



**CENTRAL GROUND WATER BOARD
MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT
AND GANGA REJUVENATION
GOVERNMENT OF INDIA**

**GROUND WATER YEAR BOOK
OF
HARYANA STATE
(2014-2015)**

North Western Region
CHANDIGARH
December 2015

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**GROUND WATER YEAR BOOK OF
HARYANA STATE FOR THE PERIOD**

2014-2015

Principal Contributors

GROUND WATER DYNAMICS

**M. L. Angurala
Scientist- 'D'**

GROUND WATER QUALITY

**B. P. SINGH
Scientist- 'D'**

North Western Region
CHANDIGARH)
December 2015

डॉ० एस. के. जैन
Dr. S. K. Jain



क्षेत्रीय निदेशक
केन्द्रीय भूमि जल बोर्ड
उत्तर पश्चिमी क्षेत्र
भारत सरकार
जल संसाधन मंत्रालय
Regional Director,
Central Ground Water Board
North Western Region
Government of India
Ministry of Water Resources

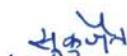
PREFACE

Central Ground Water Board has been regularly monitoring ground water levels and ground water quality of the country since 1968 to depict the spatial and temporal variation of ground water regime. The changes in water levels and quality are result of the development pattern of the ground water resources for irrigation and drinking water needs. Analyses of water level fluctuations are aimed at observing seasonal, annual and decadal variations. Therefore, the accurate monitoring of the ground water levels and its quality both in time and space are the main pre-requisites for assessment, scientific development and planning of this vital resource.

Central Ground Water Board, North Western Region (NWR), Chandigarh has established 964 ground water observation wells for monitoring the water levels and water quality, which include 481 dug wells and 483 piezometers in Haryana State. These observation wells are being monitored four times a year during May, August, November and January through in-house activity and participatory approach. The activity of monitoring of ground water regime is simultaneously undertaken throughout the country. This report presents the observations and findings for the period from May 2014 to January 2015.

The ground water monitoring has been completed by the sincere efforts of scientific officers and technical staff of NWR, Chandigarh. Sh M. L. Angurala, Scientist 'D' has put his concerted efforts to compile and analyse the data and prepare the report in the present form. Chemical quality of ground water has been tested in NWR Lab by Mrs. B. P. Singh, Scientist 'D', Sh K.S.Rawat, Scientist 'B' and Sh Rishi Raj, Asstt. Chemist. The processing of the report has been carried out by Dr. P. K. Naik, Superintending Hydrogeologist and Sh Tejdeep Singh, Scientist 'D'.

This report incorporates the actual field data on ground water monitoring done in the State and provides vital information on prevailing ground water regime and chemical quality. The report is therefore, of immense importance to the various user agencies and stakeholders as well.


(Dr. S. K. Jain)
Regional Director

GROUND WATER YEAR BOOK
HARYANA STATE FOR THE YEAR
2014-2015

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GROUND WATER YEAR BOOK

HARYANA STATE

2014 - 2015

1 INTRODUCTION

The State of Haryana is in North India with its capital at Chandigarh. The Haryana State is located between North Haryana is a landlocked state in northern India. It is between 27°39' to 30°35' N latitude and between 74°28' and 77°36' E longitude covering an area of 44,212 sq. km. The state is sub-divided into nine physiographic units and is drained by two major rivers Ghaggar and Yamuna. It was carved out of the parent state of Punjab on 1 November 1966 on the basis of language distribution. The name Haryana has been derived from the works of the 12th century AD Apabhramsha writer Vibudh Shridhar (VS 1189–1230). It is bordered by Punjab and Himachal Pradesh to the north, and by Rajasthan to the west and south. The river Yamuna defines its eastern border with Uttar Pradesh. Haryana surrounds the country's capital Delhi on three sides, forming the northern, western and southern borders of Delhi. Consequently, a large area of south Haryana is included in the National Capital Region for purposes of planning for development.

The state was home to prominent sites of the Indus Valley and Vedic Civilizations. Several decisive battles were also fought in the area, which shaped much of the history of India. These include the epic battle of Mahabharata at Kurukshetra mentioned in Hindu mythology (including the recital of the Bhagavad Gita by Lord Krishna), and the three battles of Panipat. Haryana was administered as part of the Punjab province of British India, and was carved out on linguistic lines as India's 17th state in 1966. Haryana is now a leading contributor to the country's production of food grains and milk. Agriculture is the leading occupation for residents of the state with the flat arable land irrigated by **submersible pumps** and an extensive **canal** system. There are four irrigation systems in the state namely

- | | |
|--------------------------|-------------------|
| 1. Western Yamuna canal, | 3. Agra canal and |
| 2. Bhakra canal, | 4. Ghaggar canal |

Haryana contributed heavily to the **Green Revolution** that made India self-sufficient in food production in the 1960s.

1.1 Physiography

The altitude of Haryana varies between 700 to 3600 ft (200 metres to 1200 metres) above sea level. An area of 1,553 km² is covered by forest. Haryana has four main geographical features.

- The Yamuna-Ghaggar plain forming the largest part of the state
- The Shivalik Hills to the northeast
- Semi-desert sandy plain to the southwest
- The Aravalli Range in the south

1.2 Geohydrological Conditions

On the basis of Geohydrological conditions as well as groundwater movement and surface drainage pattern, the entire state is divided into the following basins:-

1. Yamuna basin
 - a. Upper
 - b. Lower
2. Ghaggar Basin
 - a. Upper
 - b. Lower
3. Inland Alluvial Basin
4. Krishnawati Basin
5. Sahibi Basin
6. Landoha Nala Basin
7. Kanti Sub Basin (Loharu Satnali area)

Ground water occurs both under confined and unconfined conditions in the alluvial formation whereas it is mostly under un-confined conditions in Shivalik and piedmont deposits and semi-confined conditions in hard rocks.

1.3 Rivers of Haryana

The Yamuna flows along the state's eastern boundary while the ancient Sarasvati River is said to have flowed from Yamuna Nagar, but has now disappeared. Haryana's main seasonal river, the Ghaggar rises in the outer Himalayas, between the Yamuna and the Sutlej and enters the state near Pinjore in the Panchkula district. Passing through Ambala and Hissar, it reaches Bikaner in Rajasthan and runs for 460 km before disappearing into the

deserts of Rajasthan. Important tributaries include the Chautang and Tangri. The seasonal Markanda River is a stream, which in ancient times was known as the Aruna. It originates from the lower Sivalik Hills and enters Haryana west of Ambala. During monsoons, this stream swells into a raging torrent notorious for its devastating power. The surplus water is carried on to the Sanisa Lake where the Markanda joins the Saraswati and later the Ghaggar. Shahbad Markanda town is situated on its bank. Mentioned in the epic Shatapatha Brahmana as the Drishadwati, the Sahibi River originates in the Jaipur district in Rajasthan. However, before seismic activities some 7,500 years ago in the Aravalli Hills, the river brought water from as far as the Ajmer district. Gathering volume from about a hundred tributaries in Rajasthan and the Mewat areas, it reaches voluminous proportions, forming a broad stream around Alwar and Patan. Further flowing via Rewari District and Dharuhera, it reaches Jhajjar then splits into two smaller streams, finally reaching the outskirts of Delhi and flowing into the Najafgarh Lake that flows into the Yamuna through the Najafgarh drain. Recently hardly any water flows in Sahibi as most of the water is impounded in small check dams upstream in the Alwar district of Rajasthan and the Masani barrage in Rewari district, built on this river on NH 8 (Delhi-Jaipur highway). Three other rivulets in and around the Mewat hills, the Indori, Dohan and Kasavati all flow from East to West.

1.4 Hydrometeorology

The state receives its rainfall primarily through southwestern monsoon. Winter showers are also quite common. The average annual rainfall varies from little as 313 mm in areas bordering Rajasthan in South-western parts of the state over 862 mm in the North-Eastern parts near Shiwalik hills bordering Himachal Pradesh. In more than 50% of total area average rainfall is less than 500 mm. Rainfall progressively decreases towards South and southwest districts. Drought conditions are common in Mahendragarh, Rewari, Bhiwani, Hissar and Sirsa. The state experiences extreme winter and summers. The minimum and maximum temperatures recorded in the state are 2.0 c (Narnaul Dec. 2000 and 45.6C Hissar May, 2000) respectively. Winter frost is quite common during the months of December and January. Minimum and maximum wind speeds recorded are 0.4 Km per hour and 5.3 Km per hour. The mean wind speed of the state is reported to be

2.9 Km per hour. The mean relative humidity on an average varies from 30% in April to 90% in August, the annual average being 60%. As a whole the climate of the state is semi-arid to sub tropical. Aridity is more in South Western parts of the state bordering Rajasthan.

2.0 HYDROGEOLOGICAL SETUP

Three geological groups are represented in the state viz. Pre-Cambrian, Tertiary and Quaternary. The Quaternary group comprises of Alluvium which occupies 98% of the area of the state. The tertiary group is represented by the outermost zone of the Siwalik system composed mainly of sandstones, clay and boulders. The rocks of Pre-Cambrian age which form part of the Aravalli hill ranges are exposed in Gurgaon, Mewat and Faridabad districts and as small outcrops in other Southern districts. The thickness of alluvium deposits decreases from North to South.

All the three major physiographic units viz. Peninsula, Extra-Peninsula and Indo-Gangetic areas, terminating in the hard rock formations of Delhi systems (Pre-Cambrian age) towards South, Shiwalik system (Tertiary age) in the North and in between the alluvial formations (Recent to sub recent age) are observed in the state.

The general geological succession of the various units of the Paninsula and Indo-Genetic plains traversing the Haryana state are given below (table-1).

Table 1. Generalized Stratigraphy of Haryana State (after GSI, 2012).

Age	Super Group	Group/Formation	Lithology
Quaternary		Older and Newer Alluvium and Aeolian Deposits	Grey and brown sand, silt, silt-clay, clay with calcrete, limestone and gypsum.
Tertiary	Siwalik Super Group	Upper Siwalik	Boulder conglomerate, sandstones, clay/mudstone and pebble beds.
		Middle Siwalik	Sandstone with variegated clay/mudstone.
		Lower Siwalik	Sandstone, mudstone/shale
		Subathu	Fine-grained sandstone, clay and limestone.
Pre-Tertiary(?)		Tundopathar 'Series' Lower (Palaeozoic Unconformity)	Stromalitic limestone, Tosham rhyolite, Granite (Erinpura), migmatite, ultramafic and pegmatite.
Proterozoic	Delhi Group	Ajabgarh Group (Divided into Formations) 5	Quartzite and basic flows, mica-schist, carbonaceous phyllites and slates, calc-schist, dolomite, marble, calc-silicate, amphibolite, hornblende-schist, phyllite.
		Alwar Group	Quartzite, conglomerate, amphibolite, mica-schist and arkosic quartzite.

In the extra peninsular region (northern part of Panchkula district) Shiwalik system (upper tertiary) and Sabathu series (lower tertiary) are exposed. Sabathu comprises of greenish grey and red gypseous shales with thin bands of sand stones and limestone. Shales and limestones are richly fossiliferous. Shiwalik system comprises of mainly graywackes, sandstones, grits, clays, siltstones, conglomerates and pseudo-conglomerates. These are fluviatile deposits and are rich in mammalian fossils.

The area in Ambala Panchkula & Yamunanagar is underlain by the 'Kandi (equivalent of Bhabar Belt in Uttarakhand) Sirowal (equivalent of Tarai belt in Uttarakhand) and the Alluvium. The kandi belt which forms the upper higher portions of the composite fan deposits is 2 to 4 kms wide running more or less parallel to the Shiwalik foothills. The sediments comprise boulders, pebbles, gravel and sand with clays mixed in varying proportions. Sirowal belt and the adjoining Gangetic plain on the south of the Kandi belt are underlain by silt, fine to medium sand and clays. Gravel and pebbles also occur occasionally. The area in Gurgaon district is underlain by the rocks of Delhi system and by

Quaternary alluvium. The Ajabgarh shales, quartzite form the basement in the western part of the area where the thickness of alluvium is very less. In Hisar and Bhiwani districts area is underlain by consolidated sediments of Quaternary age. The sediments comprises sand, silt clay and kankar. In Sonepat, Jind, Karnal and K.shetra districts the area is underlain by alluvium deposits of Quaternary age. Alluvium comprises clay, silt, sands of various grades, kankar, gravel and pebbles. The alluvium deposits are generally lenticular in shape. In Mohindergarh and part of Bhiwani districts the following geological succession is met. Recent to sub Recent- Alluvium and which blown sands etc Post Delhi intrusives- Pegmatites, quartz veins, granites etc. Algonkian Delhi system-Ajabgarh Series Kushalgarh Limestone, Alwar Series. The alluvium in the area belonging to the Older Alluvium comprises of sand, silt, clay loam and kankar. Newer alluvium is mainly confined to the sides of the river national watercourses. The alluvium is the fresh water deposit of the Indo-Gangetic river system. The sub-aerial deposits are represented by the talus material on the hill slopes and windblown sands. Rohtak district is underlain by alluvium deposits of Quaternary age. The alluvium overlies the rocks of Algonkian system outcrops of which are seen outside the district. The alluvium consists of clay, silt and various grades of sand. Wind blown sand occurring as sand dunes is often seen overlaying the alluvium in various parts of the district.

The unconsolidated alluvial sediments cover around 98% of the state while hard rocks cover just around 2% area of the state. Alluvial deposits are of older and newer types and consist chiefly of clay, silt and fine to medium sand. Other deposits are piedmont deposits, which are confined to a narrow zone, about 2 to 4 kms wide, between Siwalik hills and alluvial plains. Sand-dunes are found in the districts of Bhiwani, Mohindergarh, Hissar and Sirsa Coarse sand, gravels and boulders are found to occur in piedmont areas and in the adjacent alluvial tracts. These deposits have developed in the north part of Ambala district. The thickness of alluvial sediments is more than 600 mtr and along Yamunanagar-Karnal stretch it is reported to be more than 3000 mtr. However, the thickness of sediments progressively decreases towards Delhi and hard rock areas of Bhiwani, Gurgaon, Faridabad and Mohindergarh districts.

3.0 GROUND WATER REGIME MONITORING

Central Ground Water Board, North Western Region, Chandigarh has established Ground Water Observation Wells (GOWW) in Haryana State for monitoring the water levels. As on 31.03.2014, there were 866 Ground Water Observation Wells which included 472 dug wells and 394 piezometers for monitoring phreatic and deeper aquifers. However, with establishment of new ground water observation wells including dug wells and piezometers, and reconciliation of ground water observation wells, total number of ground water observation wells As on 31.03.2015, has reached 964 ground water observation wells which include 481 dug wells and 438 piezometers for monitoring phreatic aquifers. Besides, there are 45 deep piezometers for monitoring confined/ semi- confined aquifers.

The Ground Water Observation Wells are shown in Plate-1 and district wise split is given in Table 1. The density of the observation wells being monitored in the state of Haryana is given in Table 2 and depicted in Plate 2.

Table 2. District wise ground water observation wells in Haryana State.

