Soil Disturbance Definition Document

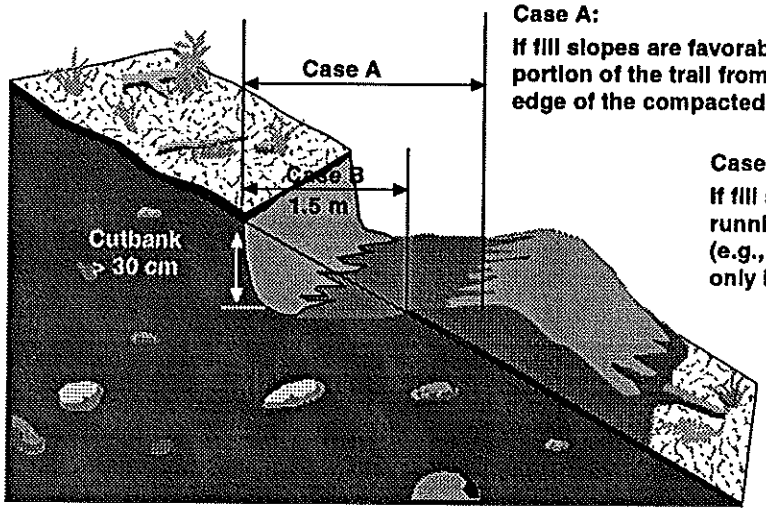
Under the Forest Practices Code disturbance to the soil must meet minimum size criteria before it is counted as a category of detrimental soil disturbance. In this agreement each specific category of soil disturbance will be defined and illustrated so the contractor can avoid creating categories of disturbance that will be counted.

Excavated or Bladed Trails of a Temporary Nature

Excavated or bladed trails are constructed trails with an excavated width greater than 1.5 m and a depth of excavation into mineral soil exceeding 30 cm. The construction of excavated or bladed trails requires prior approval in a logging plan or silviculture prescription. If the rehabilitation of temporary excavated or bladed trails is not carried out, these structures contribute towards counted soil disturbance. If trails are constructed (for fire guards, planter access, etc.) so the depth of excavation into mineral soil is less than 30 cm, they will not meet the legal definition of excavated or bladed trails.

Soil disturbance in association with excavated or bladed trails will be assessed in different ways depending on whether the fill slope material is favorable or unfavorable for growing trees. The following diagrams illustrate these points.

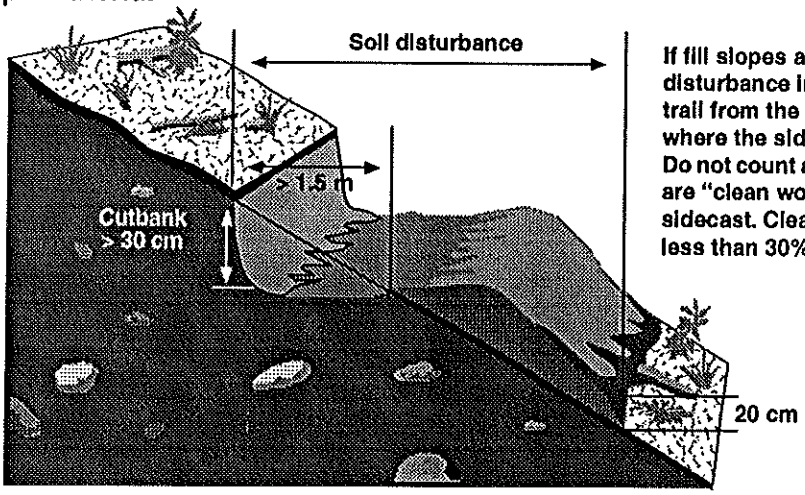
Favorable Fill Slope Material



Case A:
If fill slopes are favorable – soil disturbance includes any portion of the trail from the top of the cut to the outside edge of the compacted running surface.

Case B:
If fill slopes are favorable and the running surface is not compacted (e.g., a winter trail), soil disturbance only includes the excavated area.

Unfavorable Fill Slope Material



If fill slopes are unfavorable – soil disturbance includes any portion of the trail from the top of the cut to the point where the sidecast fill is >20 cm deep. Do not count accumulations of slash that are "clean woody debris" as part of the sidecast. Clean woody debris contains less than 30% mineral soil.

