



**Government of India**  
**Ministry of Water Resources**  
**CENTRAL GROUND WATER BOARD**

**GROUND WATER INFORMATION BOOKLET**  
**SIRMAUR DISTRICT, HIMACHAL PRADESH**



**NORTHERN HIMALAYAN REGION**  
**DHARMSALA**  
**2008**

**Contributors**



**Vidya Nand Negi**  
Scientist-B

Prepared under the guidance of

**Bhajan Singh**  
Regional Director Incharge

### **Our Vision**

Water security through sound groundwater management

# **Ground Water Information Booklet**

## **Sirmaur District, Himachal Pradesh**

### **CONTENTS**

#### **DISTRICT AT A GLANCE**

#### **1.0 INTRODUCTION**

#### **2.0 CLIMATE & RAINFALL**

#### **3.0 GEOMORPHOLOGY & SOILS**

#### **4.0 GROUND WATER SCENARIO**

##### **4.1 Hydrogeology**

##### **4.2 Ground Water Resources**

##### **4.3 Ground Water Quality**

##### **4.4 Status of Ground Water Development**

#### **5.0 GROUND WATER MANAGEMENT STRATEGY**

##### **5.1 Ground Water Development**

##### **5.2 Water Conservation & Artificial Recharge**

#### **6.0 GROUND WATER RELATED ISSUES & PROBLEMS**

#### **7.0 AWARENESS & TRAINING ACTIVITY**

#### **8.0 AREAS NOTIFIED BY CGWA / SGWA**

#### **9.0 RECOMMENDATIONS**

## SIRMAUR DISTRICT AT A GLANCE

### 1. GENERAL PARTICULARS

A. Location	:	North latitude 30 <sup>0</sup> 22'00" - 31 <sup>0</sup> 01' & East longitude 77 <sup>0</sup> 01'00" - 77 <sup>0</sup> 50'00"
B. Area	:	2825 sq. km
C. District & Tehsil Headquarter	:	Nahan
D. Number of Tehsils	:	6
E. Number of Sub-Tehsils	:	4
F. Number of Blocks	:	5
G. Number of Towns	:	3
H. Number of Villages	:	968
I. Population	Total	: 4,58,593 persons (2001)
	i. Rural	: 4,10,923 persons
	ii Urban	: 47670 persons
	iii Schedule Caste	: 1,35,774 persons
	iv Scheduled tribes	: 5,960 persons
J. Work Force	i. Cultivators	: 1,62,100 persons
	ii. Agricultural Laborers	: 5,526 persons
K. Literacy	:	70.85 %
M. Livestock Population	:	4,22813

### 2. LANDUSE

i. Net Cultivated Area	:	41,447 Hectare
ii Area Sown	:	35,121 Hectares
ii. Net Irrigated Area	:	14,034 Hectares

### 3. CLIMATOLOGY

A. Average Annual Rainfall	:	1660 mm
B. Maximum Temperature	:	30 <sup>0</sup> C
C. Minimum Temperature	:	-2 <sup>0</sup> C
D. Relative Humidity	:	80 %

### 4. GROUND WATER HYDROLOGY

A. Depth to Water Level		
	i. Valley fill Area	: 5 to 10 m bgl
	ii. Fissured formation	: 20 to 30 m bgl
B. Maximum rise in water level (seasonal)	:	6.20 m
C. Minimum rise in water level (seasonal)	:	0.28 m bgl
D. Tubewell yield within 50 to 300 m depth	:	15 lps to about 25 lps
E. Spring yield	:	Less than 1 lps to 25 lps

### 5. GROUND WATER RESOURCES (PAONTA VALLEY) March 2004

A. Assessment Unit (Paonta Valley)	:	15,000 hect.
------------------------------------	---	--------------

B.	Existing gross ground water draft for all uses	:	1220.30 hect.m
C.	Total Annual Ground water recharge	:	7693.49 hect.m
D.	Natural Discharge during Non-Monsoon season.	:	769.35 hect.m
E.	Allocation for domestic, and industrial requirement supply up to next 25 years	:	490.14 hect.m
F.	Net ground water availability for future irrigation development	:	5491.10 hect.m
G.	Stage of ground water development	:	17.62 %
H.	Categorization of the Assessment Unit	:	“SAFE”
6.	Ground Water Quality	:	Fresh

# **DISTRICT GROUND WATER BOOKLET**

## **SIRMAUR DISTRICT, HIMACHAL PRADESH**

### **1.0 INTRODUCTION**

Sirmaur is the southern most districts of Himachal Pradesh having 2825 sq km geographical area. The district has hilly and mountainous topography with intermontane valleys, prominent being the Poanta valley. The district, has its headquarter at Nahan and lies between North latitude 31°01'00" to 30°22'00" and East longitude 77°01'00" to 77°50'00" and is covered by Survey of India degree-sheets 53F and 53E. The district is bounded by Shimla district towards north & Sirmaur district towards west. District has inter-state boundary in the south with State of Haryana and with Uttranchal to the east. The district is well connected by road network with national high way number 72 passes through the district. The nearest airports are at Shimla (Jubbal Hatti) and Chandigarh.

Administratively, Sirmaur district has been divided in to three-sub division viz., Nahan, Poanta Sahib & Rajgarh and have ten tehsils & sub-tehsils [Nahan, Poanta Sahib, Puchad, Rajgarh, Shalai, Renuka, Nohra, Rohnat, Dadahu, Kamrau. There are 228 panchayats, 968 villages & 3 towns in the district.