S. No.	Districts	No. of GOWW as on 31.3.2014			No. of GOWW established during 2014-2015			Total no. GOWW as on 31.3.2015		
		DW	PZ	Total	DW	PZ	Total	DW	PZ	Total
1.	Ambala	16	17	33	3	2	5	19	19	38
2.	Bhiwani	31	23	54	0	1	1	31	24	55
3.	Faridabad	21	8	29	0	0	0	21	8	29
4.	Fatehabad	15	12	27	4	3	7	19	15	34
5.	Gurgaon	11	32	43	0	11	11	11	43	54
6.	Hissar	42	16	58	0	0	0	42	16	58
7.	Jhajjar	28	7	35	0	2	2	28	9	37
8.	Jind	31	18	49	7	9	16	38	27	65
9.	Kaithal	14	22	36	3	9	12	17	31	48
10.	Karnal	5	66	71	1	2	3	6	68	74
11.	Kurukshetra	17	22	39	1	1	2	18	23	41
12.	Mahendergarh	17	9	26	4	3	7	21	12	33
13.	Mewat	14	12	26	0	5	5	14	17	31
14.	Palwal	27	17	44	0	0	0	27	17	44
15.	Panchkula	18	3	21	1	3	4	19	6	25
16.	Panipat	10	28	38	0	11	11	10	39	49
17.	Rewari	17	19	36	0	0	0	17	19	36
18.	Rohtak	28	5	33	1	0	1	29	5	34
19.	Sirs	42	18	60	0	0	0	42	18	60
20.	Sonipat	35	33	68	0	6	6	35	39	74
21.	Yamunanagar	17	33	40	0	0	5	17	33	45

Total	456	410	866	25	78	98	481	488	964
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Plate-1: Locations of National Hydrograph Observation Stations

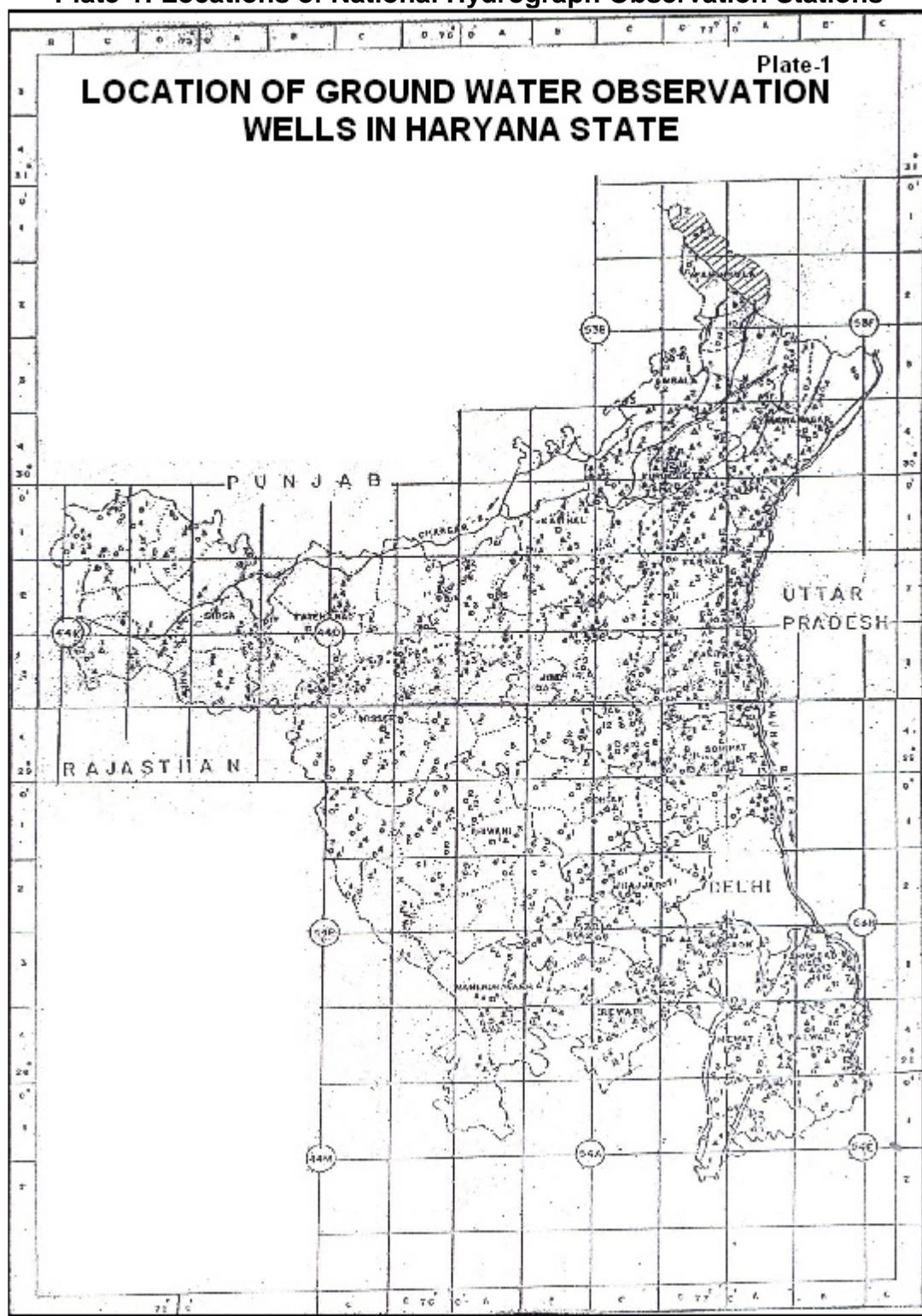
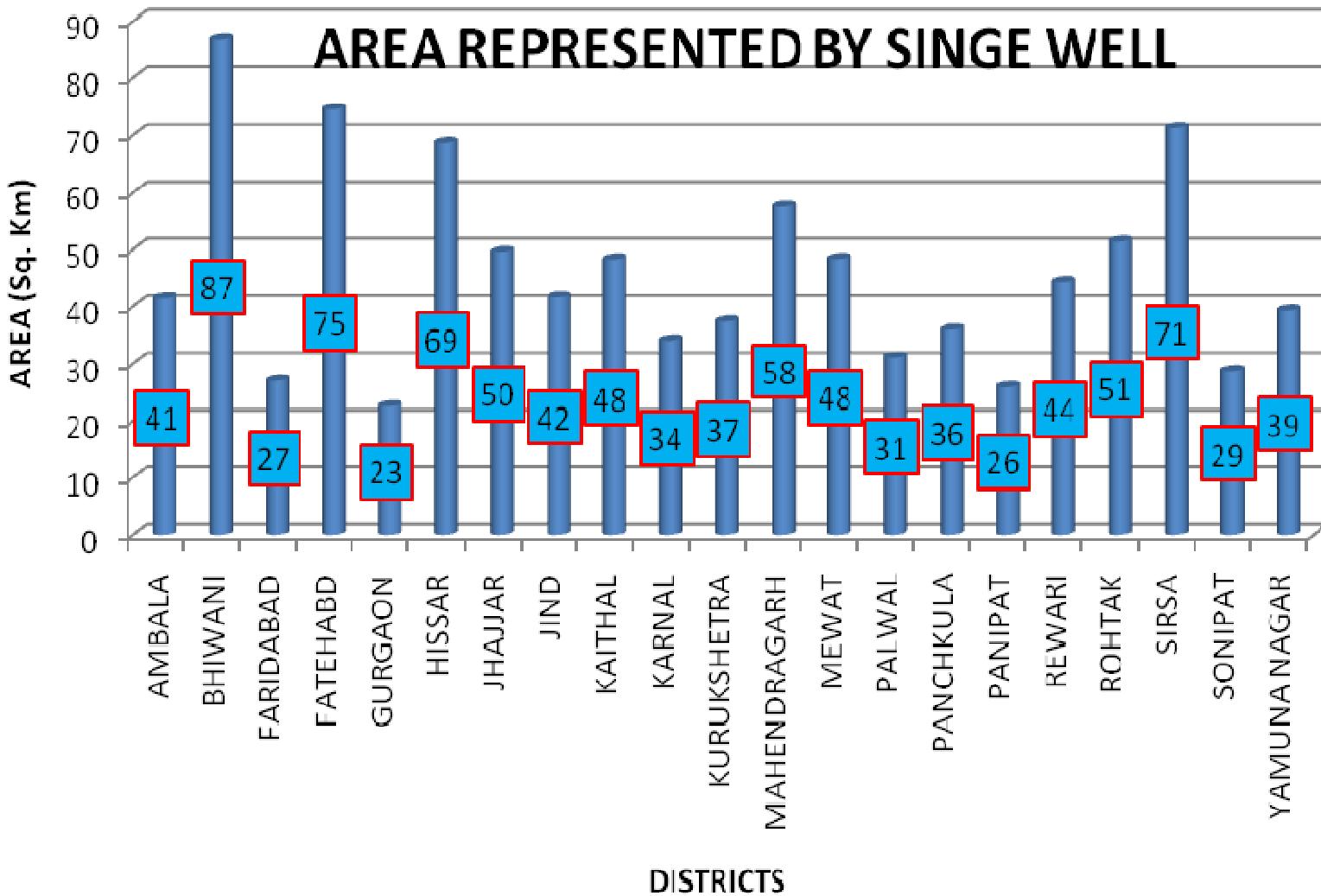


Table 3. Density of shallow ground water observation wells in Haryana State.

S. No.	District	Area (Km ²)	No. of Shallow Ground water observation wells	Density represented by one GWOW (area/no. of well)
1	AMBALA	1574	38	41
2	BHIWANI	4778	55	87
3	FARIDABAD	782	29	27
4	FATEHABD	2538	34	75
5	GURGAON	1215	54	23
6	HISSAR	3983	58	69
7	JHAJJAR	1834	37	50
8	JIND	2702	65	42
9	KAITHAL	2317	48	48
10	KARNAL	2520	74	34
11	KURUKSHETRA	1530	41	37
12	MAHENDRAGA RH	1900	33	58
13	MEWAT	1499	31	48
14	PALWAL	1367	44	31
15	PANCHKULA	898	25	36
16	PANIPAT	1268	49	26
17	REWARI	1595	36	44
18	ROHTAK	1745	34	51
19	SIRSA	4277	60	71
20	SONIPAT	2122	74	29
21	YAMUNA NAGAR	1768	45	39

Plate 2: Density of ground water observation wells in Haryana State.



BEHAVIOUR OF GROUND WATER LEVEL

In order to assess the quantitative change in ground water resources, water levels as a routine were monitored four times May 2014, August 2014, November 2014 and January 2015 during the **Annual Action Plan 2014-15** and compared with previous water level records to ascertain the change in ground water level scenario.

3.1 DEPTH TO WATER LEVEL

The behaviour of water level in all four seasons May 2014, August 2014, November 2014 and January 2014 along with maps is discussed in following paragraphs and data is presented in annexure I. The maximum and minimum water levels recorded in four seasons is given below Table 3.

Table 3 Range of depth to water levels in May, August, November 2013 and January 2014

Range	May 2014	August 2014	November 2014	January 2015
Minimum	0.82m bgl Kulasi (Jhajjar district)	0.48 m bgl Akbarpur (Gurgaon district)	0.02 m bgl Gulaltha (Gurgaon district)	0.45m bgl Kulasi (Jhajjar district)
Maximum	71.78 m bgl Khatodra (Mahendergarh district)	61.25 m bgl Mandola (Rewari district)	75.72 m bgl Khatodra (Mahendergarh district)	74.25 m bgl Khatodra (Mahendergarh district)

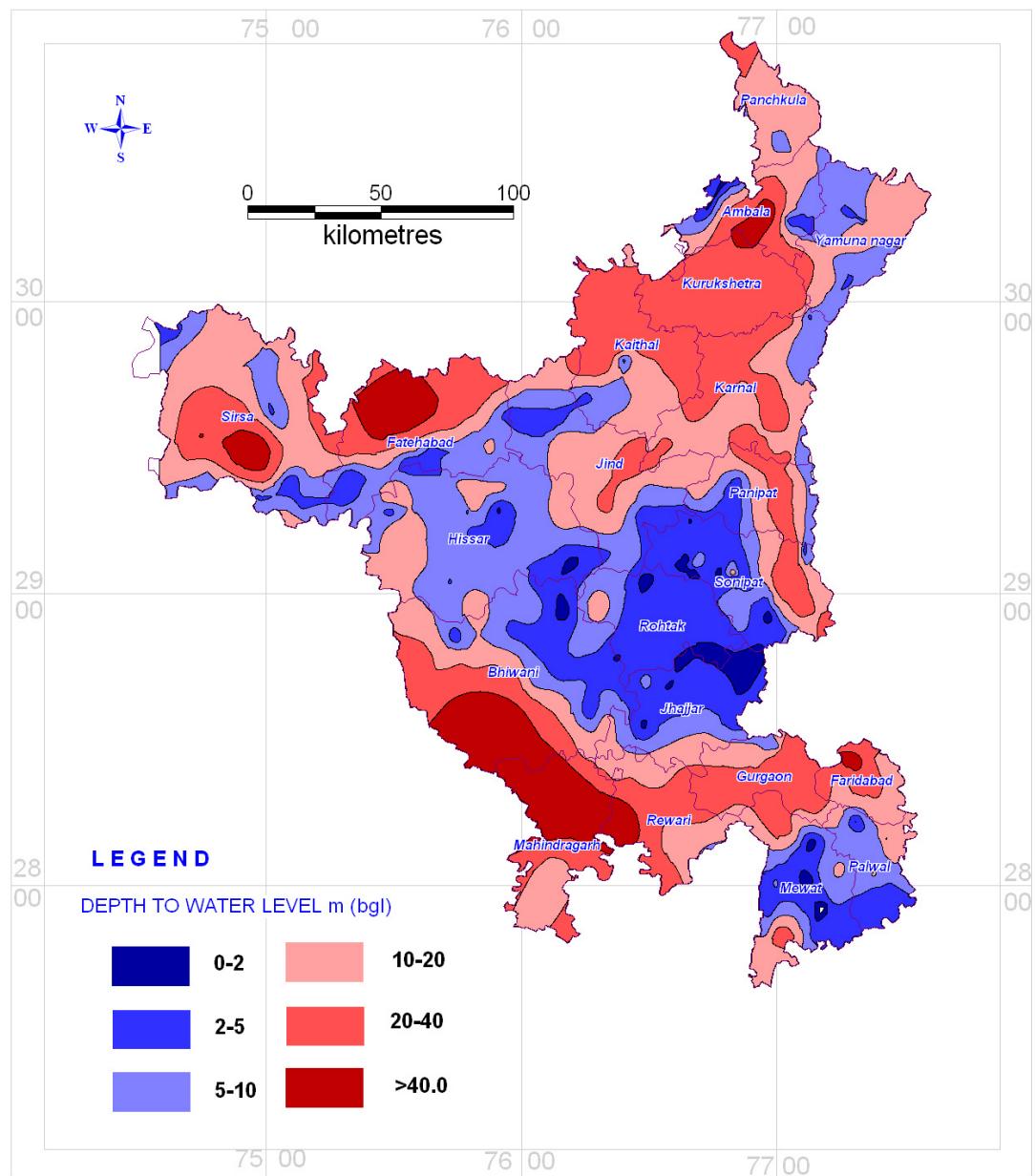
3.1.1 MAY 2014

The behavioral pattern of depth to water level data of May 2014 is discussed below along with depth to water level map (Fig.1) and data are presented in Annexure-1 (Col-4).

The depth to water level during May 2014 varies from 0.82m bgl at Kulasi in Jhajjar district to 71.78m bgl at Khatodra in Mahendragarh district. Very shallow (0-2m) water levels conditions are observed in small pockets in the central part of the state comprising Sonipat and Rohtak districts. More than 7% wells and 1% area of state fall in this group which indicates water logging conditions. Shallow water levels (2-5m) observed in 22% wells and 15% area mainly in the central part and in few isolated patches in Fatehabad, Palwal Mewat districts. Moderate water levels (5-10m) occur in 21% wells covering 23% of area of the state. Moderately deep water levels of 10-20m are observed in nearly 29% wells and 30% of the area falling in Karnal, Kurukshetra, Jind, Fatehabad, Sirsa Hissar, Bhiwani, Rewari, Mahendragarh, Gurgaon and Faridabad districts. Deep water levels of 20-40m have been registered in 18% of wells and about 25% area reported from Ambala, Kurukshetra, Kaithal, Karnal, Panipat, Sonipat, Jind, Fatehabad, Sirsa, Bhiwani, Rewari, Mahendragarh, Gurgaon and Faridabad districts. Very Deep water levels (>40m) also occur in less than 3% of the wells and 7% area falling in Bhiwani and Mahendragarh districts & isolated patches in Kurukshetra, of Fatehabad and Sirsa districts.

