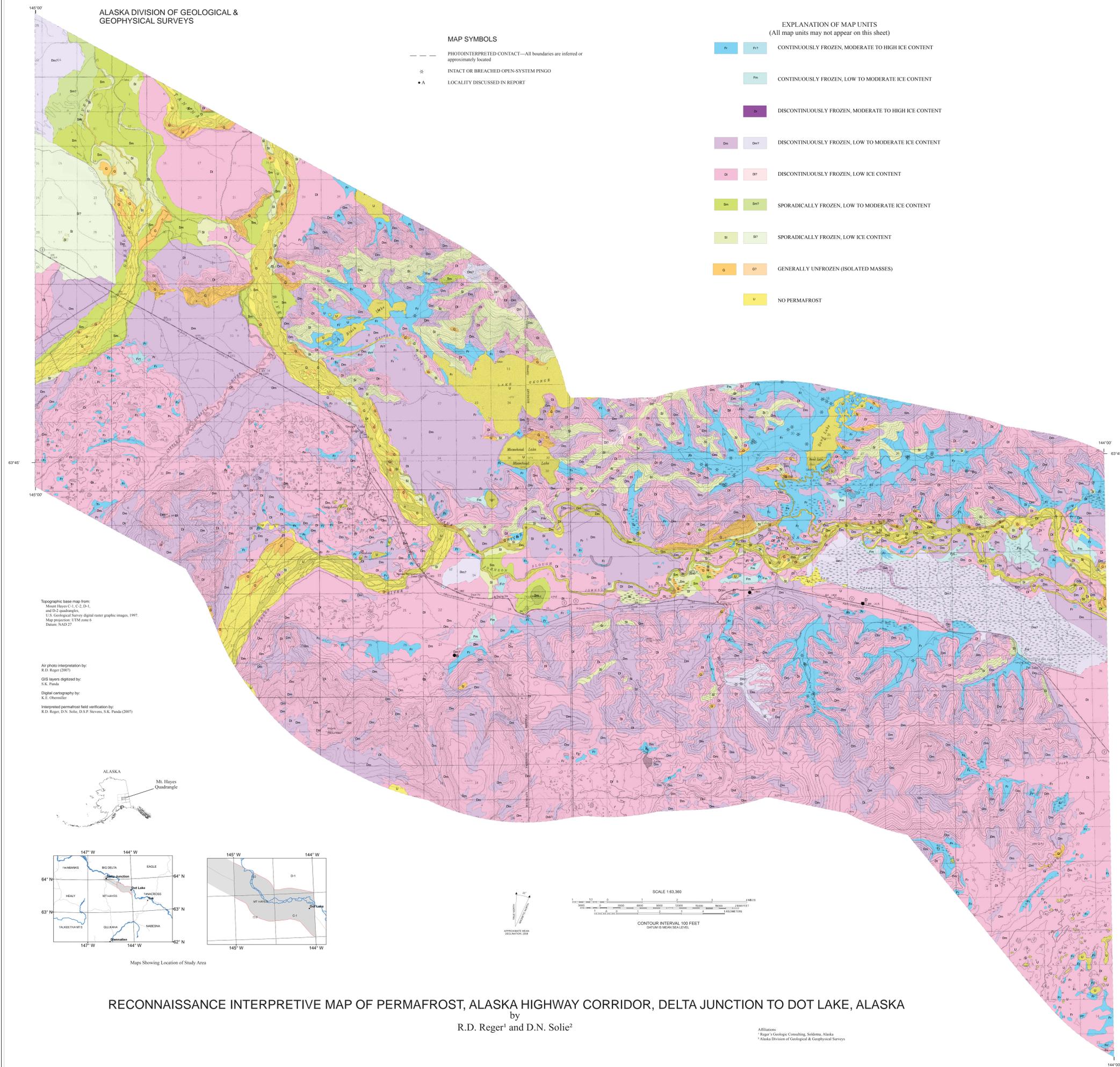


MAP SYMBOLS

- PHOTOINTERPRETED CONTACT—All boundaries are inferred or approximately located
- * INTACT OR BREACHED OPEN-SYSTEM PINGO
- A LOCALITY DISCUSSED IN REPORT

EXPLANATION OF MAP UNITS
(All map units may not appear on this sheet)

- Fr F17 CONTINUOUSLY FROZEN, MODERATE TO HIGH ICE CONTENT
- Fm CONTINUOUSLY FROZEN, LOW TO MODERATE ICE CONTENT
- Dm D17 DISCONTINUOUSLY FROZEN, MODERATE TO HIGH ICE CONTENT
- Dn D17 DISCONTINUOUSLY FROZEN, LOW TO MODERATE ICE CONTENT
- Di D17 DISCONTINUOUSLY FROZEN, LOW ICE CONTENT
- Sm S17 SPORADICALLY FROZEN, LOW TO MODERATE ICE CONTENT
- Si S17 SPORADICALLY FROZEN, LOW ICE CONTENT
- G G17 GENERALLY UNFROZEN (ISOLATED MASSES)
- U NO PERMAFROST