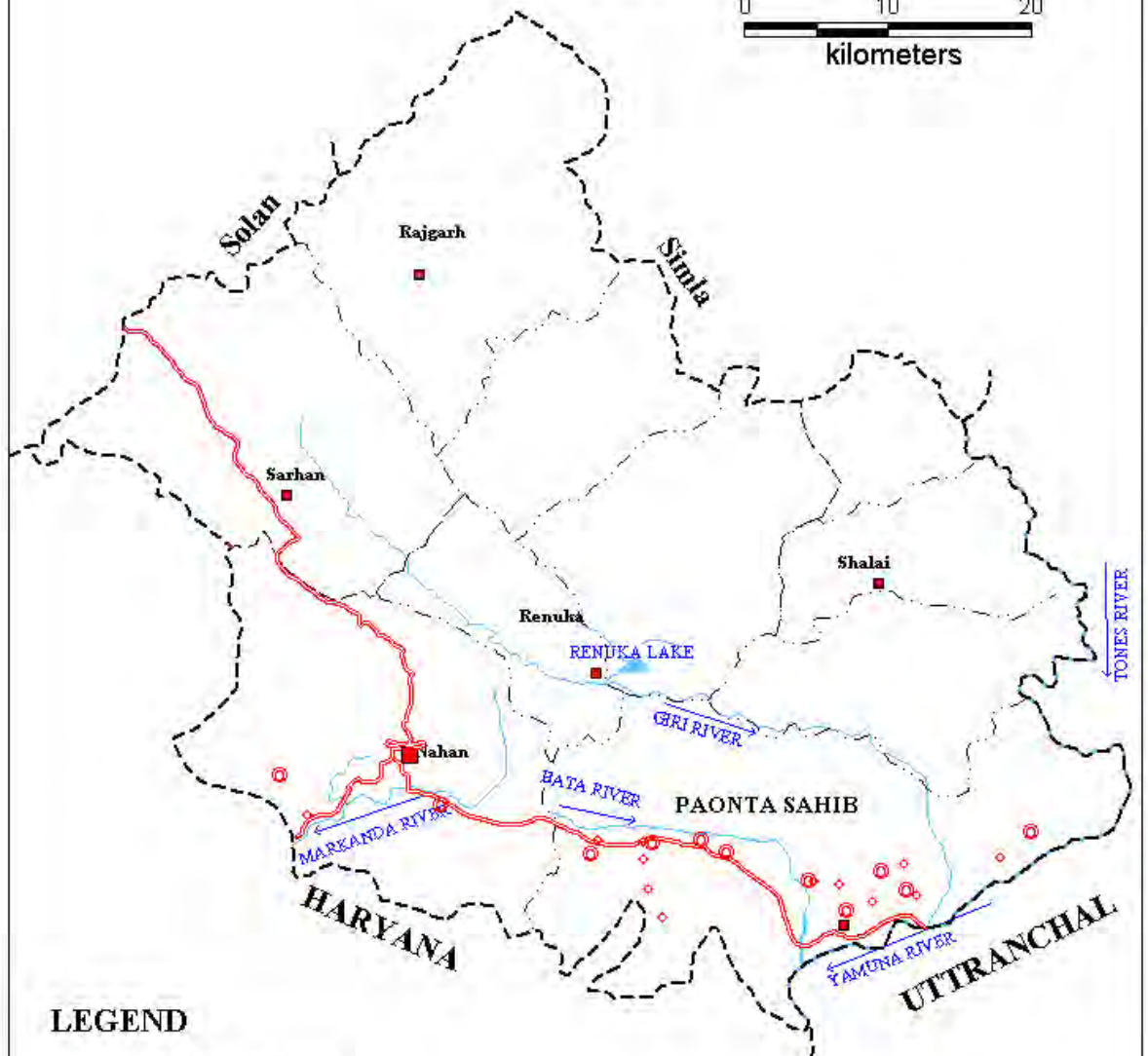
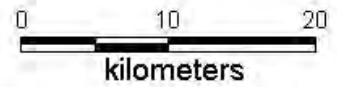
As per 2001 census, population of the district is 4,58,593 persons with 162 person per sq km density of population. The decadal population growth rate is %. The rural & urban population is 4,10,765 (89%) & 47,828 (11%) respectively. The schedule caste and schedule tribes population in the district is 29.60 % & 0.01 % respectively. Male female sex ratio is 1000: 961.

The local inhabitants mainly depend on agriculture for their subsistence and adopt several traditional practices conducive for farming in sloping terrains. Large and small scale industrial units however has come up at Poanta valley.

Central Ground Water Board (CGWB) has carried out hydro-geological studies and ground water exploration in the district. Hydrogeological studies and exploration commenced in sixties, and under exploratory drilling programme 12 exploratory wells ranging in depth from 90 to 163 m have been drilled. Further, CGWB under its national network maintains 10

Himachal Pradesh  
**SIRMAUR DISTRICT**

**INDEX MAP**



**LEGEND**

- Sub Tehsil Boundary
- Tehsil Boundary
- District Boundary
- State Boundary
- District HQ
- Tehsil HQ
- Roads
- Exploratory Wells
- NHS

stations for ground water regime monitoring where water level and ground water quality is monitored on regular basis.

## **2.0 CLIMATE & RAINFALL**

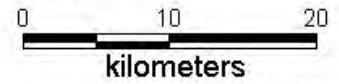
The climate of the district is sub-tropical to temperate depending upon the elevation. Four major seasons that is the winter season extends from Nov to February; summer season from March to June followed by the monsoon period extending from July to September end. Maximum precipitation in the form of rain occurs during July to September. Average annual rainfall in the district is about 982 mm with average of 60 rainy days. In the non monsoon season precipitation as snowfall also occurs in the higher reaches above 1500 m amsl, the peaks of Chaur dhar remains covered by snow. During winter period rainfall also occurs in lower hills and valleys parts. Mean maximum and minimum temperature of 30°C and -0°C respectively.

## **3.0 GEOMORPHOLOGY & SOILS**

Sirmaur district presents an intricate mosaic of high mountain ranges, hills and valleys with altitude ranging from 300 to 3000 m above MSL. There is general increase in elevation from south to north and from east to west. In general trans Gori terrain exhibits highly rugged mountain terrain. The highest peaks in Chaur dhar remain snow bound through out the year. Low denuded hill ranges of Siwalik represent the southwestern part of the district. In the areas underlain by high hill ranges of Himalayas, the valleys are narrow and deep with steep slopes. The terrain is moderately to highly dissected with steep slopes. Paonta valley, trending NW-SE, have an area of about 230 sq km and lies between the main Himalayan ranges on the north and outer Siwalik hill range in the south.

The Yamuna River that forms the eastern district boundary with the State of Uttranchal drains major part of Sirmaur district. Tons, Gori, bata are its major tributaries. Only a small area in the southeast is drained by river Markanda of the Ghaggar river basin. Gori River practically bisects the district in to two parts, namely trans Gori area and cis-Gori area. Paonta valley is drained by river Bata a tributary of Yamuna.

Himachal Pradesh  
**SIRMAUR DISTRICT**  
 PHYSIOGRAPHY AND DRAINAGE



**LEGEND**

- District Boundary
- State Boundary
- Block HQ
- Distt. HQ
- River/Drainage
- ..... Basin Boundary
- 1112  
△ Triangulation Point
- Hilly Upland Area
- Valley Plain Area

The soil in the district varies from thin and bare soil of high mountains to rich deep alluvial soil of the valleys. In the hilly area i.e. northern part soils are veneer and brown in colour, these are high base status soil of humid regions. In the southern part, combination of shallow black, brown and alluvial soils are found.