Summarized details of behaviour of depth to water level						
	Depth to water level(m) ranges					
%age	0-2	2-5	5-10	10-20	20-40	>40
Wells monitored	7	22	21	29	18	3
Area covered	1	15	23	30	25	7

DEPTH TO WATER LEVEL MAY 2014



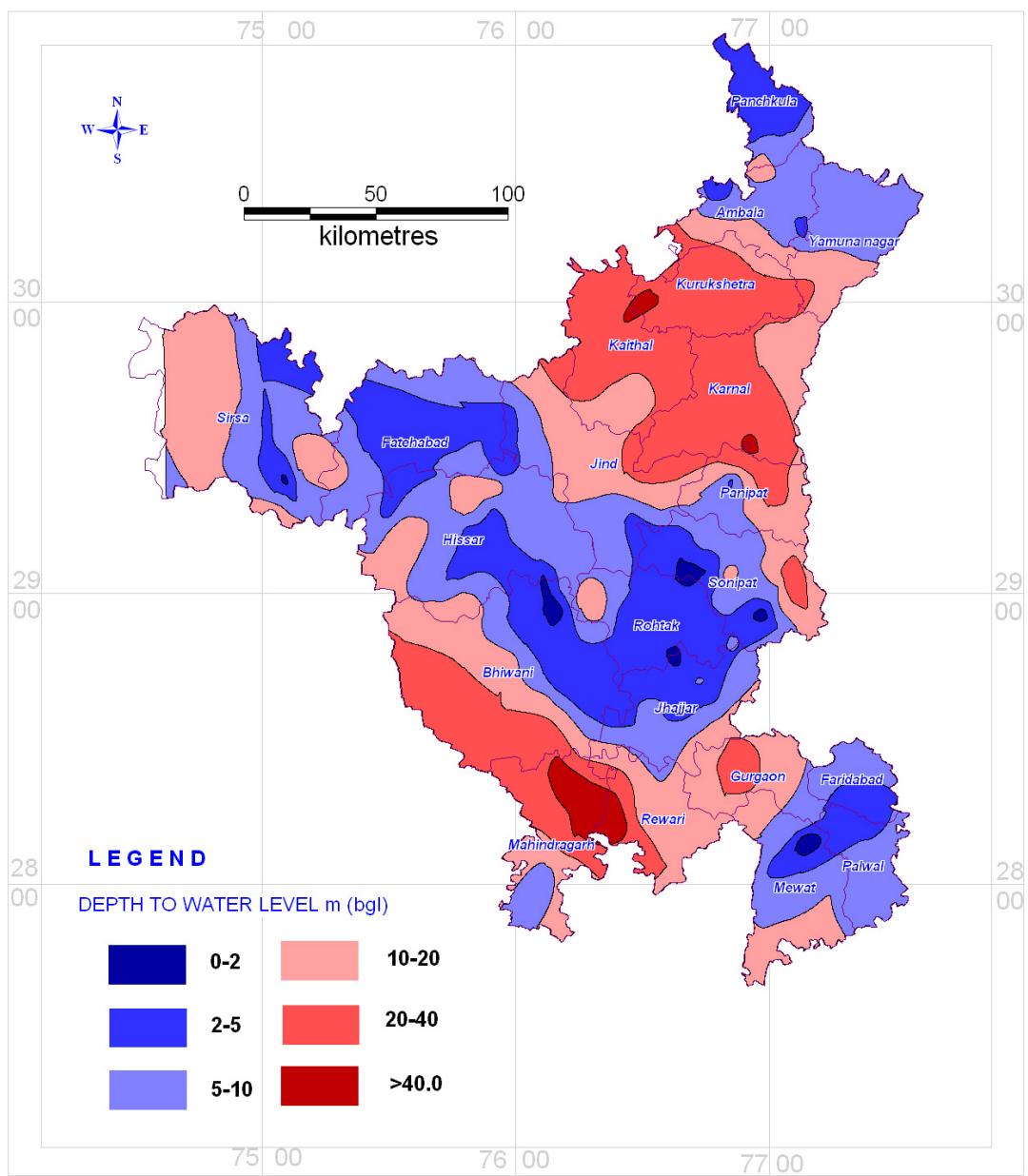
3.1.2 AUGUST 2014

The behavioral pattern of depth to water level data of August 2014 discussed below along with depth to water level map (Fig.2) and data are presented in Annexure-1 (Col-5).

The depth to water level during August 2014 varies from 0.45m bgl at Akbarpur in Gurgaon district to 61.25m bgl at Mandola in Rewari district. Very shallow (0-2m) water levels conditions are observed in small pockets in the central part of the state comprising Sonipat and Rohtak districts. More than 7% wells and 1% area of state fall in this group which indicates water logging conditions. Shallow water levels (2-5m) observed in 23% wells and 13% area mainly in the central part and in few isolated patches in Fatehabad, Palwal Mewat districts. Moderate water levels (5-10m) occur in 29% wells covering 35% of area covering south central parts of the state. Moderately deep water levels of 10-20m are observed in nearly 24% wells and 28% of the area falling in Sonipat, Panipat, Karnal, Kurukshetra, Jind, Fatehabad, Sirsa Hissar, Bhiwani, Rewari, Mahendragarh, Gurgaon and Faridabad districts. Deep water levels of 20-40m have been registered in 14% of wells and about 21% area reported from Kurukshetra, Kaithal, Karnal, Panipat, Sonipat, Jind, Bhiwani, Rewari, Mahendragarh and Gurgaon districts. Very Deep water levels (>40m) also occur in less than 3% of the wells and 2% area falling in Rewari and Mahendragarh districts.

Summarized details of behaviour of depth to water level						
	Depth to water level(m) ranges					
%age	0-2	2-5	5-10	10-20	20-40	>40
Wells monitored	7	23	29	24	14	3
Area covered	1	13	35	28	21	2

DEPTH TO WATER LEVEL AUGUST 2014



3.1.3 NOVEMBER 2014

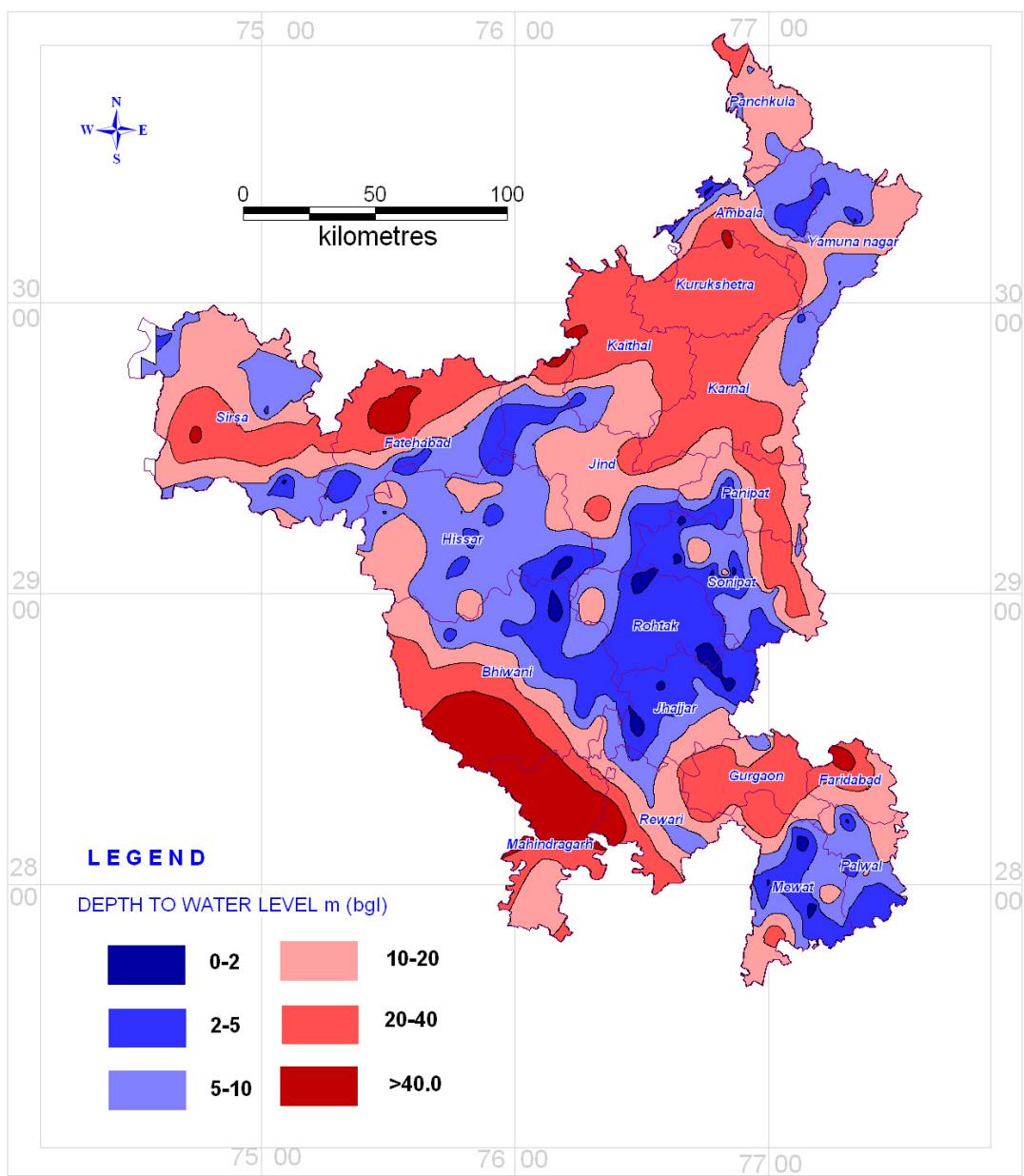
The behavioral pattern of depth to water level data of November 2014 discussed below along with depth to water level map (Fig.3) and data are presented in Annexure-1 (Col-6).

The depth to water level during November 2014 varies from 0.02m bgl at Gulatha in Gurgaon district to 75.72m bgl at Khatodra in Mahendragarh district. The distribution of water level in various ranges is discussed below along with depth water level map for November 2014 (Fig.1). The water level data are presented in Annexure-1 (Col-4).

Very shallow (0-2m) water levels conditions are observed in small pockets in the central part of the state comprising Sonipat, Rohtak and Mewat districts. 8% wells and 1% area of state fall in this group which indicates water logging conditions. Shallow water levels (2-5m) observed in 20% wells and 15% area mainly in the central part and in few isolated patches in Fatehabad, Palwal Mewat, Jind and Fatehabad districts. Moderate water levels (5-10m) occur in 22% wells covering 24% of area covering parts of Sonipat, Panipat, Jind, Fatehabad, Sirsa, Hissar, Bhiwani, Mewat, Palwal, Ambala and Yamuna Nagar districts of the state. Moderately deep water levels of 10-20m are observed in nearly 28% wells and 29% of the area falling in Panipat, Karnal, Kurukshetra, Yamuna Nagar, Ambala, Panchkula, Kaithal, Jind, Fatehabad, Sirsa, Hissar, Bhiwani, Rewari, Mahendragarh, Gurgaon and Faridabad Districts. Deep water levels of 20-40m have been registered in 19% of wells and about 26% area reported from Ambala, Kurukshetra, Kaithal, Karnal, Panipat, Sonipat, Jind, Fatehabad, Sirsa, Bhiwani, Rewari, Mahendragarh, Gurgaon and Faridabad districts. Very Deep water levels (>40m) also occur in less than 3% of the wells and 6% area falling in Bhiwani and Mahendragarh districts & isolated patches in Kurukshetra, of Fatehabad and Sirsa districts.

Summarized details of behaviour of depth to water level						
	Depth to water level(m) ranges					
%age	0-2	2-5	5-10	10-20	20-40	>40
Wells monitored	8	20	22	28	19	3
Area covered	1	15	24	29	26	6

DEPTH TO WATER LEVEL NOVEMBER 2014



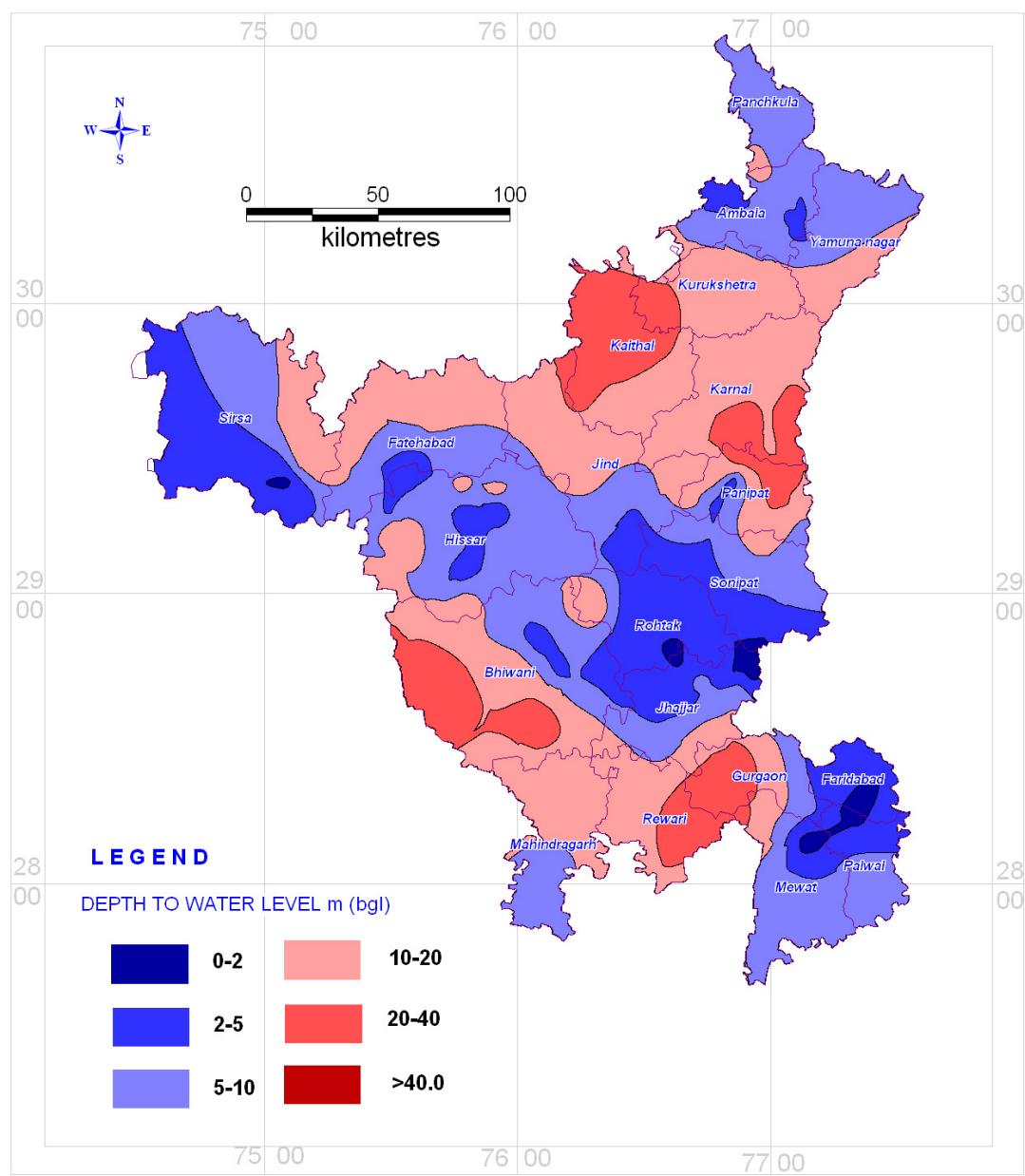
3.1.4 JANUARY 2015

The behavioral pattern of depth to water level data of January 2015 discussed below along with depth to water level map (Fig.4) and data are presented in Annexure-1 (Col-7).

Very shallow (0-2m) water levels conditions are observed in 5% wells and 1% area of state fall in this group which indicates water logging conditions. It is observed in central parts, Sonipat and Rohtak and in western parts, Sirsa and Hissar and in south, Faridabad district of the state. Shallow water levels (2-5m) observed in 26% wells and 18% area mainly in the central haryana covering parts of Sonipat, rohtak and jhajjar districts, western haryana in parts of hisaar and sirsa districts Sirsa and Hissar and in the south, Faridabad, Palwal and Mewat districts. Moderate water levels (5-10m) occur in 32% wells covering 34% of area of the state covering parts of Sonipat, Jind, Jhajjar, Rohtak, Rewari, Bhiwani, Hissar, Fatehabad, Sirsa, Mohinderagarh, Mewat and Palwal districts. Moderately deep water levels of 10-20m are observed in nearly 25% wells and 35% of the area falling in Sonipat, Panipat, Karnal, Kurukshetra, Jind, Fatehabad, Sirsa Hissar, Bhiwani, Rewari, Mahendragarh, Gurgaon and Faridabad districts. Deep water levels of 20-40m have been registered in 12% of wells and about 11% area reported from Kurukshetra, Kaithal, Karnal, Panipat, Bhiwani, Rewari, Mahendragarh, Gurgaon districts.

