

Illustrated Directory of Boreal Forest Silvicultural Treatments



**Centre technologique
des résidus industriels**



**Développement
économique Canada**

**Canada Economic
Development**

Canada



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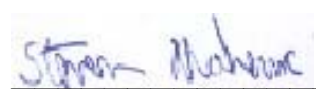
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Preface

Within the perspective of working jointly with the Cree community of Waswanipi, forest management planners have to respect and integrate the knowledge system and the stewardship role of the Cree land users in their management proposals. The Cree land users must express their concerns in a way that will be understood by forest management planners. It is hard for them to be heard and understood because they see and use the forest in a very different manner than forest management planners do. Acquiring knowledge and understanding about forest interventions would help Cree land users to express their concerns from a better perspective.

From these grounds the Waswanipi Cree Model Forest (WCMF) engaged the services of CTRI to develop a visual guide that would help the Waswanipi community members mainly focused on the trappers to recognize the various silvicultural operations performed in Eenu Istchee. This illustrated work includes all types of silvicultural operations carried out in the boreal forest. Short explanations and many photographs help the user understand the forest management objectives and evaluate more precisely when, where and how forest operations are carried out during the consultation phase.

Many thanks to Sophie Dallaire, Samuel Boucher and Guylaine Bois for their assistance in putting together this directory. Also thanks to Allan Saganash Jr., Paul Dixon, Derrick Neeposh and Rhonda Oblin. Their assistance has been important for the improvement of this illustrated work. Finally, thanks to all the people who helped finding the right photographs and for this directory. Their assistance proved essential and instrumental to delivering this reference tool.



Steven Maheux

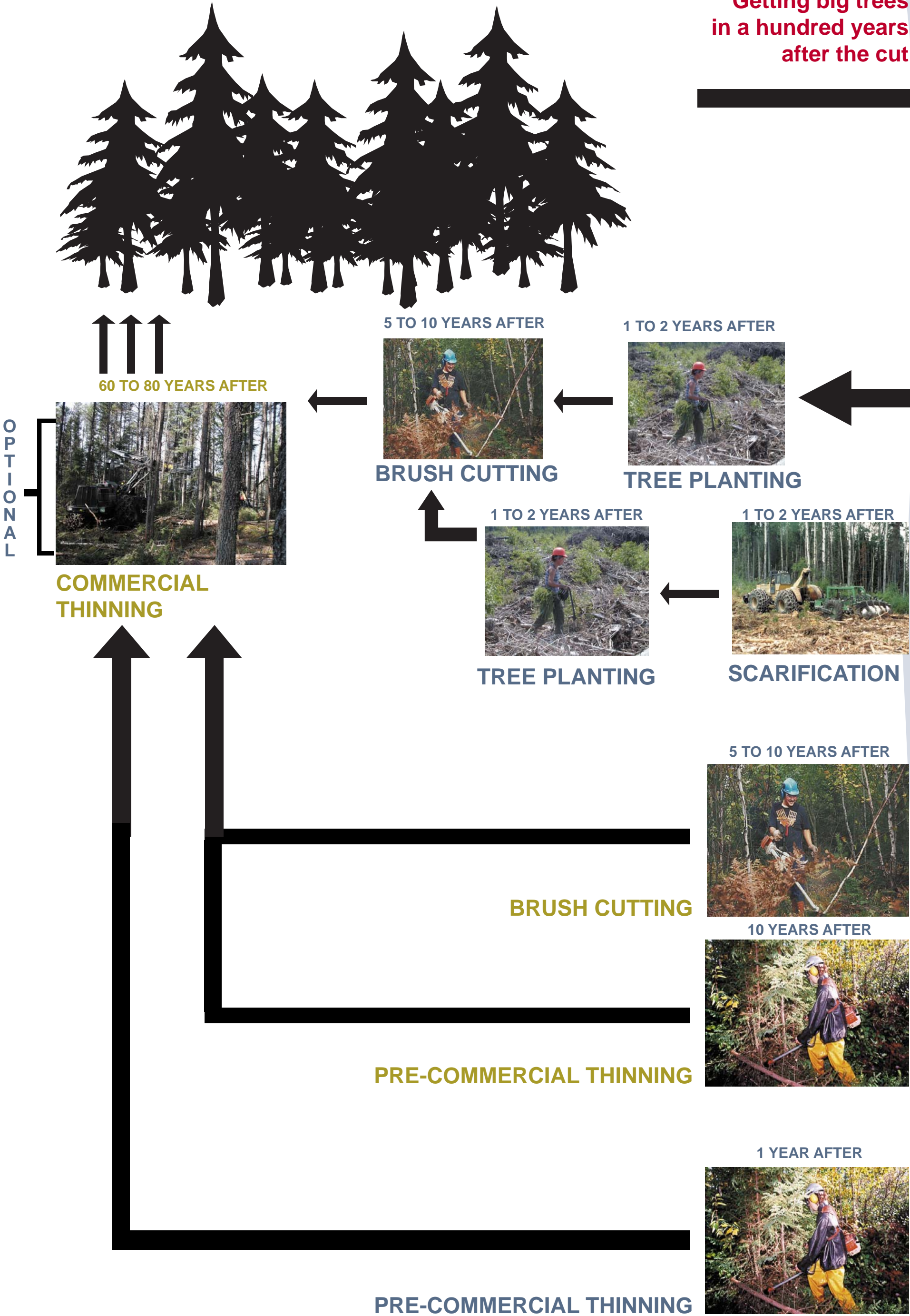
Project manager

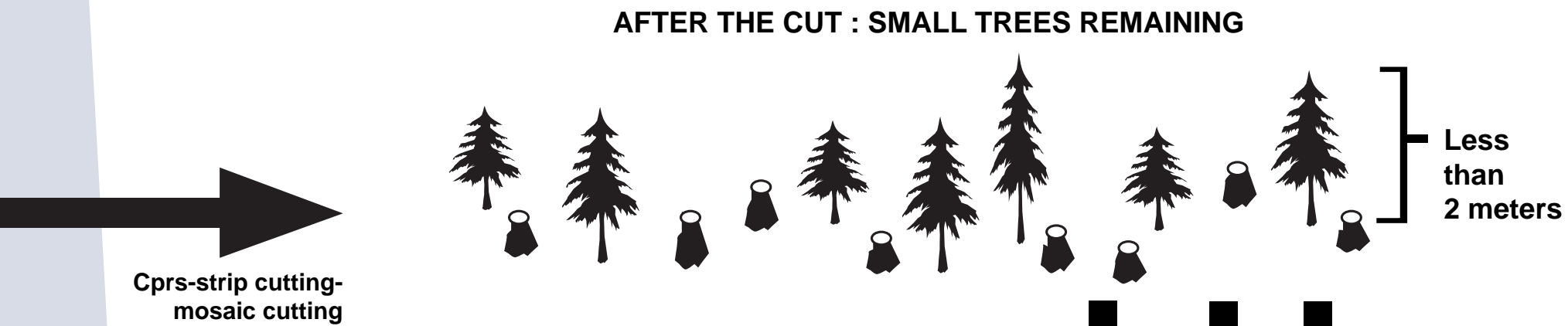
Centre technologique des résidus industriels (CTRI)

Forestry cycle

OLD FOREST : BIG TREES

Getting big trees
in a hundred years
after the cut





AFTER THE CUT



SITE OKAY

SITE NOT OKAY

INSUFFICIENT
REGENERATION

AFTER THE CUT



LOT OF BRUSHES

LOT OF TREES

SUFFICIENT
REGENERATION

AFTER THE CUT



LOT OF TREES

Lot of high
regeneration

Clear cutting methods

FULL TREE METHOD

STEP 1: FELLING / BUNCHING



CUTTING THE TREES

STEP 2: SKIDDING



Bringing the trees on roadside

STEP 4: LOADING



Bringing the trees to the saw mill

STEP 3: DELIMBING



Taking out the branches

CUT TO LENGHT (CTL)