Initials (Contractor)	Initials (Province)

Corduroyed Trails

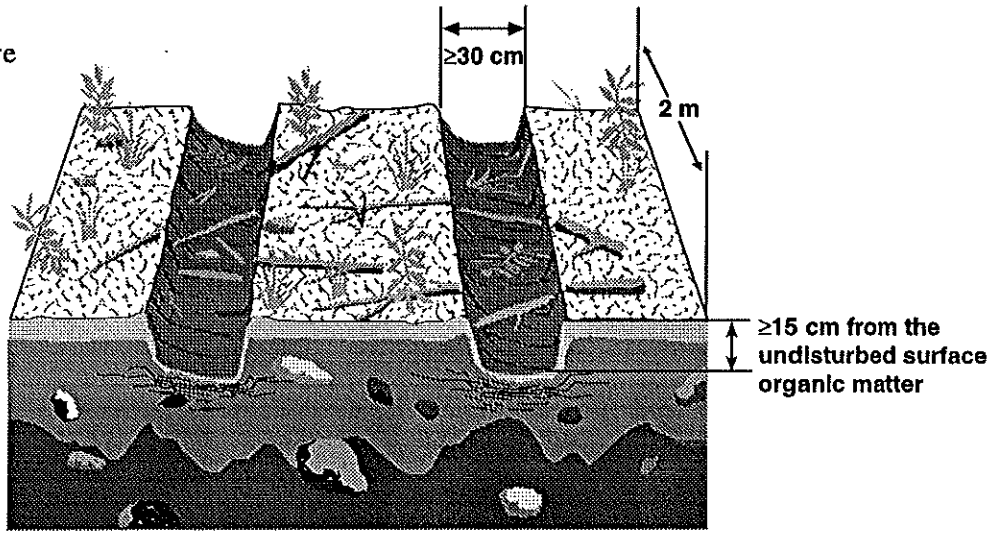
Corduroyed trails are trails where logs and woody debris placed side by side form a surface greater than 2 m in length, capable of supporting equipment traffic. Tree tops and limbs placed in front of equipment to distribute machine load and reduce soil compaction should not be considered a corduroyed trail unless they prevent the establishment of regeneration at close to target stocking. Corduroyed trails require rehabilitation in accordance with the *Forest Practices Code Act* and regulations.

Wheel/Track Ruts

Wheel/track ruts are impressions in the soil caused by machine traffic. There are two different categories of wheel/track rut disturbance.

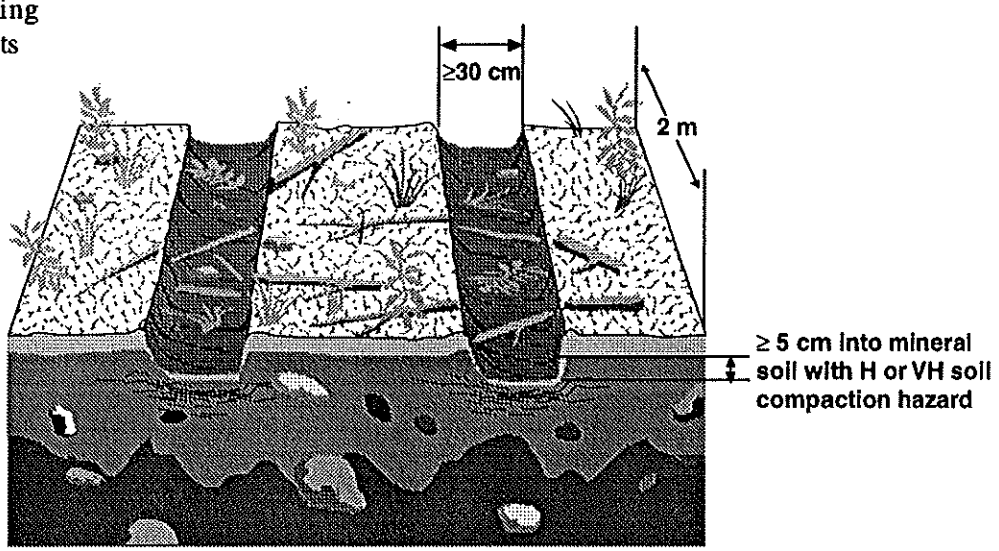
15 cm Deep Wheel/Track Ruts

Fifteen cm deep wheel/track ruts are impressions in the soil that are at least 30 cm wide, 2 m long and have a depth of at least 15 cm at the deepest point in the cross section of the rut over the entire length of 2 m. Depth is measured from the undisturbed surface organic matter to whatever soil material (mineral or organic) is present in the bottom of the rut. The 15 cm deep wheel/track ruts count as soil disturbance on all sites.