Summarized details of behaviour of depth to water level						
	Depth to water level(m) ranges					
%age	0-2	2-5	5-10	10-20	20-40	>40
Wells monitored	5	26	32	25	12	
Area covered	1	18	34	35	11	

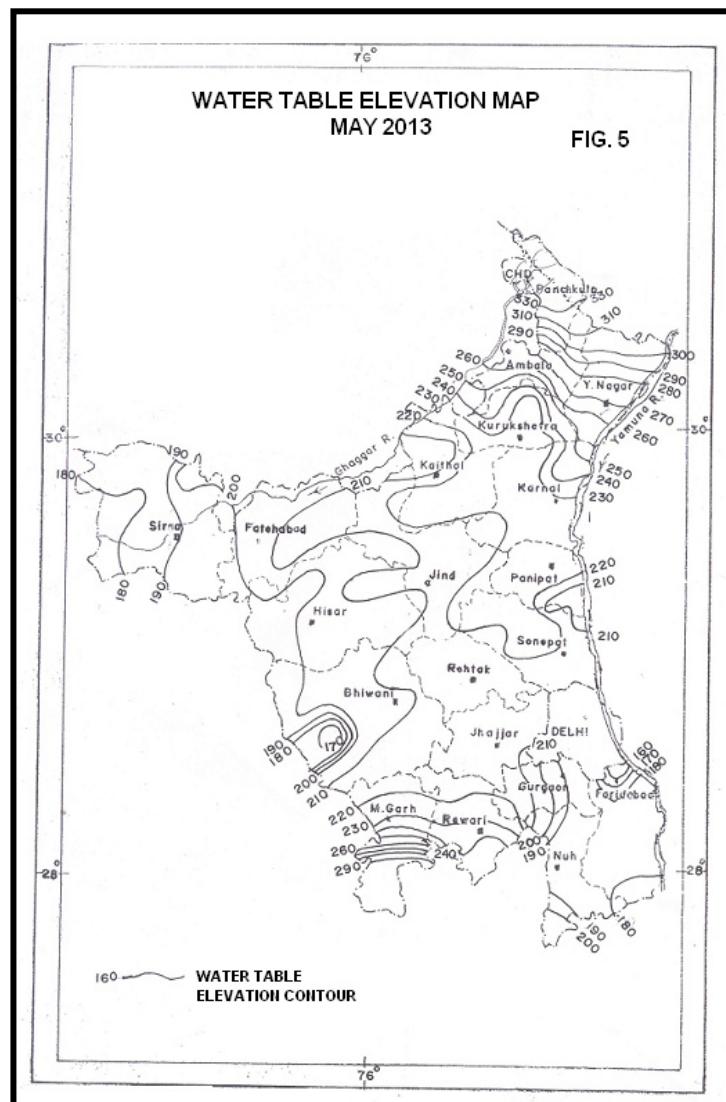
DEPTH TO WATER LEVEL JANUARY 2015



3.2 WATER TABLE ELEVATION

3.2.1 MAY 2014

Water table elevation contours in the area follows the topography and it varies from 495.84 m amsl in northeastern part in Panchkula district to 163.12 m amsl in southeastern part in Palwal district. The general ground water flow is from Northeast to Southwest direction. However, in the southern part it is towards central part thus creating a closed basin causing water logging conditions in the central Haryana in parts of Rohtak, Bhiwani and Hissar districts. The hydraulic gradient is steep in the northern, eastern and southwestern parts of the State, whereas, it is gentle in the southeastern part. The major part of the state has moderate water table gradients. The sluggish ground water movement (0.07 m/km) observed in central part results in water logging on regional scale as depicted in (Fig.5)



3.3 SEASONAL FLUCTUATIONS

3.3.1 JANUARY 2014 - MAY 2014

The water level data of May 2014 when compared with water level data of January 2014 is termed as seasonal water level fluctuations. The behavioral pattern of seasonal fluctuations is discussed below along with seasonal water level fluctuation map (January 2014 - May 2014) (Fig. 6).and data are presented in Annexure-2 (Col-4).

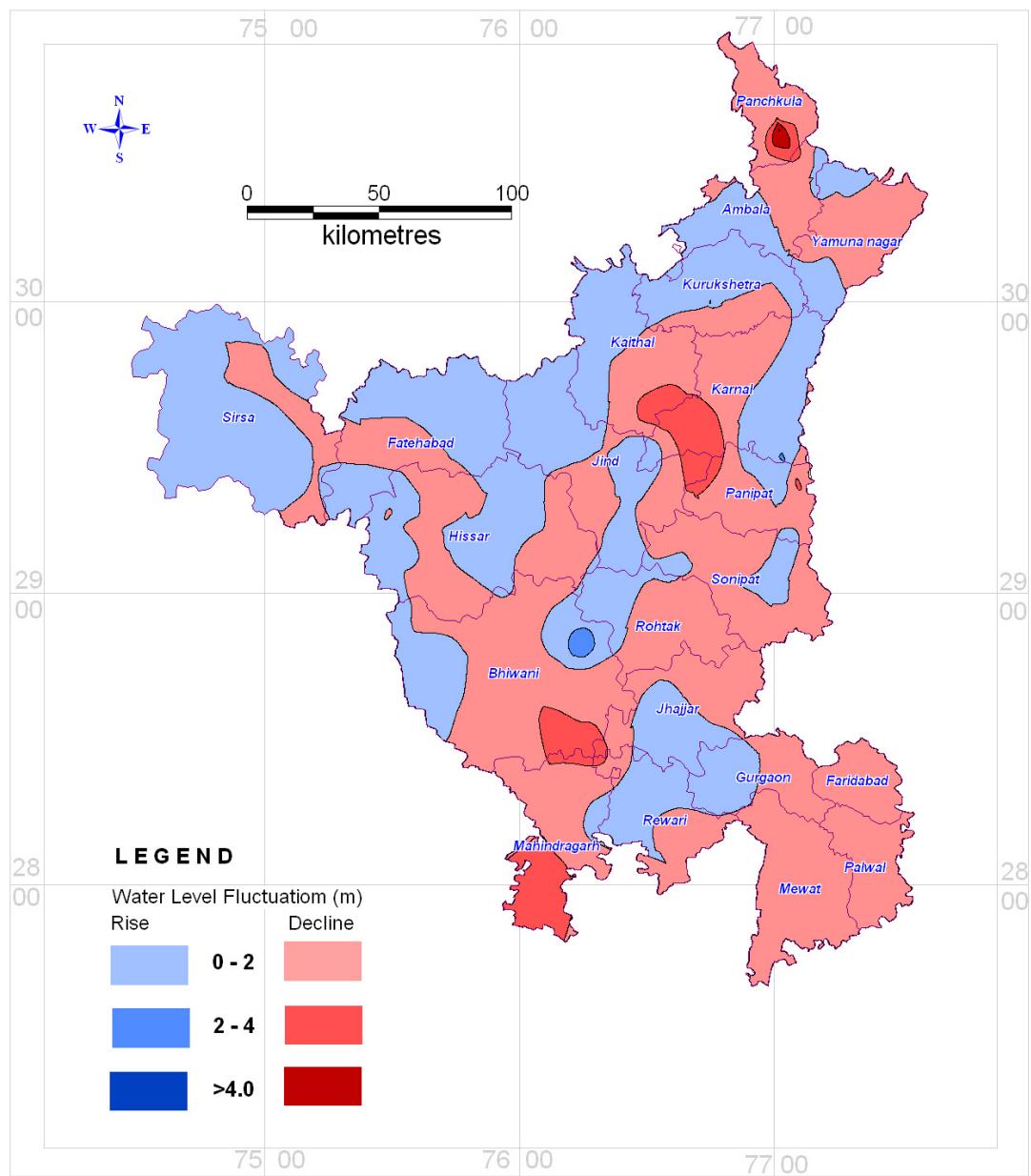
The interpretation of seasonal fluctuations indicates a general decline in 57% of the wells monitored covering an area of 59% of the State. The water level decline in the range of 0-2m has been observed in 48% wells and 53% of the area in all districts. Water level decline in range of 2-4m has been observed in 7% wells and 5% of the area covering parts of Sirsa, Hissar, Jind, Gurgaon, Mewat Palwal and Faridabad districts. Water level decline >4m is recorded in 2% wells and 2% of the area in Sonipat, Sirsa and Mahendragarh districts.

The water level rise has been observed in 44% of the wells, and 41% of the area depict rise in water levels. The water level rise of 0-2m has been observed in 41% of wells and 41% of area falling in Sirsa, Hissar, Fatehabad, Jind, Kaithal, Kurukshetra Karnal Jhajjar, Rohtak, Sonipat and Bhiwani districts. The water level rise of 2-4m has been observed in 3% of wells and 1% of area of the state.

Summarized details of behaviour of depth to water level								
Water level fluctuation(m)	Fall				rise			
	>4	4-2	2-0	subtotal	>4	4-2	2-0	subtotal
%age	>4	4-2	2-0	subtotal	>4	4-2	2-0	subtotal
Wells monitored	2	7	48	57	-	3	41	44
Area covered	2	5	53	60	-	1	40	41

WATER LEVEL FLUCTUATION

JANUARY 2014 -- MAY 2014



3.3.2 MAY 2014 - AUGUST 2014

The water level data of August 2014 when compared with water level data of May 2014 is termed as seasonal water level fluctuations. The behavioral pattern of seasonal fluctuations is discussed below along with seasonal water level fluctuation map (Fig. 7).and data are presented in Annexure-2 (Col-5).

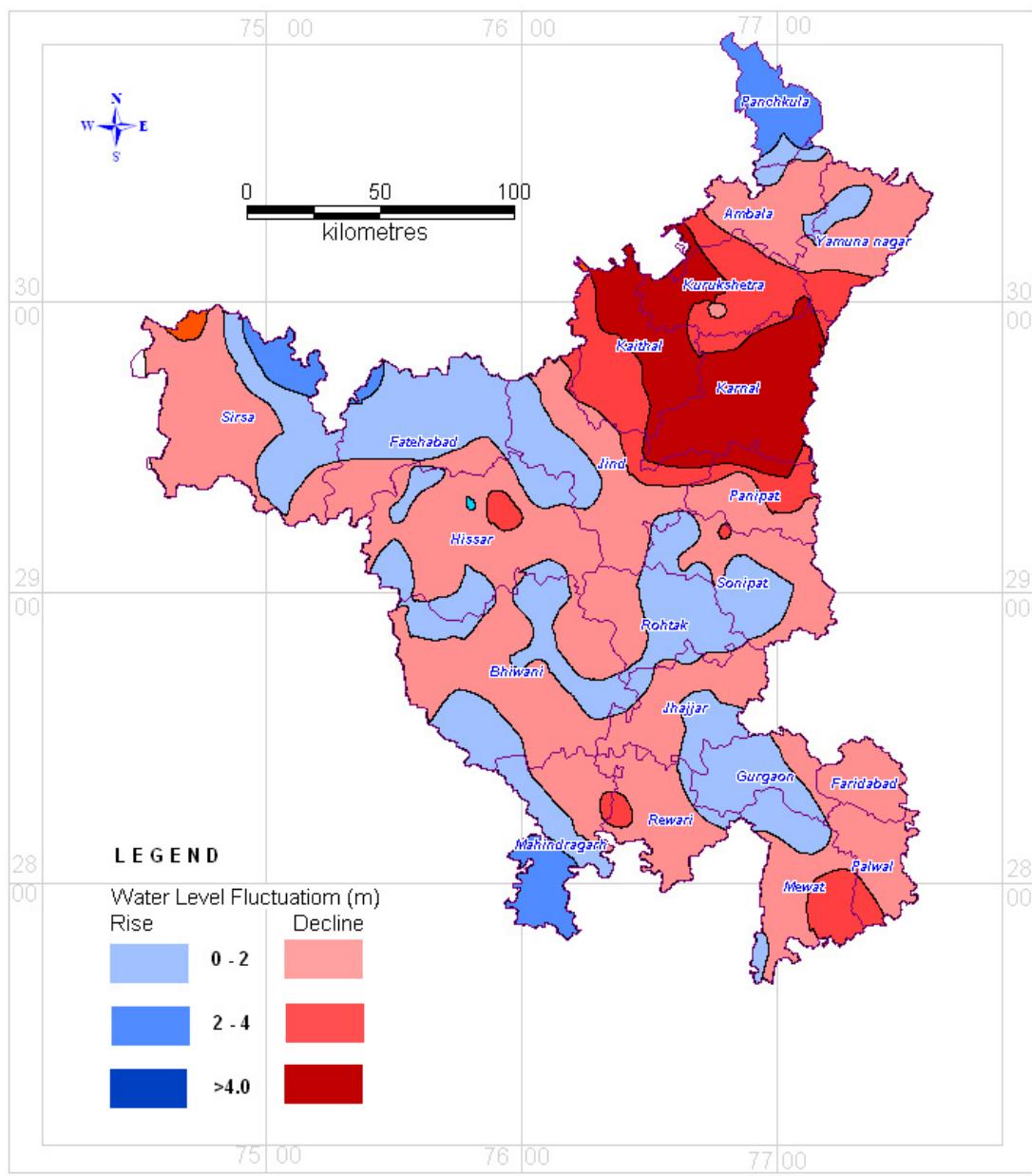
The interpretation of seasonal fluctuations indicates a general decline in 70% of the wells monitored covering an area of 72% of the State. The water level decline in the range of 0-2m has been observed in 51% wells and 53% of the area in all districts. Water level decline in range of 2-4m has been observed in 9% wells and 9% of the area covering parts of Sirsa, Panipat, Yamunanagar, Kurukshetra, Kaithal, Jind and Ambala districts. Water level decline >4m is recorded in 10% wells and 10% of the area in Karnal, Kurukshetra and Kaithal districts.

The water level rise has been observed in 30% of the wells and 28% of the area of the state. The water level rise of 0-2m has been observed in 27% of wells and 23% of area falling in Panchkula, Ambala, Yamunanagar, Mewat, Gurgaon, Mahendragarh, Bhiwani, Sirsa, Fatehabad, Jind, Jhajjar, Rohtak and Sonipat districts. The water level rise of 2-4m has been observed in 2% of wells and 3% of area falling in Panchkula and Ambala districts. The water level rise of >4m has been observed in 2% of wells and 2% of area of the state.

Summarized details of behaviour of depth to water level								
Water level fluctuation(m)	Fall				rise			
	>4	4-2	2-0	subtotal	>4	4-2	2-0	subtotal
Wells monitored	10	9	51	70	1	2	27	30
Area covered	10	9	53	72	2	3	23	28

WATER LEVEL FLUCTUATION

MAY 2014 - AUGUST 2014



3.3.3 MAY 2014 - NOVEMBER 2014

The water level data of November 2014 when compared with water level data of May 2014 is termed as seasonal water level fluctuations. The behavioral pattern of seasonal fluctuations is discussed below along with seasonal water level fluctuation map (Fig. 8).and data are presented in Annexure-2 (Col-6).

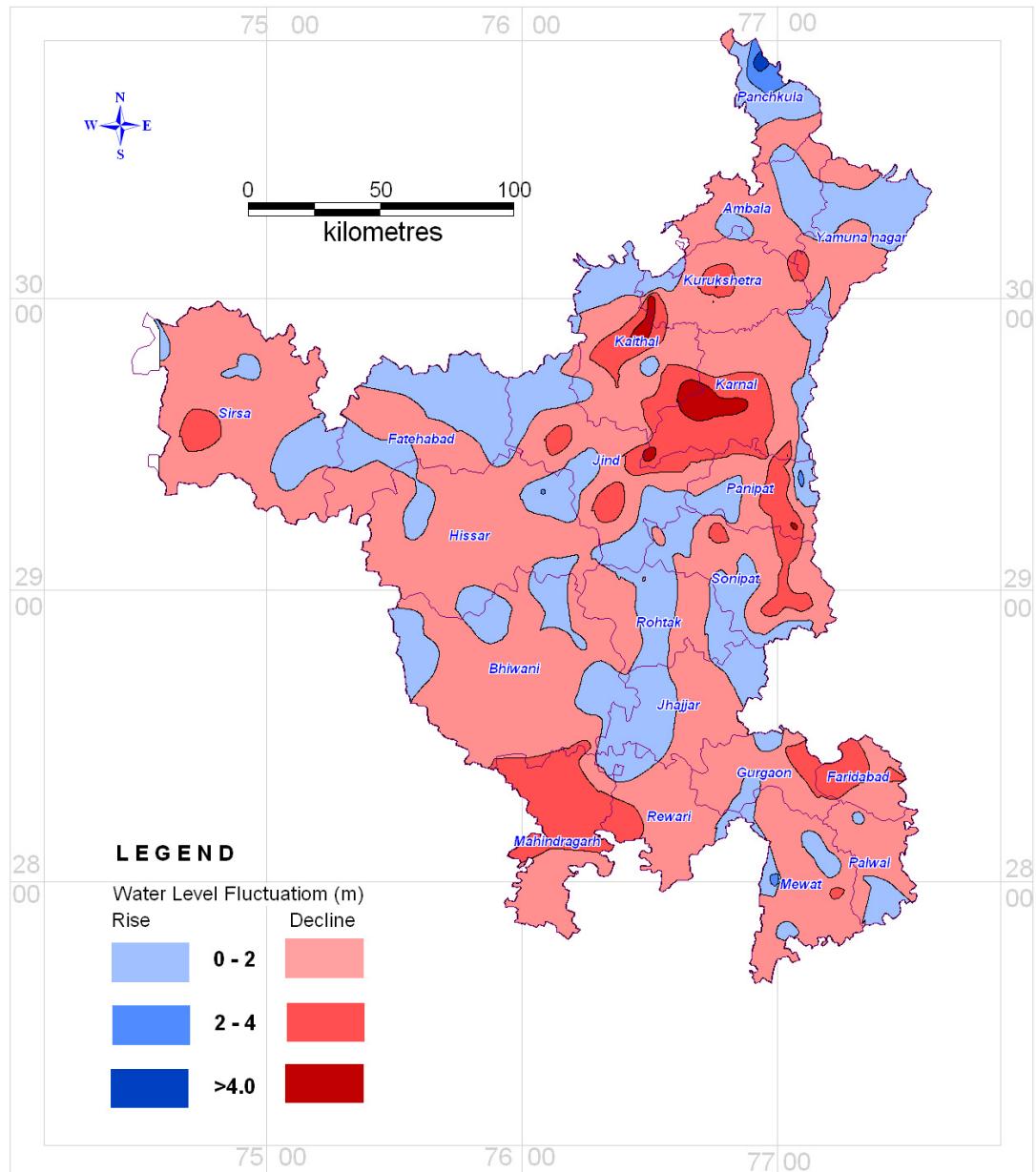
The interpretation of seasonal fluctuations indicates a general decline in 65% of the wells monitored covering an area of 73% of the State. The water level decline in the range of 0-2m has been observed in 50% wells and 61% of the area in all districts. Water level decline in range of 2-4m has been observed in 12% wells and 11% of the area covering parts of Sirsa, Jind, Kaithal, Karnal, Kurukshetra, Panipat, Sonipat Mahendragarh and Faridabad districts. Water level decline more than 4m is recorded in 3% wells and 1% of the area in isolated patches.

