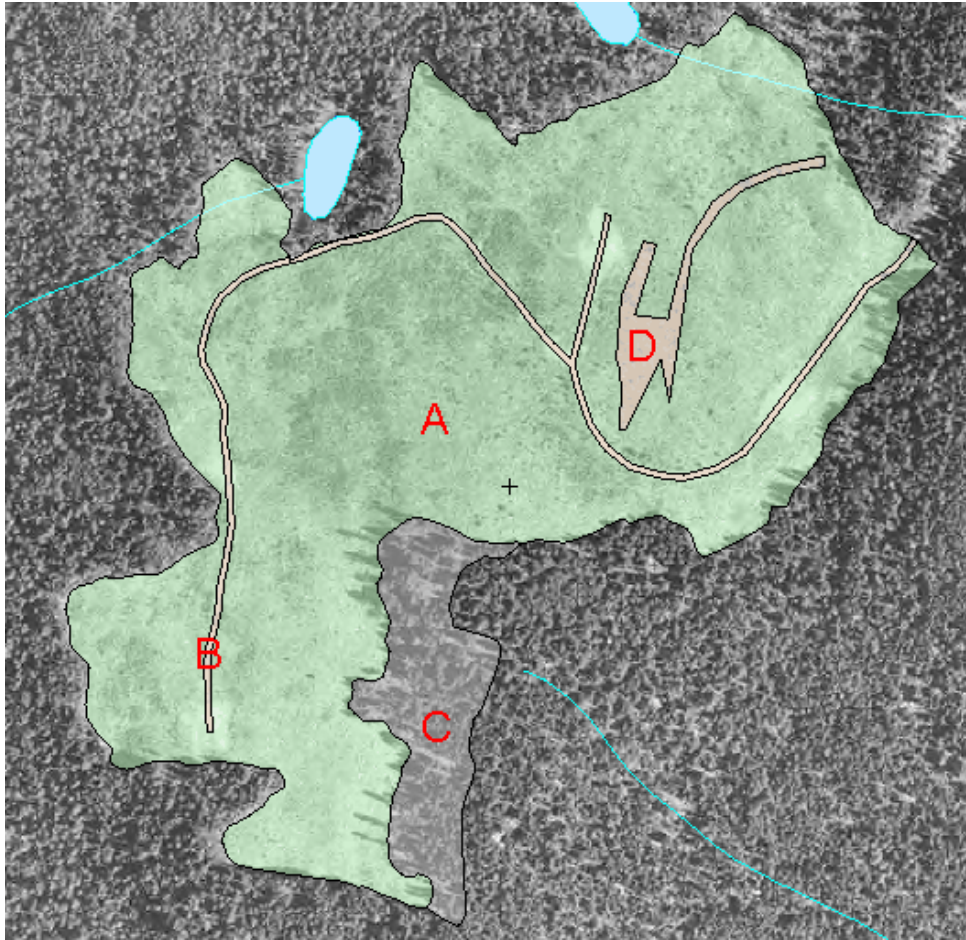
## Free growing examples: 1 SU, 1 strip <20m, 3 strips >20m

Stratum	Governing SU	Stratum Status	Size
A	1	Met/exceeded Stocking Standard	38.9
B	1	Failed to meet/exceed Stocking Standard	1.5
C	N/A	WTP	5
D	1	Failed to meet/exceed Stocking Standard	1.6



