

**CENTRAL GROUND WATER BOARD
DEPARTMENT OF WATER RESOURCES,
RIVER DEVELOPMENT AND GANGA REJUVENATION,**

**MINISTRY OF JAL SHAKTI
GOVERNMENT OF INDIA**



**INCEPTION REPORT
Sustainability of springs located in Azhutha block
(550 Sq. Km), Idukki district
(NAQUIM-2.0)**

AAP: 2023-24

**Team Lead – Smt. Rakhi U R
Scientist-C (Hydrogeology)**

The Study Area

Azhutha block is located in the southern part of Idukki district with geographical area coverage of about 1250 sq.km (Fig 1). The area comes under Periyar basin and majority of the land is covered by thick tropical rain forest. Geomorphologically, the area is covered by denudational hills and valleys with average elevation ranges from 500 to 2000 m amsl. Geologically, the area is covered by charnockite and in places, hornblende biotite gneiss. The weathering depth of bed rock varies from 0 to 10 m. Ground water occurs in phreatic condition in the weathered crystalline rocks and under semi-confined condition in the deep fractured crystalline rocks. Groundwater is mainly developed through dug wells and shallow bore wells in the study area.

Due to steep slope and shallow weathering depth to bed rock, springs emerges in various parts of the taluk, which can be developed to meet the water requirements during summer season. The study area experiences shortage for ground water due to the drying up of dug wells and springs in highlands due to high rates of base flow which is attributed to limited aquifer thickness and high gradient of the terrain.

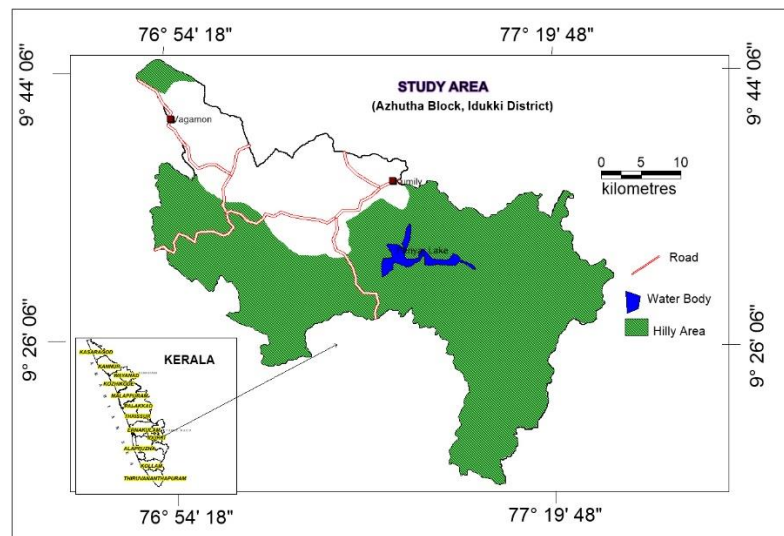


Fig1: Study Area

Priority Types

- Spring Inventory
- Quantity & Quality

- Source-Sustainability
- Spring-Shed Management

Previous Studies

Aquifer Mapping study of Idukki district has been taken up during AAP 2019-20 and the report has been published during 2022. As per Koppen climatic classification, Idukki district experiences tropical monsoon with seasonally excessive rainfall and hot summer. The weather and climate of Idukki is characterized by the presence of monsoon winds. The movement of monsoon current is normally blocked by the mountain ranges. Idukki district comprises mostly of rocks belonging to Archean metamorphic complex as established by the Geological Survey of India. The main rock types encountered in the district are charnockites, hornblende-biotite gneiss and granite gneiss. In the Aquifer mapping study, numerous perennial spring inventories has been reported in the Azhutha block, with discharge ranging from 12 to 1200 lpm during the pre-monsoon period meaning that these springs are potential and can cater drinking water requirements. Some of the potential springs identified in the study area are Valanchankanam (1200 lpm), Pullupara, two springs (15 and 12 lpm), Kaduvapara (14 lpm), Mettupagam (600 lpm), Tharangangannam (17 lpm), Pattamudi Jn. (12lpm). As per GEC 2022 Azhutha Block falls under safe category with a stage of extraction of 45.37%. Apart from this Centre for Water Resources Development and Management, Kozhikode has taken up a study on Springs of Kerala and published a report on July 1988. In this study 9 number of perennial springs are identified in the Azhutha Block of Idukki District. Many of the springs in this block can be developed for future use. Almost all springs are confined in Pamba and Manimala basins towards the eastern side of the block; even though both these basins together basins constitute only 25% of the total basin area in the block. These springs are having an yield of 1 lpm to 1200 lpm.