STEP1: FELLING - CTL
DELIMBING

OPTION 1



Cutting the trees, taking out the branches and making 2.4 to 4.8 meters logs

STEP 2: SKIDDING



Bringing logs on roadside

STEP 3-4: LOADING



Bringing logs to the saw mill

STEP 1: FELLING - BUNCHING



CUTTING THE TREES

STEP 2: CTL - DELIMBING



-Taking but the branches
-Making 2.4 to 4.8 meters logs

STEP 3: SKIDDING



Bringing the logs on roadside



STEP 5: WINDROWING

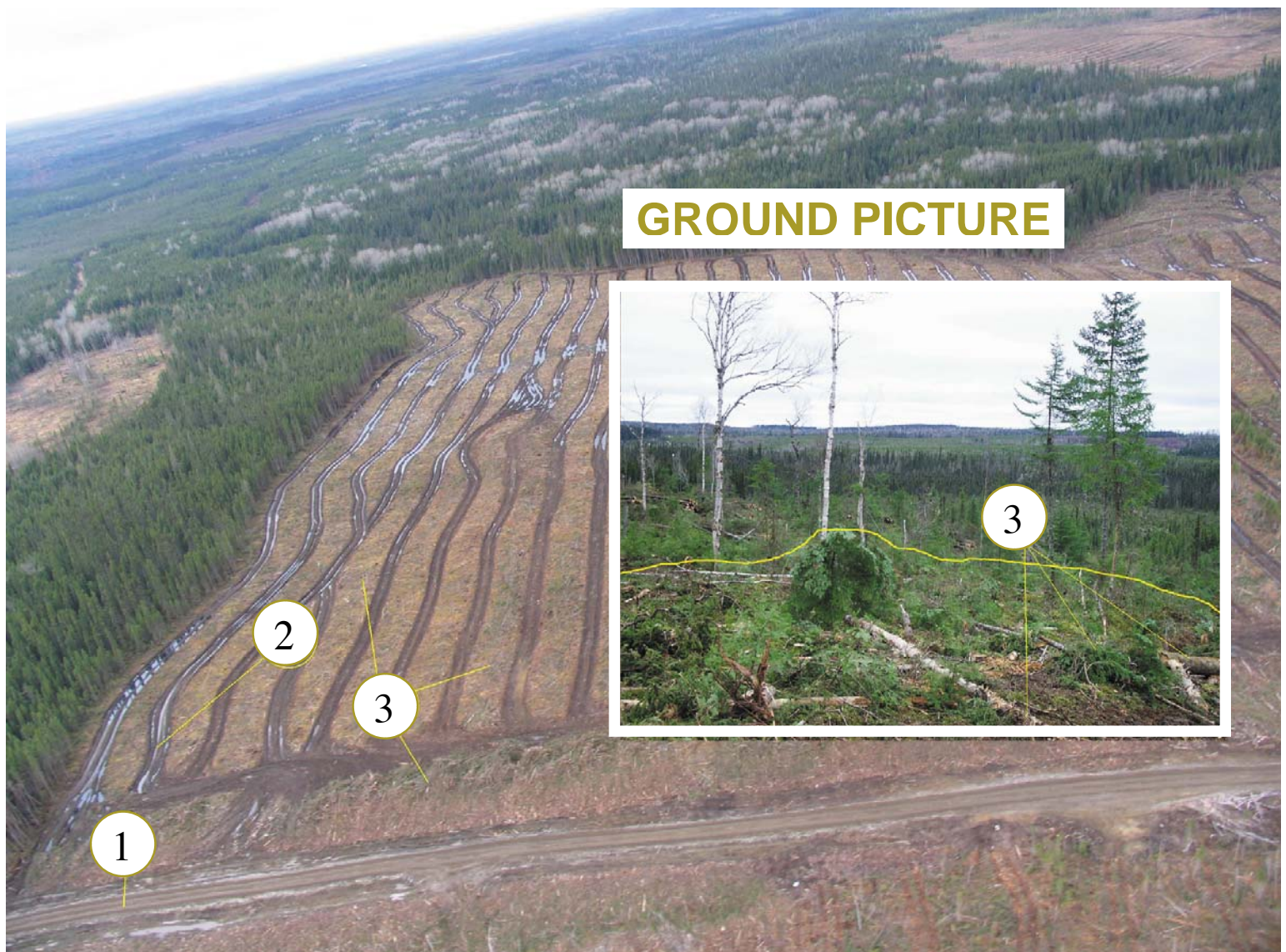


Making piles with tree ends and branches

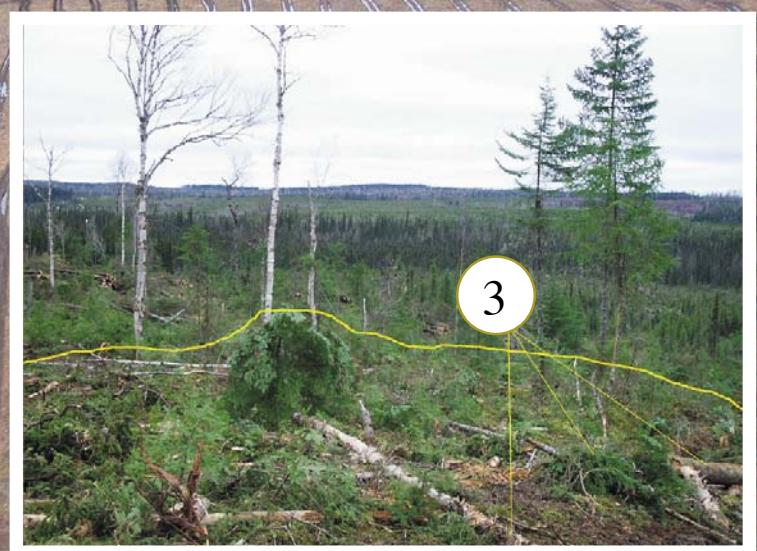


- 1- Road
- 2- Skidding trail
- 3- Windrows (tree end piles)
- 4- All the tree ends and branches on roadside

AERIAL PICTURE



GROUND PICTURE

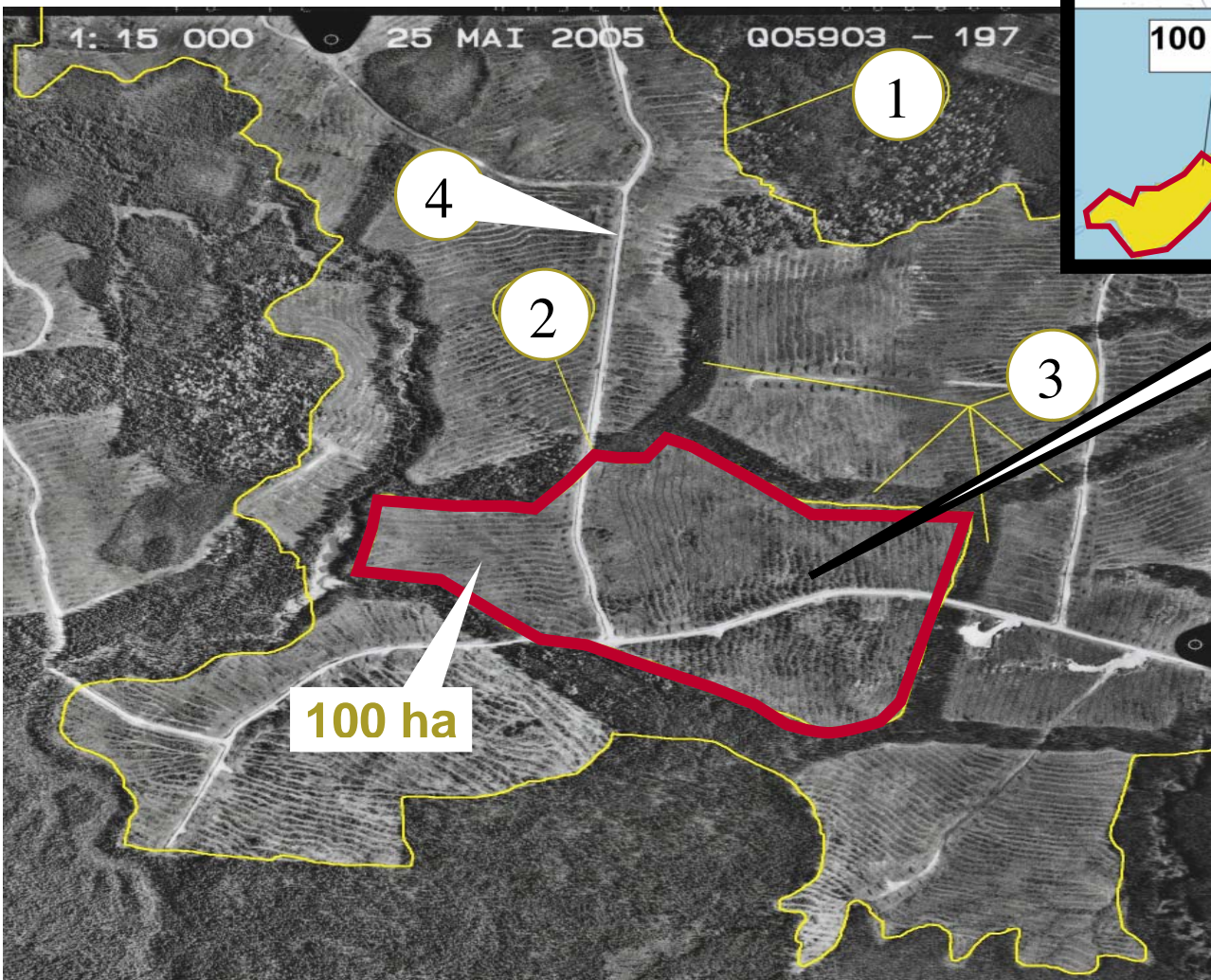


- 1- Road
- 2- Skidding trail

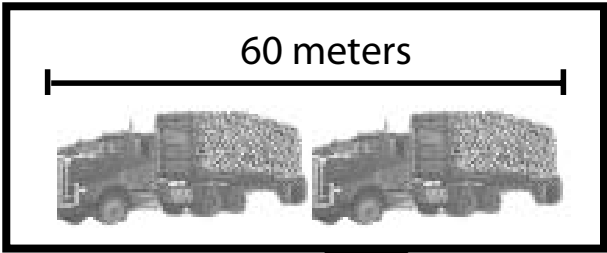
- 3- Tree ends and branches in all the clear cut

