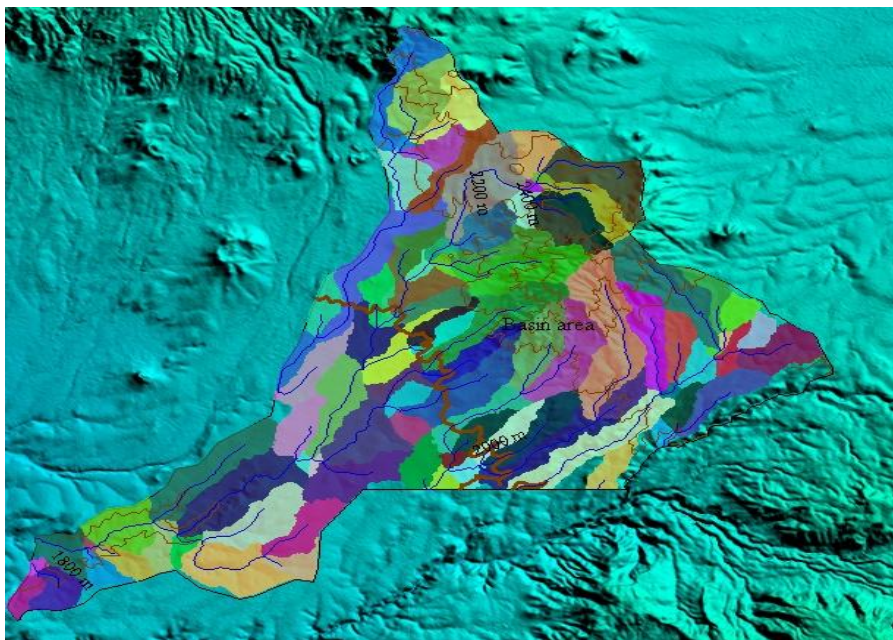


ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

Thesis Title:

Groundwater Resources Evaluation and Management in Woliso
Woreda, Central Ethiopia, South West shoa zone



Submitted to Addis Ababa University School of Graduate Studies for the Partial
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Advisor:

Seifu Kebede (Ph.D)

By: Frezer Fekadu
June, 2012

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**GROUNDWATER RESOURCES EVALUATION AND MANAGEMENT IN
WOLISO WOREDA, CENTRAL ETHIOPIA, SOUTHWEST SHOA ZONE**

**BY
FREZER FEKADU
DEPARTMENT OF EARTH SCIENCES, HYDROGEOLOGY STREAM**

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DECLARATION

I the undersigned declare that this Thesis is my original work and has not been presented for any degree in any university and all the sources of materials used for the thesis have been duly acknowledged.

Name-Frezer Fekadu

Signature_____

Place: Addis Ababa university, School of graduate studies

June, 2012

This Thesis has been submitted for examination with my approval as university advisor

Seifu Kebede (PhD)_____

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Abstract

This study covers two parts where the first part deals with groundwater potential assessment of Rebu river catchment and the second part which is the main focus of the study deals with assessment of sustainability problems of developed water supply schemes in Woliso woreda(i.e part of Rebu river catchment).

Rebu river catchment is found at the margin of Main Ethiopian Rift. The average monthly Maximum and minimum temperature of the area are 25 °C and 11.29 °C, respectively. Its mean annual aerial depth of precipitation is 1207mm. Potential evapotranspiration for the area is calculated using Penman and Thornthwaite gives annual potential evapotranspiration value of 952.49 mm/year and 807.3mm/year, respectively. Actual evapotranspiration for the area estimated, from Turc method gives a value of 806.98mm. While actual evapotranspiration using Soil-water balance (Thornthwaite and Mather) method is 733.2 mm. The overall water balance of the study area was computed with an aim of estimating the amount of annual recharge to the groundwater. Accordingly; annual recharge to the ground water of the study area is approximated to be 244.2mm.

The sustainability challenge of developed water supply schemes is conducted in Woliso woreda. The woreda have Thirty Seven PA's and the total PA's found in the woreda were surveyed. The main source of drinking water for the woreda is groundwater. Currently there are two hundred sixty five functional water supply schemes were found in woreda; where, 122 hand dug wells fitted with hand pump, 81 shallow wells, 5 deep wells and 57 on spot capped springs and 30 water supply schemes are non-functional; where, 11 Shallow wells, 8 springs, 7 hand dug well and four deep wells are failed to meet their objectives. Findings of the study reveal that Poor quality (high fluoride concentration), management problem, Lack of training for the professionals, water managers, community and local operators is other reason for sustainability problem of the woreda.

Result of the study shows that almost all of the interviewed technical staffs clarify that the existing training and staff mobility strategy doesn't allow professionals to improve their skills. In addition there is high shortage of skilled human resource, budget, and logistics in the rural water supply office of Woliso woreda. There is no clear system for monitoring and supervision of schemes by the office. Little role of local communities was seen during water supply development activities; besides Women participation at the time of development of water supply schemes and after development is completed is insignificant. All the above mentioned factors play significant role for the failure of the developed water supply schemes. A finding of the study also shows investing on knowledge of professionals is first priority of beneficiaries to minimize the rate of failure of water supply schemes.