## 4.0 GROUND WATER SCENARIO

### 4.1 Hydrogeology

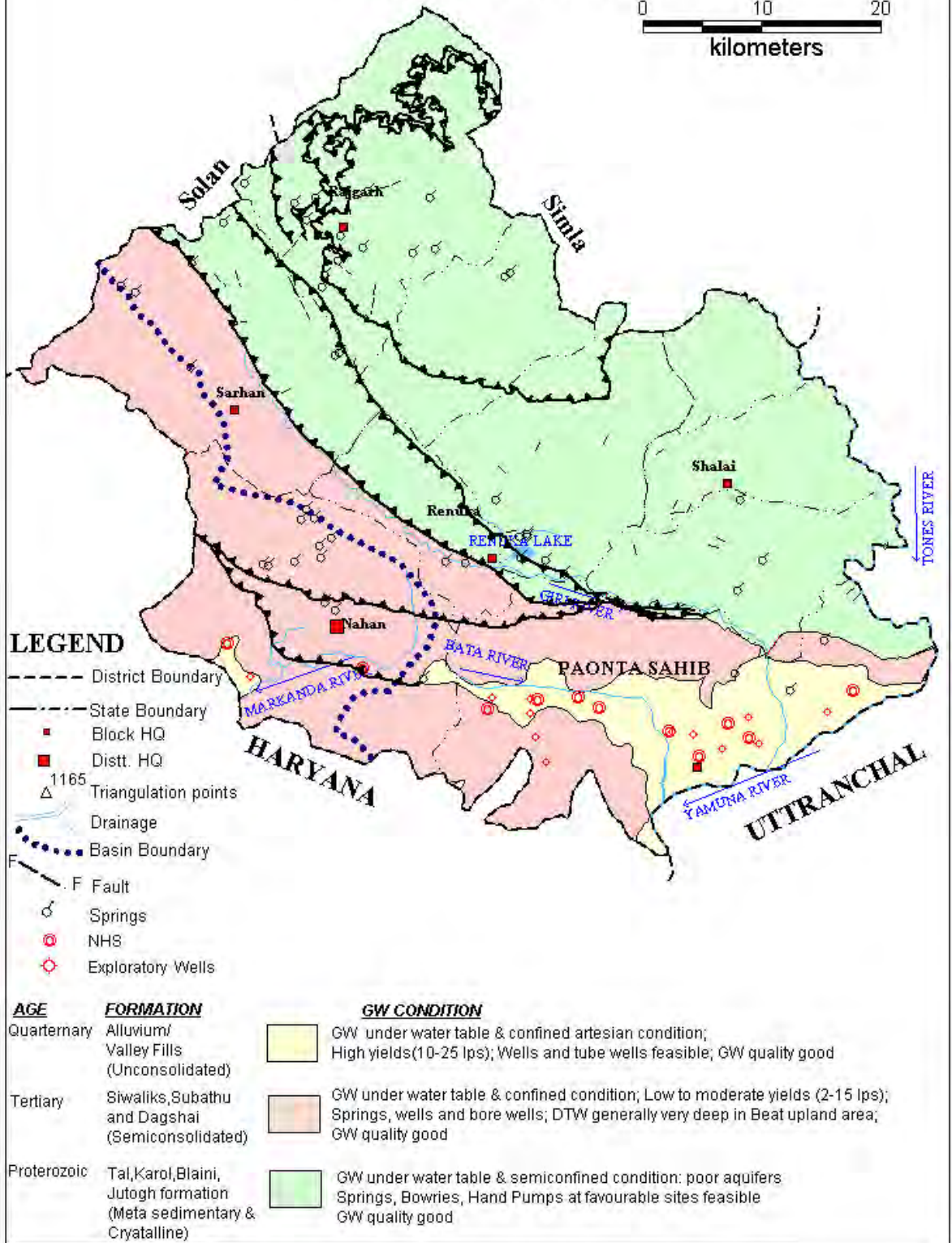
Geologically, the rock formations occupying the district range in age from pre-Cambrian to Quaternary period. The generalized geological succession in the district is given below

<u>Era</u>	<u>Period</u>	<u>Formation</u>	<u>Lithology</u>
Quaternary	Recent to Pleistocene	Alluvium /valley fills/ Older alluvium	Sand with pebble and clay & multiple cyclic sequence of medium to coarse grained sand with pebble of sandstone and lenses of clay
Tertiary	Pliocene – M-Miocene	Siwalik Group	Sandstone, shale, conglomerate, mudstone, clay, gravel & boulder beds beds
	L-Miocene – Oligo-Eocen Pemo	Kasauli/Dags hai/ Subathu Karol/ Infra-	Grey, purple sandstone, Shale, nodular clay, Shale, Limestone etc. Limestone, shale, red shale
Pre-Tertiary Group	Carboniferous	Karol, Blainis boulder beds	Carbonaceous shale, slate, greywacke, dolomitic limestone.
	Devonian	Jaunsar series	Slates schist phyllite,
	Pre-Cambrian	Chail series	Slates called Shimla slates
	Achaean	Jutogh series	Quartzites, schist and limestone.

Paonta valley is a narrow tectonic valley or *dun* and has fluvial and fluvio-glacial sediments

Hydro-geologically, the unconsolidated and semi-consolidated/consolidated rock formations form aquifers in the district. Intergarnular pore spaces in the sedimentary formations and secondary fissured porosity in hard rocks, topographical set up coupled with precipitation in the form of rain and snow, mainly govern occurrence and movement of ground water. Porous alluvial formation occurring in the valley area forms the

Himachal Pradesh  
**SIRMAUR DISTRICT**  
**HYDROGEOLOGY**



**LEGEND**

- District Boundary
- State Boundary
- Block HQ
- Distt. HQ
- △ 1165 Triangulation points
- Drainage
- Basin Boundary
- F Fault
- Springs
- NHS
- Exploratory Wells

**AGE FORMATION**

- |             |  |
|-------------|--|
| Quaternary  | Alluvium/<br>Valley Fills<br>(Unconsolidated)                                  |
| Tertiary    | Siwaliks, Subathu<br>and Dagshai<br>(Semiconsolidated)                         |
| Proterozoic | Tal, Karol, Blaini,<br>Jutogh formation<br>(Meta sedimentary &<br>Cryatalline) |

**GW CONDITION**

- |  |   |
|--|---|
|  | GW under water table & confined artesian condition;<br>High yields(10-25 lps); Wells and tube wells feasible; GW quality good   |
|  | GW under water table & confined condition; Low to moderate yields (2-15 lps);<br>Springs, wells and bore wells; DTW generally very deep in Beat upland area;<br>GW quality good |
|  | GW under water table & semiconfined condition: poor aquifers<br>Springs, Bowries, Hand Pumps at favourable sites feasible<br>GW quality good                                    |

most prolific aquifer system where as the sedimentary semi-consolidated formations and hard rocks form aquifer of low yield prospect.

