



**LANDSLIDE REHABILITATION
DATA CARD**

DATE	Y	M	D	RECORDED BY
WATERSHED				FAILURE NO.
HEADSCARP LOCATION (UTMs / Elevation)				PHOTO NO.
GEOTECHNICAL ASSESSMENT REQUIRED?			TYPE	
<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> Road <input type="checkbox"/> Clearcut <input type="checkbox"/> Natural	
FAILURE ORIGIN				
<input type="checkbox"/> os <input type="checkbox"/> fs <input type="checkbox"/> cs <input type="checkbox"/> gh <input type="checkbox"/> gc <input type="checkbox"/> gs				
VISUAL CONCERN			ACCESSIBILITY	
<input type="checkbox"/> High <input type="checkbox"/> Moderate <input type="checkbox"/> Low			<input type="checkbox"/> Good <input type="checkbox"/> Moderate <input type="checkbox"/> Poor	
AGE		STREAM CONNECTIVITY		
<input type="checkbox"/> < 1 yr. <input type="checkbox"/> 1-3 yrs. <input type="checkbox"/> 4-10 yrs. <input type="checkbox"/> > 10 yrs.		<input type="checkbox"/> Direct <input type="checkbox"/> Indirect <input type="checkbox"/> No connection		

TABLE I: PHYSICAL DATA

SEG. NO.	SEGMENT DESCRIPTOR	LENGTH (m)	WIDTH (m)	PATH SLOPE	PATH AZIM.	DRAINAGE CLASS	SURFICIAL MATERIALS
	os / g — sc / f						
	os / g — sc / f						
	os / g — sc / f						
	os / g — sc / f						
	os / g — sc / f						

TABLE II: PLANTABILITY DATA

SEG. NO.	SOIL HORIZON	SOIL TEXTURE	% COARSE	% EP	PL DEPTH (cm)	% PL
	A / B / C					
	A / B / C					
	A / B / C					
	A / B / C					
	A / B / C					

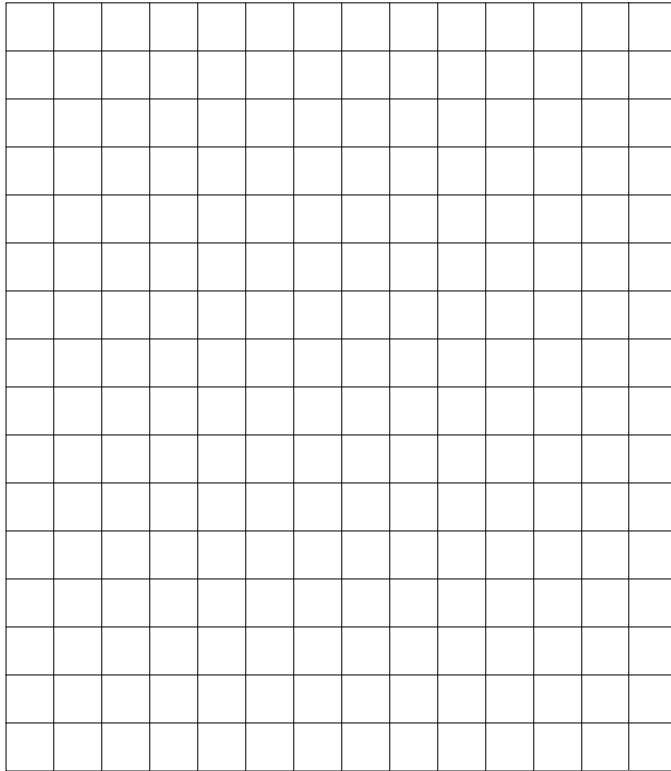
TABLE III: TREATMENT / PRESCRIPTIONS

SEG. NO.	SPECIES PRESENT				TREATMENT						ADDITIONAL	
	% GRASS COVER	% COVER			SEEDING			PLANTING				
		S + H	C	Total	f	h	d	s	H	C		

TABLE IV: SKETCH

DIAGRAM
SCALE

PHOTO
NO.



COMMENTS _____

LANDSLIDE REHABILITATION ASSESSMENT PROCEDURE TERMS AND DEFINITIONS

HEADER INFORMATION

Watershed: Main drainage or sub-basin.

Failure No.: Field designation for the specific slide being assessed.

