Supplement Guide to Minimizing Soil Disturbance

Chinook Business Area

2025-07-21

Purpose

- Supports BCTS Chinook Business Area Environmental Management System.
- Complement Site Plans; does not replace them.
- Pre-work completion and familiarity with Site Plans and Environmental Field Procedures is mandatory.

What is Soil Disturbance?

- Includes compaction, rutting, gouging, scalping, and construction of trails, roads, landings, pits, and quarries.
- Caused by machinery movement, logging under wet conditions, and unplanned traffic.
- Excessive disturbance occurs under poor planning or unsuitable conditions.
- Soil disturbance may affect soil capacity for water infiltration and storage, long-term productivity of trees or forage, soil erosion, propagation of invasive plant species, and aesthetics.

Identification & Impacts

Compaction	Rutting
Keys to Identification: • Caused by felling, skidding, and forwarding routes with repeated traffic. • Presence of compacted mineral soil, puddled soil (liquefied then hardened), or compacted slash and organic debris. >100 m2 in area and > 5 m wide with 100% compaction **Impacts:** • Reduces drainage, aeration, and root growth. • Decreases forest productivity. • Limits water infiltration, potentially causing off-site drainage issues.	**Keys to Identification:** • Ruts or impressions from wheels/tracks. • Concerning on sensitive soils at depths of just 5 cm. • On all sites, ruts >15 cm deep and 2 m long are problematic. **Impacts:** • Can occur from a single pass. • Leads to compaction, reduced drainage, and damage to shallow feeder roots.
Gouging, Scalping and Scraping	**Trails (Bladed or Excavated)**
Keys to Identification: • Forest floor removed, exposing mineral soil. • Topsoil excavated ≥5 cm; especially concerning if >30 cm deep, to bedrock, or >1 m wide and area affected (1.8x1.8 m or 3x3 m). **Impacts:** • Displaces nutrient-rich topsoil. • Increases erosion potential. • Removes root-dense layers critical for regeneration.	**Keys to Identification:** • Trails cut into side slopes, either along or across the contour >30 cm, width >1.5 m • Exposes subsurface seepage and creates drainage paths during runoff. **Impacts:** • Leads to highly compacted soils under trails. • Exposes nutrient-poor subsoils. • Increases erosion and sediment delivery to streams.

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Best Practices - General

- Conduct Pre-works to identify sensitive areas.
- Avoid sharp turns off main trails.
- Plan felling/skidding routes using herringbone patterns.
- Consider hand felling in sensitive areas.
- Operate on dry or frozen soils.
- Use lighter loads and low ground pressure equipment.
- Utilize slash for traction and padding (puncheon).
- Avoid travelling through depressions and wetter areas. If unavoidable use a designated crossing.

Best Practices - Excavated Trails

- Minimize excavation and preserve topsoil.
- Maintain natural drainage and avoid subsoil exposure.
- Use stumps/logs for cribbing on steep slopes.
- Use excavators and adapt techniques to changing conditions.
- Include grade breaks and run-offs on steep slopes to manage water flow.

Best Practices - Winter Harvesting

- Use compacted snow trails and let frost build up for soil protection.
- Don't mix topsoil with snow.
- Build trails with layered snow and soil for rehabilitation.

Rehabilitation

- Work in good soil and weather conditions
- Decompact soils and restore natural contours.
- Slope trails outward and loosen compacted soil to prevent water buildup.
- Restore natural slopes and cover bare soil with slash.
- Remove temporary trail structures and keep slash away from water.
- Fix ruts by restoring drainage and gently filling them.
- Handle topsoil carefully—don't mix it with debris or work with it when wet.
- Protect stored topsoil from water and traffic.
- Cover exposed subsoil and organic matter with slash to prevent erosion.