Clear cutting aerial pictures

CPRS

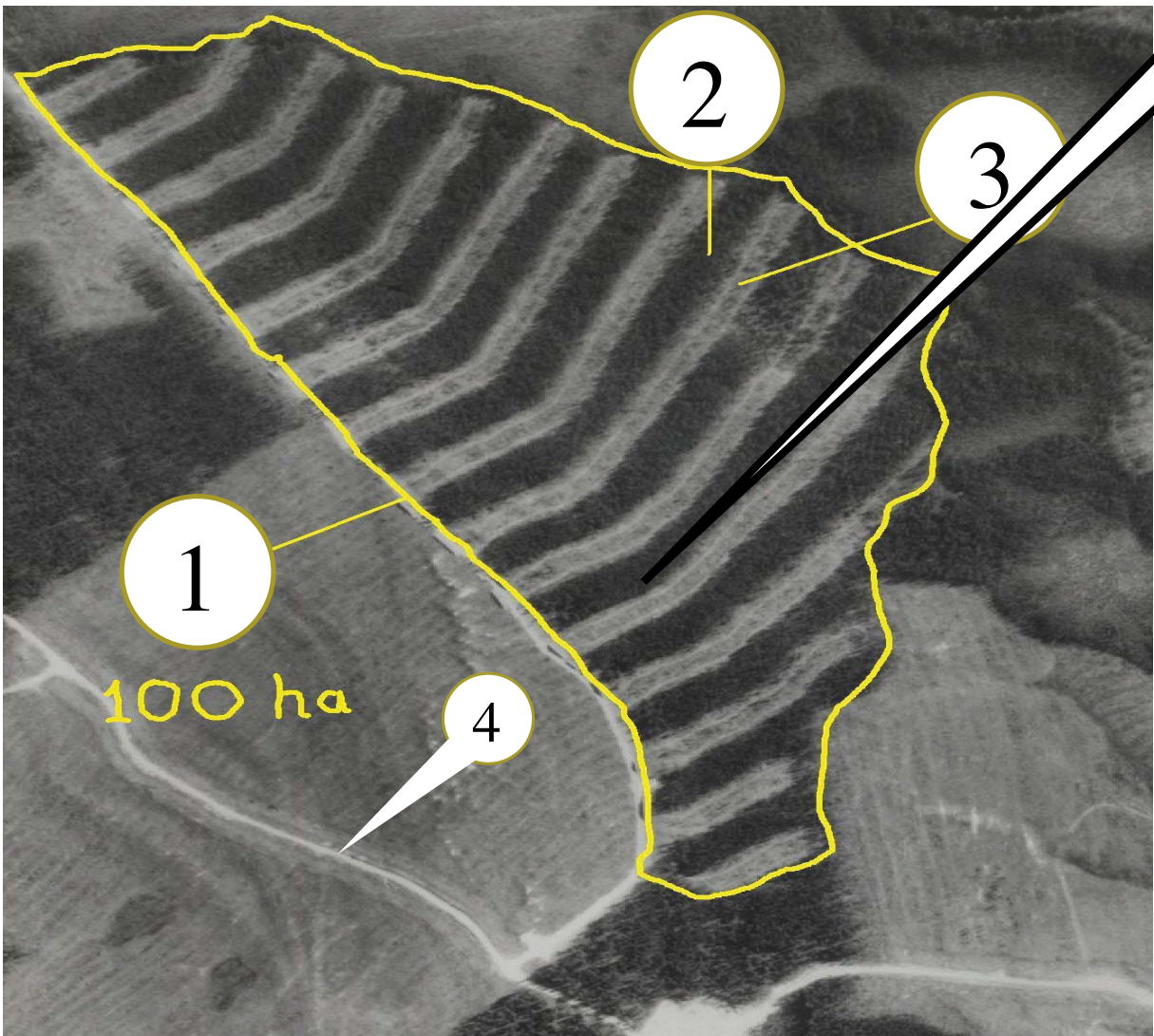


- 1- Harvesting sector
- 2- Clear cut
- 3- 60 meters buffers
- 4- Roads



20 YEARS AFTER

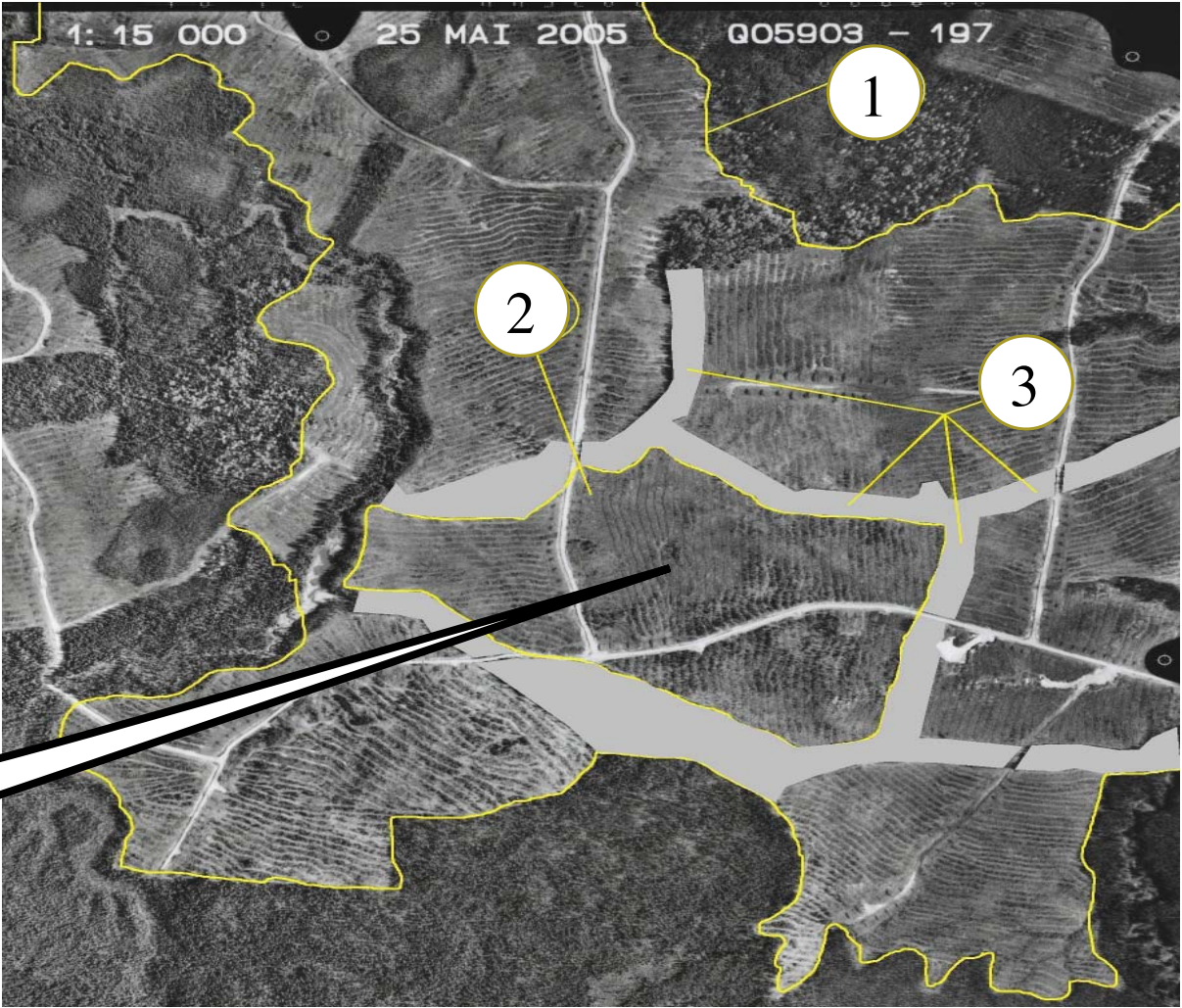
STRIP CUTTING



- 1- Harvesting sector
- 2- Residual strip
- 3- Clear cut strip
- 4- Roads

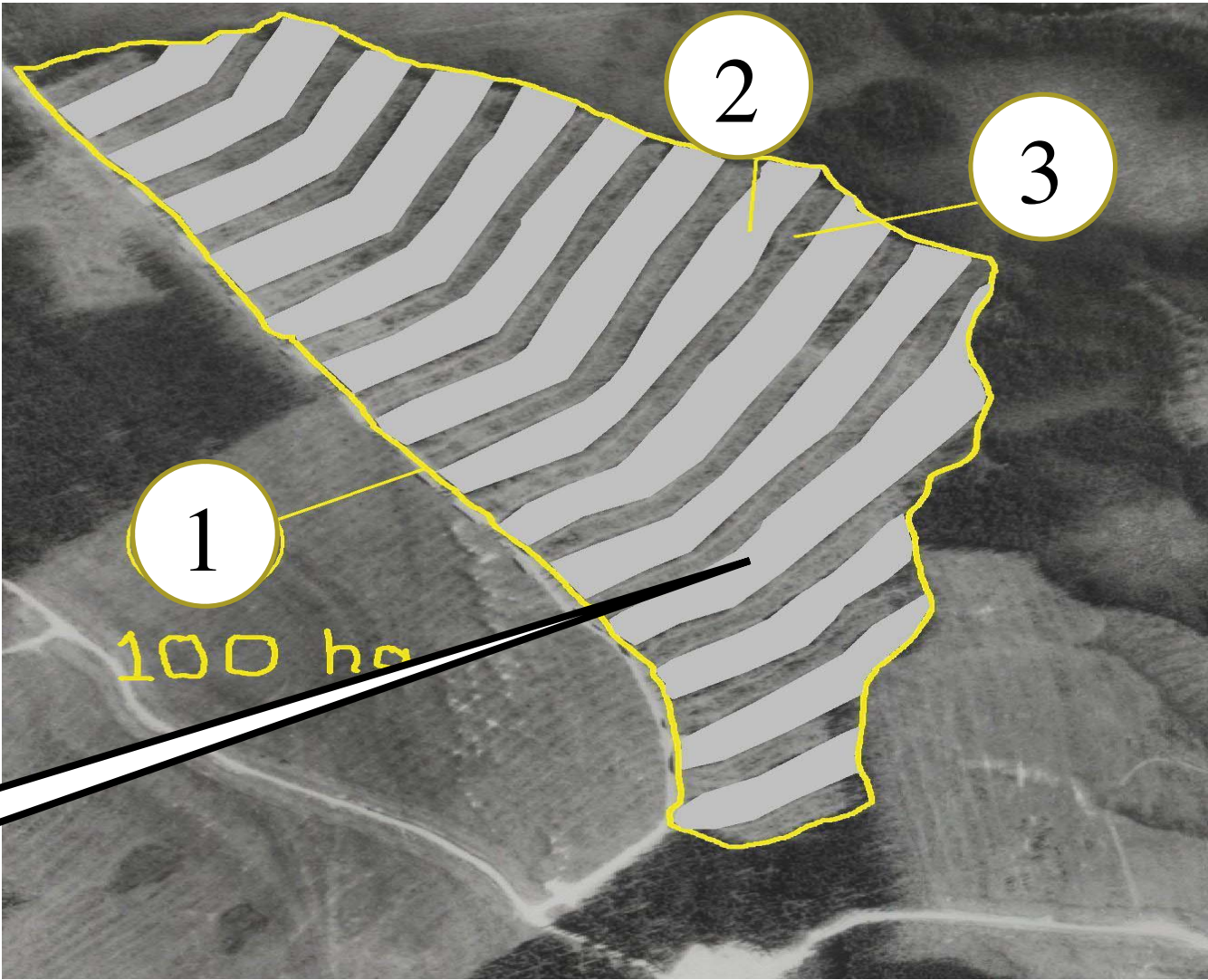
20 YEARS AFTER

CPRS, 2nd CUT



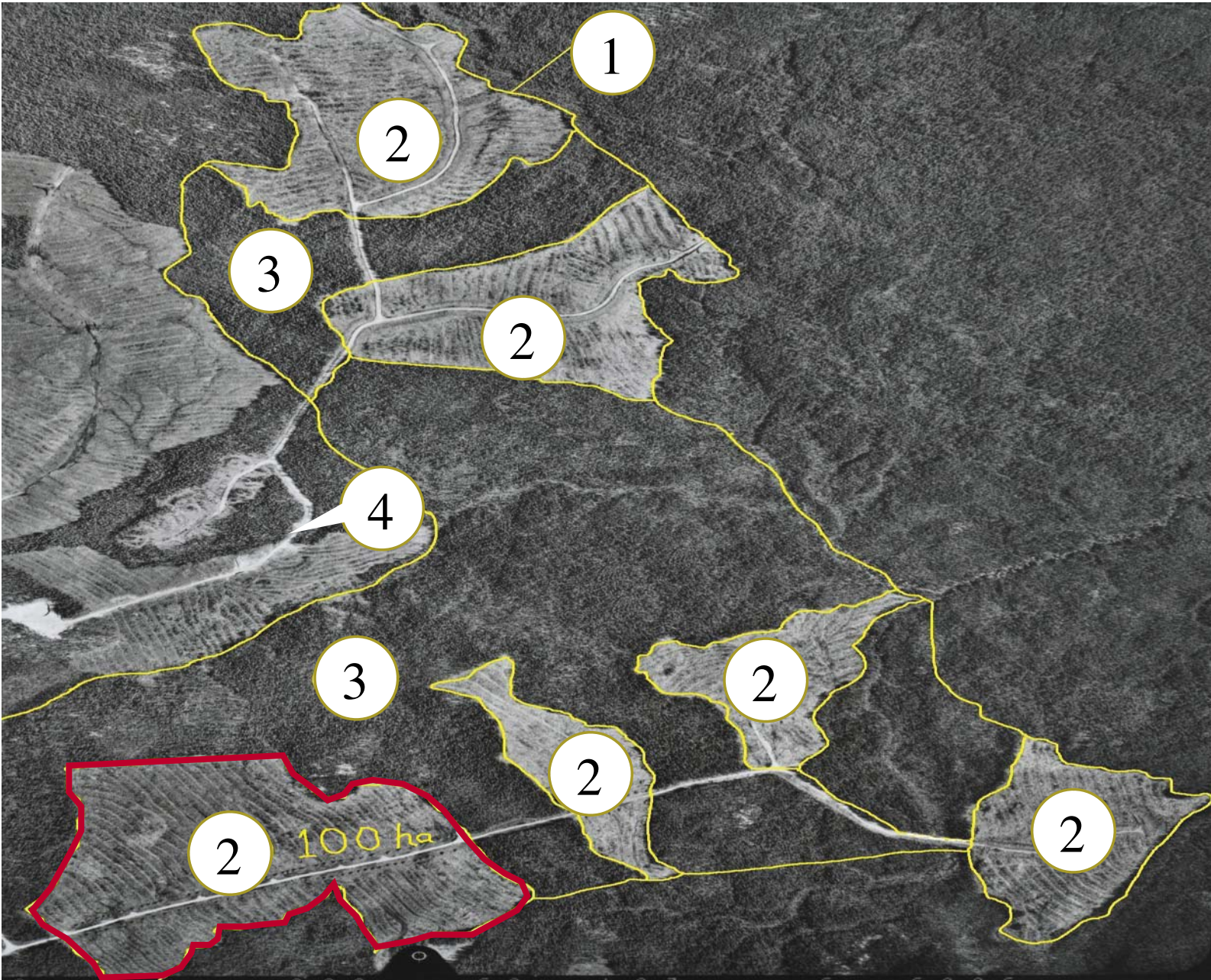
- 1- Harvesting sector
- 2- Regeneration
- 3- Clear cut