Headscarp Location: UTM coordinates and elevation of the initiation point.

Geotechnical Assessment Required: Is there a probability of significant continuing failure that requires assessment by a professional?

Failure Origin:

os (Open slope): Initiated in the midst of hillslopes away from gullies, roads, etc.

fs (Fill slope): Initiated on or immediately below a road as a result of sidecast oversteepening the slope or the concentration/redirection of water.

cs (Cut slope): Initiated above a road where the road cut has oversteepened and decreased the stability of the hillslope.

gh (Gully headwall): Initiated in the headwall of a gully system.

gc (Gully channel): Initiated in the channel of a gully system.

gs (Gully sidewall): Initiated in the sidewall of a gully system.

Type: General classification as road-related, clearcut-related or natural.

Visual Concern:

High: Visible from a highway or body of water.

Moderate: Slide of significant size (> 0.06 ha) visible from valley bottom.

Low: Slide of small size (< 0.06 ha) visible from a sub-basin valley bottom or slide that is not visible unless viewed from the immediate vicinity.

Accessibility:

Good: Access to within 100 m of slide via active road (i.e., no cross-ditches, bridges in good condition).

Moderate: 4WD access to the slide track.

Poor: Access to slide by foot or helicopter only.

Stream Connectivity:

Direct: Landslide is in direct contact with fish-bearing stream, or discharges into non-fish-bearing stream which maintains > 5% gradient before flowing into a fish-bearing stream.

Indirect: Landslide discharges into non-fish-bearing stream with < 5% gradient (minimum distance of 100 m) before reaching fish-bearing stream.

No connectivity: No discharge into a stream or fish-bearing lake.

TABLE I: PHYSICAL DATA

Segment No.: Number of the slide segment measured.

Segment Descriptor:

os / g: Open slope or gully (*circle one*). **sc / f:** Scour zone or fill zone (*circle one*).

Length (L): Slope length of the segment in metres.

Width (W): Average surface width of the segment in metres, from lip to lip.

Path Slope: Average angle of the segment from the horizontal, measured in degrees.

Path Azimuth: Compass bearing of the slide from 0 - 360°.

Drainage Class:

R (rapidly drained): Water is removed from the soil rapidly in relation to supply. Coarse and/or shallow soils free of gleying/mottling, common on steep slopes.

W (well drained): Water is removed from the soil readily, but not rapidly; soils are usually free of mottling in the upper 1 m, but may be mottled below this depth.

M (moderately well drained): Water is removed from the soil sufficiently slowly to keep the soil wet for a significant proportion of the growing season; soils are faintly mottled in the lower portion of the upper 1 m of soil (lower B horizon).

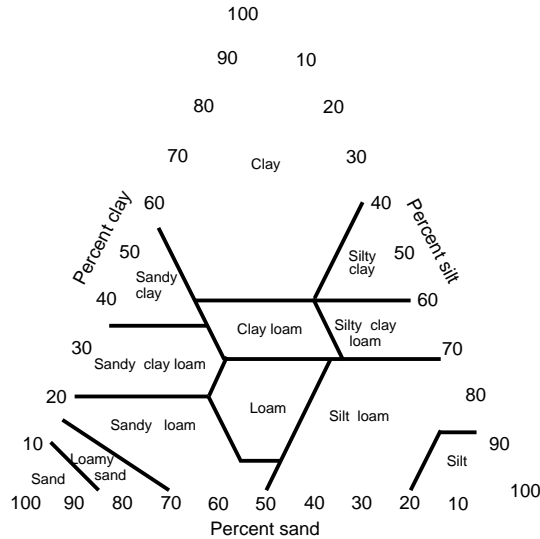
- I** (imperfectly drained): Water is removed from the soil sufficiently slowly to keep the soil wet for a significant portion of the growing season; soils are distinctly mottled throughout the B horizon.
- P** (poorly drained): Water is removed so slowly that the soil remains wet for a comparatively large part of the time; soils are usually strongly gleyed, very likely to see surface water.
- VP** (very poorly drained): Water is removed from the soil so slowly that the water table remains at or on the surface for the greater part of the time.