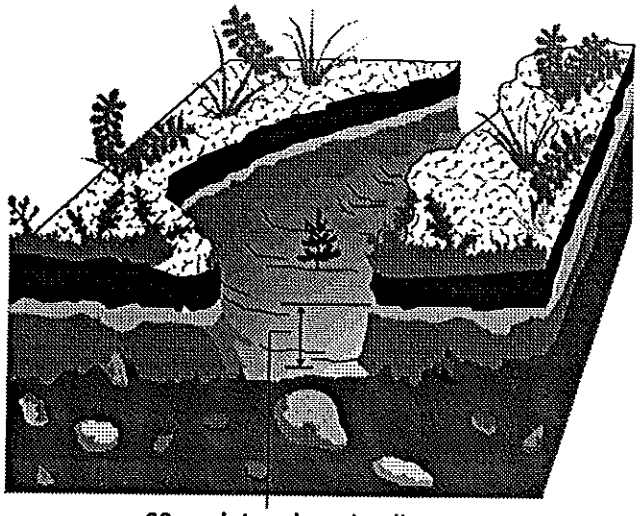
5 cm Deep Wheel/Track Ruts

Five cm deep wheel/track ruts are impressions in the mineral soil that are at least 30 cm wide, 2 m long and have a depth of at least 5 cm at the deepest point in the cross section of the rut over the entire length of 2 m. Depth is measured from the undisturbed mineral soil surface to the mineral soil surface in the bottom of the rut. If forest floor is present in the bottom of the rut, gently brush it aside to expose the underlying mineral soil. The 5 cm deep wheel/track ruts count on sites with a high or very high soil compaction hazard or where the soil compaction hazard has not been assessed in accordance with section 39(3)(a)(ii) of the *Operational Planning Regulation*.



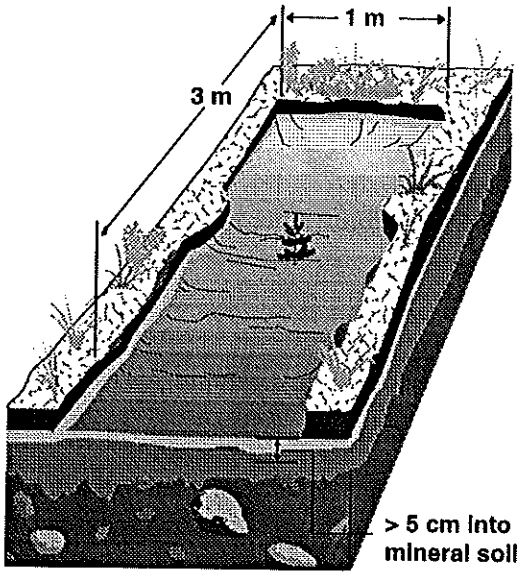
Deep Gouge

A deep gouge is an excavation into mineral soil that is deeper than 30 cm (measured from the undisturbed mineral soil surface), or to the depth of underlying bedrock. This disturbance counts on all sites.



