

Borehole and environmental protection descriptive and numerical data, Yamal Peninsula, Russia, Version 1

USER GUIDE

How to Cite These Data

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Minkin, M. and E. Melnikov. 1998. *Borehole and environmental protection descriptive and numerical data, Yamal Peninsula, Russia, Version 1*. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. <https://doi.org/10.7265/h303-nt88>. [Date Accessed].

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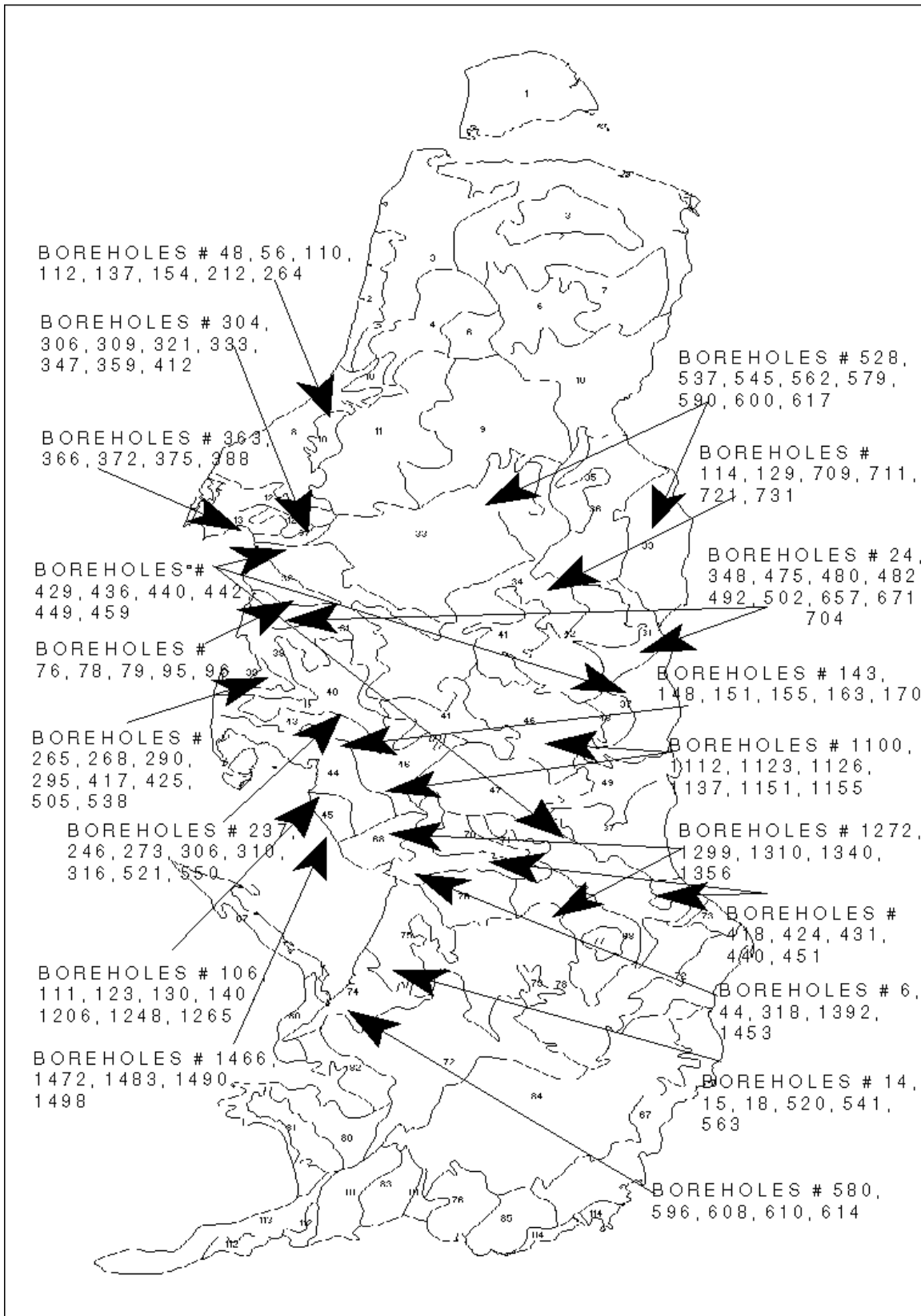
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This database of selected borehole records contains environmental descriptions (textual and numerical) of the units on the index map, and relevant borehole data, for the Yamal Peninsula, Russia. The Index Map of Yamal Peninsula with textual and numerical description (VSEGINGEO-Earth Cryosphere Institute SB RAS; PI: Prof.E.S.Melnikov) was originally compiled at a scale of 1:1,000,000, as "The Map of Natural Complexes of West Siberia for the Purpose of Geocryological Prediction and Planning of Nature-Protection Measures for the Mass Construction, 1:1 mln" (1991) by E.S.Melnikov and N.G.Moskalenko (eds.), and was taken as a base map for nature-protection regionalization. Environmental "regions", "sub-regions", "landscapes" and "localities" shown on a landscape map are merged into the nature-protection regions. Map was compiled by interpreting more than 1000 satellite images and aerial photos as well as from analysis of field data from several institutions.

