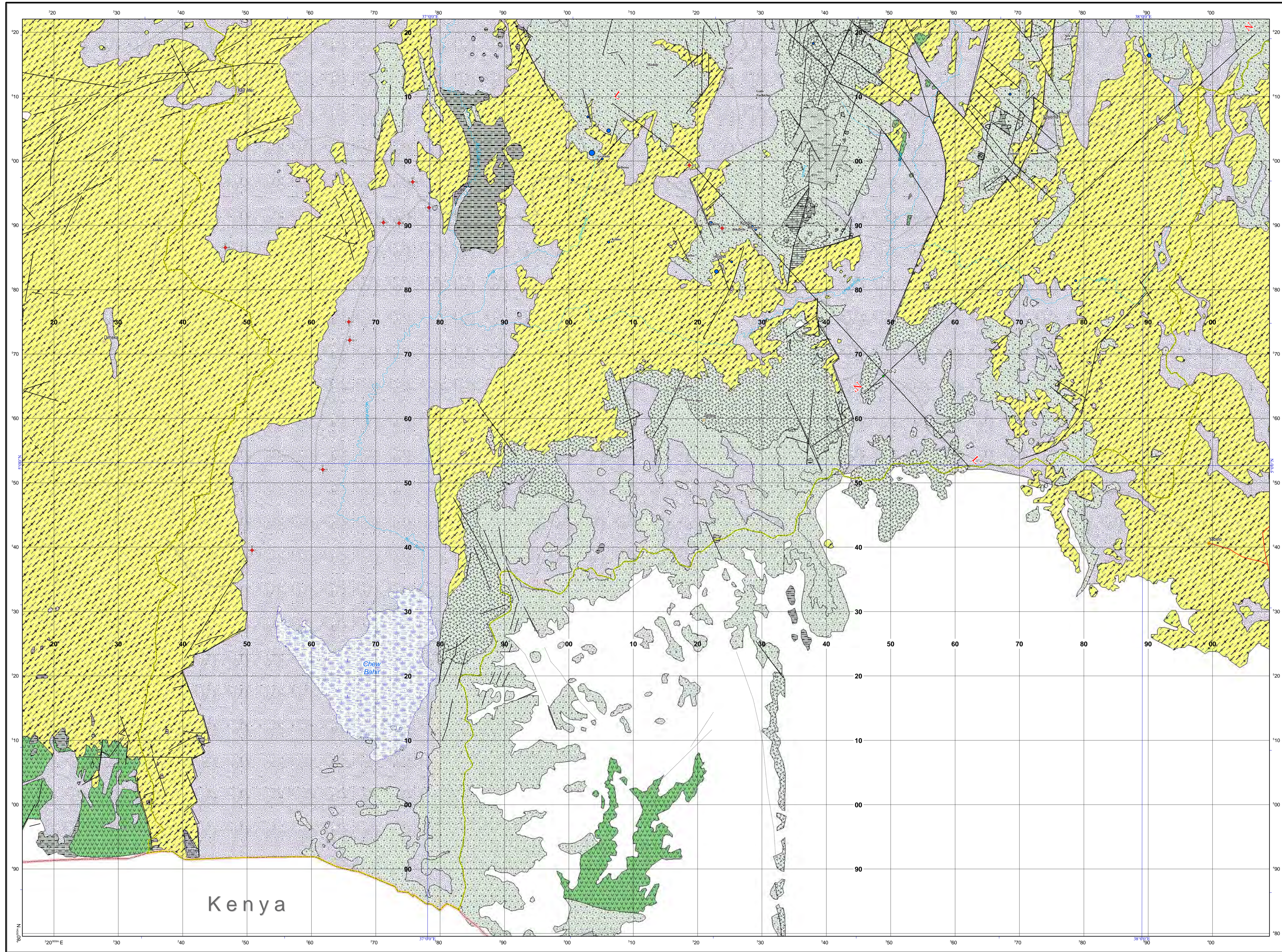