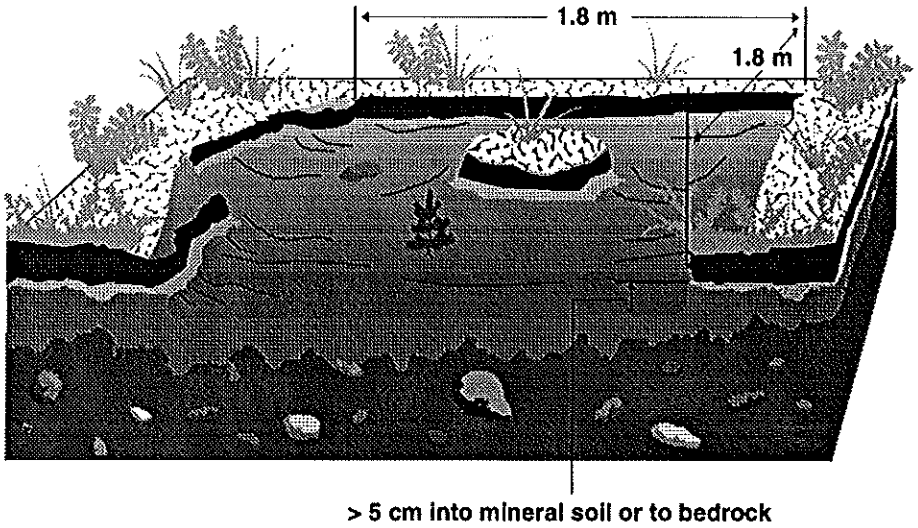
Long Gouge

A long gouge is an excavation into mineral soil that is deeper than 5 cm (measured from the undisturbed mineral soil surface), or to bedrock on 100% of a 1.0 × 3.0 m rectangle. This disturbance counts on all sites.



Wide Gouge

A wide gouge is an excavation into mineral soil that is deeper than 5 cm (measured from the undisturbed mineral soil surface) or to bedrock on at least 80% of a 1.8 × 1.8 m area. This disturbance counts on all sites.



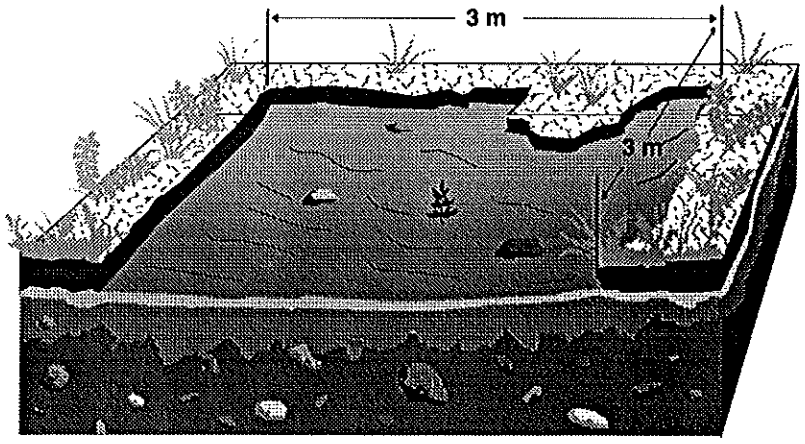
Very Wide Scalp

A very wide scalp has forest floor removed on over 80% of a 3.0 × 3.0 m area. This disturbance counts on all sites.
Forest floor **is** removed when there is:

- exposure of underlying mineral soil due to the complete removal of the forest floor
- exposed mineral soil covered by fine woody slash, undecomposed needles or dislodged rotten wood
- exposed mineral soil covered by dislodged forest floor that is less than half the thickness of the adjacent undisturbed forest floor.

Forest floor **is not** removed when there is:

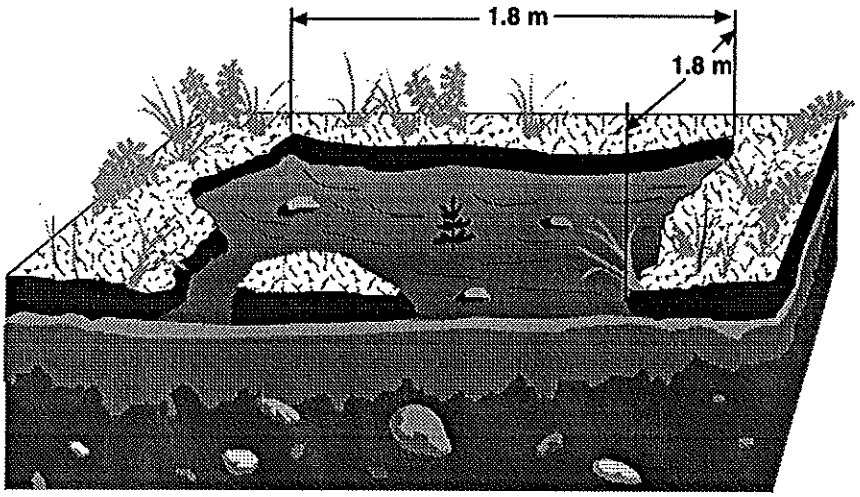
- intact forest floor of any depth typically showing the presence of roots growing into the mineral soil
- mixed forest floor and mineral soil as a result of site preparation mixing treatment
- exposed mineral soil covered by dislodged forest floor that is greater than half the thickness of the adjacent undisturbed forest floor. Dislodged forest floor must be of similar character to the adjacent undisturbed forest floor to be acceptable.