Stop Work, contact your project supervisor if soil disturbance occurred

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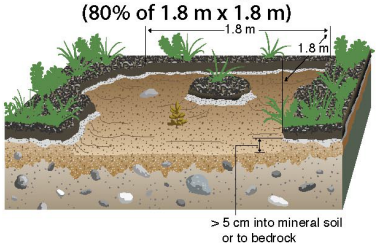
Always Counted

Deep Gouge

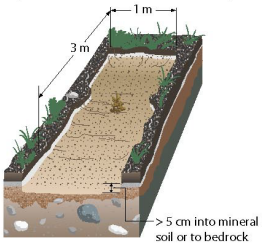
Wide Gouge

(80% of 1.8 m x 1.8 m)



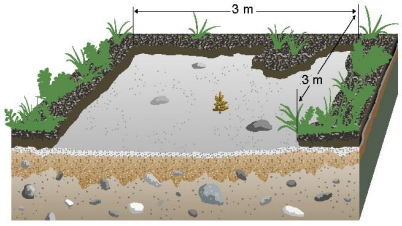
Long Gouge

(100% of 1.0 m x 3.0 m)



Very Wide Scalp*

(80% of 3.0 m x 3.0 m)

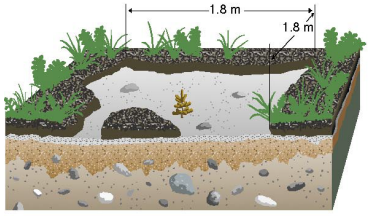


* Scalp means the forest floor has been removed.

Wide Scalp*

(80% of 1.8 m x 1.8 m)

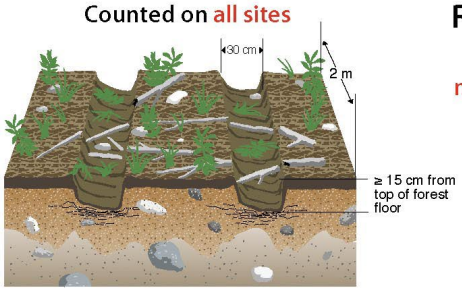
Counted when VH soil displacement, compaction or erosion; or M or H likelihood of landslides.



Forest Practices Branch
B.C. Ministry of Forests
Soil Disturbance Card June/05

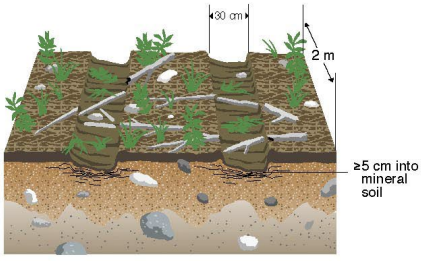
Wheel/Track Rut

Counted on all sites



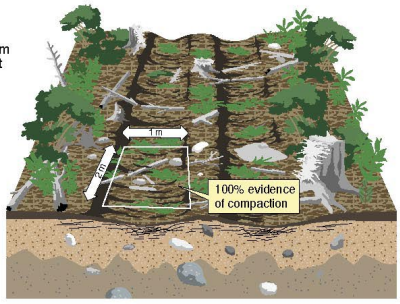
Wheel/Track Rut

Counted on very high and high compaction hazard sites



Repeated Machine Traffic

Counted on very high, high and moderate compaction hazard sites

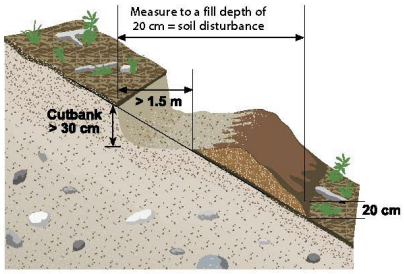


Compacted Areas:
Counted on same sites as "repeated machine traffic," but compacted areas are larger (i.e., must be >100 m^2 and >5 m wide).

Corduroyed Trail:
Logs and woody debris placed side-by-side to form a surface >2 m long capable of supporting machine traffic.

Temporary Excavated/Bladed Trails

Unfavorable Fill Slope Material
(won't support tree growth)



Favorable Fill Slope Material