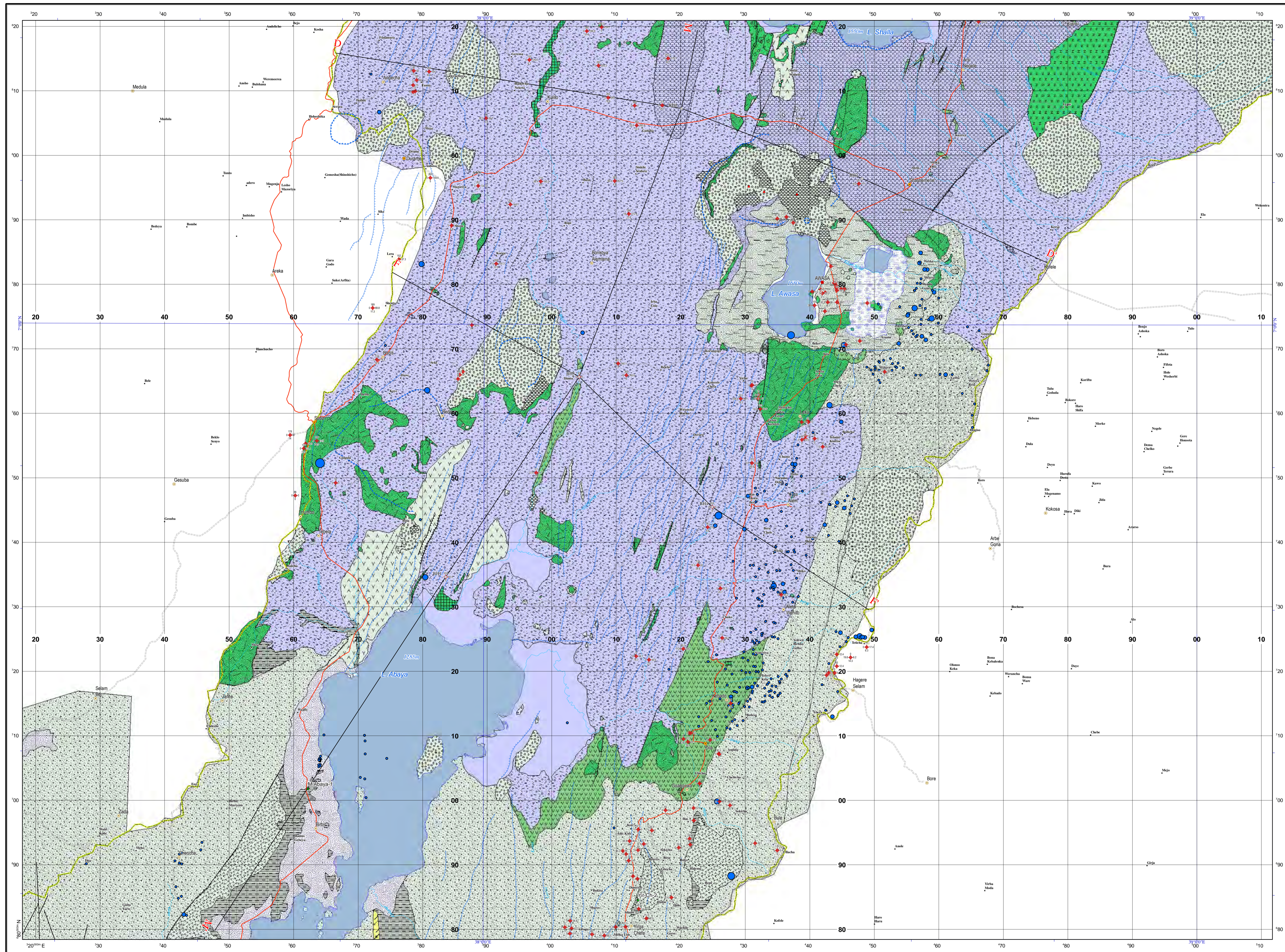


HYDROGEOLOGICAL MAP OF SODO - AWASA AREA



VERTICAL SCALE = 10 x HORIZONTALSCALE SCALE 1:250,000 TRANSVERSE MERCATOR PROJECTION

- Towns**
- Region Capital
 - Zone Capital
 - Woreda Capital
 - Developed Area
- Roads**
- Asphalt
 - Gravel
- Rivers**
- Major Rivers
- Lakes**
- Swamp
 - Lake
- Boundaries**
- Basin Boundary
 - National Boundary
- Spring Discharge [l/s]**
- 0.01 - 0.75
 - 0.75 - 2.50
 - 2.50 - 6.00
 - 6.00 - 16.00
 - 16.00
- Geological Structure**
- Major fault, downthrown shown
 - Major fault
 - Normal fault, downthrown shown
 - Normal fault
 - Inferred fault, downthrown shown
 - Inferred fault
 - Major fault, downthrown shown, by satellite images
 - Normal fault, downthrown shown, by satellite images
 - Normal fault, by satellite images
 - Inferred fault, downthrown shown, by satellite images
 - Inferred fault, by satellite images
 - Geology boundary
 - Inferred geology boundary
 - Caldera edge
 - Volcano / Volcanic Cone
- Borehole (Well)**
- Total depth [m]
 - Specific capacity [l/min/m]
 - Static water level [m]
 - Draw down [m]
 - JICA Well
- TEM**
- Survey Point of Transient-phenomenon (or Time-domain) Electromagnetic Exploration Method
- Geology**
- Holocene**
- A1 Alluvium: Fine sand - mud
 - Unclassified Fluvial Deposits: Sandy gravel-mud
 - Bulbba Lacustrine Deposits: Lake deposits such as gravel, sand and mud
 - Corbetti Pumice Flow & Fall Deposits: Pumice falls and pumice flow deposits
 - Corbetti Rhyolitic Volcanics: Rhyolite lava flows and Obsidian lava flows
 - Butajira Recent Basalt: Basalt lavas and reddish brown basaltic scoria
 - Meki Lacustrine Deposits: Lake deposits such as poorly-sorted gravels, sand, pumice, tuff and volcanic sand
- Pleistocene**
- Langano Poorly Welded Pumiceous Pyroclastics: Yellowish white rhyolitic pumice tuff
 - Kulumsa Highly Welded Tuff: Rhyolite to andesitic welded tuff
 - Ketar River Acidic Volcanic Sedimentary Rocks: Rhyolite tuffs and pumice tuffs
 - Goode Strongly Green Welded Tuff: Rhyolite to andesitic welded tuff