Wide Scalp

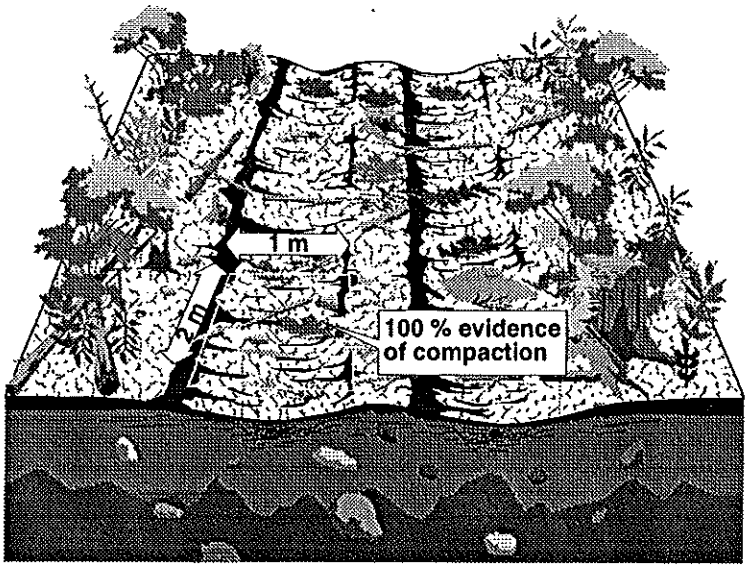
A wide scalp has forest floor removed on over 80% of 1.8 × 1.8 m area. This disturbance is counted where there is:

- very high soil displacement hazard
- very high compaction hazard
- very high soil erosion hazard
- moderate or high likelihood of landslides
- or where soil hazards have not been assessed in accordance with section 39(3)(a)(ii) of the *Operational Planning Regulation.*



Repeated Machine Traffic

Repeated machine traffic consists of evidence of soil compaction or repeated heavy machine traffic on 100% of a 1.0 × 2.0 m rectangle. This disturbance counts on all sites except where a low compaction hazard has been assessed.



Evidence of Compaction

Any of the conditions listed below is considered to be evidence of compaction (compacted mineral soil, puddled mineral soil, compacted deposits of slash and organic debris).

1. Mineral soil compaction is assessed relative to conditions in the adjacent undisturbed soil. Any one of the following attributes defines a compacted condition:
   - *Coarse platy structure.* The excavated soil breaks apart in consolidated plates that are typically 1 cm or greater in thickness. This structure is not evident in the adjacent undisturbed soil.
   - *Loss of the normal structure evident in the undisturbed soil.*
   - *A noticeable change in density.* If the disturbed and undisturbed soils have the same moisture content, the changes in density may be recognized by any one of the following characteristics:
     - a difference in resistance to shovel penetration
     - a difference in resistance to crushing between the thumb and index fingers of blocks of soil that are 2.5 cm thick.
2. Compacted deposits of forest floor, fine slash and woody debris overlying the mineral soil that cannot be readily excavated with a shovel (e.g., deposits of compacted and cribbed-in slash on winter skid trails that are deeper than 20 cm).

Compacted Areas

A compacted area is an area of soil >100 m^2 and >5 m wide that has been compacted by equipment travelling over the area. It has the same characteristics and is counted as soil disturbance on the same sites as repeated machine traffic areas. Compacted areas require rehabilitation in accordance with the *Forest Practices Code Act* and regulations.

Sometimes Counted Categories of Soil Disturbance

The following categories of soil disturbance only count on more sensitive sites or where soil hazards have not been assessed. They are referred to as *sometimes counted* categories of soil disturbance.

1. 5 cm Deep Wheel/Track Ruts
2. Repeated Machine Traffic
3. Wide Scalp
4. Compacted Area

The Work Plan Maps should indicate if any of these *sometimes counted* categories of soil disturbance count on specific treatment units. If the Work Plan Maps do not contain this information, the contractor must avoid the creation of any of the *sometimes counted* categories of soil disturbance.