Surficial Materials:

- C** (colluvium): Non- to poorly-sorted, angular to sub-angular clasts, block-supported, clay to boulder-sized material.
- M** (moraine or till): Well- to non-compacted, unstratified, matrix-supported, sand, silt or clay matrix with heterogeneous mixture of coarse fragments.
- D** (debris): Non- to poorly-sorted mixture of soil, rock and organic materials.
- F^G** (glacio-fluvial): Ranges from non-sorted to well-bedded, generally silt, sand, gravel, cobbles.
- v** (veneer): Mantle of unconsolidated material, does not mask characteristics underlying material, ranges from 0.1 - 1 m in thickness.
- b** (blanket): Thicker than veneer (> 1 m), this material masks minor irregularities of the underlying material but conforms to the general topography.

TABLE II: PLANTABILITY DATA

Segment No.: Corresponds to Segment No. in Table I.
Soil Horizon: Soil horizon present on the surface of the slide segment.
A represents a dark brown to black organic-rich horizon,
B represents a red-brown to brown mineral horizon,
C represents parent material (e.g., glacial till) with no soil development preserved.
Soil Texture: Based on the fine-grained, less than 2 mm diameter component of the material that is present in the segment. Use the classification diagram below:



% Coarse: Percentage of clasts (0 - 20, 20 - 40, 40 - 70, > 70%) above 2 mm in diameter in the surface material.

% Erosion Pavement: Percentage of the segment (0 - 20, 20 - 40, 40 - 70, > 70%) that has been eroded by water, wind and/or gravity, leaving cobble- to boulder-sized particles (i.e., clasts with an intermediate diameter > 64 mm).

Plantable Depth: Depth in cm (0 - 5, 5 - 10, 10 - 15, > 15 cm) that one can penetrate with a shovel or small pick.

% Plantable Spots: Percentage of the segment (0 - 20, 20 - 40, 40 - 70, > 70%) that is plantable (i.e., not underlain by bedrock or impenetrable surficial material).

TABLE III: TREATMENT DATA

Segment No.: Corresponds to the Segment No. in Tables I and II.

Species Present: Lists the types and amounts of species present on the landslide segment.

% Grass Cover: The percentage (0 - 20, 20 - 40, 40 - 70, > 70%) of grasses and forbs present.

% Cover of S + H (shrubs + hardwoods) and **C** (conifers): The percentage of cover, estimated from 0 - 100%, of shrubs + hardwoods and conifers. Each of these species types should be recorded individually, then totalled in the **Total** column.

Treatment:

Seeding: Divided into three categories (*check off one or more*):

f (fertilization), **h** (hydroseeding) and **d** (dryseeding).

- Fertilization is generally required on slide scars, unless significant A horizon is present.
- Hydroseeding is generally required on slopes > 25° except in cases where either the use of a helicopter or truck is not feasible, the slide contains a great amount of erosion pavement or bedrock, or labour-intensive methods of rehabilitation are preferred.
- Dryseeding can be accomplished on slopes > 25°, either by helicopter or by hand; dryseeding may be an alternative on steeper slopes if any of the conditions listed above occur.

Planting: Check off one or more of **S** (shrubs), **H** (hardwoods and/or

C (conifers); may be used for planting on side scars.

- Recommended shrubs are willow and salmonberry.
- Recommended hardwoods are Sitka (Slide) Alder and Red Alder.
- Recommended conifers are Douglas Fir, White Pine and Sitka Spruce.

Additional: Note any other treatments that might be appropriate, such as bio-engineering, mechanical contouring, surface protection (blankets, rip rap, Soil Guard, etc.).

Additional Comments: Safety concerns, location of local seed or cuttings sources, need for headscarp stabilization, method of field assessment (e.g., by foot, by binoculars, from a helicopter, etc.), special revegetation or erosion mitigating techniques that might be considered, overall plantability. Plantability may be determined by reviewing the following matrix. For any particular rating, the segment should qualify in 80% (4 out of 5) of the categories, or be reduced to the next lowest rating.

PLANT-ABILITY	SOIL TEXTURE	COARSE MATERIALS	EROSION PAVEMENT	PLANTABLE DEPTH	PLANTABLE SPOTS
Good	sandy, silty, loamy	< 40%	< 40%	> 10 cm	> 70%
Moderate	sandy, silty, clayey	< 40%	40 - 70%	> 10 cm	40 - 70%
Poor	clayey	> 40%	> 70%	< 10 cm	< 40%