

### Alcan map units (178 005 ha)

Alcan (AC) map units are dominated by Orthic Gray Luvisols on loamy and clayey till of continental origin. The eight map units in which Alcan soils predominate are distributed across the plateau uplands that lie east of the Halfway and Kiskatinaw rivers. The Alcan map units occupy 12.8% of the map area.

The morainal landform is composed mainly of a loamy-to clayey-textured till blanket occurring at elevations near 750 m, or a veneer overlying sandstone on the higher plateau ridges. The till is grayish brown, weakly calcareous, slightly saline, and slightly to moderately stony. Topography ranges from gentle to moderate slopes to steep and very steep slopes in the various map units.

Most of the units occur in class 3 agricultural climate, where the May to September growing period has a range from 1030 to 1169 growing degree-days. Class 5 climate, with 30-40 frost-free days and 780-1029 growing degree-days prevails above an elevation of approximately 820 m. Although trembling aspen, willows, and alder form the present vegetative cover, white spruce occurs on sites that have long been free from repeated fires.

Alcan soils are moderately well drained, are moderately pervious, and have a perhumid to humid water regime. The soil profile shows a thick gray Ae horizon over a more finely textured Bt horizon. The solum grades down through strongly acidic transition horizons to accumulations of lime and gypsum salts at depths of 180 cm or more. Alcan soils generally have the chemistry and morphological characteristics of strongly developed Orthic Gray Luvisols. Occasionally, B horizons will have the structure and chemistry of a Btnj horizon, indicating an intergrade to the Solonetzic order. A description and an analysis of an Orthic Gray Luvisol are given in the Appendix. Alcan soils were described and mapped during the first soil survey of the Peace River region in British Columbia (Farstad et al. 1965).

Problems associated with high acidity and low fertility, as well as the physical characteristics of Ae horizons that lead to compaction, crusting, and puddling of cultivated surfaces, have somewhat impeded the agricultural development of the Alcan soils. Although white spruce (Plate IIb) and lodgepole pine can produce 5.0-6.3 m<sup>3</sup>/ha per year (class 3) on Alcan soils, only limited use is made of these soils in forestry.

**AC Alcan** (11 064 ha): Delineations of this map unit occur near Goodlow and Charlie Lake. The gently to strongly sloping unit is made up of moderately well drained Alcan soils, with minor inclusions of gleyed soils and Gleysols. Cereal grains, forage crops, and oil seed crops are grown.

**AC-BU Alcan-Buick** (46 200 ha): Large areas of the AC-BU unit occur east of Cecil Lake on moderately sloping lands near 750 m elevation. Here the soils are rated class 4 and 3 for agricultural capability. Along the Alaska Highway northwest of Charlie Lake, where elevations approach 900 m, the severe limitations of climate restrict agriculture to the growth of perennial forage crops. Imperfectly drained and poorly drained Gleysols (Buick) may constitute 40% of the map unit and occupy cold frosty sites in low-lying depressions.

**AC-CL Alcan-Clouston** (15 570 ha): The few areas of this map unit are confined mainly to moderately sloping lands west of Charlie Lake, south of Dawson Creek, and near Bessborough. The AC-CL unit contains 30-60% Clouston soils (Eutric Brunisols or weakly expressed Gray Luvisols on gravelly shoreline materials of postglacial lakes) and some lithic phase soils (Shearerdale).

**AC-CO Alcan-Codesa** (18 560 ha): This map unit occurs mainly near Baldonnel and south of the Peace River on moderately sloping lands near 750 m elevation. Although Codesa soils, which make up about 30% of the map unit, tend to be more variable in surface textures and are less acidic than Alcan soils, they have similar capabilities for agriculture and forestry.

**AC-DO Alcan-Donnelly** (36 156 ha): Although the Donnelly soils are developed from parent materials that are more calcareous and somewhat more heavily textured than Alcan soils, their capabilities for agriculture and forestry are similar in this map unit. Donnelly soils occupy as much as 50% of the unit in areas near Clayhurst and south of the Peace River to Farmington.

**AC-MU Alcan-Murdale** (18 147 ha): The soils of the AC-MU map unit occur mainly on very strongly sloping, high elevation lands to the west of Charlie Lake and north of Fort St. John. Murdale soils, with relatively thick, dark-colored Ah horizons, make up 30-40% of the map unit. The semiopen nature of the vegetative cover allows for some grazing by domestic livestock and browsing by deer. Cereal grains and forage crops are produced on the moderately sloping lands. The unit has limited value for forestry.

**AC-SH Alcan-Shearerdale** (11 995 ha): The soils of this unit include about 40% stony and shallow Shearerdale soils with some Rockland. The map unit lies at relatively high elevations near the Cameron River and occurs as scattered areas south of the Peace River. Although agricultural use is confined to grazing and pasture, forestry capability for white spruce and lodgepole pine is moderately high (class 3 or 4).

