Natural Resources Canada | Ressources naturelles Canada

NATMAP
Canada's National Mapping Program
Le Programme national de cartographie géoscientifique du Canada

GEOLOGICAL SURVEY OF CANADA | COMMISSION GÉOLOGIQUE DU CANADA

Ontario

MEMPR

DESCRIPTIVE NOTES

INTRODUCTION

The 1:250 000 compilation map is one of a series assembled as part of the Western Superior NATMAP project. Geological mapping, geochronological and geophysical investigations were completed during the course of the project with existing reconnaissance and detailed sources (Figure 5). On the map here, an alphanumeric code is assigned to each lithologic unit (Figure 6) and a unique colour is assigned to each group of units. The colour scheme on the map has been to group the many rock units of the Archean Superior Province into a small number of age groupings (Figure 3). Within each age grouping, the rock units are subdivided into a number of tectonic assemblages (informally designated through reference to geographical areas), thematic attributes assigned to individual supracrustal successions (Figure 4) and lithologic units (Figure 6). The tectonic assemblages are shown on the tectonic overview (Figure 1). The map summarizes the environment of crystallization for magmatic rocks and deposition for sedimentary rocks based on lithologic character, whole-rock geochemical classification, geochemical characteristics, and where available, isotopic ages. Rock units are described in terms of lithologic character, mineralogy, texture, and where available, rock types, depositional ages, and geochronological characteristics. Metamorphic rocks are described in terms of protolith, metamorphic grade, and deformation. Structural features are described in terms of the geometry and kinematics of structures and assemblages in the hierarchy, with designations based on chronology (e.g., D_1, D_2, D_3 fold phases), and where possible, with reference to the tectonic assemblages (e.g., D_1 Island Lake, D_2 Oxford Lake).

Locations of samples dated by isotopic or skeletal (~75 micron) dating and the techniques employed are shown on the map here and listed in Tables 1 and 2, respectively. The map incorporates interpretation of the magnetic and gravity data sets (Figure 7) and the results of geochronological investigations (Figure 8). Ages are presented in large areas of the map here based inferred from the ages of the geological assemblages, as defined by dating of key rock units. Where available, the ages of individual rock units are shown on the map here. Where available, the ages of rock units have been assigned to the rock unit, whereas with greater uncertainty, the assigned age range is based on the ages of rock units in the vicinity. The ages are listed in Tables 1 and 2 and shown on Figure 8. The map here is the culmination of the knowledge to date. A summary of the ages of rock units is given in Figure 3.

The map sheet displays Archean and Proterozoic geology of the eastern Sachigo Subprovince. The area is bounded by the Superior boundary zone to the north, the Oxford Lake–Stull Lake terrane to the west, the Island Lake and Stull Lake terranes to the south, and the Hudson Bay Lowland to the east. The Sachigo Subprovince (Stott and Corkery, 1998) has been recently subdivided into terranes including the Island Lake terrane, Oxford Lake–Stull Lake terrane, and Superior boundary zone (Percival et al., 2004; Stott et al., 2010; Stott, 2011; Stott, 2012). A examination of the geology and ages of rocks in the Sachigo Subprovince was initiated by the Ontario Geological Survey in the 1980s (Breaks et al., 1986; Corkery et al., 1988; Corkery et al., 1989; Stone and Kelly, 1989; Stone et al., 1989; Stone and Kelly, 1990). Prior to this work, little was known apart from the basic geology of the provincial belts mapped by Wilson (1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954) and geochronological data (Bowden et al., 1980; Corkery and Davis, 1981; Corkery and Davis, 1982; Corkery et al., 1982; Corkery et al., 1983; Corkery et al., 1984; Corkery et al., 1985; Corkery et al., 1986; Corkery et al., 1987; Corkery et al., 1988; Corkery et al., 1989; Corkery et al., 1990; Corkery et al., 1991; Corkery et al.,