The water level rise has been observed in 35% of the wells and 27% of the area depict rise in water levels. The water level rise of 0-2m has been observed in 34% of wells and 27% of area falling Panchkula, Ambala, Yamuna Nagar, Kaithal, Jind, Fatehabad, Sirsa, Hissar, Jhajjar, Rohtak, Sonipat and Bhiwani districts. The water level rise of 2-4m has been observed in 1% of wells and <1% of area.

Summarized details of behaviour of depth to water level								
Water level fluctuation(m)	Fall				rise			
	>4	4-2	2-0	subtotal	>4	4-2	2-0	subtotal
%age								
Wells monitored	3	12	50	65	-	1	34	35
Area covered	1	11	61	73	-	-	27	27

WATER LEVEL FLUCTUATION

MAY 2014 - NOVEMBER 2014



3.3.4 MAY 2014 – JANUARY 2015

The water level data of January 2015 when compared with water level data of May 2014 is termed as seasonal water level fluctuations. The behavioral pattern of seasonal fluctuations is discussed below along with seasonal water level fluctuation map (Fig. 9).and data are presented in Annexure-2 (Col-7).

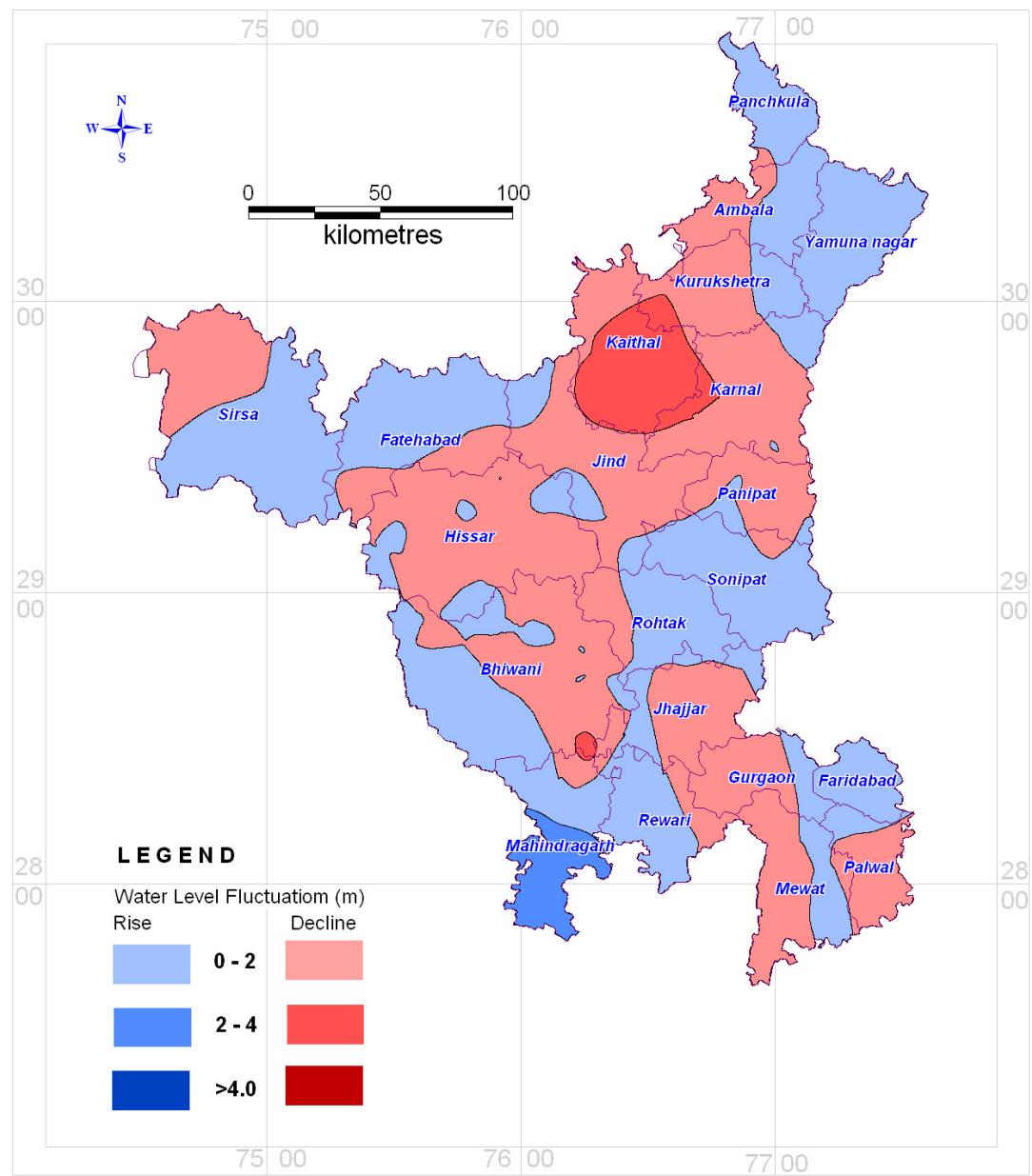
The interpretation of seasonal fluctuations indicates a general decline in 57% of the wells monitored covering an area of 53% of the State. The water level decline in the range of 0-2m has been observed in 53% wells and 49% of the area in all districts. Water level decline in range of 2-4m has been observed in 4% wells and 4% of the area covering parts of Sirsa, Kurukshetra, Karnal, Panipat and Sonipat districts.

The water level rise has been observed in 43% of the wells and 47% of the area depict rise in water levels. The water level rise of 0-2m has been observed in 42% of wells and 45% of area falling in Sirsa, Hissar, Fatehabad, Jind, Kaithal, Kurukshetra Karnal Jhajjar, Rohtak, Sonipat and Bhiwani districts. The water level rise of 2-4m has been observed in 1% of wells and 2% of area.

Table-2: Summarized details of behaviour of depth to water level								
Water level fluctuation(m)	Fall				rise			
%age	>4	4-2	2-0	subtotal	>4	4-2	2-0	subtotal
Wells monitored		4	53	57		1	42	43
Area covered		4	49	53		2	45	47

WATER LEVEL FLUCTUATION

MAY 2014 - JANUARY 2015



3.4 ANNUAL WATER LEVEL FLUCTUATIONS

3.4.1 MAY 2013 – MAY 2014

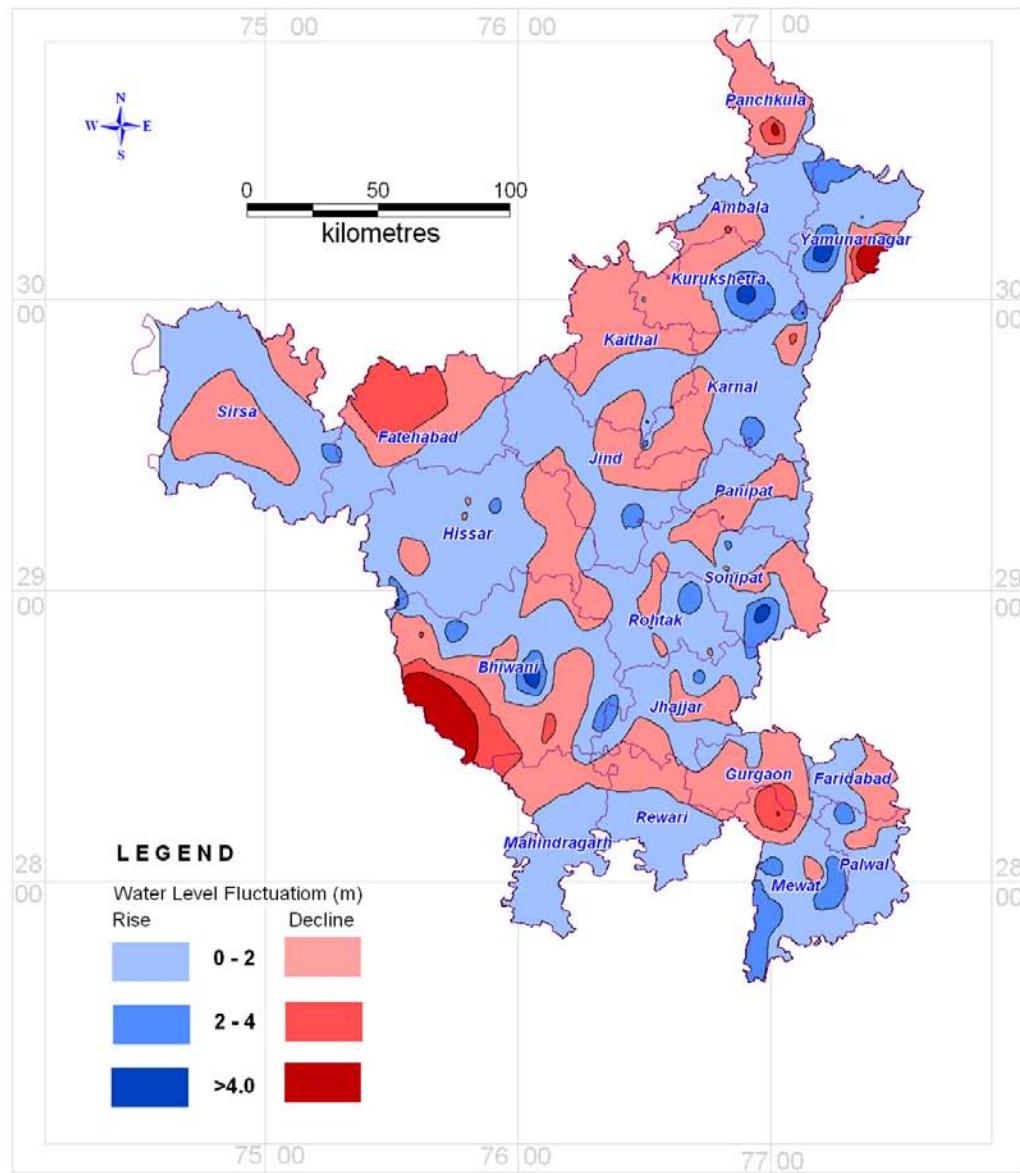
The water level data of May 2014 when compared with water level data of May 2013 is termed as annual water level fluctuations. The behavioral pattern of annual fluctuations is discussed along with (Fig. 10) and data are presented in Annexure-1 (Col-6).

The interpretations of annual water level fluctuations show that there has been a decline of water levels in about 34% of wells monitored and 40% of the area of the state. Water level decline (0-2m) has been recorded in 33% of wells and 33% of area in isolated patches especially in Panchkula, Ambala, Kurukshetra, Fatehabad, Sirsa, Bhiwani, Mahendragarh, Rewari, Gurgaon, Jind, Karnal, Panipat and Sonipat districts. Water level decline (2-4m) has recorded in 2% of wells and 2% of area in small patches in Kurukshetra, Kaithal and Sirsa districts. Water level decline of more than 4m was observed in 2% of wells and 2% of area. The remaining 66% of the wells and 60% of the area have recorded water level rise. Water level rise (0-2m) has been recorded in 55% of the wells and 55% area covering central parts of the state. Water level rise of 2-4m has been observed in small patches in 9% of wells and 5% of area of the state especially in parts of Bhiwani, Gurgaon, Rewari, Jhajjar and Ambala districts. Summarized details of water level fluctuation in various ranges with percentage of wells monitored and area is shown in table below.

Summarized details of behaviour of depth to water level								
Water level fluctuation(m)	Fall				rise			
	%age	>4	4-2	2-0	subtotal	>4	4-2	2-0
Wells monitored	2	2	33	37	-	9	55	64
Area covered	2	2	33	37	-	5	55	60

WATER LEVEL FLUCTUATION

MAY 2013 - MAY 2014



3.4.2 August 2013 – August 2014

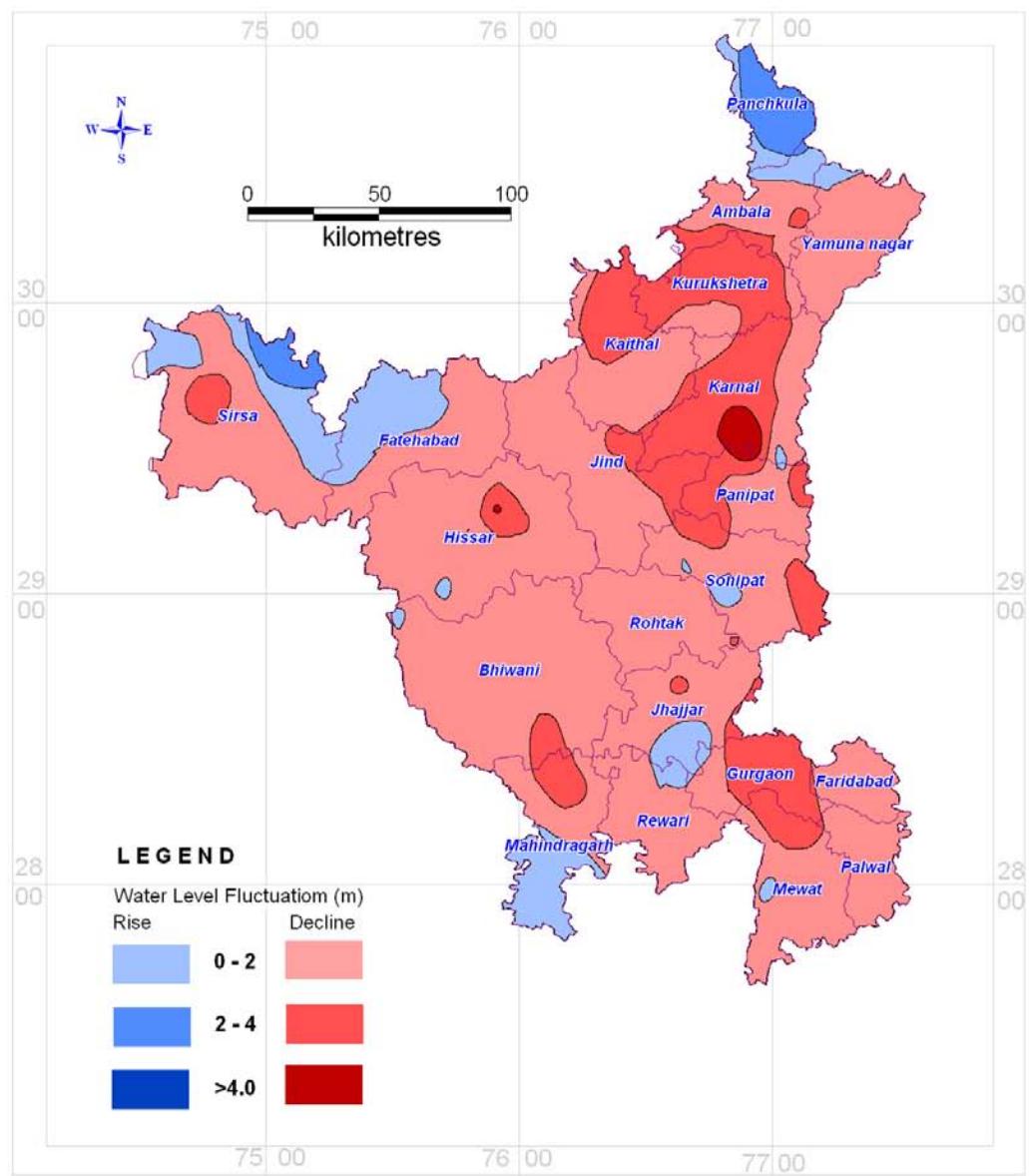
The water level data of August 2013 when compared with water level data of August 2014 is termed as annual water level fluctuations. The behavioral pattern of annual

fluctuations is discussed along with (Fig. 11) below and data are presented in Annexure-1 (Col-6).

The interpretations of annual water level fluctuations show that there has been a decline of water levels in about 80% of wells monitored and 89% of the area of the state. Water level decline (0-2m) has been recorded in 57% of wells and 69% of area in all districts except Panchkula. Water level decline (2-4m) has recorded in 19% of wells and 19% of area in small patches in Jind, Karnal, Panipat, Sonipat, Kurukshetra, Kaithal and Sirsa districts. Water level decline of more than 4m was observed in 4% of wells and 1% of area. The remaining 16% of the wells and 11% of the area have recorded water level rise. Water level rise (0-2m) has been recorded in 16% of the wells and 9% area covering central parts of the state. Water level rise of 2-4m has been observed in small patches in 4% of wells and 2% of area of the state especially in parts of Bhiwani, Gurgaon, Rewari, Jhajjar and Ambala districts. Summarized details of water level fluctuation in various ranges with percentage of wells monitored and area is shown in table below.