### SU1 (40.0ha) is FG

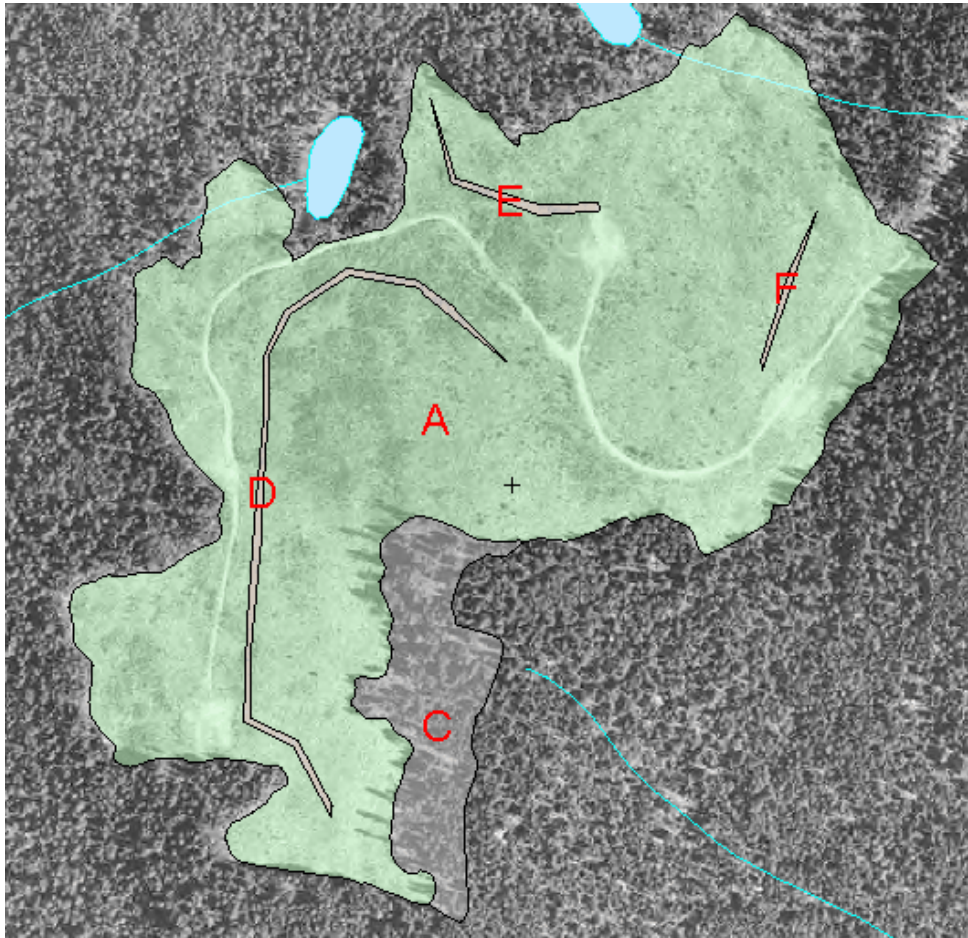
- Stratum A meets SU stocking standard and
- Stratum B does not meet SU stocking standard but is
  - Less than 20m wide (note this is below the minimum width requirement so it would not normally be stratified.)
  - Note that B is not the road, but a brushy stratum adjacent to the road
- Stratum D does not meet SU stocking standard
  - 3 separate strips each > 20m wide, but less than 20m apart
  - Should be treated as a single stratum as in the image below
  - Combined area is 1.6 ha which does not exceed 5% of SU1 area
- Since Stratum B is below the minimum width requirement it should be lumped with Stratum A. Survey and report on Strata A and D.



The image above shows the how the 3 strips that were greater than 20m wide, and less than 20m apart were lumped into a single stratum.

## Free growing examples: 1 SU, 3 strips <20m

Stratum	Governing SU	Stratum Status	Size
A	1	Met/exceeded Stocking Standard	38.1
C	N/A	WTP	5
D	1	Failed to meet/exceed Stocking Standard	1.1
E	1	Failed to meet/exceed Stocking Standard	0.5
F	1	Failed to meet/exceed Stocking Standard	0.3