Major parts of the district are hilly & mountainous with highly dissected and undulating terrain. These areas are underlain by semi-consolidated and consolidated hard rocks of Tertiary and pre-Tertiary period. Ground water potential in such areas is very low due to its hydro-geomorphic set up. Springs are the main ground water structures that provide water supply for domestic and irrigation in major rural and urban areas.

Springs are the major ground water sources of water supply in the district. These springs are mainly gravity, contact or fracture type and springs located along major thrust/faults or structurally weak planes are high yielding. The springs, locally called *Chasma*, have discharges varying from seepages to 15 litres per second. *Bowries*, a type dug well, are another structure constructed in the hill slopes to tap the seepages. Such *Bowries* are common and observed all southern part of the district. In the last more than a decade, state government have drilled shallow bore wells fitted with hand-pumps to provide domestic water. These hand pumps have depth up to average 50-60m and have low discharges up to 1 lps.

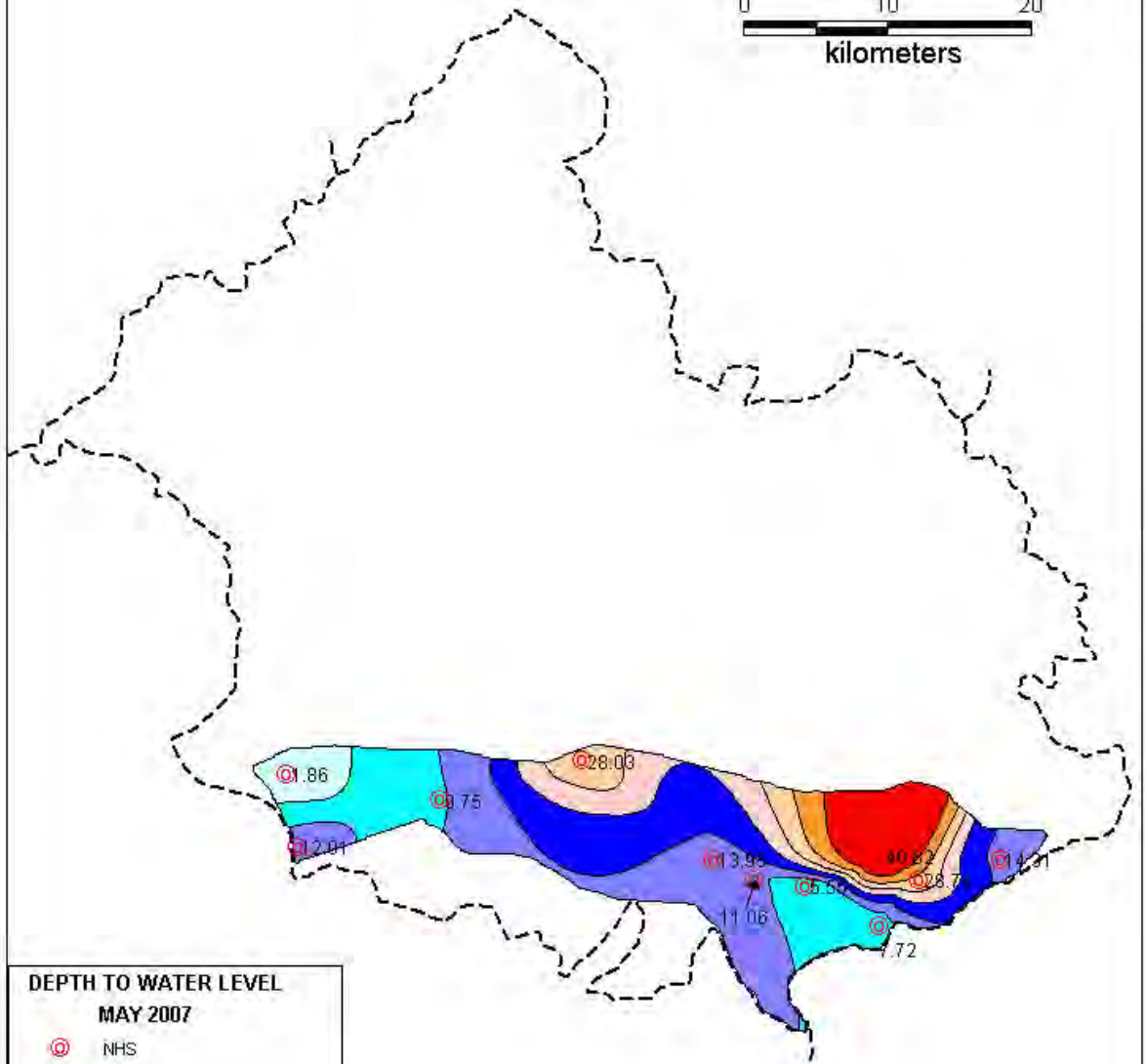
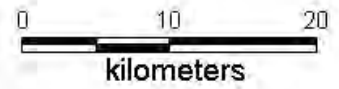
In valley area of Poanta, the ground water occurs in porous unconsolidated alluvial formation (valley fills) comprising, sand, silt, gravel, cobbles/pebbles etc. Ground water occurs both under phreatic & confined conditions. Wells and tube wells are the main ground water abstraction structures. Ground water is being developed in the area by medium to deep tube wells, dug wells, dug cum bored wells. Depth to water level shows wide variation from near surface to more then 35 m bgl. Yield of shallow aquifer is moderate with well discharges up to 10 lps.

CGWB has drilled/constructed 11 exploratory wells in the valley area in the depth range of 90.00 to 163.00 m bgl. Static water level of the tubewells ranges from 2 m to 43.00 m bgl and discharges ranged from 200 to 3220 lpm.