Summarized details of behaviour of depth to water level								
Water level fluctuation(m)	Fall				rise			
	>4	4-2	2-0	subtotal	>4	4-2	2-0	subtotal
%age	>4	4-2	2-0	subtotal	>4	4-2	2-0	subtotal
Wells monitored	4	19	57	80	-	4	16	20
Area covered	1	19	69	89	-	2	9	11

WATER LEVEL FLUCTUATION AUGUST 2013 - AUGUST 2014



3.4.3 NOVEMBER 2013 – NOVEMBER 2014

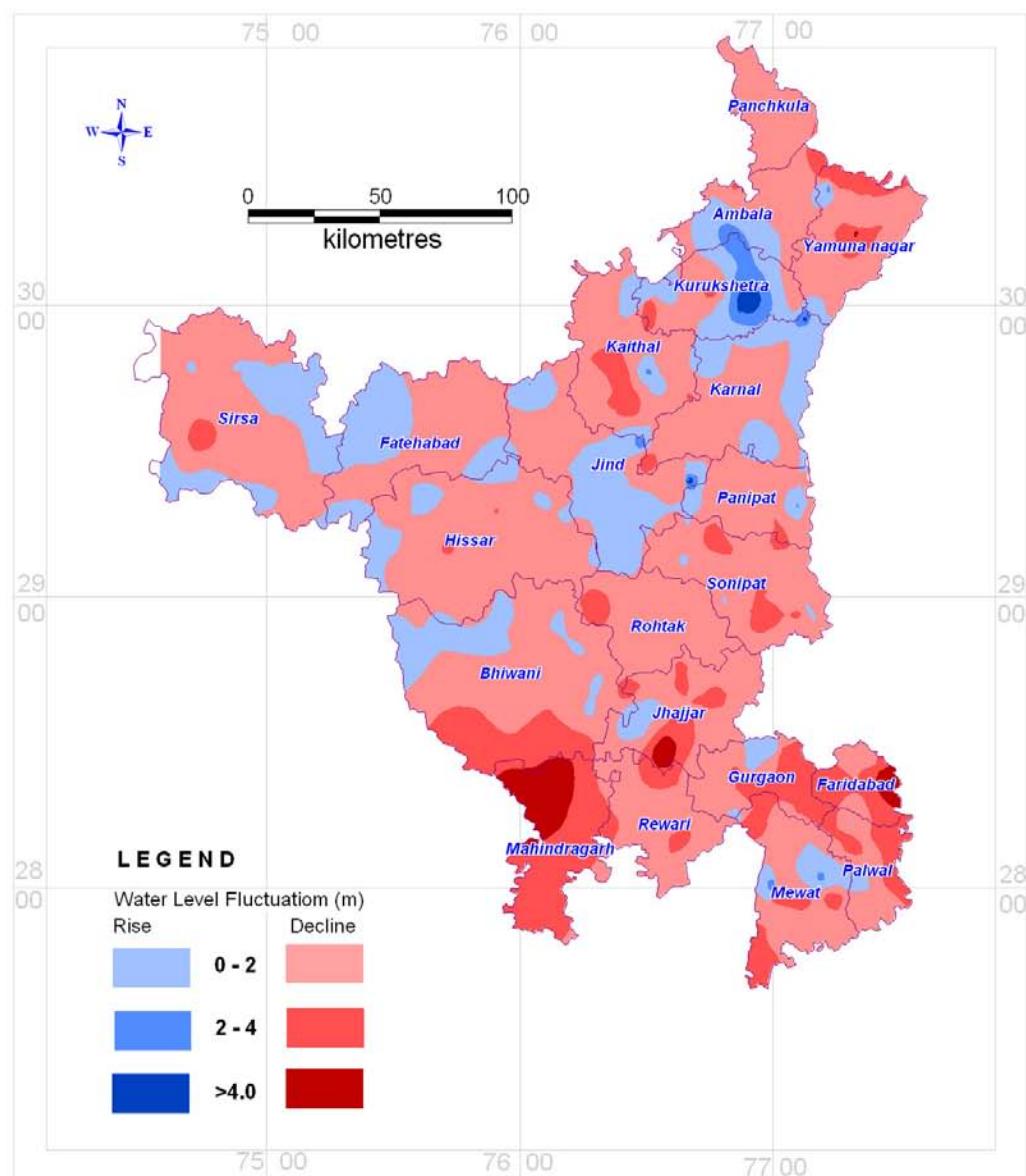
The water level data of November 2014 when compared with water level data of November 2013 is termed as annual water level fluctuations. The behavioral pattern of annual fluctuations is discussed along with (Fig. 12) below and data are presented in Annexure-1 (Col-6).

The interpretations of annual water level fluctuations show that there has been a decline of water levels in about 73% of wells monitored and 80% of the area of the state. Water level decline (0-2m) has been recorded in 58% of wells and 65% of area in all districts in the state. Water level decline (2-4m) has recorded in 13% of wells and 13% of area in Kurukshetra, Sirsa, Bhiwani, Mahendragarh, Rewari, Gurgaon, Jind, Karnal, Panipat and Sonipat districts. Water level decline of >4m recorded in 2% of wells and 2% of area of the state.

Water level rise recorded in 27% of the wells and 20% of the area. Water level rise (0-2m) has been recorded in 23% of the wells and 19% area covering parts karnal, Kurukshetra, Ambala, Jind, Fatehabad, Sirsa, Hissar and Bhiwani districts. Water level rise of 2-4m has been observed in small patches in 3% of wells and 1% of area and water level rise of >4m recorded in 1% of wells and <1% of area of the state. Summarized details of water level fluctuation in various ranges with percentage of wells monitored and area is shown in table below.

Summarized details of behaviour of depth to water level								
Water level fluctuation(m)	Fall				Rise			
	>4	4-2	2-0	subtotal	>4	4-2	2-0	subtotal
%age								
Wells monitored	2	13	58	73	1	3	23	26
Area covered	2	13	65	80		1	19	20

WATER LEVEL FLUCTUATION NOVEMBER 2013 - NOVEMBER 2014



3.4.4 JANUARY 2014 – JANUARY 2015

The water level data of January 2015 when compared with water level data of January 2014 is termed as annual water level fluctuations. The behavioral pattern of annual fluctuations is discussed along with (Fig. 13) below and data are presented in Annexure-1 (Col-6).

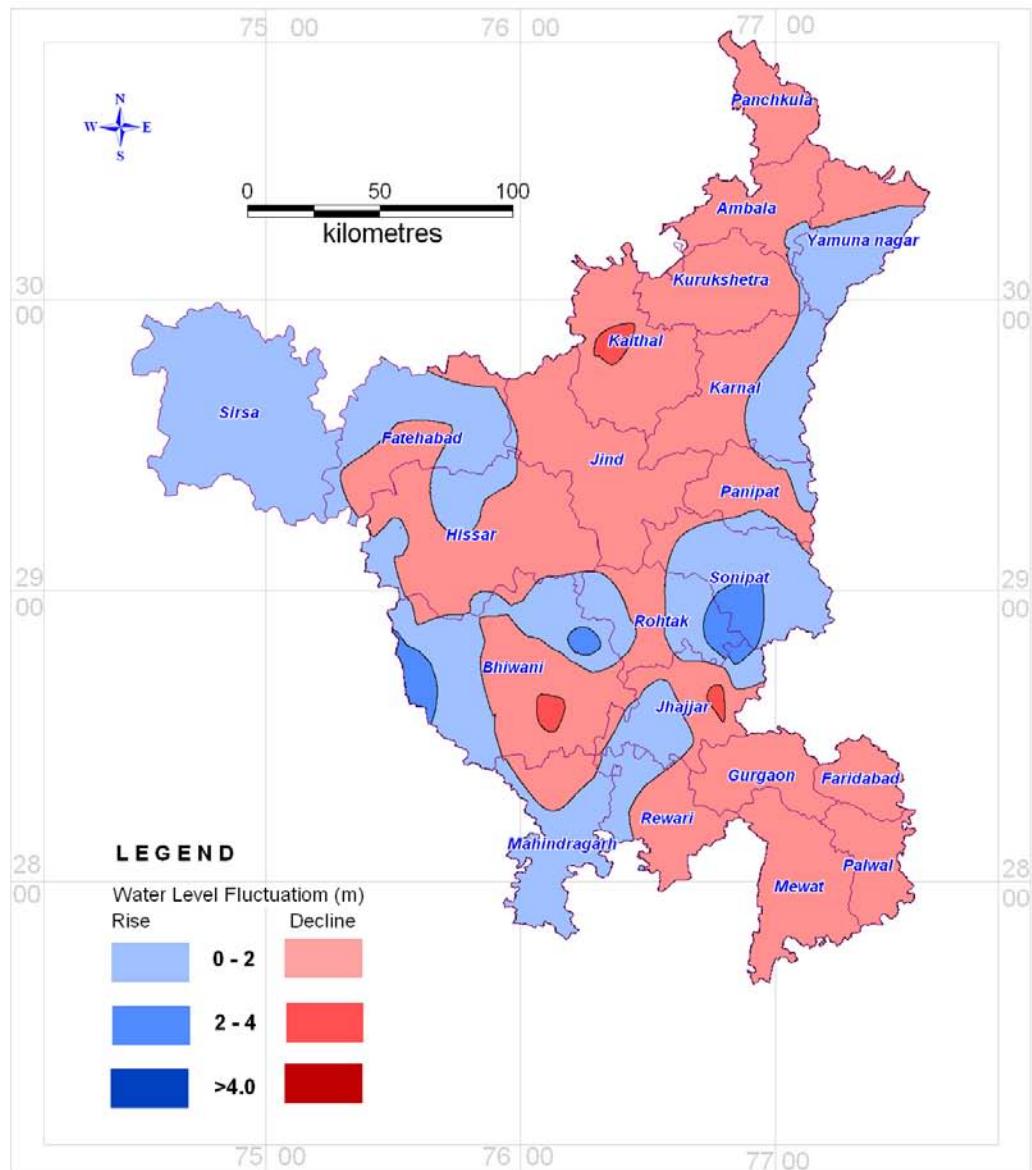
The interpretations of annual water level fluctuations show that there has been a decline of water levels in about 66% of wells monitored and 62% of the area of the state. Water level decline (0-2m) has been recorded in 60% of wells and 61% of area in Panchkula, Ambala, Yamunanagar, Kurukshetra, Kaithal, Jind, Fatehabad, Hissar, Bhiwani, Mahendragarh, Rewari, Gurgaon, Mewat, Palwal, Faridabad, Karnal, Panipat and Sonipat districts. Water level decline (2-4m) has recorded in 6% of wells and 1% of area in small patches in Kurukshetra, Kaithal and Sirsa districts.

Water level rise has been recorded in 34% of the wells and 38% of the area of the state. Water level rise (0-2m) has been recorded in 25% of the wells and 36% area covering parts of Sirsa, Fatehabad, Hissar, Bhiwani, Mahendragarh, Jhajjar, Rohtak and Sonipat districts. Water level rise of 2-4m has been observed in small patches in 9% of wells and 2% of area of the state especially in parts of Bhiwani, Rohtak and Sonipat districts. Summarized details of water level fluctuation in various ranges with percentage of wells monitored and area is shown in table below.

Table-3:		Summarized details of behaviour of depth to water level							
Water level fluctuation(m)		Fall				rise			
%age		>4	4-2	2-0	subtotal	>4	4-2	2-0	subtotal
Wells monitored		6	60	66	-	9	25	34	
Area covered		1	61	61	-	2	36	38	

WATER LEVEL FLUCTUATION

JANUARY 2014 - JANUARY 2015



3.5 DECADAL MEAN FLUCTUATION

Changes in water level behaviour since last one decade have been observed using decadal mean data. Water level mean data of past one decade, May (2004-2013), of each ground water observation wells are computed and compared with the water level data of May 2014. The behaviour of water level over the period under reference is discussed alongwith Decadal Mean Fluctuation map (Fig.14) in following paragraph and data are given in (Annexure-IV- Col. 4).

3.5.1 MAY (2004-2013) & MAY 2014

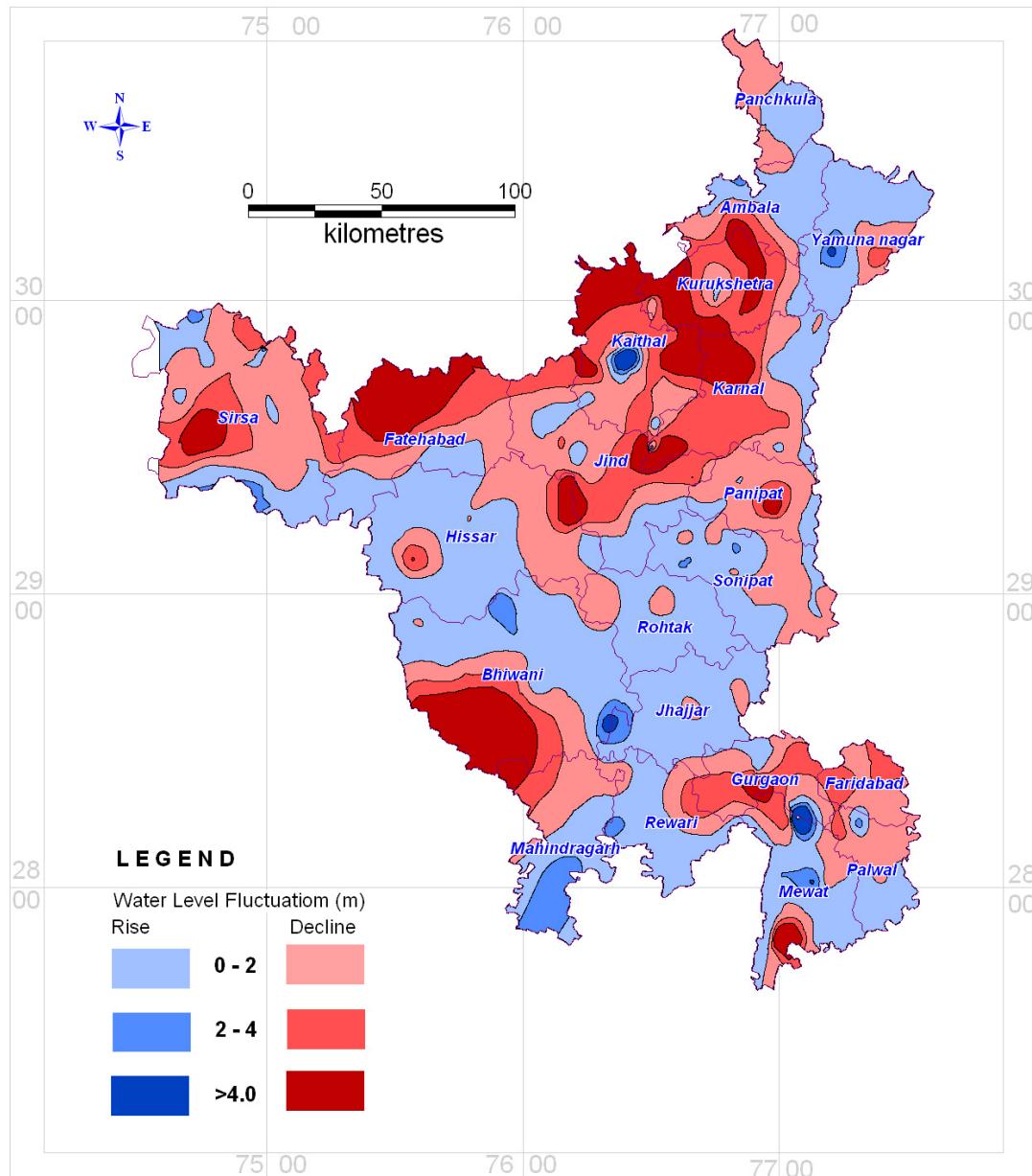
The interpretations of decadal mean fluctuations so arrived at indicate water level decline in parts of Panchkula, Ambala, Kurukshetra, Karnal, Panipat, Sonipat, Jind, Fatehabad, Sirsa, Hissar, Bhiwani, Mahendragarh, Gurgaon, Faridabad and Palwal districts of the State. About 46% of wells which covers about 58% area of the State have shown water level decline. Water level decline in the range of 0-2m has been reported from 30% of the wells covering 31% of area of the state, Water level decline between 2-4 m has been reported from 8% of wells covering 17% area of the state in parts of Panipat, Karnal, Kurukshetra, Kaithal, Ambala, Bhiwani, Mahendragarh, Rewari Gurgaon and Faridabad districts. Water level decline of more than 4m has been observed in 8% wells and 11% of the area of state covering parts of Ambala, Karnal, Kurukshetra, Kaithal, Fatehabad, Jind, Sirsa, Bhiwani, Rewari and Faridabad districts.

The water level rise has been observed in 54% of wells and 42% area. Water level rise in the range of 0-2m has been observed in 48% wells covering 41% area of the state, covering Panchkula, Ambala, Yamuna nagar Sonipat, Jind, Rohtak, Fatehabad, Sirsa, Hissar, Bhiwani, Mahendragarh, Rewari, Mewat and Palwal districts. Water level rise more than 2m has been observed small patches in small patches in 1% wells and 6% area of the state.