 - Adami Tulu Basaltic Pyroclastics: Basaltic tuff breccia and lapilli tuff
 - Ogoleke Pleistocene Basalt: Massive basalt lavas
 - Lekansho Lacustrine Deposits: Lake deposits such as sand silt and alternate layer
- Plio-Pleistocene**
- Gadmetta Rhyolite: Rhyolite lava flows and rhyolite tuffs
 - N2b Basalt: Basalt lavas and basaltic pyroclastics
 - NQs Rhyolite: Rhyolite tuffs
- Pliocene**
- N1, 2a Rhyolitic Volcanics: Plagioclase rhyolite tuff and rhyolite lava flows containing obsidian
 - N1, 2b Rhyolitic Tuff: Plagioclase rhyolite tuff, pumice tuff and crystal tuff
 - N1b Basalt: Anchor Basalt
 - N1a Rhyolite: Rhyolite
- Miocene**
- Sharenga Rhyolite: Rhyolite piles and necks
 - Upper Basalt: Porous basalt lavas
 - Beyana Tuff: Lapilli tuff with minor laminated tuff
 - Middle Basalt: Porphyritic basalt lavas
- Eocene-Oligocene**
- Shale Welded Tuff: Densely welded rhyolite welded tuff
 - Lower Basalt: Porphyritic basalt lavas
- MESOZOIC**
- Adigrat Sandstone, Amara Limestone, Sandstone, Shale and Limestone
- PRECAMBRIAN**
- Biotite Gneiss, Pegmatite, Biotite Gneiss, Granite, Biotite Metagranite

No.	Description	Lithology	Productivity Classes
1	Extensive aquifer with intergranular permeability	Unconsolidated sediments, silt/clay, claystone, lacustrine sediments, poorly cemented sandstone	A High B Moderate C Low
2	Extensive aquifers with fracture and/or karstic permeability	Consolidated sediments and metamorphosed carbonate; Limestone, sandstone, shale, marl, evaporite marble	High, moderate, low (A, B, C) (Note: Not applicable in this map)
3	Extensive aquifers with fracture permeability	Volcanic rocks, basalts, rhyolites, trachytes, agglomerates	A High B Moderate C Low
4	Localized aquifers with fracture and intergranular permeability	Non-carbonate metamorphic rocks, granitic intrusives/dolerites	D Poor
5	Main geothermal areas	Molten or high productivity thermal groundwater in fractured volcanic rocks and subvolcanic unconsolidated sediments	(Note: Not applicable in this map)