STRIP CUTTING, 2nd CUT



- 1- Harvesting sector
- 2- Clear cut
- 3- Regeneration

MOSAIC CUTTING



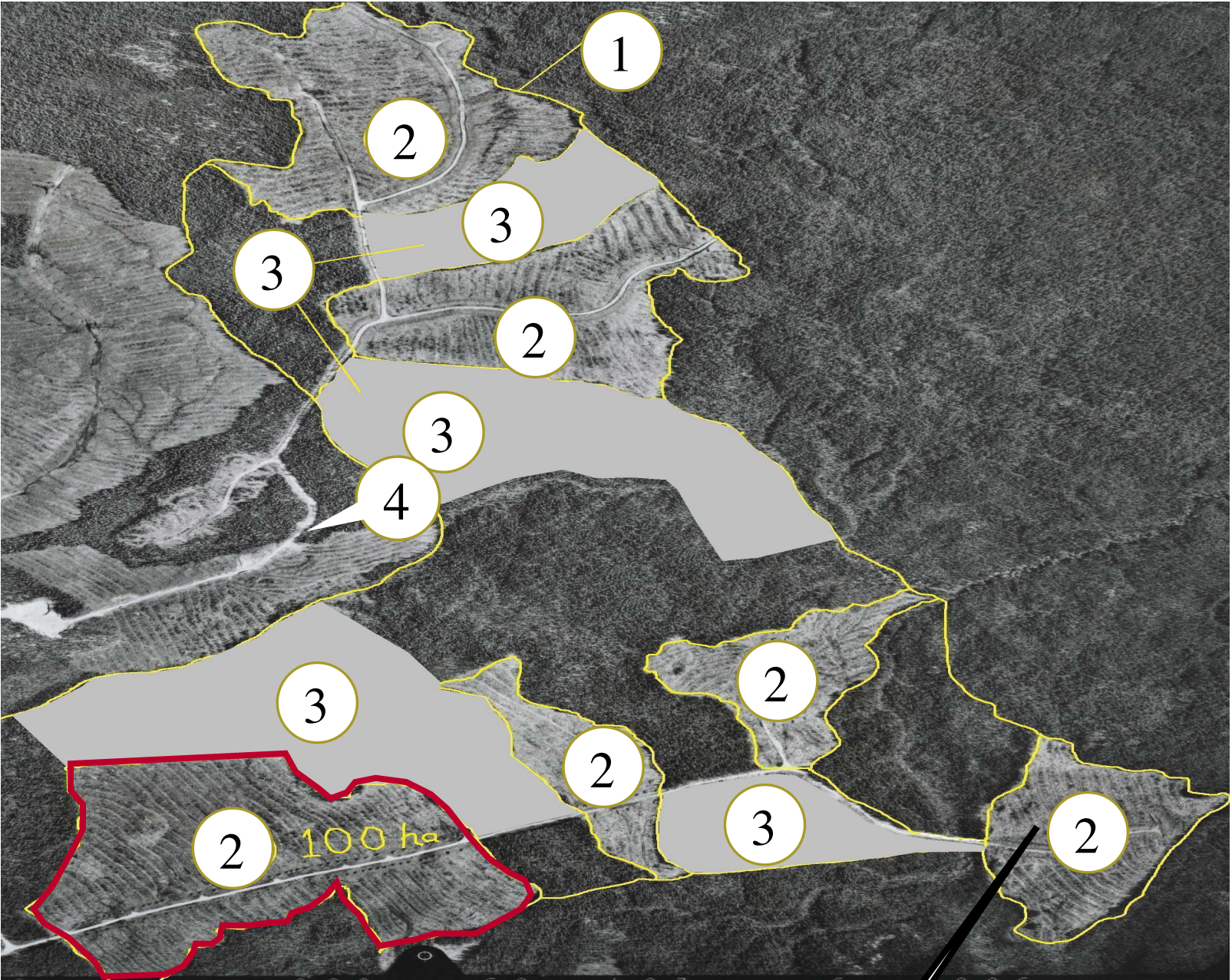
20 YEARS
AFTER

- 1- Harvesting sector
- 2- Clear cut
- 3- Residual forest
- 4- Roads



THE RED CIRCLED
AREAS ARE NOT
AT THE SAME PLACE

MOSAIC CUTTING, 2nd CUT



- 1- Harvesting sector
- 2- Regeneration
- 3- Clear cut
- 4- Roads



MORE THAN 7 METERS IN THE 25%
AREA OF THE CREE QUEBEC AGEEMENT

Windrowing (tree planting between piles)

ENABLE TREE PLANTING ON ROADSIDE

STEP 1: BEFORE

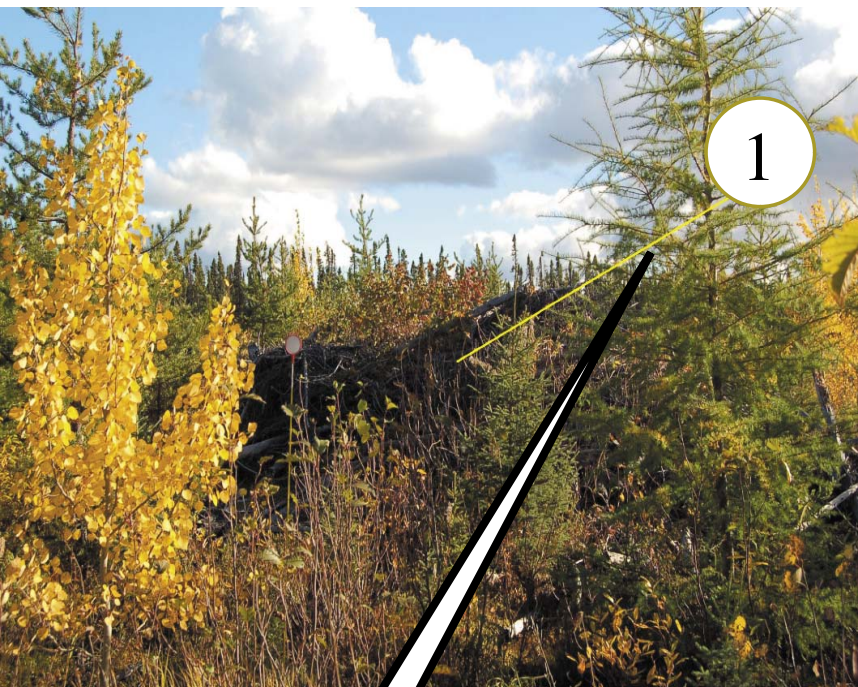


- 1- Too much debris for tree planting
- 2- Roadside

STEP 2: WINDROWING



AFTER 15 YEARS



1- WINDROW



AFTER 5 YEARS

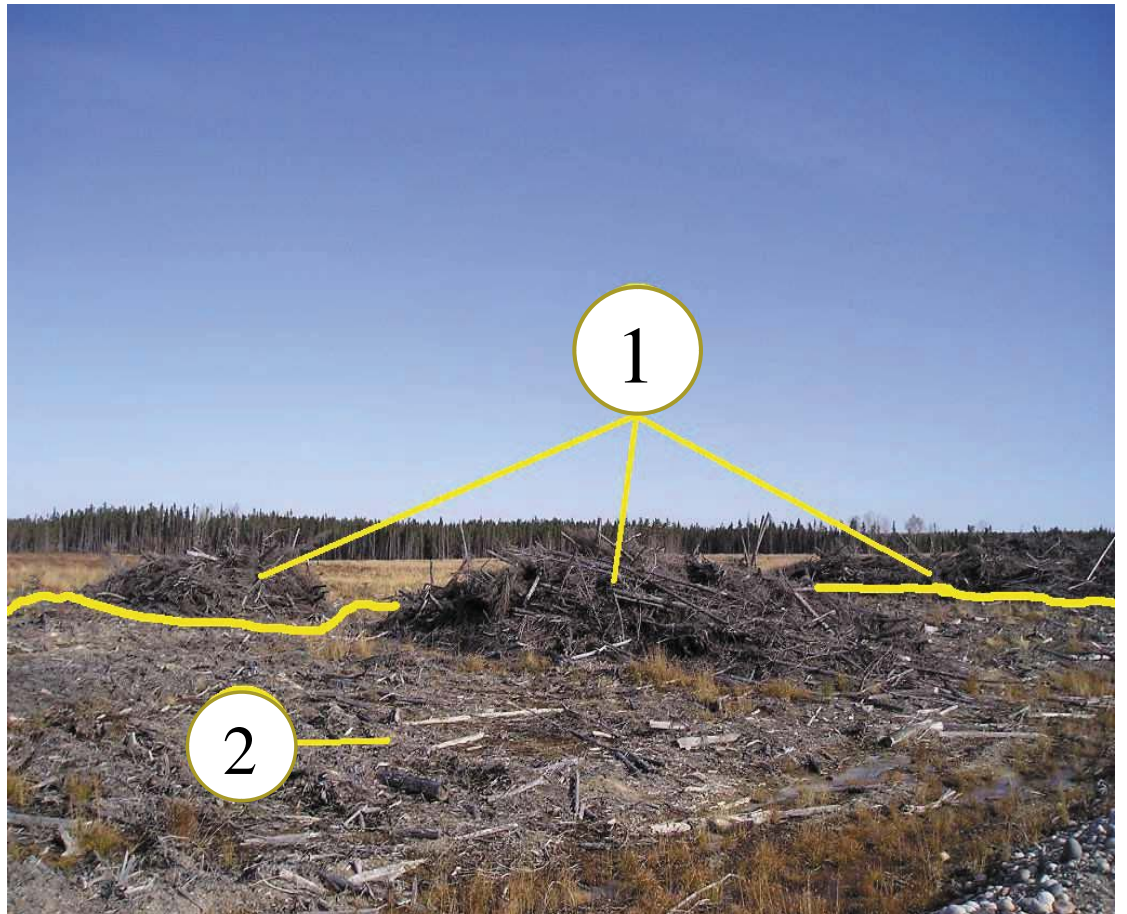


1- WINDROW



Windrowing (tree planting between piles)