In Poanta valley area, there are 12-hydrograph network stations where depth to water level is monitored four times a year and ground water quality once during pre-monsoon period. Depth to water table shows wide variation. During pre-monsoon period (May 2006) it ranged between 3.02 & 38.2 m bgl, while during the post-monsoon period (November 2006) depth to water level ranged from 3.3 to 36.86 m bgl. Deeper water levels

Himachal Pradesh  
**SIRMAUR DISTRICT**

**Depth To Water Level  
 May 2007**



**DEPTH TO WATER LEVEL  
 MAY 2007**

- ⊙ NHS
- 0-5 m
- 5-10 m
- 10-15 m
- 15-20 m
- 20-25 m
- 25-30 m
- 30-35 m
- >35m

are observed mainly in northwestern part and along the foothills. In major parts of the valley the depth to water level are less than 15.00 m bgl.

Long-term water level fluctuation was analysed for the period of May 2007 with respect to decadal average of 1998 to 2006. In general, fall in water level up to 1 m is observed in most part of the valley. However, in isolated pockets in western and eastern part of Paunta valley rise of water level up to 4 m is also observed.

## 4.2 Ground Water Resources

Rainfall is the major source recharge to the groundwater body apart from the influent seepage from the rivers, irrigated fields and inflow from upland areas. The discharge from ground water mainly takes place from wells and tube wells; effluent seepages of ground water in the form of springs and base flow in streams.

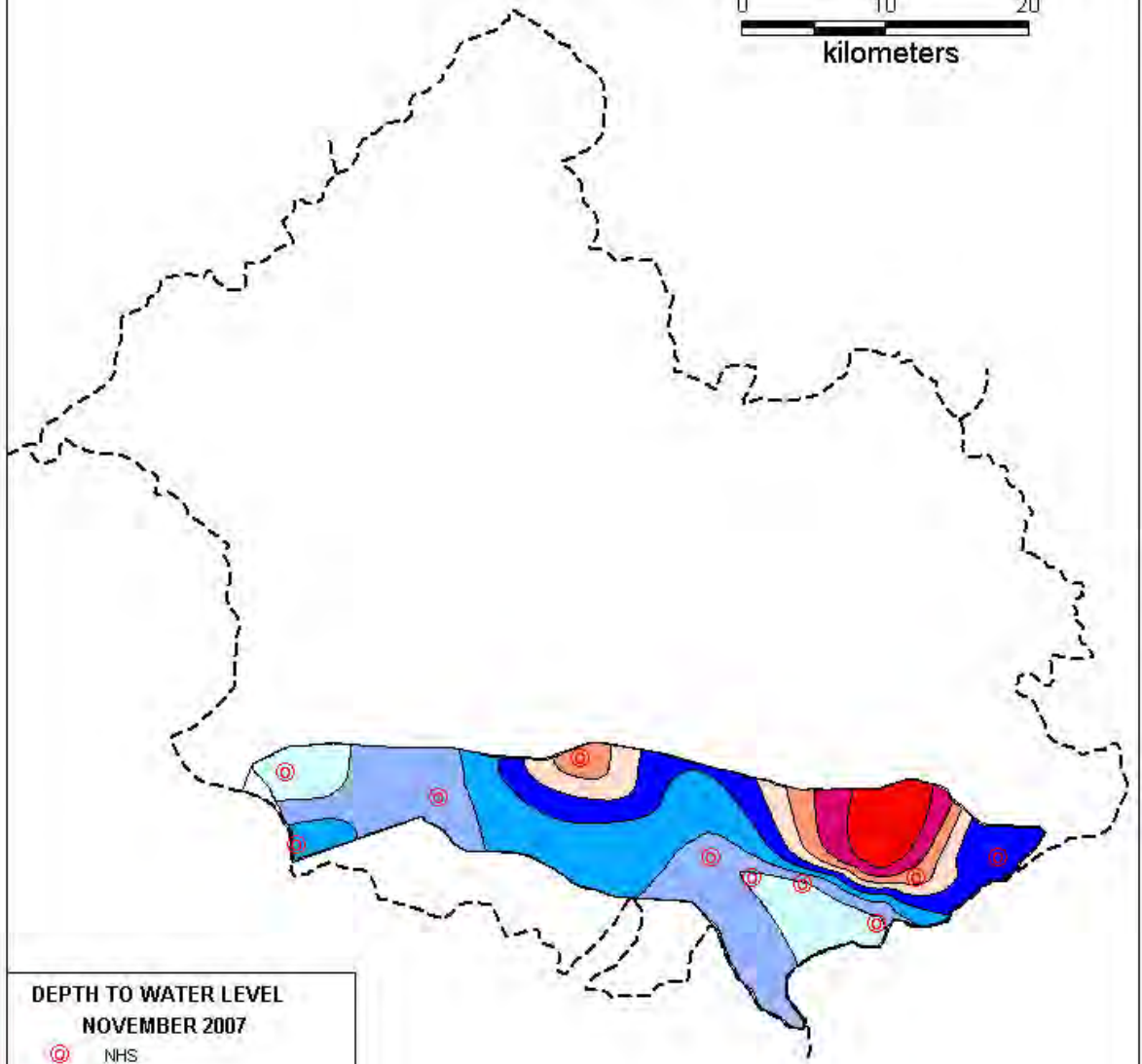
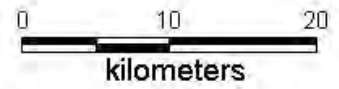
Ground water resources and irrigation potential for Poanta valley area of Sirmaur district have been computed utilising GEC-97 methodology for the year 2004 as given below.

1. Area of Poanta valley considered for GW Assessment	150	Sq km
2. Annual Replenishable GW Resource during monsoon & non-monsoon period	76.93	MCM
3. Natural Discharge during Non-monsoon Season	7.69	-do-
4. Net Annual Ground Water Availability	69.24	-do-
5. Annual Ground Water Draft	12.20	-do-
6. Demand for Domestic and Industrial uses (Projected up to 2025)	4.90	-do-
7. Ground Water Availability for Future Irrigation	54.91	-do-
8. <i>Stage of Ground Water Development</i>	18	%

The stage of ground water development in Poanta valley area is 18% as on 2004 and falls under “*safe category*”.