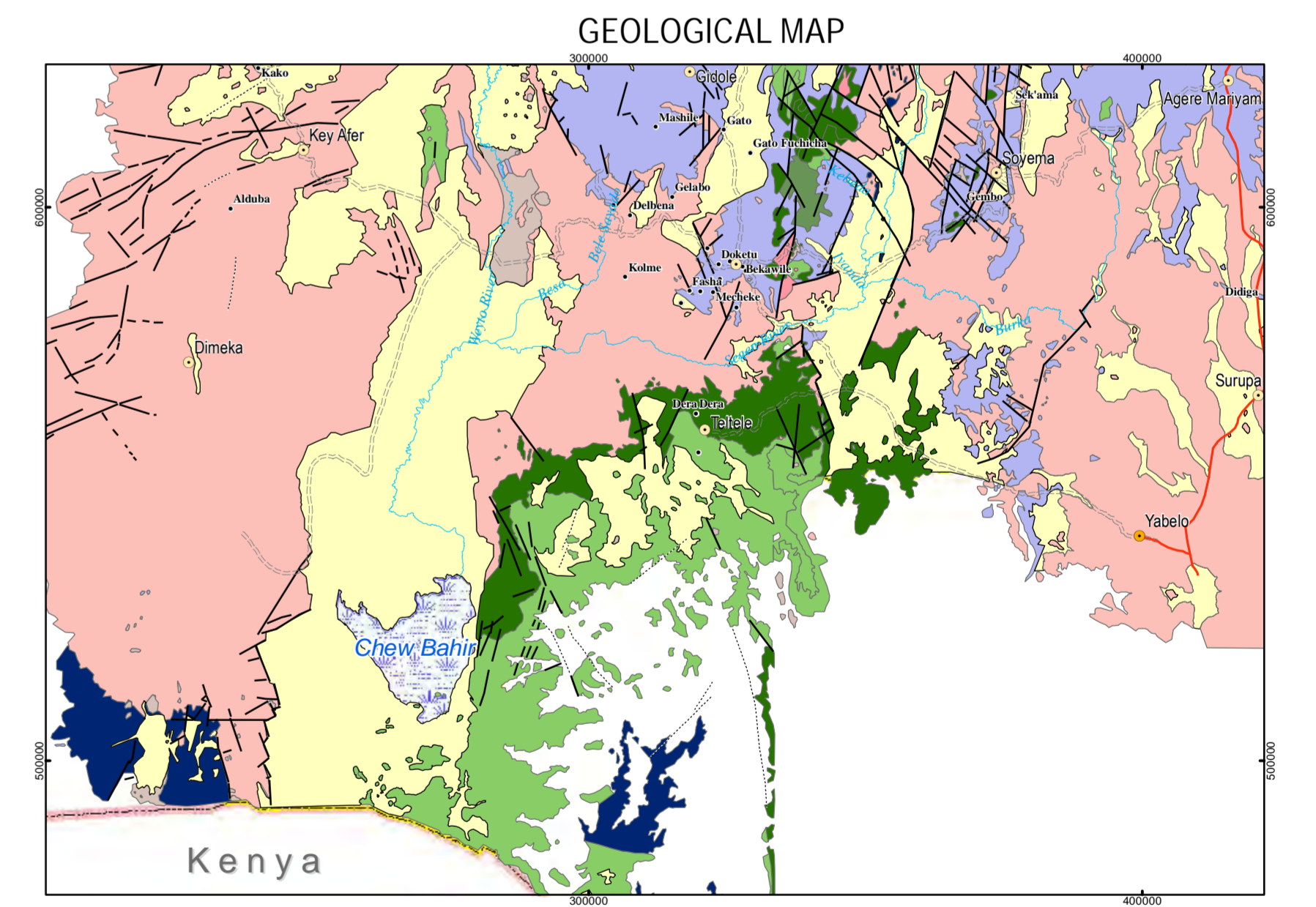
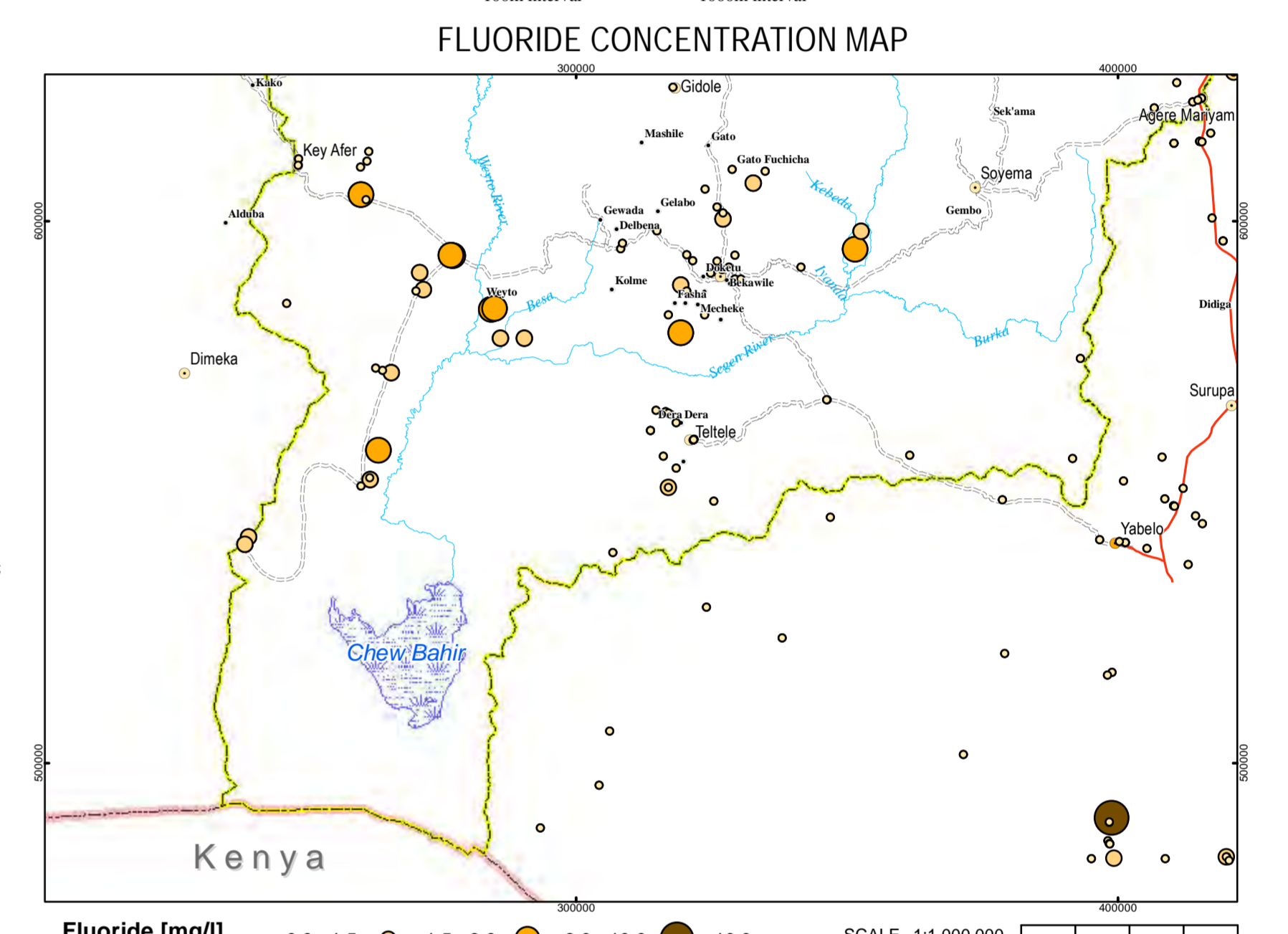