STEP 3: AFTER WINDROWING



- 1- Windrows (tree end piles)
- 2- Planting site



STEP 4: TREE PLANTING



Scarification (field preperation for tree planting)

LOOSENING THE TOPSOIL TO ENABLE TREE PLANTING

STEP 1: BEFORE



1- Lots of big debris
- no regeneration



1- Few big debris
- no regeneration

STEP 2: SCARIFICATION USING A HARROW



1- Harrow (slicing the top soil)
- break up and spread the debris

STEP 2: CHANNEL SCARIFICATION



1- Serrated discs scratching the top soil.
- Doesn't break the debris

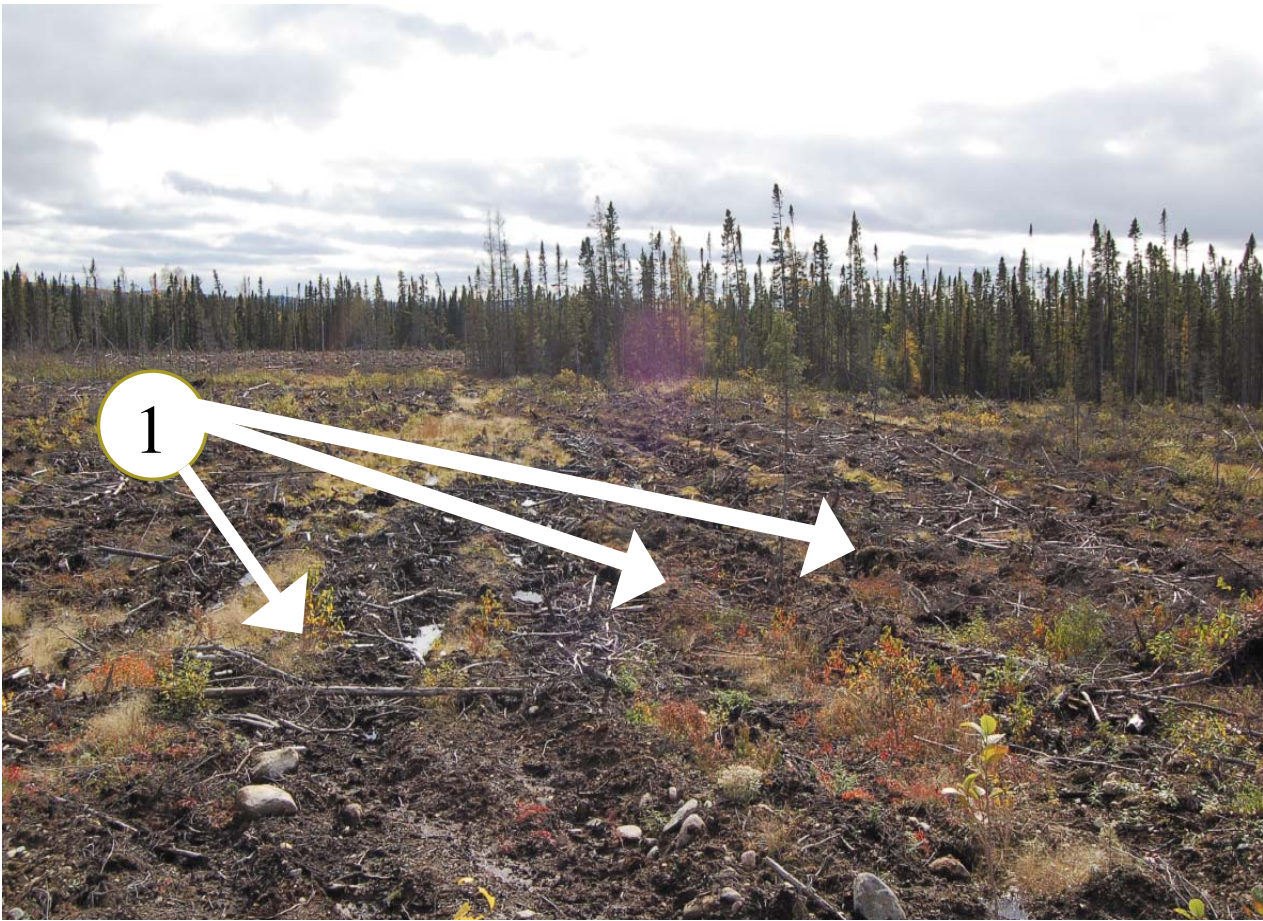
Scarification (field preperation for tree planting)

STEP 3: READY FOR TREE PLANTING



- Loosened topsoil in all the area
- broken debris

STEP 3: READY FOR TREE PLANTING



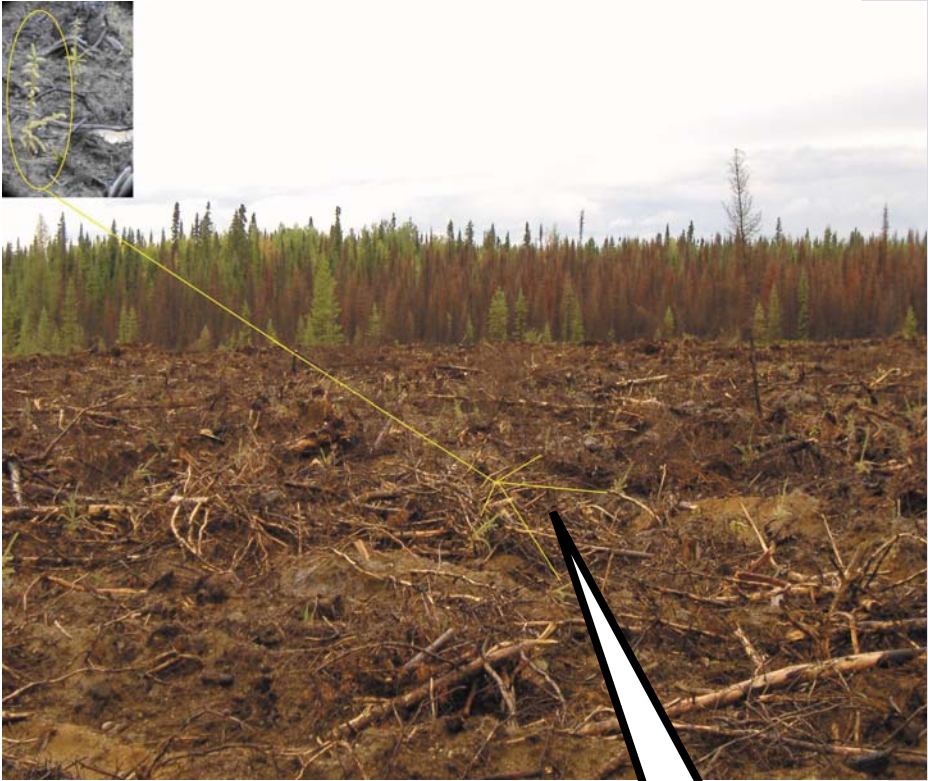
- 1- Channels
- loosened topsoil only in the channels
 - unbroken debris

