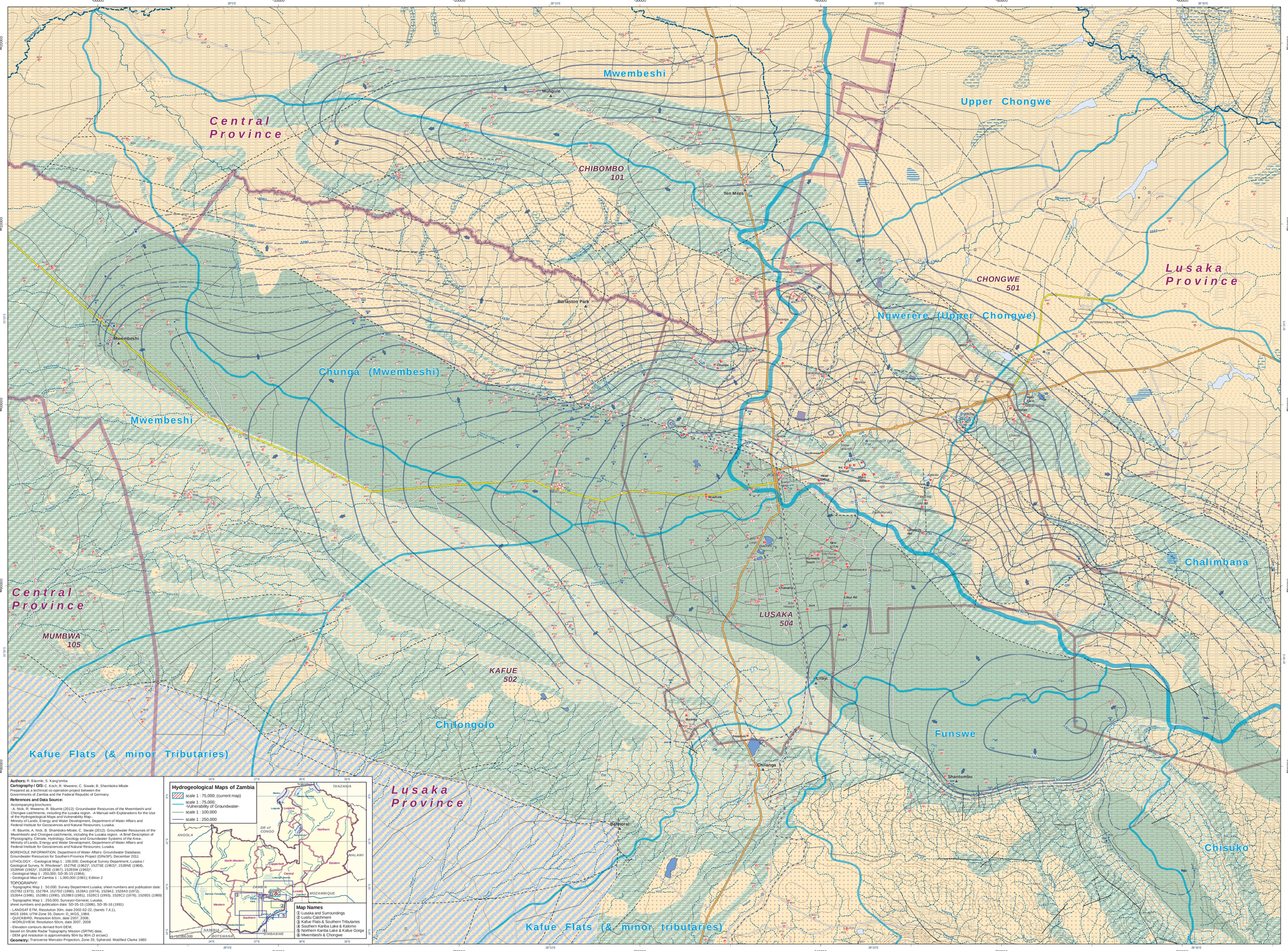
Hydrogeological Map of Zambia
Lusaka Province
First Edition 2012



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Prepared as a technical co-operation project between the Governments of Zambia and the Federal Republic of Germany

References and Data Source:

Accompanying brochures:
- A. Nick, R. Mweene, R. Bäumle (2012): Groundwater Resources of the Mwembeshi and Chongwe catchments, including the Lusaka region. -A Manual with Explanations for the Use of the Hydrogeological Maps and Vulnerability Map-. Ministry of Lands, Energy and Water Development, Department of Water Affairs and Federal Institute for Geosciences and Natural Resources; Lusaka.
- R. Bäumle, A. Nick, B. Shamboko-Mbale, C. Siwale (2012): Groundwater Resources of the Mwembeshi and Chongwe catchments, including the Lusaka region. -A Brief Description of Physiography, Climate, Hydrology, Geology and Groundwater Systems of the Area-. Ministry of Lands, Energy and Water Development, Department of Water Affairs and Federal Institute for Geosciences and Natural Resources; Lusaka.