Introduction

Permafrost, or perennially frozen ground, is rock or soil that remains continuously colder than 0°C for 2 years or longer (Muller, 1947; Ferrans and others, 1969; Pówe, 1966, 1982). Based on the interpretation of 1:63,360-scale false-color infrared aerial photographs, this map illustrates the inferred extent and estimated ice content of permafrost between the ground surface and a depth of ~20 ft (6 m) in the proposed corridor straddling the Alaska Highway between Delta Junction and the western boundary of the Tanana River Quadrangle in August 1980, the date of the aerial photographs. The presence or former presence of permafrost and the ground-ice content are inferred from several indicators, including vegetation, slope and aspect, landform, soil type, local drainage, and terrain features, such as open-system pingos, polygonal ground, and thermokarst pits, gullies, and ponds (Kreig and Reger, 1982). Because of a lack of subsurface data, our interpretation should be considered tentative until validated by multi-year ground-temperature measurements that confirm the persistence of frozen ground. Permafrost classifications in areas that were burned just prior to August 1980 are less reliable than in unburned areas because the vegetation was destroyed or significantly altered and, in these areas, interpretation of permafrost is based only on landform and setting, which are less diagnostic than vegetation. The user is cautioned that this map has not been verified by field observations, except very locally, although we have considerable field experience in the Tanana River valley and during our interpretation referred to available published and unpublished reports. Physical properties of map units are extrapolated from similar deposits in the region and from previously published reports and data. Detailed subsurface investigations should be completed prior to development.

Description of permafrost map units

Symbols indicate the inferred continuity of permafrost in upper-case letters and the estimated ice content in lower-case letters. For example, 'Dm' indicates that discontinuous permafrost with low to moderate ice content is inferred between the ground surface and a depth of ~20 ft (6 m). Classes of permafrost continuity are consistent with classes used in previous mapping in Alaska (Ferrans, 1965; Kreig and Reger, 1982; Brown and others, 1997).

Symbol	Description
F	CONTINUOUSLY FROZEN—More than 90 percent of the area is inferred to be underlain by permafrost
D	DISCONTINUOUSLY FROZEN—Between 50 and 90 percent of the area is inferred to be underlain by permafrost
S	SPORADICALLY FROZEN—Between 10 and 50 percent of the area is inferred to be underlain by permafrost
G	GENERALLY UNFROZEN (ISOLATED MASSES)—Between 0 and 10 percent of the area is inferred to be underlain by permafrost
U	NO PERMAFROST—Seasonally frozen but the ground is inferred to be warmed to a temperature above 0°C at least once during any 2-year period
r	MODERATE TO HIGH ICE CONTENT—Estimated to typically contain 50 to 1,000 percent soil moisture relative to dry weight
m	LOW TO MODERATE ICE CONTENT—Estimated to typically contain 25 to 50 percent soil moisture relative to dry weight
l	LOW ICE CONTENT—Estimated to typically contain 6 to 25 percent soil moisture relative to dry weight
?	QUESTIONABLE IDENTIFICATION

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Oblique aerial view northwest of upper Sand Lake area. Permafrost is continuous to discontinuous, shallow, and has moderate to high ice contents in black spruce-shrub lowlands. South-facing slopes of upper bedrock ridges with deciduous woodlands generally lack permafrost, which terminates on lower ridge slopes. Beneath north-facing upland slopes, permafrost is discontinuous and has low to moderate ice contents. Thermokarst caving of lake shorelines is documented by tilted trees (photograph taken August 2007).

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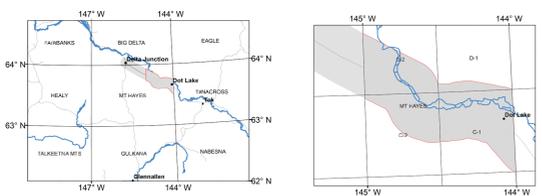
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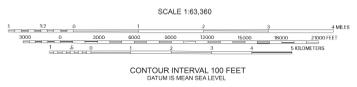
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Topographic base map from:
Mount Hayes C-1, C-2, D-1,
and D-2 quadrangles
U.S. Geological Survey digital raster graphic images, 1997
Map projection: UTM zone 6
Datum: NAD 23

Air photo interpretation by:
R.D. Reger (2007)
GIS layers digitized by:
S.K. Pinda
Digital cartography by:
K.E. Omsicker
Interpreted permafrost field verification by:
R.D. Reger, D.N. Solie, D.S.P. Stevens, S.K. Pinda (2007)



Maps Showing Location of Study Area



RECONNAISSANCE INTERPRETIVE MAP OF PERMAFROST, ALASKA HIGHWAY CORRIDOR, DELTA JUNCTION TO DOT LAKE, ALASKA
by
R.D. Reger¹ and D.N. Solie²

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