Tree planting

TREE PLANTING



AFTER



BLACK
SPRUCE



0.3 METER



MORE
THAN
1 METER

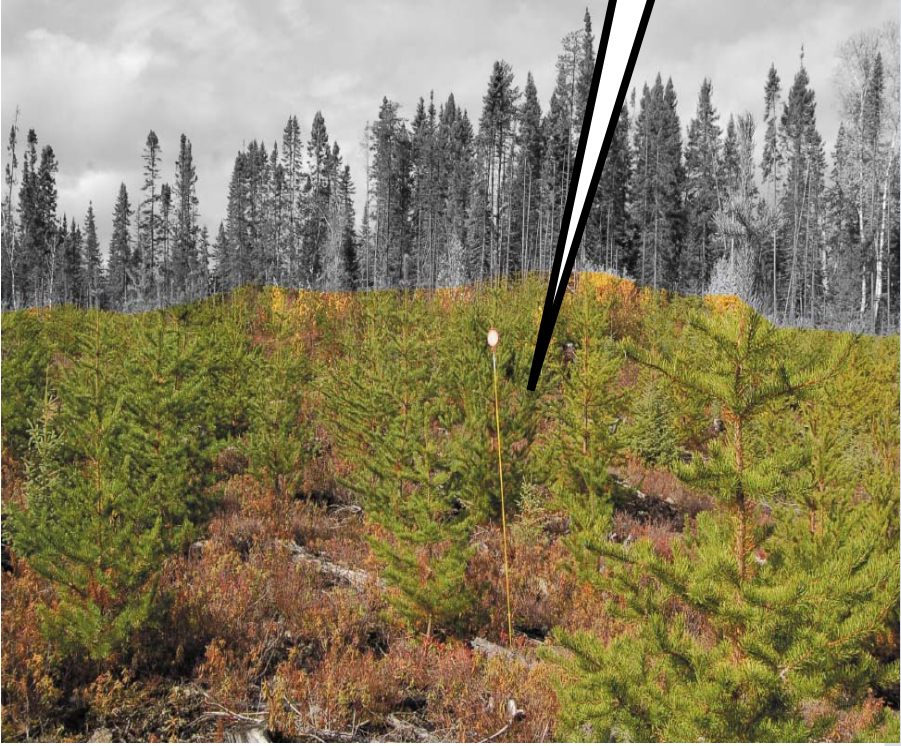
JACK PINE



AFTER



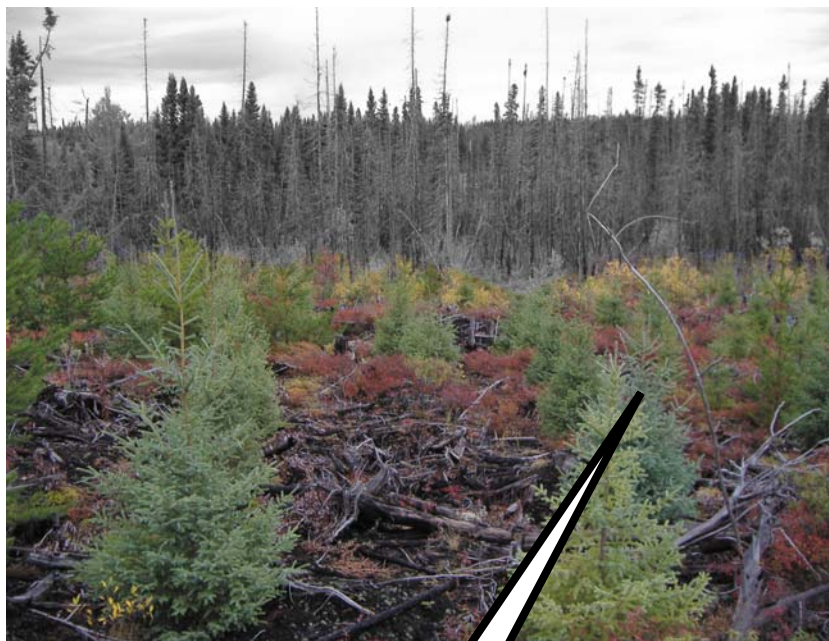
5 YEARS AFTER



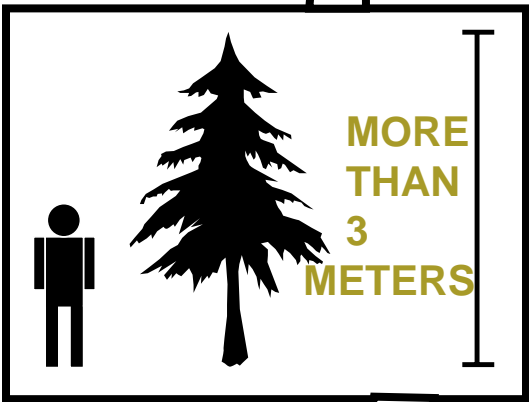


0.3 METER

5 YEARS AFTER



15 YEARS AFTER



15 YEARS AFTER



Pre-commercial thinning and brush cutting

CUTTING TO INCREASE THE GROWTH OF RESIDUAL TREES

PRE-COMMERCIAL THINNING

STEP 1: BEFORE

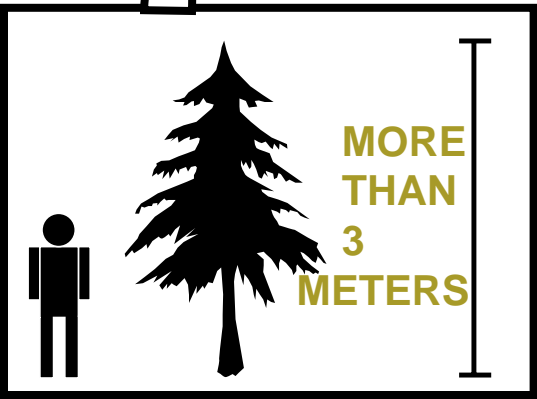


1- Insufficient light

STEP 1: DURING



- Cutting trees



BRUSH CUTTING

STEP 1: BEFORE



1- Insufficient light
2- Planned sector

STEP 1: DURING



- Cutting brush



Pre-commercial thinning and brush cutting

STEP 3: AFTER

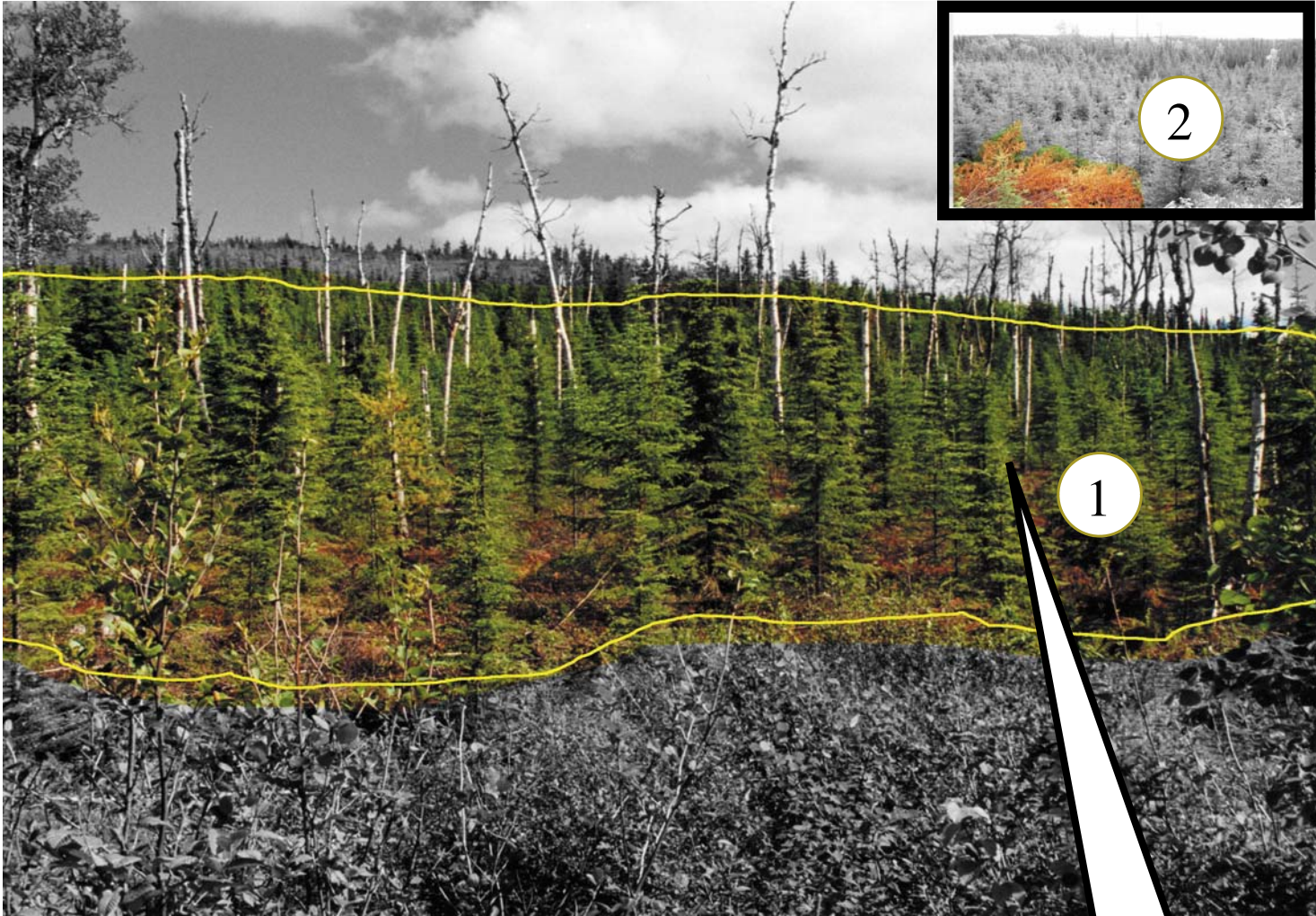


AFTER 10 YEARS



- 1- Enough light
- trees grow faster
- 2- Slashing debris left on the site

STEP 3: AFTER



- 1- Enough light
- trees grow faster
- 2- Slashing debris left on the site



STEP 1: FEFORE



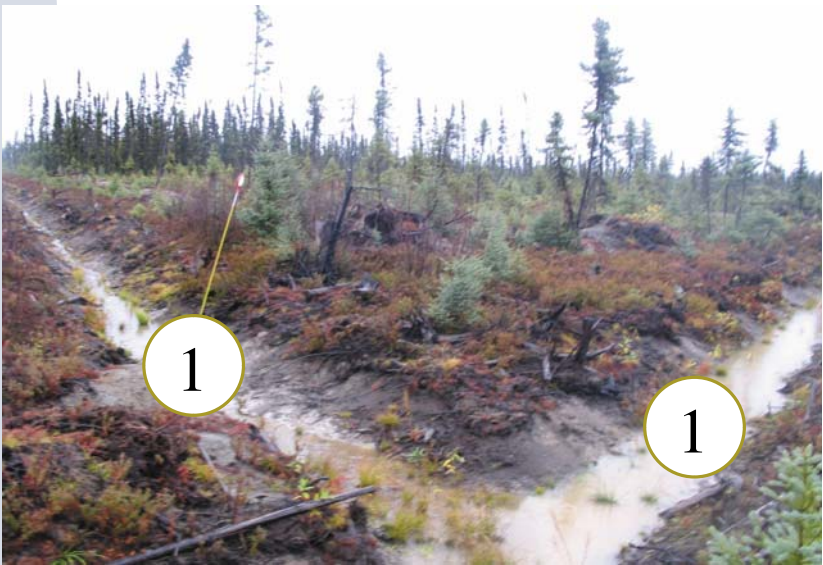
- 1- Wet soil
- 2- Slow growth



STEP 2: DIGGING



HIGHER GROUND LEVEL



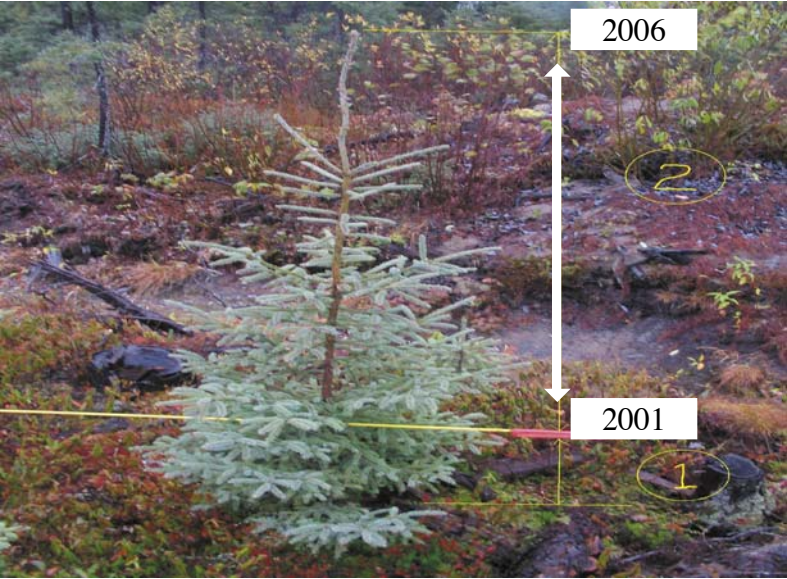
1- Small ditches (less than 0.6 meter)