Himachal Pradesh  
**SIRMAUR DISTRICT**

**Depth To Water Level**  
**November 2007**



**DEPTH TO WATER LEVEL**  
**NOVEMBER 2007**



NHS

	0-5 m
	5-10 m
	10-15 m
	15-20 m
	20-25 m
	25-30 m
	30-35 m
	>35 m

### 4.3 Ground Water Quality

Chemical quality data of ground water from shallow and deep aquifers in the district indicates that ground water is generally alkaline in nature and suitable both for domestic and irrigation use. All the parameters analyzed are well within the permissible limit of safe drinking water as per Bureau of Indian Standard (BIS). The range of chemical parameters hydrograph network stations of CGWB in the district are summarized below

Range	pH	EC μS/cm	HC O <sub>3</sub>	Cl	N O <sub>3</sub>	F	Ca	Mg	Na	K	TH as CaCO <sub>3</sub>
Min	7.45	412	177	15	1.8	.16	36	8.5	20	1.2	50
Max	7.80	915	415	163	90	.72	104	27	137	7.9	355

Quality of ground water in shallow aquifer is thus good for domestic and irrigation purpose in the district.

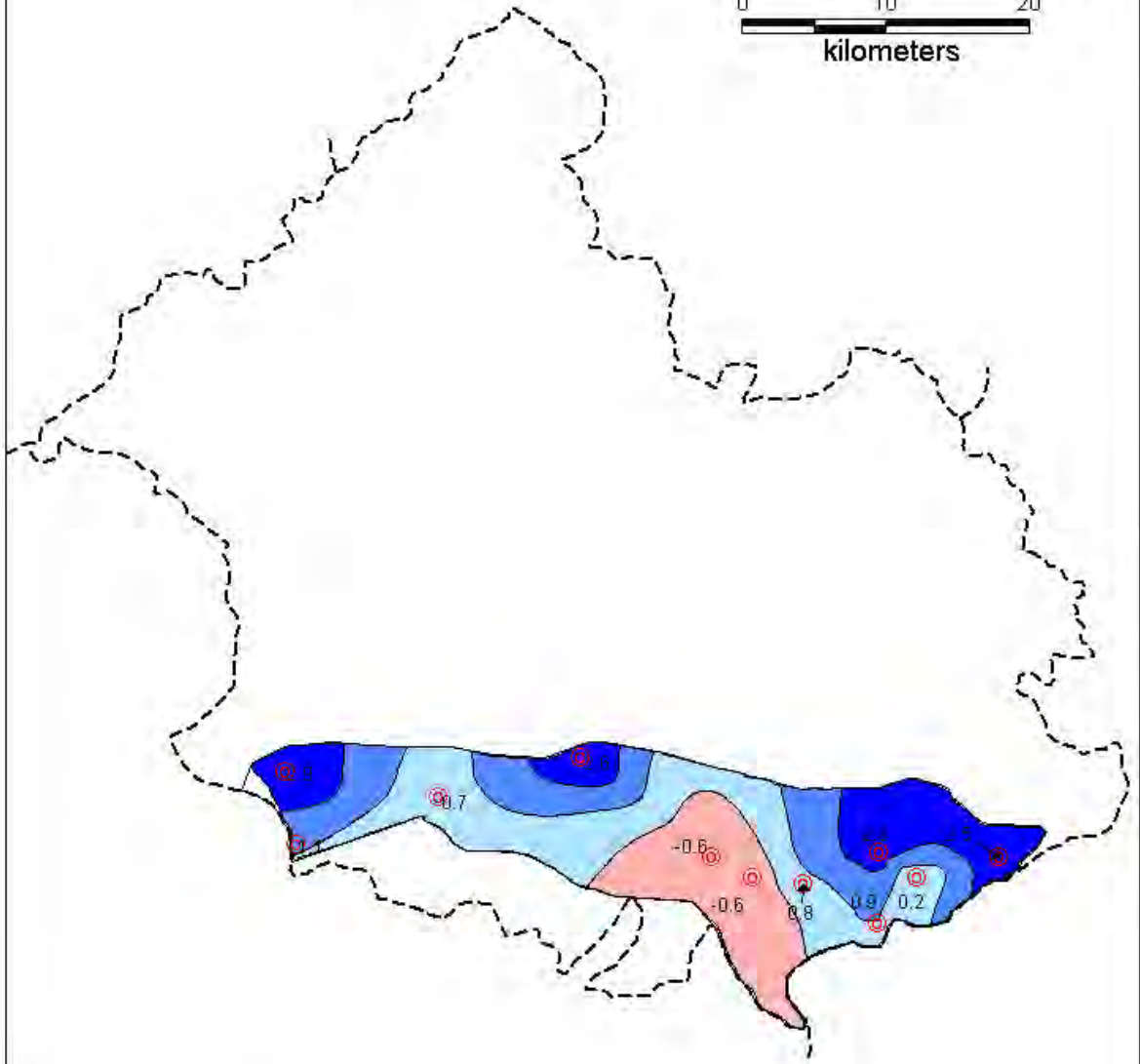
Though contamination of ground water sources has not been reported in the district so far, however, the fast developing industrial area particularly in Poanta block, is vulnerable to pollution from industrial effluents. There is thus need to have proper ETPs and waste disposal system with all the industries and also the towns. Proper monitoring is very much required.

### 4.4 Status of Ground Water Development

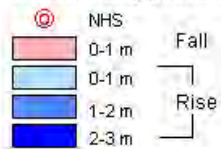
Ground water development particularly in valley areas in the district is on moderate scale. In these areas, all the major irrigation, industrial and domestic water supplies depend on ground water viz., open wells & tube wells. In rest of the district area due to poor potentialities in hilly hard rock areas and due to steep sloppy terrain, groundwater oozes in the form of springs. The development by wells and tube wells is not feasible and thus negligible. However, in these areas also, major water supply and sources of water are ground water based viz., perennial springs, *bowries* and hand pumps. Springs are tapped at the source so that the water can be supplied under gravity. All major towns and villages are supplied water from ground water sources. Large-scale ground water development is mainly

Himachal Pradesh  
**SIRMAUR DISTRICT**

**Depth To Water Level**  
**Decadal May(1998-2006) with May 2007**



**WATER LEVEL FLUCTUATION**  
**Decadal May(1998-2006) with May 2007**



restricted to Poanta valley only where wells and tube wells are feasible. In these areas, ground water is developed by large number of dug wells, shallow & tube well. All the major irrigation, drinking and industrial water supplies depend on these structures in addition to various water supply schemes based on base flow in rivers and streams or *nallas*.

As per MI census, there were about 400 dug wells, 150 shallow tube wells and 12 deep tube wells in the district as on 2000-01 in the Sirmaur district used exclusively for irrigation.