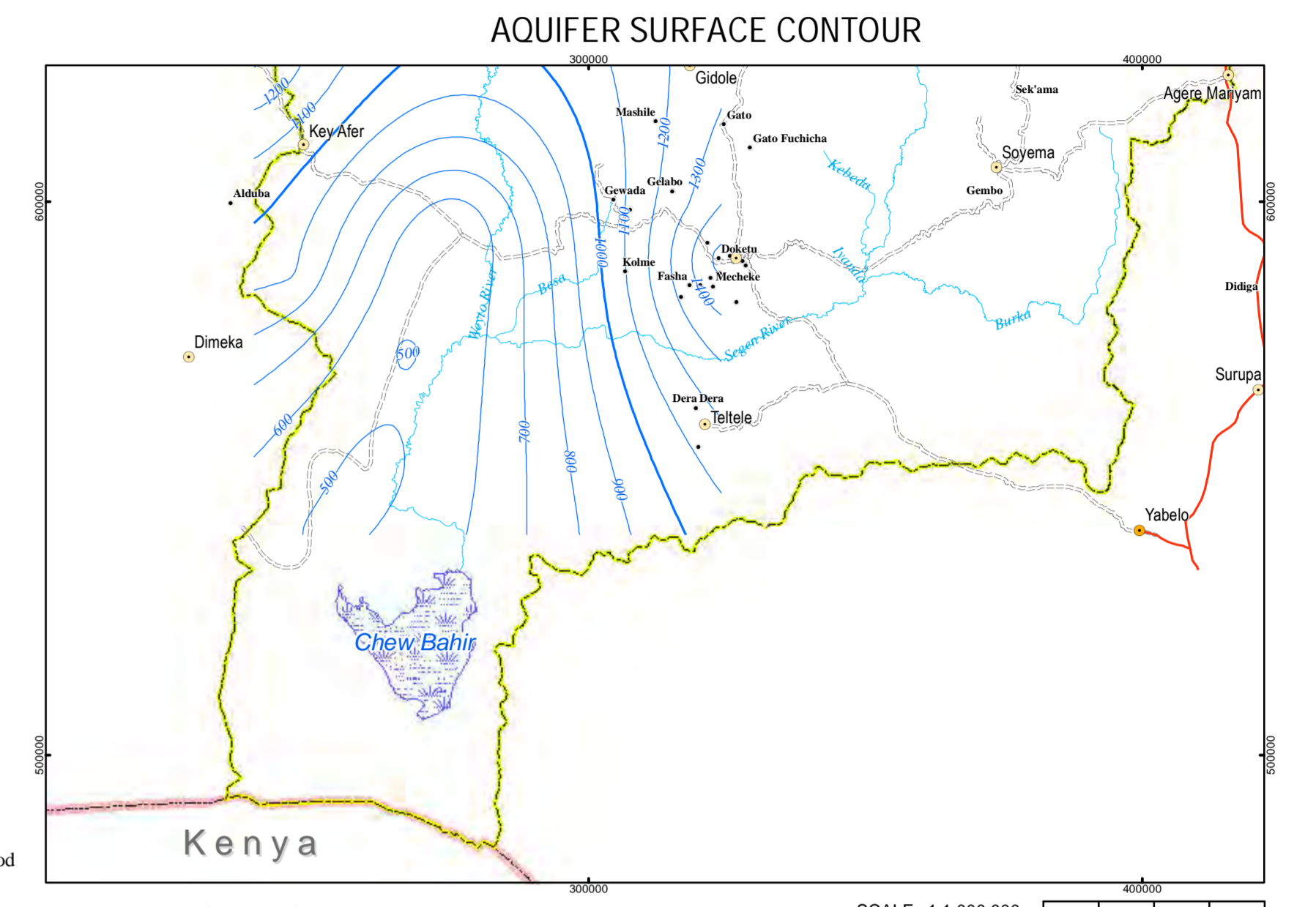