Objectives of the Present Study

The objectives of the present study is as follows:-

- i. Inventorying of Springs across the study area
- ii. Regular Monitoring the Springs
- iii. Water Quality Sampling
- iv. Classification of Springs (both Type and Discharge)
- v. Spring-shed Mapping / Recharge Zone

- vi. Isotope Study (If feasible)
- vii. Management plan for Spring sustainability
- viii. Sharing the detailed report with State

Proposed Work Plan

- i. Old Literature Survey
- ii. Study of Geology & Geo-Hydrology of the Area
- iii. Identification of Meteorological Stations
- iv. Satellite Imagery & DEM (If available)
- v. Soil Map
- vi. Field Visit
- vii. Outsourcing for Data Collection (monthly)
- viii. Collection and Analysis of Water Samples
- ix. Data Interpretation
- x. Preparation of Management Plan
- xi. Preparation of Maps & Report

Management Plan

- Identification of Recharge interventions
 - Percolation Tanks
 - Afforestation
 - Contour Trenching
 - Staggered Contour Trenching
- Sustainability of the Spring

New Data Generation Plan

Month	Activity
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May-2023	Pre-Monsoon field work and spring-water sampling
June-2023	Collection of secondary data from State and Central Govt. Offices.
July-2023	Data analysis and interpretation
August-2023	Assessment of temporal variation in discharge of the springs
September-2023	Analysis and interpretation of chemical data
October-2023	Mid-term appraisal presentation
November-2023	Post-Monsoon field work
December-2023	Field work for verification and ground truthing and preparation of plans for source sustainability.
January-2024	Preparation of spring-shed management plans.
February-2024	Report preparation
March-2024	Sharing of the report.

Composition of the Team

Team Member	Name & Designation	Responsibility
Team leader	Smt. Rakhi U R, Sc. C (HG)	To co-ordinate the study including field work, assessment of progress, data compilation & report preparation, presentation and sharing. Overall invigilation of the study.
Team Member	Sh. Aneesh Kumar V, Sc. C (HG)	Data collection and generation including field work. Preparation of thematic maps, source sustainability plan and management plans. Preparation of report.
Team Member	Sh. Aneesh Kumar N, (Asst. Chemist)	Analysis and interpretation of chemical data.

Team-Member wise Monthly Target

Month	Activity	Name of the Officer
May-2023	Pre-Monsoon field work and spring-water sampling	Smt. Rakhi U R, Sc. C (HG)&Sh. Aneesh Kumar V, Sc. C (HG)
June-2023	Collection of secondary data from State and Central Govt. Offices.	Sh. Aneesh Kumar V, Sc. C (HG)
July-2023	Data analysis and interpretation	Smt. Rakhi U R, Sc. C (HG)&Sh. Aneesh Kumar V, Sc. C (HG)
August-2023	Assessment of temporal variation in discharge of the springs	Sh. Aneesh Kumar V, Sc. C (HG)
September-2023	Analysis and interpretation of chemical data	Sh. PankajBakshe, Sc. B (Chemical) & Sh. Aneesh Kumar N, (Asst. Chemist)
October-2023	Mid-term appraisal presentation	Smt. Rakhi U R, Sc. C (HG)&Sh. Aneesh Kumar V, Sc. C (HG)
November-2023	Post-Monsoon field work	Smt. Rakhi U R, Sc. C (HG)&Sh. Aneesh Kumar V, Sc. C (HG)
December-2023	Field work for verification and ground truthing and preparation of plans for source sustainability.	Smt. Rakhi U R, Sc. C (HG)&Sh. Aneesh Kumar V, Sc. C (HG)
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February-2024	Report preparation	Smt. Rakhi U R, Sc. C (HG)&Sh. Aneesh Kumar V, Sc. C (HG)
March-2024	Sharing of the report.	Smt. Rakhi U R, Sc. C (HG)