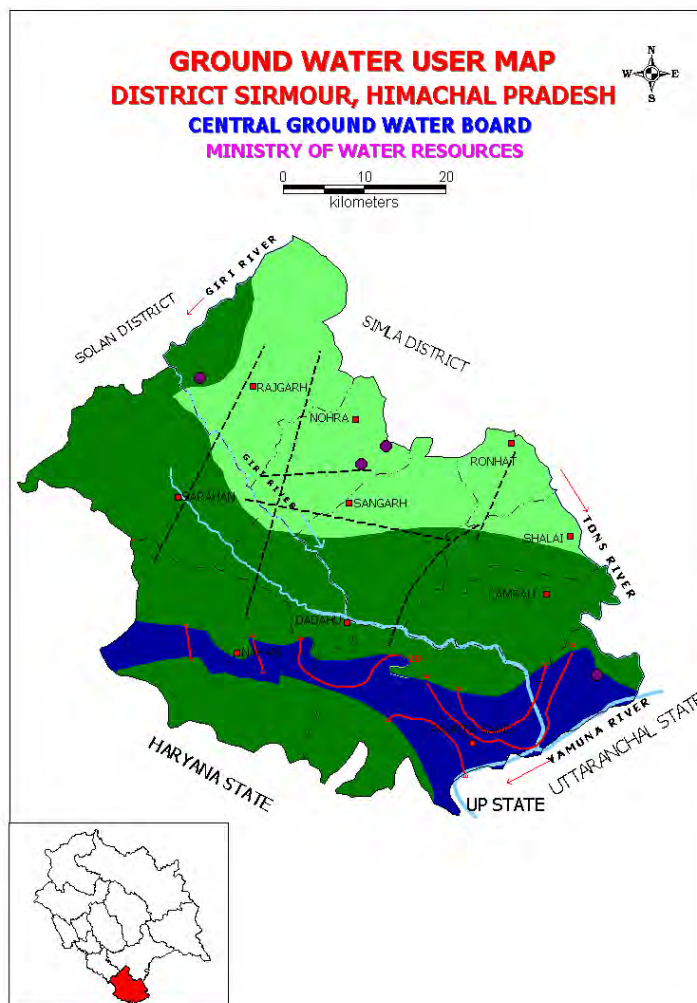
## 5.0 GROUND WATER MANAGEMENT STRATEGY

### 5.1 Ground Water Development










In hilly and mountainous area of the district ground water development through the traditional ground water sources viz. Springs (*chasmas*), *Bowries* and perennial streams are the only possible apart from the shallow bores or hand pumps in favorable locations. Proper development of springs is essential as it is observed that most of the spring does not have collection chamber or tanks from where water can be distributed under gravity. The objective of spring development should be to collect the flowing water underground, to protect it from surface contamination and store it in sanitary spring box for supply. Similarly, *seepage springs* along hill sides also need to develop for harnessing ground water in such areas.

In the last decade number of shallow bore wells fitted with hand pumps have been constructed in these areas serving as the source of water supply for domestic uses in the district. In the hilly areas and shallow bore wells in favorable location are feasible. However, looking to the fragile eco-system drilling activity should be minimum and traditional sources should be harnessed and protected.

In valley areas of the district, Poanta valley, resource estimation shows only 17% the stage of ground water development (as on 2004). Thus this area falls in *safe category*. Thus the scope for further ground water development by constructing additional wells, shallow and medium depth tube-wells are feasible in these areas. However, in view of mild falling water levels, cautious development approach along with proper development monitoring is required.



**LEGEND**

	Wells feasible	Rigs suitable	Depth of Well (m)	Discharge (lpm)	Suitable artificial Recharge structures
 Soft rock aquifers	Tube well Dug well	Percussion & Percussion cum Rotary Manual	100-120 10-20	1200-2500 300-500	Check dam, Check dam cum ground water dam, Recharge shaft
 Hard rock aquifers	Dug well Spring development	Manual	10-20	300-500 30-2000	
• Spring				 5 Water level contour (m bgl) (Pre monsoon decadal mean, 1993-2002)	
 Major drainage				 Fault/lineament	
 Reservoir				 Tehsil boundary	
				 District boundary	
				 State boundary	

## 5.2 Water Conservation & Artificial Recharge

Ground water is the major source for irrigation & domestic water supply in both rural and urban areas. Water level observation data has revealed declining trend in water level in some parts of the district. Though the stage of ground water development in valley is still in *safe category*, however,

