UNNAO DISTRICT

Basic Information

Geographical Area :	4558 Sq. Km.	No. of Blocks:	16
Basin :	Ganga	Population:	27,00, 426
Availability of Ground Water :	178412.57 ham.	Stage of G.W. development:	44.63%

Introduction

Unnao district is a part of Central Ganga Plain of the state covering an area of 4558 sq.km. and lies between North latitudes 26°06´ and 26°55´ and East longitudes 80°03´ and 81°03´ with total population of 27,00,426 as per 2001 census (density:592 persons/sq.km.). The district is bounded by river Ganga in the west and the river Sai in the east. The entire district falling in Sai Sub-basin of Ganga basin represents flat topography. The irrigation in the district takes place through Sharda Canal network system and tubewells. About 92% of the district area is under cultivation.

Top

The district receiving a normal annual rainfall of 837.80 mm with ……..rainy days experiences sub-tropical climate. The district is mainly drained by river Ganga and its tributaries Kalyani, Khar, Loni and Marahai in the western part and by Sai river in the Eastern part of the district and all these rivers are perennial in nature.

About 87% area of net sown area (3,00,000 hectares) is irrigated both by surface water (Sharda Canal network system) and ground water through shallow and moderately deep tubewells. The share of surface water irrigation is 48% while that of ground water is 52%. The economy of the district mainly depends upon Agriculture

Top

Hydrogeology

The area is underlain by Quaternary alluvium consisting of clays, occasional kankar, sand of various grades and gravels in different proportions. The results of 14 exploratory bore holes drilled by CGWB ranging in depth from 250 mbgl to 450 mbgl reveal that the following four aquifer groups exist in the district.

I Aquifer Group	25-130 mbgl
II Aquifer Group	80-240 mbgl
III Aquifer Group	180-410 mbgl
IV Aquifer Group	Below 470 mbgl

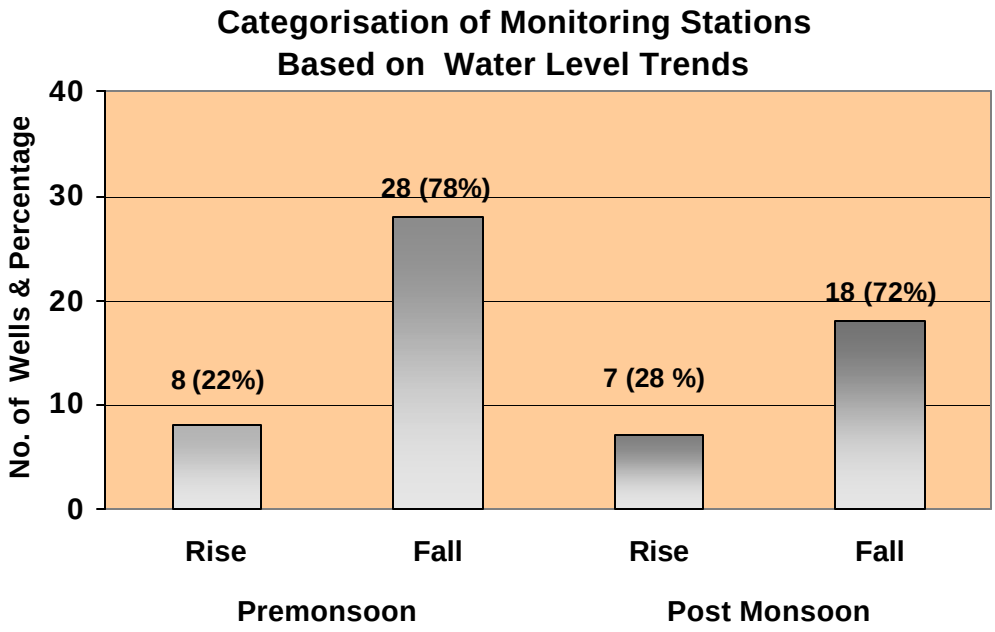
Top

The ground water occurs under unconfined to confined conditions. The pre-monsoon depth to water level ranges from 1.10 to 15.65 m.bgl while post-monsoon depth to water level varies from 0.70 to 14.80m.bgl. The area experiencing water logging/ prone to water logging lies mainly along the Sharda canal command area. The areas having comparatively deeper water level lie in parts of Ganj Mordabad, Sikandarpur Sarausi and Sikandarpur Karan blocks. The seasonal water level fluctuation shows both rise (0.10 to 4.38 m) and fall (0.50 to 0.60 m) behaviour.

