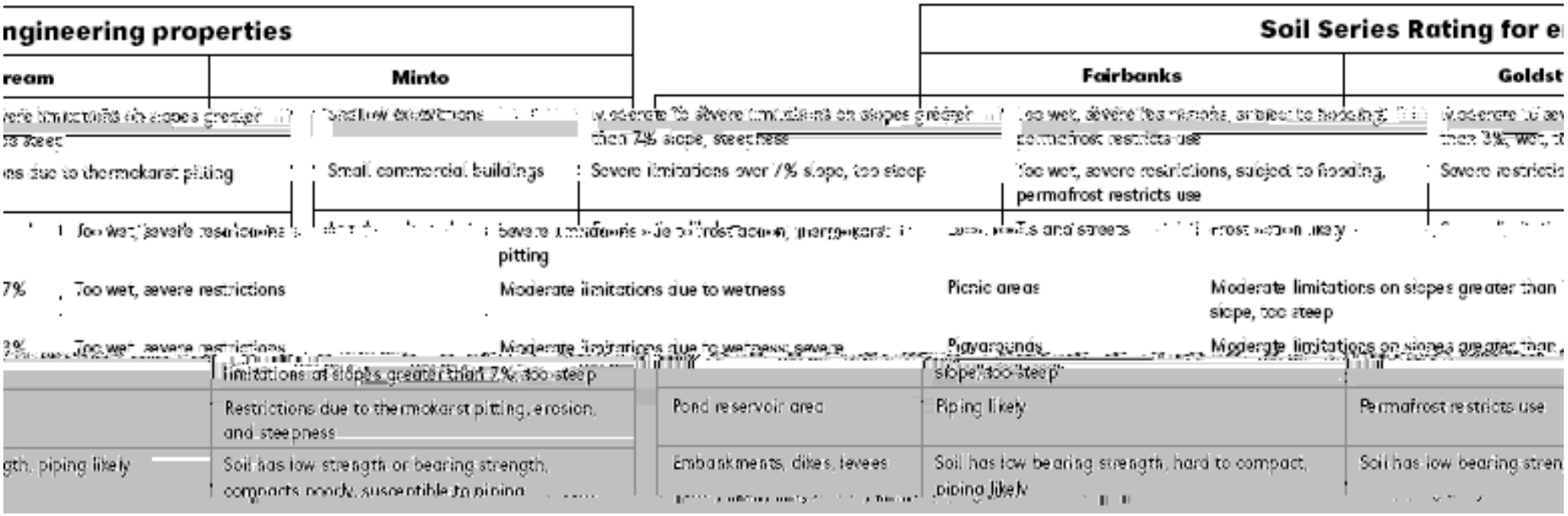
Appendix I—Soil Characteristics of North Campus

TABLE 1. Classification of major soil series occurring in the North Campus area (USDA Soil Conservation Service and Alaska Agricultural Experiment Station 1963)



ngineering properties			Soil Series Rating for e	
ream	Minto		Fairbanks	Goldst
ere limitations on slopes greater 8 feet	Shallow excavations	Moderate to severe limitations on slopes greater than 7% slope, steepness	Too wet, severe restrictions, subject to flooding, permafrost restricts use	Moderate to sev than 3%, wet, s
as due to thermokarst pitting	Small, commercial buildings	Severe limitations over 7% slope, too steep	Too wet, severe restrictions, subject to flooding, permafrost restricts use	Severe restrictio
	Too wet, severe restrictions	Severe limitations due to wetness, permafrost, pitting	Streets and streets	Frost action likely
7%	Too wet, severe restrictions	Moderate limitations due to wetness	Picnic areas	Moderate limitations on slopes greater than slope, too steep
3%	Too wet, severe restrictions	Moderate limitations due to wetness, severe	Playgrounds	Moderate limitations on slopes greater than
	limitations on slopes greater than 7%, too steep		slope, too steep	
	Restrictions due to thermokarst pitting, erosion, and steepness	Pond reservoir area	Piping likely	Permafrost restricts use
gth, piping likely	Soil has low strength or bearing strength, compacts poorly, susceptible to piping	Embankments, dikes, levees	Soil has low bearing strength, hard to compact, piping likely	Soil has low bearing stren

Thermokarst mounds in the Fairbanks area are polygonal or circular hummocks 10 to 50 feet in diameter, 1-8 feet in height and are composed of loess. They are commonest in cultivated field but there are also some in abandoned fields now reforested. In some fields the mounds are separated by trenches 1-5 feet wide, but in others the trenches are poorly developed. The trenches form as a result of melting of ice masses.

A field on a gentle north-facing slope at the AES has the best developed mounds and the most detailed record in the Fairbanks area. The surface of the field was smooth before clearing in 1908. By 1922 pronounced individual and connected depressions had formed and by 1926 some trenches between mounds were as much as 5 feet deep. Cultivation stopped a year or two later because the irregular topography formed by the pits and mounds was dangerous to the operation of farm machinery. The field then was seeded to pasture. By 1938, the mounds were 3 to 8 feet high and about 20 to 50 feet in diameter. Rockie studied the field in November 1938 in order to determine whether the ice still was actively melting "A tractor bulldozer was used to remove the upper part of every hummock and fill each pit until the land surface assumed approximately a uniform slope. The surface remained smooth for nearly a year but in July 1939 irregularities began to form. In succeeding years polygonal mounds formed as the ground surface subsided over melting ice.

Mounds in the test area smoothed in 1938 were as large and as high as those in the part of the field that had not been smoothed when the writer first studied the field in 1947. Maximum mound height was 8 feet. Comparisons of aerial photos with those taken 10 years earlier reveal that in 1948 mounds were about the same size and shape and in the same position as in 1938. Probing with a soil auger on 14 July 1948, revealed no ice or frozen ground at a depth of 9 f