Index Map of Yamal Peninsula



Dominating components of the landscape, composition of the surface deposits, geocryological conditions and natural protection of ground water were considered while distinguishing the Nature-Protection Regions within the limits of Environmental Regions (Melnikov, 1988). The Map is supplied with relevant databases, containing the following information: - number of regions and landscape type, - category of resiliency, - category of the ground water protection, - vegetation type, - geological and geocryological structure to the depth of 10-15 m, - ice content (of lenses and of macro-inclusions separately), - seasonally frozen and seasonally thawed layers thickness, - ground temperature, - contemporary exogenic geological (periglacial) processes, - and the area affected by these processes.

The 55 nature-protection regions of Yamal Peninsula generalize information. To approve the ranges of geocryological and cryolithological characteristics, 160 boreholes were retrieved out of the database containing more than 4000 boreholes data obtained in 1977-1990 by Fundamentproekt Design Institute (Moscow, Russia; PI: Dr.sci.M.A.Minkin) at Kharasavey and Bovanenkovo gas fields and along the pipelines Yamal-Ukhta and Yamal-Uzhgorod. The boreholes have reference to geographical coordinates (latitude and longitude), as well as to the nature-protection region numbers shown on the Index Map. A total of 21 units are covered by borehole data, 5-8 boreholes in each unit, covering most typical conditions (see description of environmental-protection units database).

The original database consisted of 3 relational (by the unit number) tables in .dbf format. The first characterizes the nature-protection regions with the following information:

- number of the nature-protection region;
- category of resiliency;
- locality type description;
- landscape type description;
- type of lithological section and its description (ground-ice content, water saturation, cryogenic structure, macro-ground-ice content);
- category of the ground-water protection type and its description;
- dominating forest, shrubs, and grass species, coverage in %;
- dominating moss-lichen species, and coverage in %;
- seasonally frozen and seasonally thawed layer depths (range from min to max);
- ground temperature at the depth of 10 m (range from min to max);
- exogenic geological processes and their paragenesis and combinations;
- degree of the surface disturbance.

The second relational table contains layer-by-layer description of the lithological section types. Lithological composition of 3 to 4 layers within the sections of Yamal Peninsula is shown in the table in terms of ground texture and excessive ground ice (e.g., sand, sandy loam, clay, peat, ice-ground, ice).

The third table for the boreholes includes the following:

- date of drilling,
- borehole mouth altitude and its depth,
- description of topography around the borehole,
- types of geological profiles within the active layer,
- types of geological profiles in upper permafrost (to the depth of 10-40 m), sometimes two layers are subdivided,
- depth of permafrost table,
- ground temperature at 10-m depth (close to the depth of zero annual amplitude in the area),
- macro-ice content (average for the profile, massive ground ice excluded),
- salinity of permafrost (average for the profile, massive ground ice excluded).

The index map with the borehole locations is supplied as a .gif image. Indexes shown on the map are related to nature-protection regions of the West-Siberian permafrost area.

Please cite these data as follows:

Minkin, M.A.. 1998. Borehole and environmental protection descriptive and numerical data, Yamal Peninsula, Russia. In: International Permafrost Association, Data and Information Working Group, comp. Circumpolar Active-Layer Permafrost System (CAPS), version 1.0. CD-ROM available from National Snow and Ice Data Center, nsidc@kryos.colorado.edu. Boulder, Colorado: NSIDC, University of Colorado at Boulder.

1 DOCUMENT INFORMATION

1.1 Publication Date

1998

1.2 Date Last Updated

2021