LOWER GROUND LEVEL



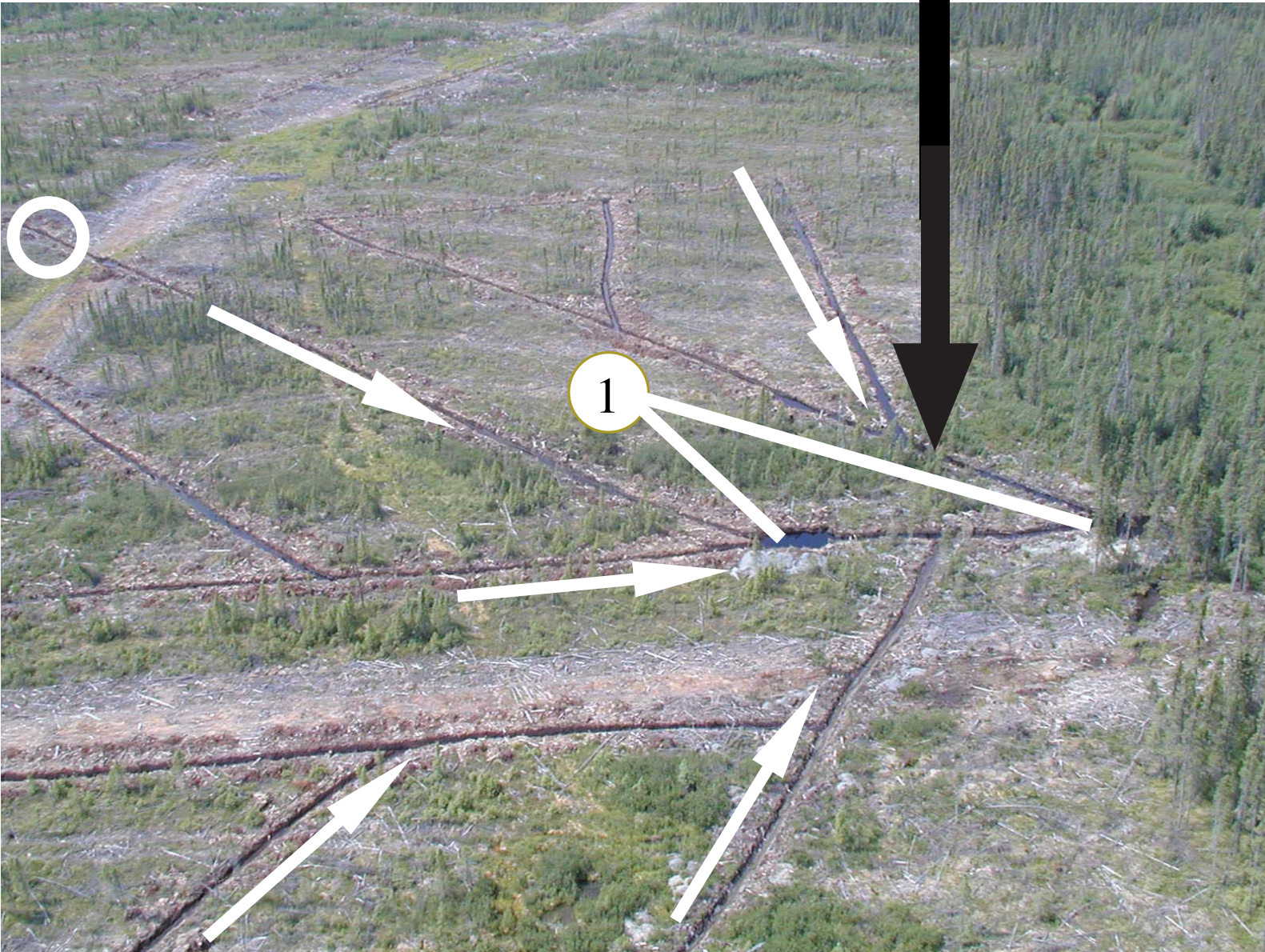
1- Bigger ditches (more than 1.2 meter)

GROWTH AFTER



1- Before drainage
2- Better growth after drainage

AFTER (AERIAL PICTURE)



1- Sedimentation pond for creek protection
- size of a house
- potential flooded area by beavers

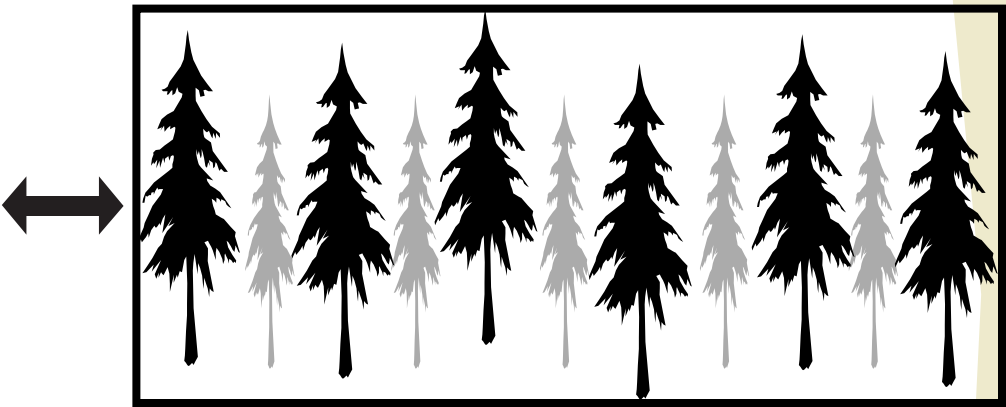
Commercial thinning

STEP 1: BEFORE



1- Insufficient light: alive branches are dying
- trees can't grow

BEFORE

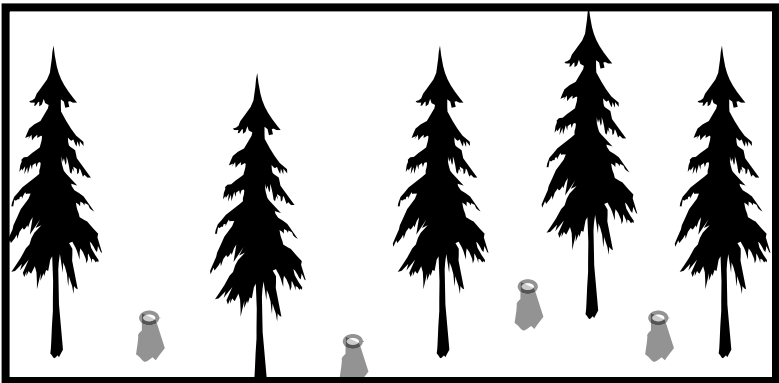


STEP 2: CUTTING THE TREES



Cutting the trees with less alive branches

AFTER



STEP 3: SKIDDING



Bring the logs on roadside

STEP 3: AFTER



1- Equals 30% of cut trees
2- Sufficient light: alive branches stop dying
- trees can grow