The yield of shallow tubewells ranges from 300 lpm to more than 500 lpm while that of exploratory tubewells varies between 2000 lpm and 3000 lpm at economic drawdowns. The yield in the Eastern part along the Sai River varies between 1000 and 2000 lpm. Auto flow conditions have been recorded at Bharshar Naushera Exploratory tubewell site where a thick confining layer of about 200 m thickness exist above the tapped granular zone (308-424 mbgl). A free flow of 10.50 lps was obtained from this tubewell at a piezometric head of 2.30 magl. The ground water development takes place in the study area mainly for drinking and irrigation purposes through shallow and moderately deep tubewells.

Long Term Water Level Trend

The water level data recorded from National Hydrograph Stations during the period 1984-2003 has been analysis both for Pre-monsoon and Post-monsoon. The number of NHS with their percentage in respect of Rise & fall has been graphically shown below:



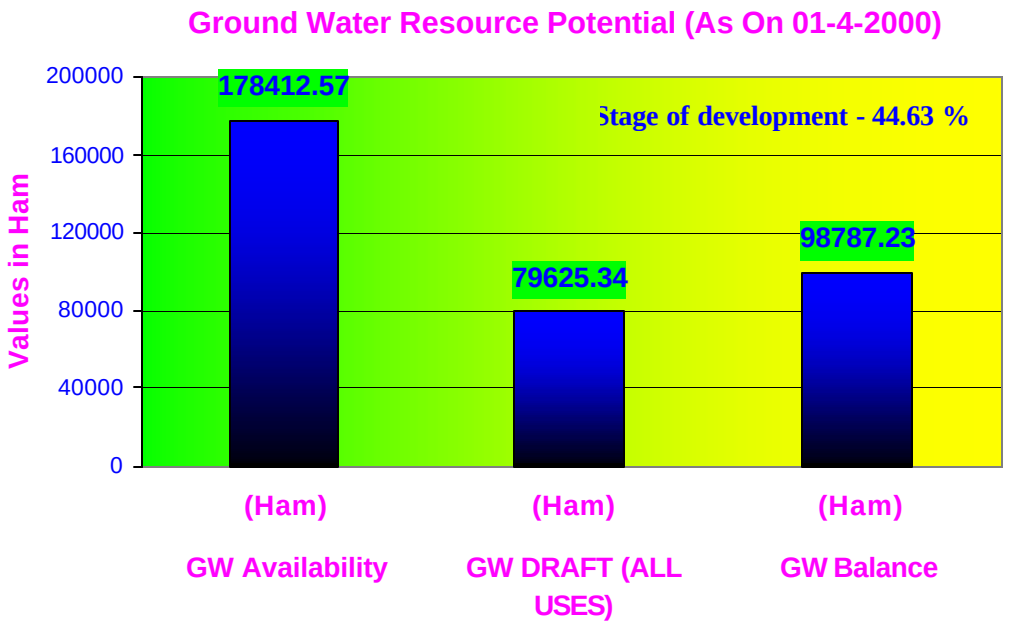
Ground Water Quality

The ground water quality in the major parts of the district is fresh and suitable both for domestic and irrigation purposes. However sporadic high concentration of fluoride exists in the top aquifer system particularly in the Nawabganj and Ashoha blocks which has caused phenomenal human health hazard mainly in the age group of below 20 years. Ground Water pollution due to excess of chromium has been observed in Unnao City area due to existence of tanneries.

Top

Ground Water Resource Potential

The ground water resource potential has been estimated based on "GEC 1997 Methodology" as on 1.4.2000, which is graphically represented below.



Top

The blockwise resource estimates show that Ganj Moradabad block falls in Semi-critical category. However, a balance of 98787.23 ham is available in the district for further ground water development in a planned manner through shallow and moderately deep tubewells to meet out domestic and irrigation requirements.

Ground Water Management

The ground water development needs to be taken up in a planned manner in the district particularly in Ganj Moradabad block in order to avoid adverse impact on ground water regime. which suggests that ground water development should be taken up cautiously. The need for implementation of Artificial recharge schemes in the block is imperative which would arrest the declining trend in water levels in due course of time There is also need to adopt conjunctive water use strategy in the area experiencing water logging problem. The water levels should be closely monitored through need based piezometers. Due care is also to be taken for providing drinking water having permissible fluoride contents in the ground water in the area where fluoride contents are found beyond the permissible limits. Effective majors like blending technique in 1:10 ratio may be emplo yed to bring down the fluoride content below 1.5 mg/l before put to use for drinking. For drinking purposes the tubewells should be constructed more than 30 m depth as fluoride content decreases with depth. Since the quality of ground water in the II aquifer group is brackish to saline proper cement sealing is to be provided between II and III aquifer groups if deeper tubewells are to be constructed to avoid contamination from II aquifer.

Top