**AC-SN Alcan-Snipe** (20 313 ha): Poorly drained snipe soils constitute about 30% of this map unit, which occupies uplands to the west and north of Dawson Creek. Other soils such as Donnelly and Hanshaw may be present. Such factors as low permeability, a high water table, and susceptibility to frostiness in the poorly drained sites occupied by snipe soils adversely affect the agricultural capability of the unit.

#### **Alluvial map unit (21 387 ha)**

The Alluvial (AL) map unit includes the undifferentiated, sandy, silty, loamy, and often gravelly fluvial deposits of the active floodplains of rivers and streams. Regosolic soils dominate the map unit.

Included are all recently deposited fluvial soils except those named in map units of the following major drainage systems: the Bear Flat soils of the Peace River, the Oetca soils of the Sukunka and Murray river floodplains, and Meikle Creek soils of the upper Pine River valley. The Alluvial map unit occupies 1.5% of the map area.

**AL Alluvial** (21 387 ha): This map unit includes dominantly Cumulic Regosols occurring on undifferentiated river and stream floodplains, islands, and low terraces. Although most areas are nearly level, soil texture and drainage may be extremely variable.

Dependent on climate and other limitations such as adverse soil properties, flooding hazard, and adverse topography, the agricultural capability of the Alluvial map unit ranges from class 2 to class 7.

Soils of the map unit support a wide range of trees, shrubs, forbs, and grasses. The productivity of black cottonwood frequently exceeds 10.5 m<sup>3</sup>/ha per year in some areas. The Alluvial map unit and associated valley slopes (Attachie and Septimus map units) provide critical wintering areas for wild ungulates throughout the map area.

## ALCAN SOIL

Location: 56°49'N 121°15'W NTS: 94A14 Surveyor: AG Agency: AC, Vancouver, 1968  
5 km N of Mile 18 on Beatton River Road

Identification: BC Soil Survey Report 17 Classification: Orthic Gray Luvisol (1978) Landform and parent material: till

Drainage: moderately well drained Slope and aspect: 10% E Elevation: 870 m Additional notes: Stop No. 98; Dunvegan formation; pink granites and quartzites occur with sandstone in parent material

## PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L	4-2.5	undecomposed leaves, twigs, needles, and moss				
F	2.5-0	dark colored semi-decomposed leaves and twigs				
Ae	0-7.5	grayish brown (10YR5/2 d), dark brown (10YR 3/2 m)	silt loam	strong, medium platy	slightly hard, friable, slightly plastic	common, medium, fine
AB	7.5-14	very pale brown (10YR 7/3 d), light yellowish brown (10YR 6/4 m)	silty clay loam	strong, medium subangular blocky	slightly hard, firm, plastic	common, medium, fine
Bt1	14-37	very pale brown (10YR 7/3 d), brown-dark brown (10YR 5/3,4/3 m)	clay	strong, medium subangular and angular blocky	hard, firm, sticky	few, fine, medium
Bt2	37-63	very pale brown (10YR 7/3 d), brown (10YR 5/3 m)	clay	weak columnar breaking to moderate subangular blocky	very hard, firm, sticky	few, fine, medium
BC	63-90	light brownish gray (10YR 6/2 d), dark grayish brown (10YR 4/2 m)	clay loam	moderate, medium and coarse angular blocky	very hard, firm, sticky	occasional root
CB	90-120	pale brown (10YR 6/3 d), dark grayish brown (10YR 4/2 m)	clay loam	moderate, fine and medium angular blocky	very firm, sticky	occasional root
C1	120+	dark gray (10YR 4/1 m)	clay loam	weak, medium pseudo-angular blocky	firm, very plastic	very few

## CHEMICAL AND PHYSICAL DATA

Horizon	pH in CaCl <sub>2</sub>	Organic C (%)	Total N (%)	Cation exchange (meq/100 g)					Particle-size distribution (%)				Bulk density	P1 (ppm)	S (ppm)
				CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay			
Ae	4.5	1.0	0.7	8.9	2.5	1.7	0.3	0.1	24	60	16	2		5	92
AB	4.4	0.8	0.1	14.0	3.8	2.4	0.3	0.1	15	49	36	12	1.7	3	124
Bt1	4.0	0.7	0.1	23.6	5.2	3.0	0.3	0.1	12	35	53	23		4	106
Bt2	3.9	0.5	0.1	21.6	4.9	3.1	0.3	0.1	21	36	43	21		10	156
BC	4.0			18.8	5.8	3.4	0.2	0.1	25	40	35	16		21	137
CB	4.5			19.4	9.6	4.8	0.2	0.2	22	41	37	16			
C1	6.4			15.9	10.9	4.6	0.2	0.2	25	43	32	13			
till (@ 240 cm)	7.5								27	41	32	12			286