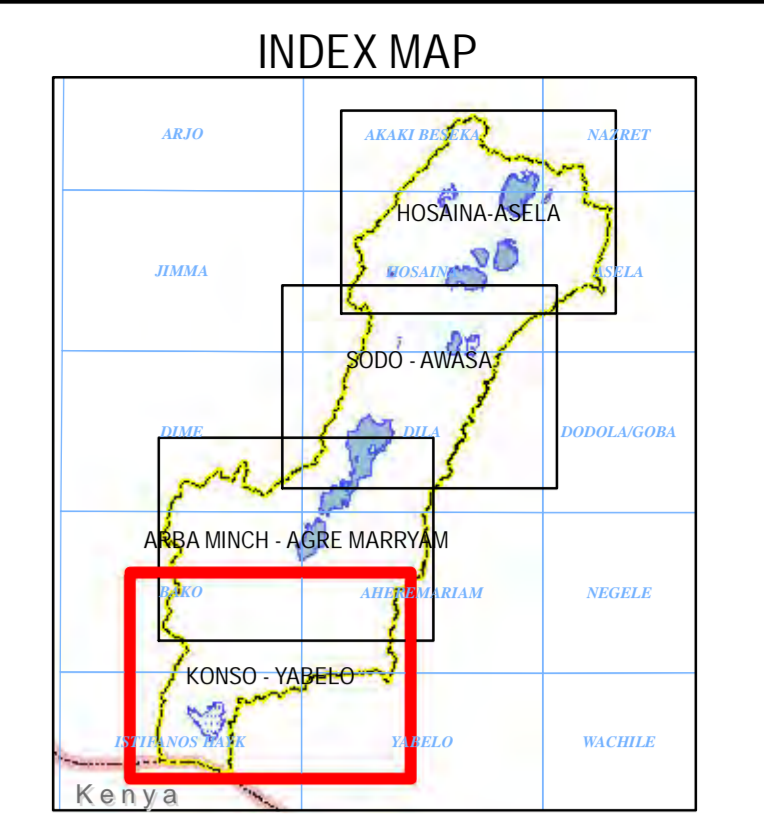