CUTTING TO
IMPROVE THE
GROWTH OF
THE REMAINING
TREES

STEP 5: CLEAR CUT



STEP 4: TREES STOP GROWING AGAIN



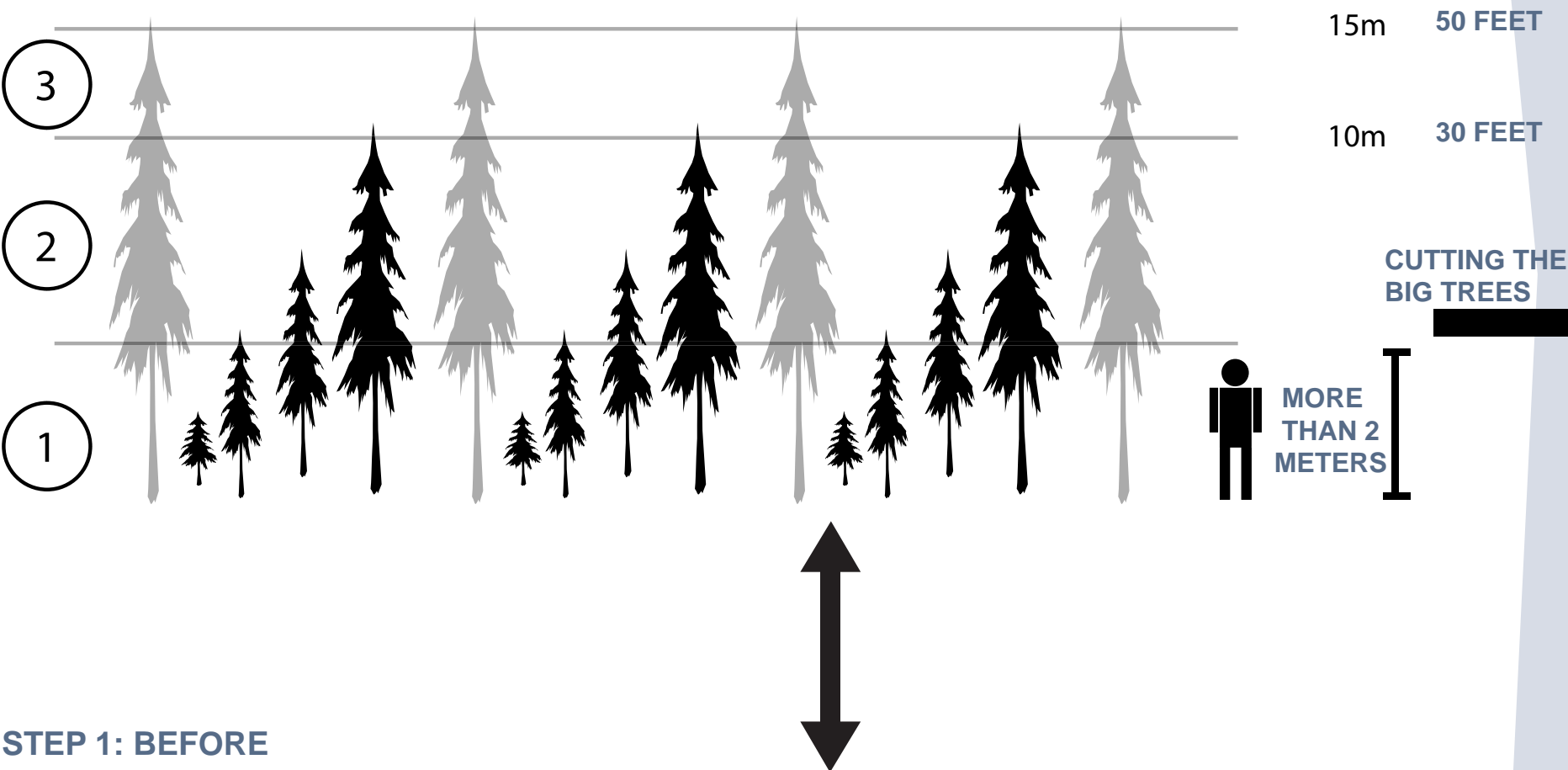
AFTER 15 YEARS

AFTER



1- SKIDDING TRAIL

BEFORE

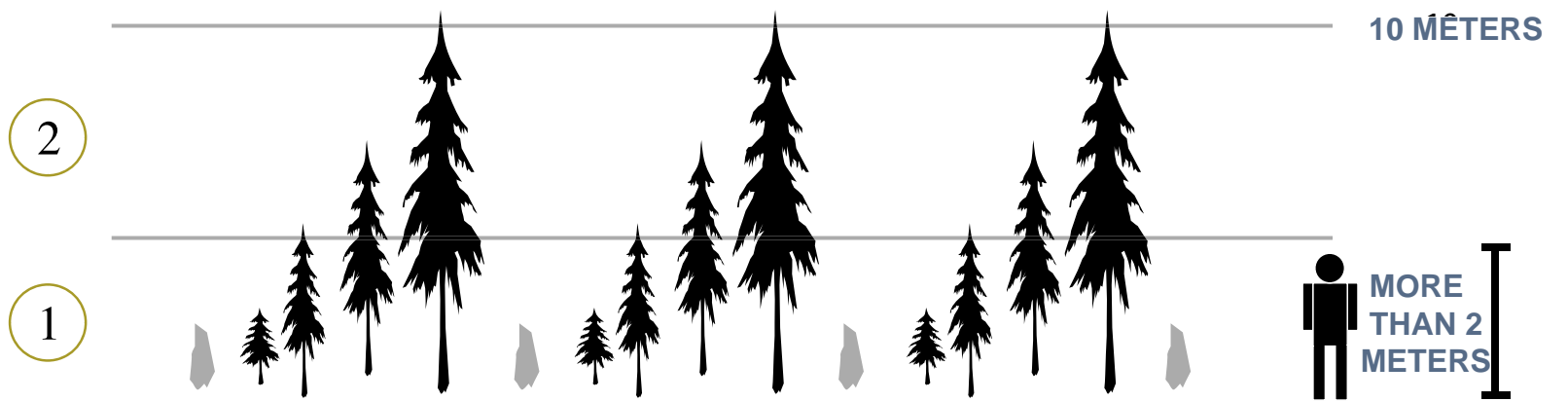


STEP 1: BEFORE



- 1- High regeneration
- 2- Small trees
- 3- Big trees

AFTER



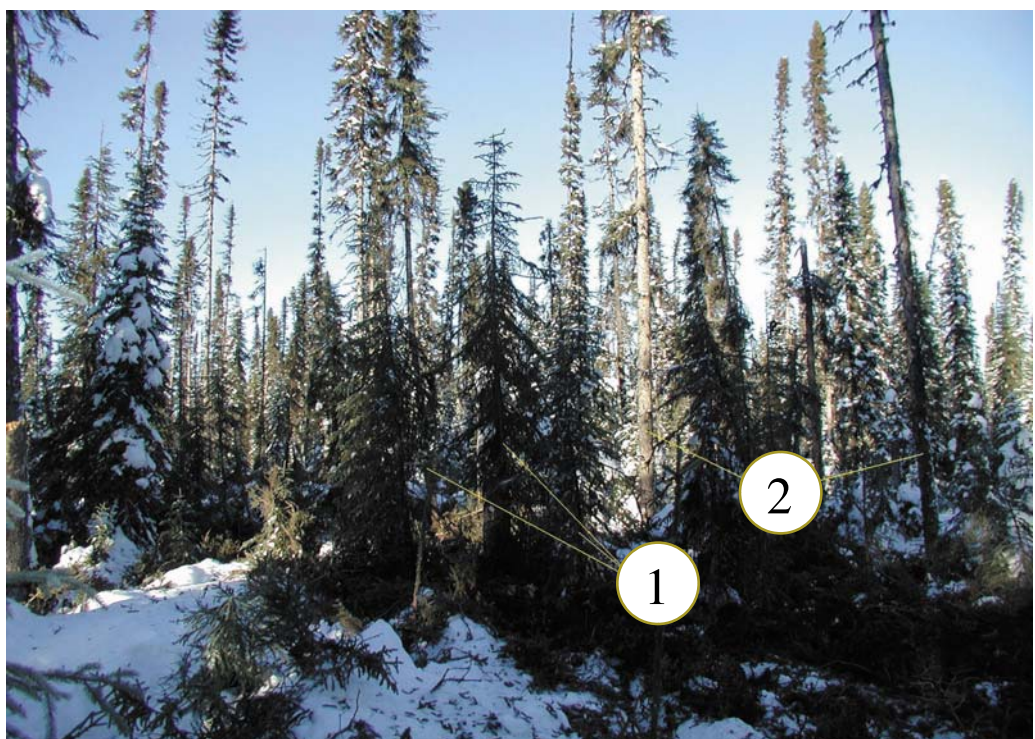
STEP 2: CUTTING THE TREES



STEP 3: SKIDDING

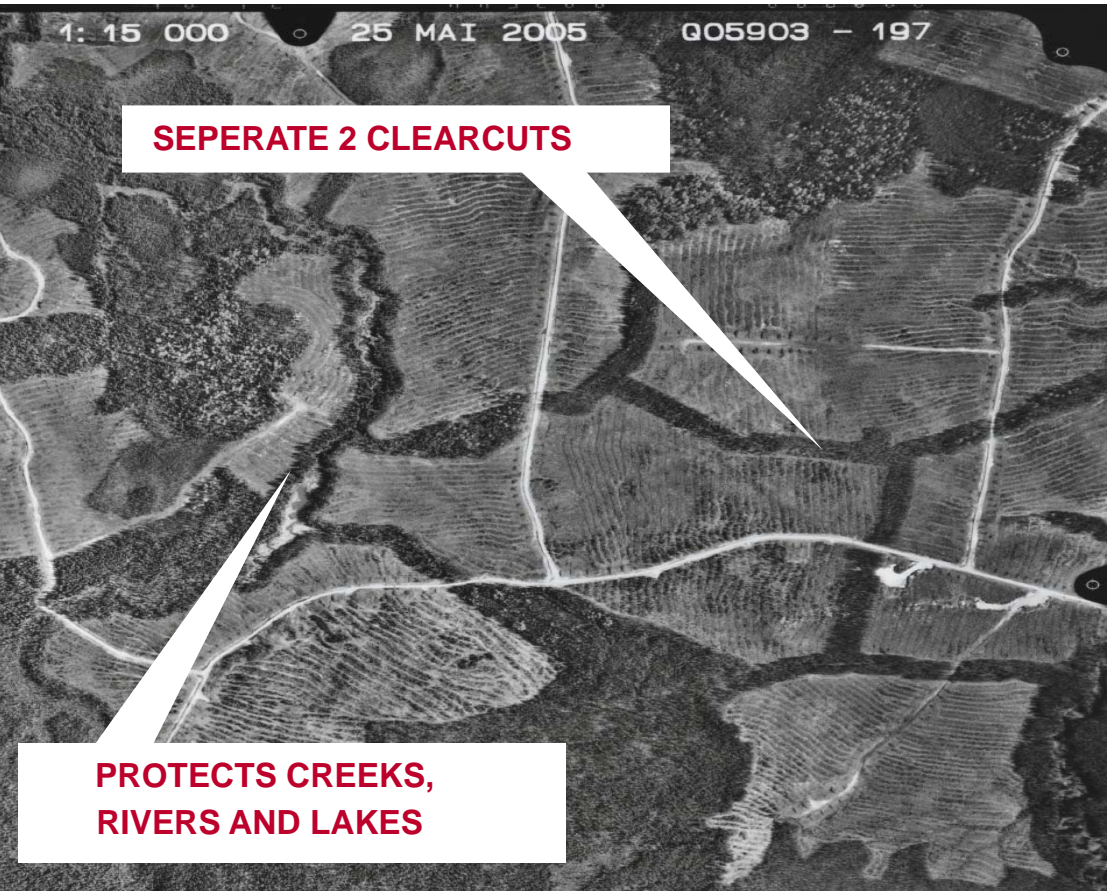


STEP 4: AFTER



1- High regeneration
2- Small trees

BUFFER’S FUNCTIONS



LESS THAN 20 M BUFFER
(66FEET)



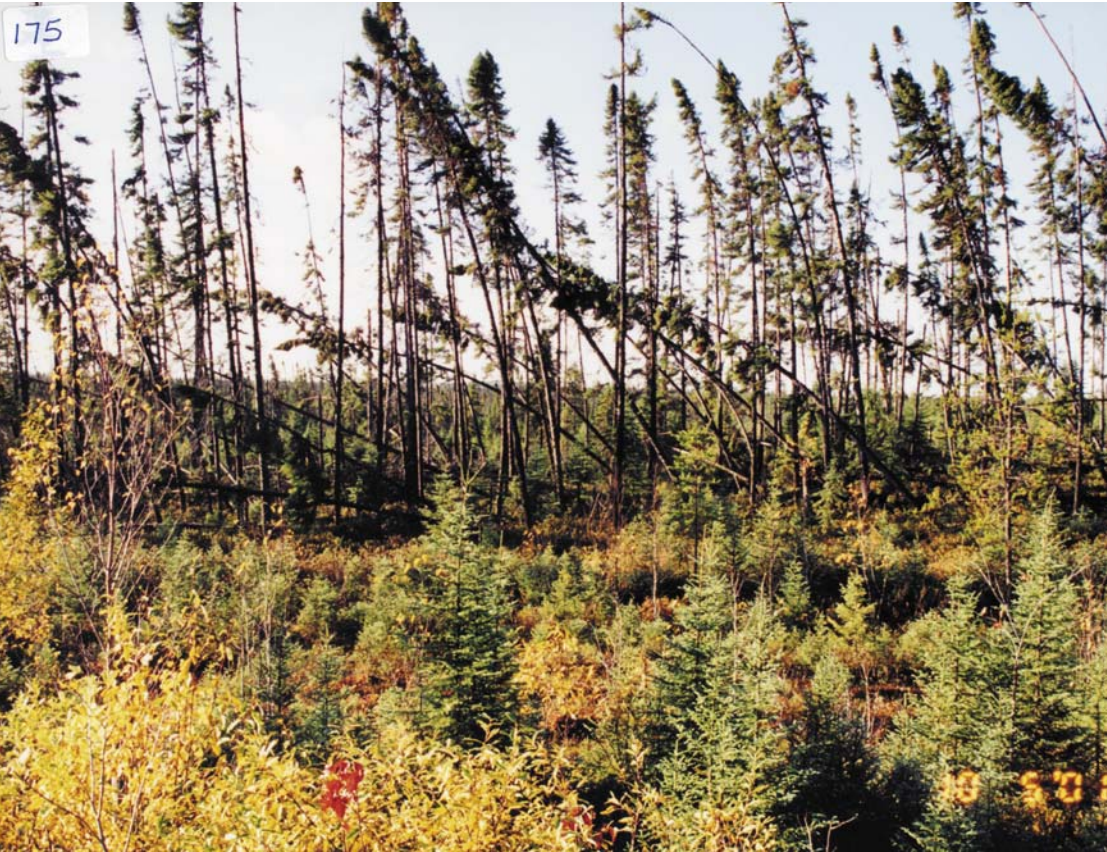
30 M BUFFER (98FEET)



60 M BUFFER (197 FEET)



THIN BUFFER WITH BLOWDOWN



STEP 1: CREATING THE ROAD SITE



Cutting and bringing trees to the sawmill

STEP 2: ROAD SITE READY



1- Road side soil
2- Road

GRAVELED ROADS



WINTER ROADS



STEP 3: PADDING



Putting the road side soil on the road

STEP 4: PADDED ROAD



1- PAD

STEP 5: GRAVELING



Bringing the gravel on the pad



Spreading the gravel on the pad

FELLER - BUNCHERS

CUTTING



1- FELLING HEAD

- Cut the trees
- Place them in piles

PROCESSOR (MULTIFUNCTIONAL)

CTL - DELIMBING



1- PROCESSOR HEAD

- Cut the trees into logs
- Take out the branches

GRAPPLE SKIDDER

SKIDDING



CABLE SKIDDER



Tow the trees to roadside

1- PROCESSOR HEAD



HARVESTER (MULTIFUNCTIONNAL)



- Cut the trees into logs
- Take out the branches

DELIMBING

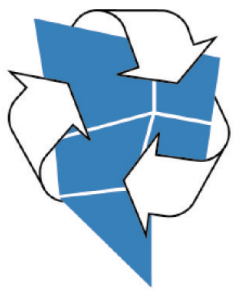


Take out the branches

FORWARDER



Carry the logs to roadside



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