Summarized details of behaviour of depth to water level								
Water level fluctuation(m)	Fall				Rise			
	>4	4-2	2-0	Total	>4	4-2	2-0	Total
Wells monitored	8	8	30	46		1	48	49
Area covered	11	17	31	59		6	41	47

WATER LEVEL FLUCTUATION

DECadal Mean (May 2004: May 2013) - May 2014



3.5.2 MEAN AUGUST (2004-2013) & AUGUST 2014

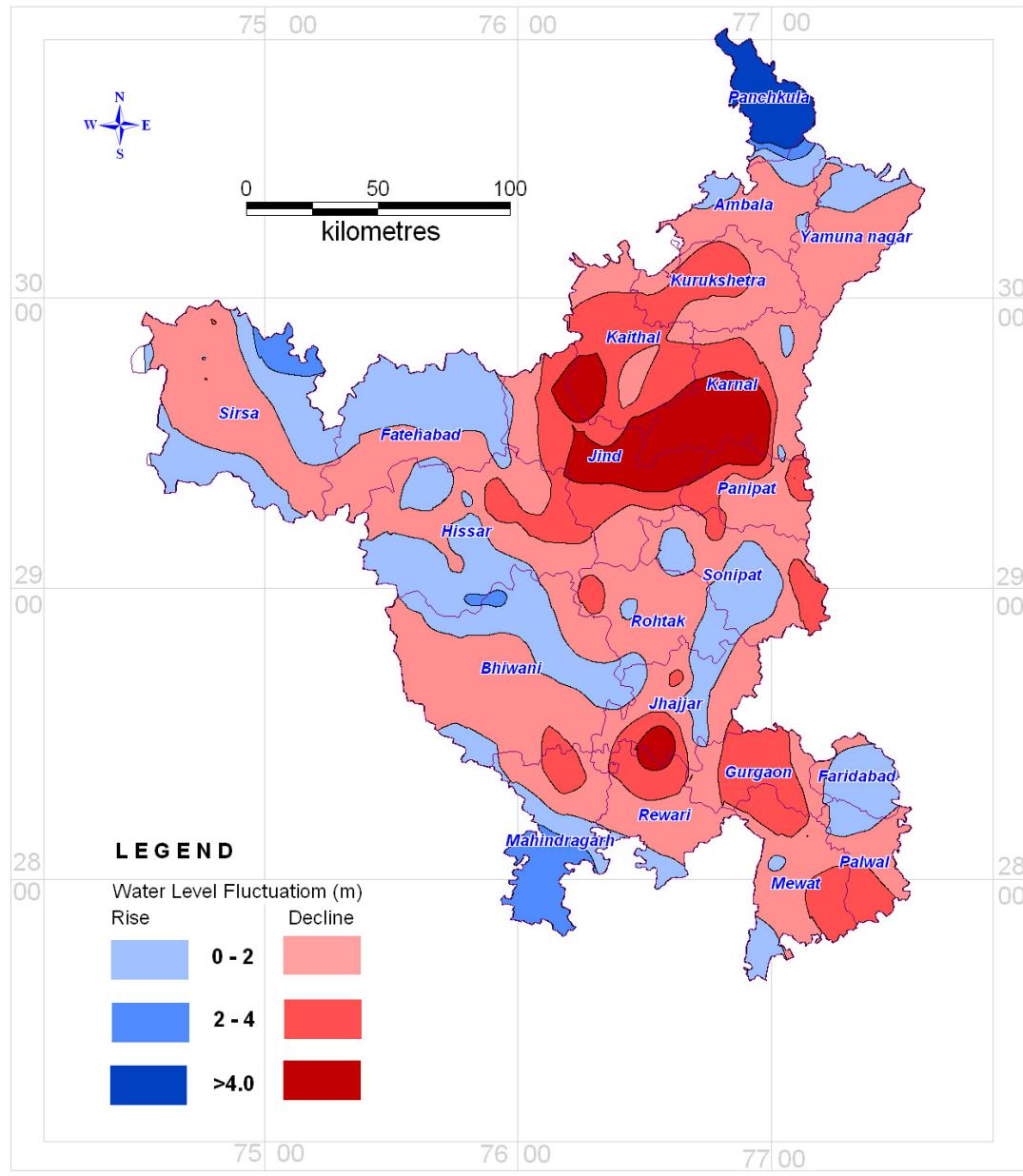
Changes in water level behaviour since last one decade have been observed using decadal mean data. Water level mean data of past one decade: August (2004-2013), of each ground water observation wells are computed and compared with the water level data of August 2014. The behaviour of water level over the period under reference is discussed in following paragraph alongwith map (Fig.15) and data are given in (Annexure-IV- Col. 5).

The interpretations of decadal mean fluctuations indicate water level decline in 65% of wells monitored and about 76% area of the State. Water level decline in the range of 0-2m has been reported from 44% of the wells covering 5231% of area in parts of Panchkula, Ambala, Kurukshetra, Karnal, Panipat, Sonipat, Jind, Fatehabad, Sirsa, Hissar, Bhiwani, Mahendragarh, Gurgaon, Faridabad and Palwal districts of the State. , Water level decline between 2-4 m has been reported from 15% of wells covering 18% area of the state in parts of Panipat, Karnal, Kurukshetra, Kaithal, Ambala, Bhiwani, Mahendragarh, Rewari Gurgaon and Faridabad districts. Water level decline of more than 4m has been observed in 6% wells and 6% of the area of state covering parts of Ambala, Karnal, Kurukshetra, Kaithal, Fatehabad, Jind, Sirsa, Bhiwani, Rewari and Faridabad districts. The water level rise has been observed in 35% of wells and 24% area. Water level rise in the range of 0-2m has been observed in 29% wells covering 19% area of the state, covering Panchkula, Ambala, Yamuna nagar Sonipat, Jind, Rohtak, Fatehabad, Sirsa, Hissar, Bhiwani, Mahendragarh, Rewari, Mewat and Palwal districts. Water level rise 2-4m has been observed small patches in small patches in 3% wells and 3% area of the state. Water level rise >4m has been observed small patches in small patches in 3% wells and 2% area of the state. Summarized details of water level fluctuation in various ranges with percentage of wells monitored and percentage of area is shown in table below.

Summarized details of behaviour of depth to water level								
Water level fluctuation(m)	Fall				Rise			
	>4	4-2	2-0	Total	>4	4-2	2-0	Total
Wells monitored	6	15	44	65	3	3	29	35
Area covered	6	18	52	76	2	3	19	24

WATER LEVEL FLUCTUATION

DECadal Mean (AUG. 2004: AUG. 2013) - AUG. 2014



3.5.3 Mean November (2004:2013) & November 2014

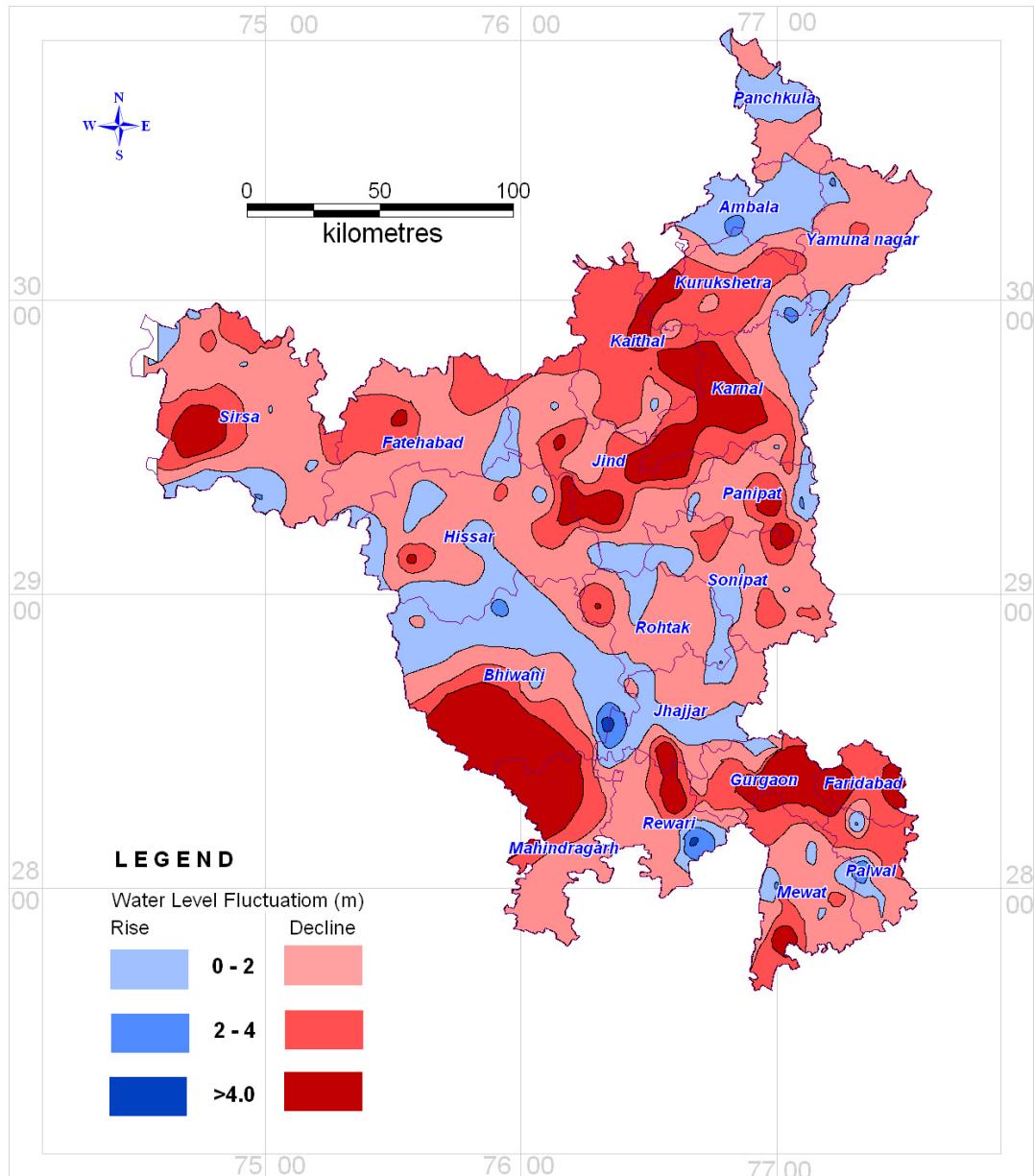
Changes in water level behaviour since last one decade have been observed using decadal mean data. Water level mean data of past one decade, November (2004-2013), of each ground water observation wells are computed and compared with the water level data of November 2014. The behaviour of water level over the period under reference is discussed in following paragraph along with map (Fig.16) and data are given in (Annexure-IV- Col. 6).

The interpretations of decadal mean fluctuations so arrived at indicate general water level decline. Nearly 69% of wells which covers about 80% area of the State have shown water level decline. Water level decline in the range of 0-2m has been reported from 43% of the wells covering 46% of area in all districts of the state. Water level decline between 2-4 m has been reported from 16% of wells covering 22% area of the state in parts of Panipat, Karnal, Kurukshetra, Kaithal, Fatehabad, Sirsa, Bhiwani, Mahendragarh, Rewari, Gurgaon and Faridabad districts. Water level decline of more than 4m has been observed in 10% wells and 12% of the area of state covering parts of Karnal, Kurukshetra, Kaithal, Fatehabad, Jind, Sirsa, Bhiwani, Mahendragarh, Rewari and Faridabad districts. The water level rise has been observed in 31% of wells and 20% area. Water level rise in the range of 0-2m has been observed in 27% wells covering 19% area of the state, covering Panchkula, Ambala, Yamuna Nagar, Sonipat, Jind, Rohtak, Fatehabad, Sirsa, Hissar and Bhiwani districts. Water level rise of 2-4m has been observed in 3% wells and 1% area of the state. Water level rise of >4m has been observed in 1% wells and <1% area of the state. Summarized details of water level fluctuation in various ranges with percentage of wells monitored and percentage of area is shown in table below.

Summarized details of behaviour of depth to water level								
Water level fluctuation(m)	Fall				Rise			
	>4	4-2	2-0	Total	>4	4-2	2-0	Total
Wells monitored	10	16	43	69	1	3	27	31
Area covered	12	22	46	80	1	1	19	21

WATER LEVEL FLUCTUATION

DECadal Mean (Nov. 2004: Nov. 2013) - Nov. 2014



3.5.4 Mean January (2005:2014) & January 2015

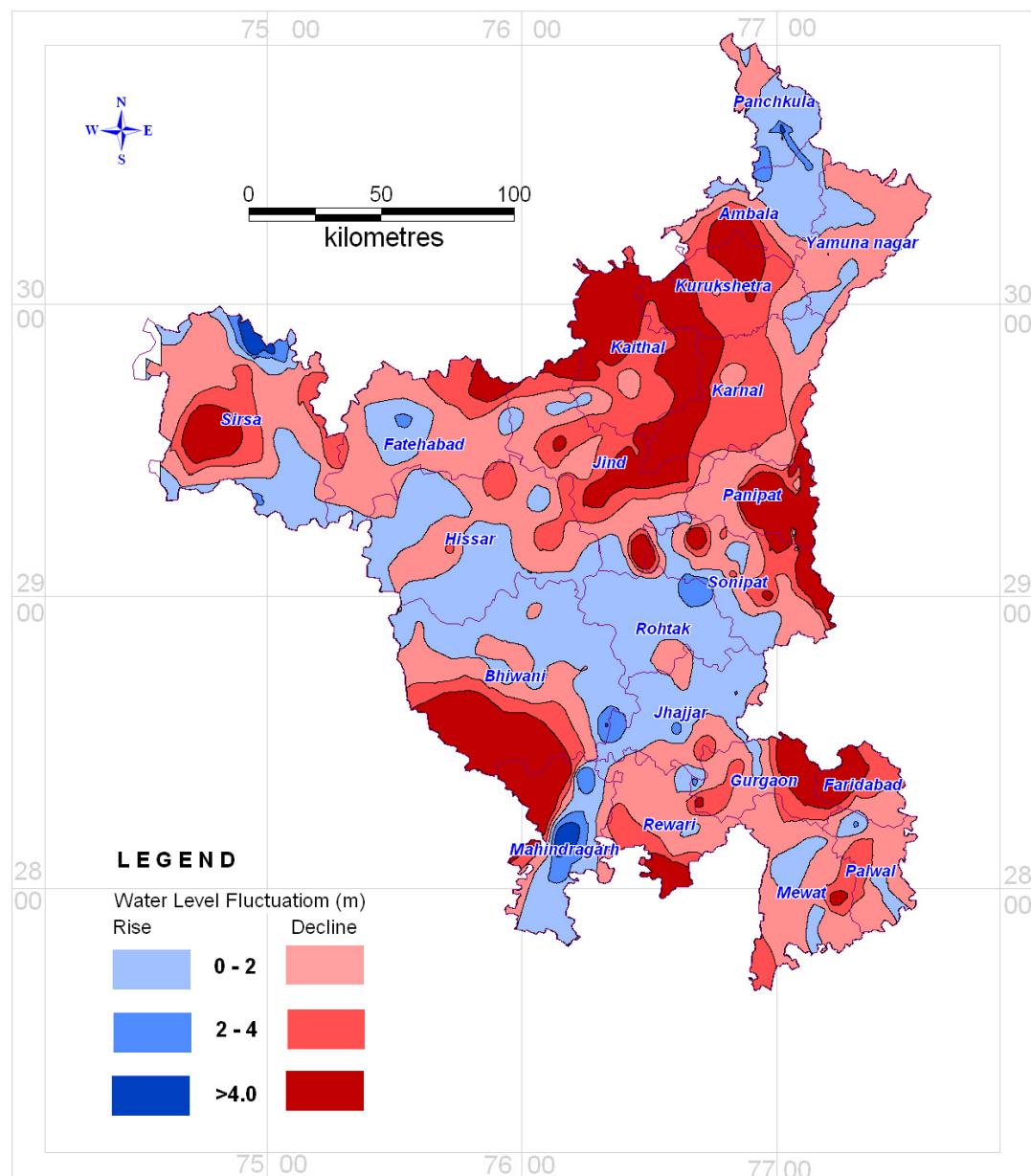
Changes in water level behaviour since last one decade have been observed using decadal mean data. Water level mean data of past one decade, January(2005:2014), of each ground water The behaviour of water level over the period under reference is discussed in following paragraph along alongwith map (Fig.17) and data are given in (Annexure-IV- Col. 7).