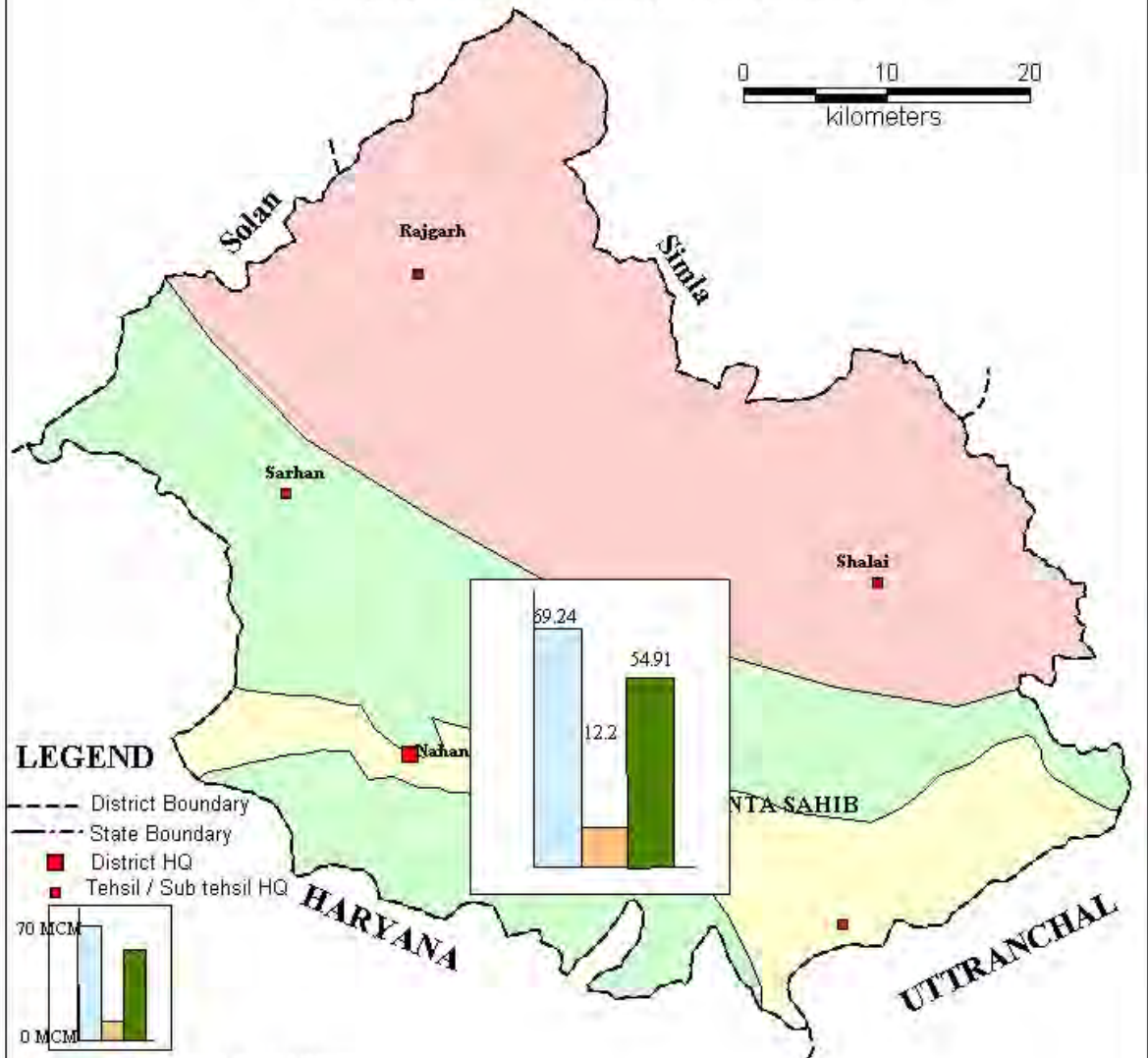
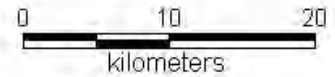
In many parts the availability of water during summer is limited particularly in hilly areas in drought/ low rain/snow years. There is thus a general need to conserve and augment water resource. Based upon the climatic conditions, topography, hydro-geology of the area, suitable structure for rain water harvesting and artificial recharge to ground water body need to be planned and implemented. Roof top rainwater harvesting is one such solution both for urban & rural areas. Rainwater harvesting in rural area and proper scientific intervention for spring development and revival of traditional water storage is required in water scarce hilly upland areas.

## 6.0 GROUND WATER RELATED ISSUES & PROBLEMS

Most of the ground water issues and problems in the district are localized requiring independent treatment by taking the micro level studies. In hilly and mountainous parts, the most common issues relate to scarcity of water particularly in low precipitation year during non-monsoon period when dwindling levels and spring discharges are seen. Rainwater harvesting and awareness for water conservation, protection & scientific development of traditional sources and water harvesting are measures that need to be adopted.

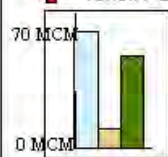
Presently large development of ground water is observed in industrial belts of Poanta valley wherein fall of water level down to six meters have been observed in parts. Thus, ground water level depletion and also vulnerability to ground water pollution is major issues in this industrial belt.

Himachal Pradesh  
**SIRMAUR DISTRICT**  
**GROUND WATER RESOURCE AND**  
**ARTIFICIAL RECHARGE PROSPECTS**



**LEGEND**

- - - District Boundary
- - - State Boundary
- District HQ
- Tehsil / Sub tehsil HQ



- Net Annual Ground Water Availability
- Gross Ground Water Draft
- Ground Water Availability for Future Irrigation

**AR Feasible Structures**

- Valleys : Check Dam cum Ground water Dam, Check Dam, Rain water harvesting, Talabs and Springs
- Siwaliks : Check Dams, Rain water Harvesting, Springs, Talabs
- High Himalayan Ranges : Springs, Check Dams, Rain water harvesting

## **7.0 AWARENESS & TRAINING ACTIVITY**

### **Mass Awareness Programme (MAP) & Water Management Training Programme (WMTP) by CGWB**

#### **Participation in Exhibition, Mela, Fair etc**

To create the awareness about ground water resources, need for rain water harvesting and artificial recharge models, posters, displays etc. were exhibited during mass awareness programme conducted in the district.

#### **Presentation & Lectures delivered in public forum / Radio/TV/Institution of repute/Grassroots association /NGO/Academic institutions etc**

So far presentation and lectures are delivered amongst the gathering during the MAP and WMTP only.

## **8.0 AREAS NOTIFIED BY CGWA / SGWA**

The stage of ground water development in Poanta valley of the district (as on 2004) is 17% only. No area or block has been notified for groundwater development point of view.

## **9.0 RECOMMENDATIONS**

- In alluvial areas of Poanta valley, there is scope for ground water development as stage of ground water development is low. However, ground water development should be cautious and in phased manner and regular monitoring is required.
- This industrial units particularly dye and pharmaceutical discharge highly toxic effluents and such areas are highly prone and vulnerable to surface & ground water pollution; thus close network of water quality monitoring is essential.
- Proper waste/effluent disposal measures are required to be adopted by industrial units and state authorities needs to check this.
- There is need to protect traditional water harvesting structures like ponds, tanks, talavs to utilized these for rain water harvesting and recharging shallow aquifers.

- In hilly and mountainous terrain, traditional ground water sources viz., springs, *bowries* etc needs to be developed and protected for better health and hygiene with proper scientific intervention.
- Springs needs to be inventoried & studied for optimum utilisation of their discharge either by fracturing, horizontal drilling or by constructing galleries etc.
- Roof top rainwater harvesting practices can be adopted in hilly areas and urban areas, since the district receives fair amount of rainfall. Construction of roof top rain water harvesting structures should be made mandatory in all new construction and rain water harvesting in rural areas should be promoted. Traditional water storage systems need to be revived.
- People's participation is a must for any type of developmental activities. So proper awareness for utilization and conservation of water resources is required.

*SAVE WATER – SAVE LIFE*

**For Technical Assistance Relating to**  
**Rainwater Harvesting**  
**&**  
**Artificial Recharge to Ground Water**

**Contact:**

**CENTRAL GROUND WATER BOARD**  
**NORTHERN HIMALAYAN REGION**  
**Lower Barol, Dari, Dharmsala**

**Phone: 01892- 227160**

**Telefax: 01892-223535**

**e-mail: [rdnhr-cgwb@nic.in](mailto:rdnhr-cgwb@nic.in)**