HYDROGEOLOGICAL MAP OF KONSO - YABELO AREA

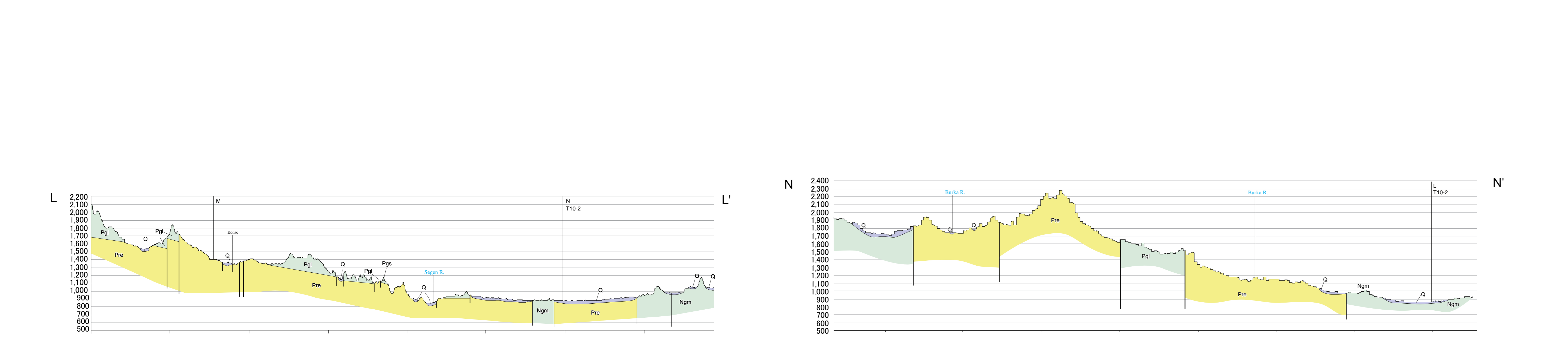


- Towns**
- Region Capital
 - Zone Capital
 - Woreda Capital
 - Developed Area
- Roads**
- Asphalt
 - Gravel
- Lakes**
- Major Rivers
 - Swamp
 - Lake
- Boundaries**
- Basin Boundary
 - National Boundary
- Spring Discharge [l/s]**
- 0.01 - 0.75
 - 0.75 - 2.50
 - 2.50 - 6.00
 - 6.00 - 16.00
 - 16.00 -
- 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
 - Major fault, 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

No.	Description	Lithology	Productivity Classes
1	Extensive aquifer with intergranular permeability	Unconsolidated sediments, siltstone, claystone, colluvium, lacustrine sediments, poorly cemented sandstone	A High B Moderate C Low
2	Extensive aquifers with fracture and/or karstic permeability	Consolidated sediments with 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, gabbros	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	Moderate to high productivity in fractured volcanic rocks and subordinate unconsolidated sediments	(Note: Not applicable in this map)



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



Geology

- Holocene
 - Alluvium, Fine sand - mud
 - Unclassified Fluvial Deposits, Sandy gravel-mud
 - Bulbula 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 lava and reddish brown basaltic scoria
 - Meki Lacustrine Deposits, Lake deposits such as poorly-sorted gravel, sand, pumice, tuff, and volcanic sand
- Pleistocene
 - Langano Poorly Welded Picrobasaltic Pyroclastics, Yellowish white rhyolitic pumice tuff
 - Kulumsa Highly Welded Tuff, Rhyolite to andesitic welded tuff
 - Ketur River Acidic Volcanic Sedimentary Rocks, Rhyolite tuffs and pumice tuffs
 - Gonde Strongly Green Welded Tuff, Rhyolite to andesitic welded tuff
 - Adami Tulu Basaltic Pyroclastics, Basaltic tuff breccias and lapilli tuffs
 - Ogokhe Pleistocene Basalt, Massive basalt lavas
 - Lekansho Lacustrine Deposits, Lake deposits such as sand stone and alternate layer
- Plio-Pleistocene
 - Gademta Rhyolite, Rhyolite lava flows and rhyolitic tuffs
 - N2b Basalt, Basalt lavas and basaltic pyroclastics
 - NQs Rhyolite, Rhyolitic tuffs
- Pliocene
 - N1_2a Rhyolitic Volcanics, Plagioclase rhyolite tuff and obsidian lava flows containing obsidian
 - N1_2b Rhyolitic Tuff, Plagioclase rhyolite tuff, pumice tuff and crystal tuff
 - N1a 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 rhyolitic welded tuff
 - Lower Basalt, Porphyritic basalt lavas
- MESOZOIC
 - Adigras Sandstone, Antenn Limestone, Sandstone, Shale and Limestone
- PRECAMBRIAN
 - Biotite Gneiss, Pegmatite, Biotite Gneiss, Granite, Biotite Metagranite

Hydrogeological Map **March 2012**

THE STUDY ON GROUNDWATER RESOURCES ASSESSMENT IN THE RIFT VALLEY LAKES BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)