U.S. Geological Survey
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Figure 1

LEGEND

QUATERNARY

Surfacial Deposits :

Qd Qsb — Sand Dunes. Sabkha.

Q — Undifferentiated Quaternary : Includes older Nile deposits, playa deposits, raised beaches and corals of Red Sea Coast.

TERTIARY

NEOGENE

Tn Tpl Tm — Tn - Undifferentiated Neogene :

Tpl- Pliocene : Includes marine beds of the Nile Valley, Red Sea and Mediterranean Coasts, fresh water and spring deposits of Nile Valley and Western Desert Oases, and non-marine scree deposits outside the Nile Valley.

Tm - Miocene : Covers most of Western Desert north of latitude 25°N, represented by a basal clastic section overlain by a carbonate unit; along Gulf of Suez and Red Sea coast where clastics, gypsum and carbonates are dominant especially in the north.

OLIGO-MIOCENE

Tv — Extrusive Rocks : Mostly of Tertiary age, some of the occurrences in Gulf of Suez are of Mesozoic age whereas some in Nubian Desert are of Quaternary age.

To Tm — Oligo-Miocene : Includes gravel spreads west of Nile between Minia-Faiyum and Bahariya Oasis.

OLIGOCENE

To — Oligocene : Includes fluviatile and lacustrine clastics and gravel sheets in Cairo-Suez stretch, around Cairo, Faiyum and Bahariya Oasis; conglomerate of Nakheil Formation in Queir-Safaga stretch and further north; marl section at foot of Ballum scarp may be Oligocene or younger in age.

EOCENE

Te — Eocene : Includes thick marine limestone with chert and minor clay beds forming higher cliffs and plateaux overlooking Nile between Esna and Cairo, partly exposed along Sin El Kaddab scarp and further west covering most of the limestone Plateau to Darb El Arbain, Kharga scarps and plateaux, in Farafra and Bahariya areas, covers most of central parts of Western Desert, high cliffs and plateaux of Hamadat, Duwi, Esh El Mellaha, El Galalas and Ataqa in Eastern Desert and El Tih and Egma in Sinai; clastics predominate in the Upper Eocene of Cairo and Faiyum areas.

PALEOCENE

Tp — Paleocene : Includes in northern Egypt, lower part of Esna Shale and Sudr Chalk; in middle and south latitudes of Egypt Upper Dakhla, Tarawan, Kurkur and lower Garra beds or their equivalent formations.

Kv — Wadi Natash Volcanics.

Rc — Ring Complexes : Essentially alkaline syenites.

MESOZOIC

CRETACEOUS

Ku Kn Km Kl — K - Undifferentiated Cretaceous : Includes in south west Egypt top-most sandstone beds exposed at Gilf Kebir plateau and covering desert surface to the east; in west Wadi Araba sandstone above Paleozoic section; in south Sinai clastic beds above Basement or Paleozoic rocks.

Ku - Upper Cretaceous : Includes clastics, phosphate and carbonate rocks above Nubia sandstone in Western Desert, Nile Valley, Red Sea Coast and Wadi Qena, mainly represented by Duwi Phosphate and lower part of Dakhla Formation; in north Egypt, Abu Rawash, El Galalas and Sinai the Upper Cretaceous is mostly represented by carbonate beds.

Kn - Nubia Sandstone : Represented in south and central Egypt by a mâgnafacies coeval to Upper Cretaceous marine beds in northern Egypt, defined by a suite of litho-biostratigraphic units, Duwi or Dakhla at top and Basement at base; in extreme south of Egypt, top part of Nubia, Shab Clastic Member, belongs to Lowe'r Paleocene; in central latitudes Dakhla-Kharga-Nile Valley stretch, Nubia; Qunseir Clastic and Taref Sandstone Member, overlies a subsurface sandstone section which belongs to uncertain and variable periods within the Mesozoic and Paleozoic Eras.

Km - Cenomanian and Turonian : Represented by clastics with thin carbonates at Bahariya; Abu Rawash, El Galalas, Wadi Qena and north and central Sinai; clastic dominates at base and carbonate at top.

Kl - Lower Cretaceous : Includes, in northern Sinai, west coast of Gulf of Suez and in Wadi Qena, marine fossiliferous beds intercalated within a continental clastic section.

JURASSIC

Jr — Jurassic : Includes the marine and associated fluviomarine beds of northern and central Sinai, west coast of Gulf of Suez and thick clastic section forming the Gilf Kebir in south west Egypt - the upper part of latter section is of Cretaceous age; thick vertical sandstone cliffs at Wadi Qena, north of latitude 27°N, may be Jurassic or older in age.

TRIASSIC

Tr — Triassic : Represented at Arif El Naga by a carbonate/clastic section.

PALEOZOIC

U. PAL.

Pzu — Upper Paleozoic (Post-Carboniferous) : Includes, on west side of Gulf of Suez, clastic section overlying Carboniferous beds which may be of Permian and/or of Triassic age, and probably tilted sandstone beds unconformably overlying Basement in northern reaches of Wadi Qena.

CARBONIFEROUS

C — Carboniferous : Includes topmost (40m thick) dolomites and clastics of Um Bogma Formation in central and western Sinai, clastics of west coast of Gulf of Suez and of Dweinat area.

Pz — Undifferentiated Paleozoic (Pre-Carboniferous) : Includes clastics below Carboniferous rocks in Gulf of Suez area, including probable Cambrian beds above Basement in west and central Sinai, Devonian clastics west of Gilf Kebir and Cambro-Ordovician clastics below the Carboniferous section in Gebel Uweinat.

PRECAMBRIAN

Gy — Younger Granitoids : Gattarian granite and all post-tectonic granite, granodiorite and adamellite.

H — Hammamat Group : Slightly metamorphosed conglomerate (Breccia Verde Antico), greywacke, arenite and siltstones.

Dv — Dokhan Volcanics : Slightly metamorphosed andesite, porphyrite and pyroclastic rocks.

G — Older Granitoids : Syntectonic to late tectonic plutonites essentially of granodioritic composition previously referred to as grey granite, shaitian granite or older granite.

Di — Metagabbro-Diorite Complex : Gabbroid and doleritic masses, tectonised, uralitised and affected by older granitoids.

Sp — Serpentinites : Serpentinite, talc carbonate, and related rocks.

mv — Geosynclinal Shadli Metavolcanics : Fissure eruptions of surface or submarine effusives represented by regionally metamorphosed rhyolite, dacite, andesite, basalt and pyroclastic rocks.

ms — Geosynclinal Metasediments : A wide range of lithological types including hornblende, biotite and chlorite schists, metagreywacke, metamudstone, phyllite, slate and occasional conglomerate.

Gn — Migif-Hafafit Gneisses and Migmatites : Psammitic, hornblende and biotite gneisses and migmatites.

Ⓔ — Sample locality

This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature.

scale 1:2,000,000

KILOMETRES 0 50 100 150 200 250 KILOMETRES

Geological Cross Section

Undifferentiated Mesozoic / Paleozoic Section above the Basement

Figure 1.--Sample locations plotted on geological map of Egypt from Egypt Geological Survey (1979).