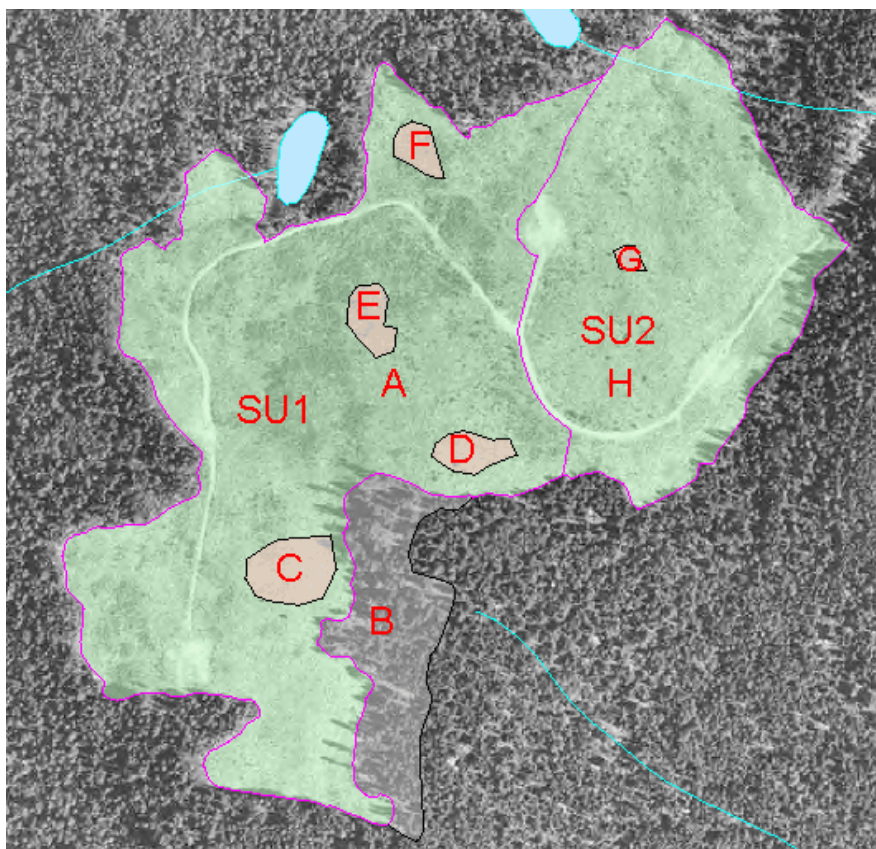


### SU1 (40.0ha) is FG

- Stratum A meets SU stocking standard and
- Strata D, E, F do not meet SU stocking standard
  - D, E, and F are less than 20m wide and greater than 20m apart (note this is below the minimum width requirement so it would not normally be stratified.)
- Because strata D, E, F are less than the minimum stratum size they should be lumped with Stratum A. Survey and Report on Stratum A.

## Free growing examples: 2 SUs, Various Patches

Stratum	Governing SU	Stratum Status	Size
A	1	Met/exceeded Stocking Standard	24.7
B	N/A	WTP	5
C	1	Failed to meet/exceed Stocking Standard	1.1
D	1	Failed to meet/exceed Stocking Standard	0.7
E	1	Failed to meet/exceed Stocking Standard	0.6
F	1	Failed to meet/exceed Stocking Standard	0.6
G	2	Failed to meet/exceed Stocking Standard	0.3
H	2	Met/exceeded Stocking Standard	11.7



### SU1 (28.0ha) is FG

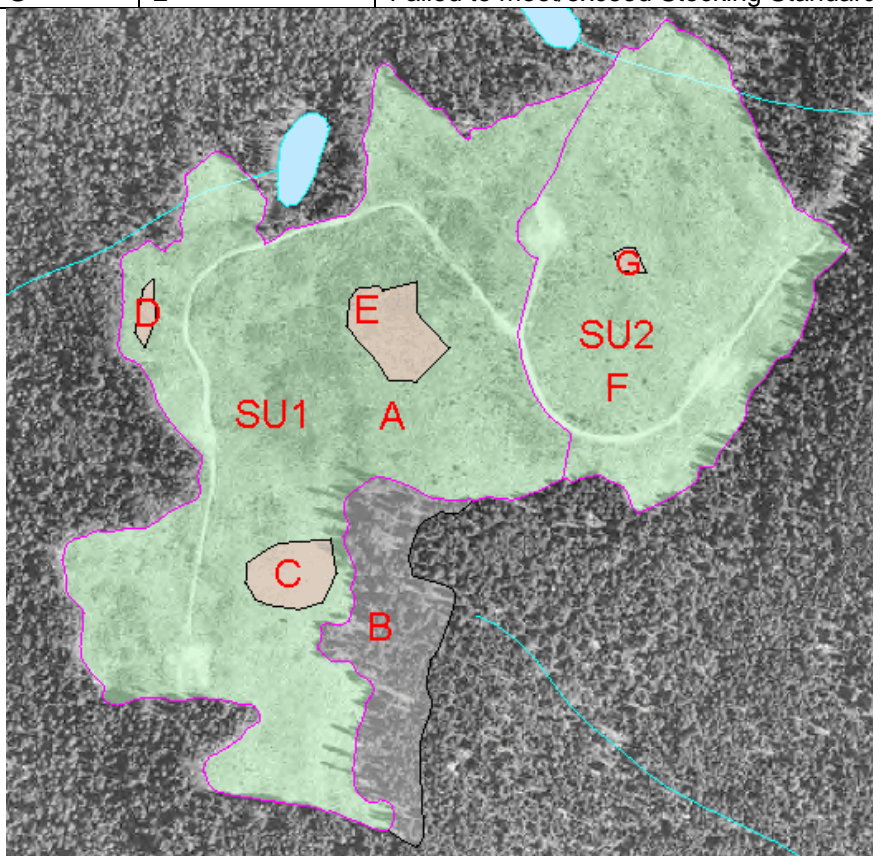
- Stratum A (24.7) meets SU stocking standard and
- Strata D, E, F do not meet SU stocking standard
  - D, E, and F are less than 1ha (note this is below the minimum stratum size so it would not normally be stratified.)
- Stratum C is
  - Greater than 1ha,
  - Less than 2 ha
  - Does not occupy more than 5% of the SU