BOREHOLE INFORMATION: Department of Water Affairs: Groundwater Database; Groundwater Resources for Southern Province Project (GReSP), December 2011

LITHOLOGY: - Geological Map 1 : 100,000; Geological Survey Department, Lusaka / Geological Survey, N. Rhodesia"; 152.7NE (1962)*, 152.7SE (1963)*, 152.8NE (1968), 152.8NW (1963)*, 152.8SE (1967), 152.8SW (1963)*;
- Geological Map 1 : 250,000; SD-35-15 (1984);
- Geological Map of Zambia 1 : 1,000,000 (1981), Edition 2

TOPOGRAPHY:
- Topographic Map 1 : 50,000; Survey Department Lusaka; sheet numbers and publication date: 152.7B2 (1973), 152.7B4, 152.7D2 (1980), 152.8A1 (1974), 152.8A2, 152.8A3 (1972), 152.8A4 (1986), 152.8B1 (1990), 152.8B3 (1981), 152.8C1 (1993), 152.8C2 (1976), 152.8D1 (1989)
- Topographic Map 1 : 250,000; Surveyor-General, Lusaka; sheet numbers and publication date: SD-35-15 (1986), SD-35-16 (1991)
- LANDSAT ETM, Resolution 30m, date 2002-02-22, (bands 7,4,1), WGS 1984, UTM-Zone 35, Datum: D_WGS_1984;
- QUICKBIRD, Resolution 60cm, date 2007, 2008;
- WORLDVIEW, Resolution 50cm, date 2007, 2008
- Elevation contours derived from DEM, based on Shuttle Radar Topography Mission (SRTM) data; - DEM grid resolution is approximately 90m by 90m (3 arcsec)

Geometry: Transverse Mercator Projection, Zone 35; Spheroid: Modified Clarke 1880

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BGR, Hannover; Germany
Lusaka 2012

Lusaka and Surroundings

1 : 75,000

TOPOGRAPHY

- Mungule — hut, village
- points of interest (mission, agricultural station)
- research institute
- school outside Lusaka District
- health facility
- trunk road
- main road
- district road
- street, motorable track or farm road
- track
- railway
- 750 — contour line in meter [a.s.l.], contour interval 20m
- KAFUE 502 — district boundary with name and district code
- Central — provincial boundary with name

Authorities: This map is not an authority on the delimitation of cadastral boundaries.

LITHOLOGY

Sedimentary Rock
- unconsolidated or semi-consolidated gravel, sand, silt and clay
- limestone / dolomite
- sandstone and conglomerate – example: aquifer category C –
- undifferentiated sandstone, siltstone and mudstone
- mudstone, siltstone and shale
- sedimentary (clastic)

Metamorphic Rock
- marble, meta-carbonate: Cheta-, Lusaka-, Nyama Formation
- marble, meta-carbonate and calc-silicate rock (undifferentiated)
- gneiss and granite-gneiss
- schist, slate, phyllite and quartzite
- metamorphic rock (undifferentiated)
- psammite or pelite

Igneous Rock
- basic extrusive (basalt)
- extrusive (undifferentiated) – example: aquifer category C –
- basic to ultra-basic intrusive
- acid to intermediate intrusive

TECTONIC LINEAMENT
- fault
- fault, interferred

GROUNDWATER FEATURES

Used production borehole of the Lusaka Water and Sewerage Company (LWSC) with name
- Chanda — single appearance
- Chunga — grouped appearance

Ground water monitoring well with number
- 01 — of the Department of Water Affairs (DWA), Lusaka

Water points with short number
for complete numbering:
add district code to number shown in labels, e.g. *502 (Kafue) = 5020283*

- BOR — borehole
- BOM — borehole with hand pump
- BOS — borehole with submersible pump
- DWI — hand dug-well with hand pump
- DWU — hand dug-well usually with bucket and windlass
- SPR — spring, perennial
- SPO — spring, intermittent or seasonal

AQUIFER CATEGORY

Aquifer in which flow is mainly intergranular
- local or discontinuous productive aquifer or extensive but only moderately productive aquifer

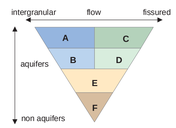
Fissured aquifer, including karst aquifer
- extensive and highly productive aquifer
- local or discontinuous productive aquifer or extensive but only moderately productive aquifer

Stratum forming insignificant aquifer
- minor aquifer with local and limited groundwater resource
- stratum with intermediate characteristics

1 : 75,000

0 1 2 3 4 5 km

1 centimeter equals 750 meters



Aquifer classification system (after Struckmeyer & Margat, 1995). For further explanations: A. Nick et al. (2012)

HYDROLOGY
- dam, lake, lagoon, pond, reservoir
- pan
- swamp or marsh
- dambo (type of shallow wetland)
- stabilization pond
- open groundwater surface
- large river with perennial / seasonal or intermittent runoff
- river or large stream with perennial / seasonal or intermittent runoff
- stream with perennial / seasonal or intermittent runoff
- small stream or creek with seasonal or intermittent runoff
- catchment boundary of surface water
- Lufua — sub-catchment boundary of surface water with name

Piezometric surface, contour line in meters [a.s.l.], contour interval 10m
(prepared using water level measurements taken April 2009)
- 500 — validated
- tentative
- regional groundwater flow direction

Reliability: This map provides an overview of the hydrogeological setting at the respective scale. Siting of successful boreholes requires more detailed investigations by a professional hydrogeologist.