### SU2 (12.0ha) is FG

- Stratum H meets the SU stocking standard and
- Stratum G is less than 1ha (note this is below the minimum stratum size so it would not normally be stratified.)
- Lump Strata D, E, and F into Stratum A. Lump G into stratum H. Survey and report on Strata A, C, and H. The survey intensity on C may be quite light.

## Free growing examples: 2 SUs Various Patches

Stratum	Governing SU	Stratum Status	Size
A	1	Met/exceeded Stocking Standard	25.2
B	N/A	WTP	5
C	1	Failed to meet/exceed Stocking Standard	1.1
D	1	Failed to meet/exceed Stocking Standard	0.4
E	1	Failed to meet/exceed Stocking Standard	1.3
F	2	Met/exceeded Stocking Standard	11.7
G	2	Failed to meet/exceed Stocking Standard	0.3



### SU1 (28.0ha) is not FG

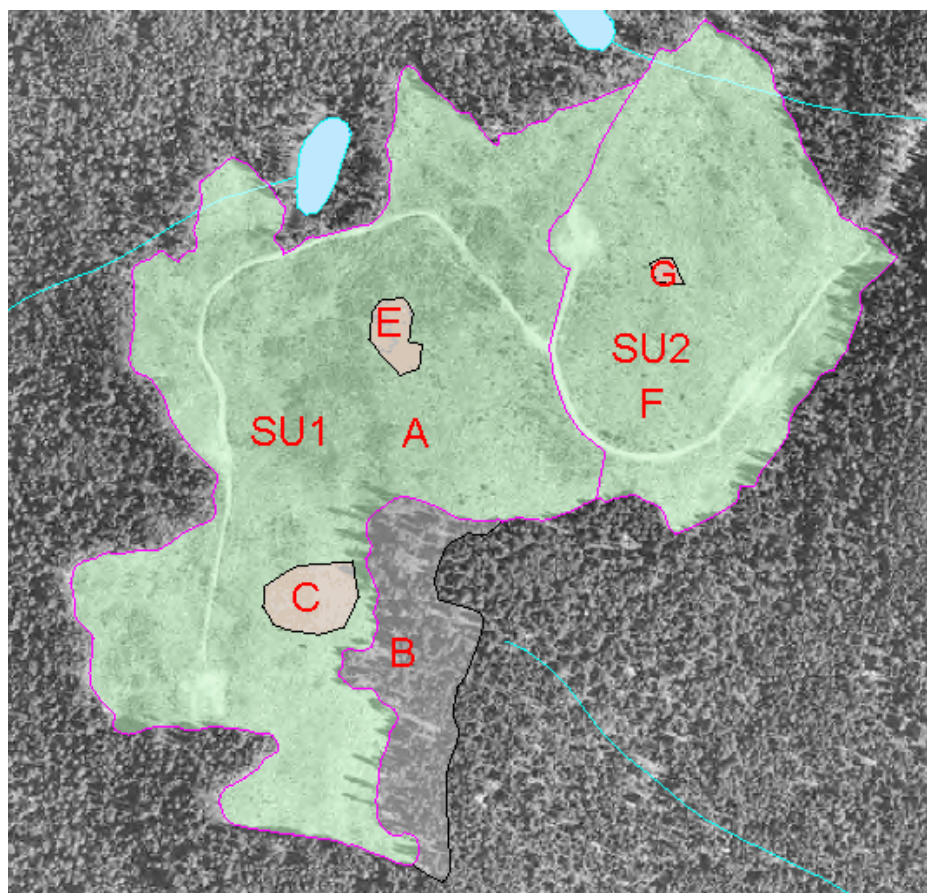
- Stratum A (25.2) meets SU stocking standard and
- Stratum C and E do not meet SU stocking standard but are
  - Greater than 1 ha,
  - Less than 2 ha
  - Occupy more than 5% the area of SU1
- Stratum D does not meet SU stocking standard but
  - Is less than 1ha (note this is below the minimum stratum size so it would not normally be stratified.)

### SU2 (12.0) is FG

- Stratum F (11.7ha) meets SU stocking standard and
- Stratum G (0.3ha) does not meet stocking standard but
  - Is less than 1 ha (note this is below the minimum stratum size so it would not normally be stratified.)
- Lump D into Stratum A, and lump G into stratum F. Survey and Report on strata A, F, C and E. The survey intensity on C and E may be quite light.

## Free growing examples: 2 SUs Various Patches

Stratum	Governing SU	Stratum Status	Size
A	1	Met/exceeded Stocking Standard	26.3
B	N/A	WTP	5
C	1	Failed to meet/exceed Stocking Standard	1.1
E	1	Failed to meet/exceed Stocking Standard	0.6
F	2	Met/exceeded Stocking Standard	11.7
G	2	Failed to meet/exceed Stocking Standard	0.3



### SU1 (28.0ha) is FG

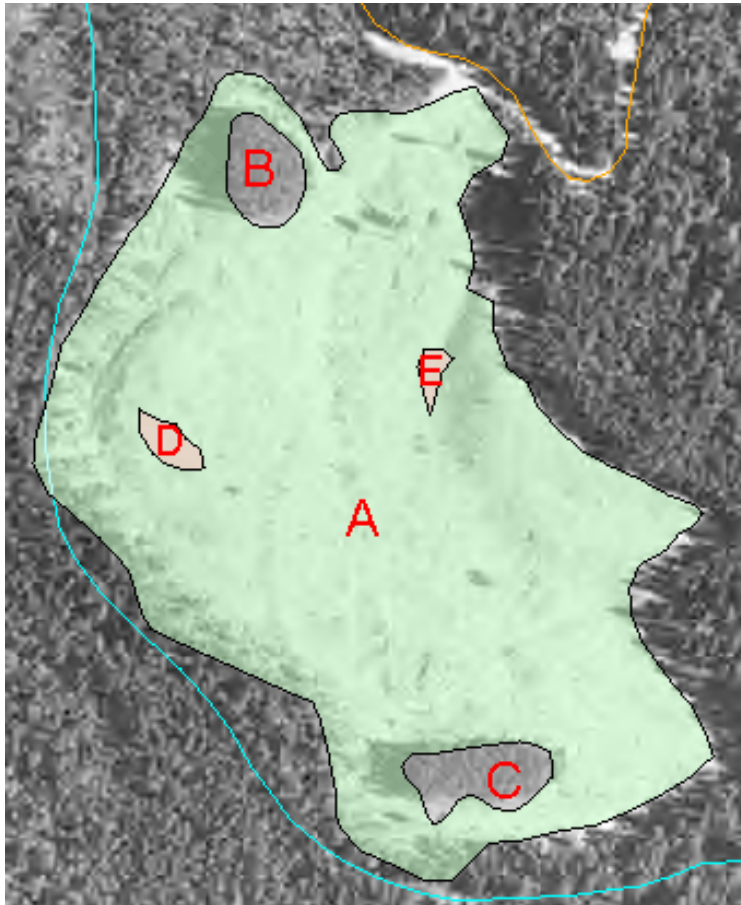
- Stratum A (26.3) meets SU stocking standard and
- Stratum C does not meet stocking standard and
  - Is greater than 1 ha,
  - Is less than 2 ha
  - Occupies less than 5% the area of SU1
- Stratum E does not meet SU stocking standard and
  - Is less than 1ha (note this is below the minimum stratum size so it would not normally be stratified.)

### SU2 (12.0) is FG

- Stratum F (11.7ha) meets SU Stocking status and
- Stratum G (0.3ha) does not meet stocking standard but
  - Is less than 1 ha (note this is below the minimum stratum size so it would not normally be stratified.)
- Lump E into Stratum A and G into Stratum F. Survey and Report on Strata A, C and F. The survey intensity on C may be quite light.

## Free growing examples: 1 SU > 40ha, Various Patches

Stratum	Governing SU	Stratum Status	Size
A	1	Met/exceeded Stocking Standard	47.6
B	N/A	WTP	6
C	N/A	WTP	5
D	1	Failed to meet/exceed Stocking Standard	1.1
E	1	Failed to meet/exceed Stocking Standard	1.3



### SU1 (50.0ha) is FG

- Stratum A meets SU stocking standards and
- Strata D, E do not meet the SU stocking standards and
  - Are Greater than 1 ha and
  - Are Less than 2 ha and
  - Occupy less than 5% of the total area of SU 1
- You may be able to lump D and E together. Survey and Report on Strata A, D and E.



# **Appendix A: FPPR Amendment**

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