The interpretations of decadal mean fluctuations so arrived at indicate water level decline in About 58% of wells which covers about 63% area of the State have shown water level decline. Water level decline in the range of 0-2m has been reported from 34% of the wells covering 38% of area in Panchkula, Ambala, Kurukshetra, Karnal, Panipat, Sonipat, Jind, Fatehabad, Sirsa, Hissar, Bhiwani, Mahendragarh, Gurgaon and Mewat districts of the State. Water level decline between 2-4 m has been reported from 18% of wells covering 14% area of the state in parts of Panchkula, Ambala, Panipat, Karnal, Kurukshetra, Kaithal, Jind, Fatehabad, hissar, Bhiwani, Mahendragarh, Rewari and Gurgaon districts. Water level decline of more than 4m has been observed in 6% wells and 10% of the area of state covering parts of Karnal, Kurukshetra, Kaithal, Fatehabad, Jind, and Rewari districts.

The water level rise has been observed in 42% of wells and 37% area. Water level rise in the range of 0-2m has been observed in 34% wells covering 30% area of the state, covering Panchkula, Ambala, Sonipat, Rohtak, Sirsa, Hissar, Bhiwani, Mahendragarh, Mewat, Faridabad and Palwal districts. Water level rise of 2-4m has been observed in 5% wells and 7% area of the state. Water level rise of >4m has been observed in 1% wells and <1% area of the state.

Table-4:		Summarized details of behaviour of depth to water level							
Water level fluctuation(m)		Fall				Rise			
%age		>4	4-2	2-0	Total	>4	4-2	2-0	Total
Wells monitored		6	18	34	58	1	5	34	40
Area covered		10	14	38	62	1	7	30	38

WATER LEVEL FLUCTUATION DECadal Mean (Jan. 2005: Jan. 2014) - Jan. 2015



4.0 GROUND WATER QUALITY IN HARYANA

Natural quality of ground water is dependent on geological characteristics and climatic conditions. It is further influenced and generally degraded by human activities. Indiscriminate extraction of groundwater for day to day uses, application of fertilizers in agriculture and unscientific disposal of industrial waste have great impact on ground water quality. The quality of ground water is normally ascertained through concentration values of number of physical, chemical and biological parameters present in it. Concentration of these parameters affects its acceptability and usefulness for domestic, agriculture, industrial and other purposes. It is, therefore, essential to know the chemical composition of ground water to determine its suitability for the intended use. Knowledge of quality of ground water not only helps in finding its suitability for various purposes, but it also helps in taking effective remedial measures for its improvement on scientific lines. In rural as well as in urban area of Haryana State, ground water is a major resource for drinking and other uses. Wherever surface water is inadequate or unavailable, ground water is exploited for drinking and irrigation purposes.

In the backdrop of various uses of ground water, its quality is monitored annually by CGWB, NWR Chandigarh through dedicated ground water monitoring stations (GWMS) of dug wells and/or hand pumps of shallow depth.

4.1 SAMPLING & ANALYSIS

358 water samples were collected in 1-liter capacity good quality polyethylene bottle from national ground water monitoring stations distributed over 21 districts of Haryana during May 2014. Sampling points are mostly open dug wells and hand pumps, which are fully or at least are partially in use. Chemical analysis was carried out for major cations (Ca, Mg, Na, K) and anions (CO₃, HCO₃, Cl, SO₄, NO₃, F) in addition to pH, EC, PO₄, SiO₂, TH as CaCO₃, in the Chemical Laboratory at Chandigarh. Standard analytical procedures as given in APHA 2012 were followed. Results of chemical analysis of water samples are placed in Annexure I.

4.2 COMPOSITION OF WATERS

Chemical analysis shows that ground water is slightly to moderate alkaline with pH ranging between 7.05 (Jateri , district Kaithal) and 9.30 pH units (Jawan district Faridabad). EC

(salinity) is found to vary widely with a minimum value of 250 μ S/cm at Nahla in district Jind and a maximum value of 21960 μ S/cm at 25°C at Phagu in district Sirsa.

Among anions, carbonate though generally absent in ground water samples is found in significant number of water samples and it varies from nil to 190 mg/l. Bicarbonate varies from 31 to 1425 mg/l, chloride varies from 7.0 mg/l to 5088 mg/l and sulphate varies from nil to 2400 mg/l. However, exceptionally high concentrations of 7400mg/l of sulphate are also encountered in Sirsa district (Phagu). Nitrate, an indicator of domestic, irrigation and industrial contamination, is found at many locations. Its concentration in State varies from nil to 1844mg/l. Fluoride is found to be present in all the water samples and it varies from nil to 20.0 mg/l at Kurlan in Karnal district. In about 21% of the samples, it is found more than the drinking water limit of 1.5 mg/l F (BIS 2012). Phosphate has not been detected in most of the locations but the highest concentration of 2.91mg/l has been observed in well water of Bhunderi in Sonepat district.

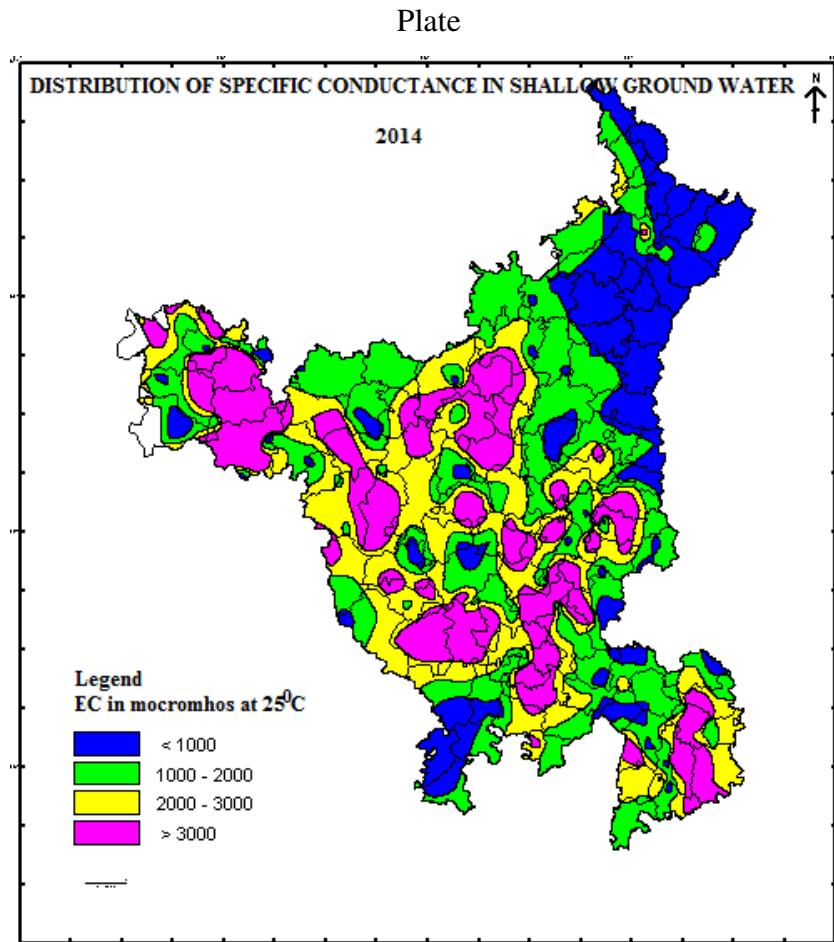
Among cations, calcium is found to vary from 2.0 mg/l to 552 mg/l whereas magnesium generally varies from nil to 826 mg/l. Sodium is found to range between 4.5 mg/l and 1714 mg/l. However, exceptionally high concentrations of 4775 mg/l of sodium is also encountered at Phagu in district Sirsa. Potassium in ground waters is normally below 10 mg/l and its higher concentration indicates contamination from point as well as non-point sources. In Haryana, potassium in shallow waters is found to range from traces to as high as 389 mg/l. Very high potassium concentrations of 1520mg/l and 3765mg/l are observed at Bhagaula in Palwal district and Dighal in Jhajjar district, respectively. Hardness reported as CaCO₃ varies between 22 mg/l and 2920 mg/l indicating wide variation. However, very hard water with concentration as high as of 4779 mg/l is also encountered at Phagu in district Sirsa. The district-wise concentration range of various chemical constituents in ground water is given in Table 5 .

Table.5 District wise distribution of chemical constituents in groundwater of Haryana State (GWMS 2014)

No.	District	No of Samples	Range	pH	EC at 25°C in µS/cm	Concentration in mg/l														SAR	RSC
						CO ₃	HCO ₃	Cl	SO ₄	NO ₃	F	PO4	Ca	Mg	Na	K	SiO ₂	T.H as CaCO ₃			
1	Ambala	12	Min	7.88	286	nil	67	14	nd	nd	0.26	0.02	10	12	25	0.9	12	92	0.9	-25.2	
			Max	8.62	3971	118	503	857	448	460	0.9	1.53	282	149	508	260	29	1317	8.8	4.9	
2	Bhiwani	31	Min	7.75	548	nil	55	40	42	0	0.14	nd	8	6.1	18	0.7	14	55	0.6	-40.4	
			Max	9.25	8552	120	866	1263	1760	1683	19.2	0.092	216	482	1360	296	38	2245	28.9	12.4	
3	Faridabad	16	Min	8.18	545	nil	148	63	4.8	10	0.23	nd	2.0	22	50	2.0	22	122	1.6	-11.1	
			Max	9.3	4611	185	510	1087	700	100	1.5	nd	61	193	752	76	34	898	18.6	8.7	
4	Fatehabad	7	Min	8.22	435	nil	97	7	70	0.6	0.19	nd	16	20	40	3.2	8.6	124	0.9	-15.3	
			Max	9.04	4530	83	429	386	1850	101	3.01	nd	152	113	801	198	18	845	12.0	3.8	
5	Gurgaon	19	Min	7.42	300	nil	96	14	0	0.07	0.19	nd	12	14	13	0.2	11	127	0.5	-11.3	
			Max	8.99	3073	92	490	765	335	137	2.01	0.172	106	124	550	222	31	715	15.5	5.2	
6	Hissar	35	Min	7.77	298	nil	61	14	12	nd	0.11	nd	10	18	9.8	1.7	5.5	165	0.3	-48.6	
			Max	9.18	7590	190	616	1425	1750	1270	8.22	0.32	330	410	1284	234	31	2513	28.3	9.3	
7	Jhajjar	16	Min	8.1	485	nil	31	16	3.6	0.3	0.24	nd	10	2.4	18	0.4	10	35	0.6	-43.0	
			Max	9.25	16980	138	555	3250	2040	1844	15.2	nd	481	428	1118	3765	45	2202	21.8	8.2	
8	Jind	15	Min	7.74	250	nil	97	14	24	nd	0.18	nd	12	17	5.4	2.3	4.1	165	0.2	-20.6	
			Max	9.18	6860	119	881	1109	1960	195	18	0.27	243	185	1441	48	29	1144	21.5	14.5	
9	Kaithal	19	Min	7.05	626	nil	317	6.7	nd	nd	0.26	nd	15	12	25	3.3	15	84	0.9	-25.7	
			Max	8.37	7398	nil	1330	1157	1600	852	9.46	nd	303	216	1360	175	32	1645	38.7	20.1	
10	Karnal	35	Min	7.33	335	19	151	6.7	nd	nd	0.26	nd	19	3.3	10	2	15	74	0.4	-1.5	
			Max	8.84	2509	37	1112	211	240	25	20	nd	97	75	506	24	29	530	15.2	15.2	
11	Kurukshetra	19	Min	7.25	455	nil	211	6.7	nd	nd	0.24	nd	32	9.8	16	2.9	18	133	0.5	-1.3	
			Max	8.2	1845	nil	1037	293	205	23	0.82	nd	94	47	269	11	32	403	6.2	9.9	
12	Mahendergarh	3	Min	8.04	250	nil	108	11	40	1.7	0.3	0.004	20	14	7.5	2.6	8	118	0.3	-1.6	
			Max	8.57	2185	59	359	435	210	68	2.01	0.022	63	43	373	6.5	22	333	11.4	5.5	
13	Palwal	10	Min	7.98	1093	nil	107	101	50	1.3	0.46	nd	10	16	133	2.5	24	92	3.9	-56.6	
			Max	9.25	9809	178	792	2498	1265	781	4.79	nd	433	447	1252	1520	30	2920	20.5	13.0	
14	Mewat	6	Min	8.17	715	nil	54	94	nd	5.1	0.21	nd	22	15	105	2	23	117	2.5	-27.0	
			Max	8.88	6039	79.2	342	1171	950	418	1.5	0.24	300	156	655	860	31	1393	10.2	1.5	
15	Panchkula	5	Min	7.26	525	nil	263	28	nd	21	0.09	nd	39	21	17	1.1	20	235	0.5	-2.1	
			Max	7.83	2590	nil	610	372	240	133	0.59	0.24	82	103	361	4	25	500	6.8	-0.4	
16	Panipat	17	Min	7.94	460	nil	115	7.1	15	nd	0.49	0.011	13	6.4	18	2.5	13	64	0.4	-3.1	
			Max	8.89	3600	65	1015	303	624	113	5.95	0.097	96	89	860	69	26	559	46.9	16.4	
17	Rewari	9	Min	7.89	825	nil	191	108	36	15	0.21	nd	20	19	123	2.4	18	176	2.1	-6.7	
			Max	8.52	5040	118	825	884	1000	148	1.62	0.07	63	152	1080	63	29	755	21.0	7.4	
18	Rohtak	13	Min	7.58	686	nil	116	20	0.4	0.2	0.3	nd	10	11	47	0.8	13	75	1.3	-42.9	
			Max	9.3	5443	132	787	1132	890	695	8.11	1.06	168	463	941	736	45	2327	47.2	15.8	
19	Sirsa	29	Min	7.94	270	nil	36	7	21	nd	0.08	0.04	8.2	25	5.0	2.8	2.6	134	0.2	-92.9	
			Max	9.08	21960	95	544	5088	7400	382	10.8	1.88	552	826	4775	389	30	4779	30.1	7.2	
20	Sonepat	26	Min	7.37	532	nil	254	8.9	15	0.4	0.12	0.011	8.6	0	25	1.8	12	22	0.6	-16.5	
			Max	8.4	6732	12	1425	1090	1640	198	7.8	2.91	162	205	1080	500	38	1151	43.2	15.5	
21	Yamunanagar	16	Min	8.22	285	nil	114	7.2	nd	nd	0.13	0.02	10	4	4.5	1	5.1	92	0.2	-2.0	
			Max	8.88	1858	79	347	289	140	143	0.48	0.05	43	60	247	159	30	276	6.5	3.3	
Haryana		358	Min	7.05	250	nil	31	6.7	nd	nd	0.08	nd	2.04	nd	4.5	0.2	2.6	22	0.2	-92.9	
			Max	9.3	21960	190	1425	5088	7400	1844	20	2.91	552	826	4775	3765	211	4779	47.2	20.1	

4.3 DISTRIBUTION OF ELECTRICAL CONDUCTANCE (EC)

EC, a primary indicator of dissolved mineral content, varies from 250 $\mu\text{S}/\text{cm}$ to 21960 $\mu\text{S}/\text{cm}$ at 25°C. About 25% of the water samples have EC less than 750 $\mu\text{s}/\text{cm}$, 55% have EC between 750 and 3000 $\mu\text{s}/\text{cm}$ and the remaining 20% of the samples have EC more than 3000 $\mu\text{s}/\text{cm}$ (Table). Water with low EC (<750) are found mostly in Ambala, Gurgaon, Hissar, Panchkula, Panipat, Jind, Karnal, Kaithal, Kurukshetra, Sirsa, Sonepat and Yamunanagar districts, water with intermediate EC (750-3000) are mostly in Ambala, Bhiwani, Faridabad, Fatehabad, Jind, Hissar, Kaithal, Karnal, Mewat, Rewari, Palwal, Panipat, Rewari, Rohtak, Sirsa, Sonepat, and Yamunanagar districts and samples with high EC (>3000) are found scattered throughout the State. However, most of them are from Bhiwani, Faridabad, Gurgaon, Hissar, Jhajjar, Kaithal, Palwal, Rohtak, Sirsa and Sonepat districts (Plate). The reason for high salinity in ground water of these areas may be due to natural concentration of salts as there is more evapo-transpiration than precipitation (Semi-arid climatic conditions) and lack of drainage.



4.4 DISTRIBUTION OF CHLORIDE

The distribution of chloride in ground water follows the distribution pattern of EC and it ranges from 6.7mg/l to 5088 mg/l. Chloride above 400 mg/l, in drinking water, may give salty taste to consumers. Bureau of Indian Standards (BIS 2012) has assigned a desirable concentration of 250 mg/l chlorides in drinking water. This limit can be extended to 1000 mg/l in case no other source with desirable chloride concentration is available. Out of 358 samples analyzed, 62% have chloride below desirable limit (250mg/l), 31% have between desirable and permissible level (250-1000 mg/l) and the remaining 7% of samples have chloride more than the permissible limit of 1000 mg/l (Table). Spatial distribution of chloride in ground water indicates that few sites at Bhiwani, Gurgaon, Hissar, Jhajjar, Jind, Kaithal, Mewat, Palwal, Rohtak and Sonepat districts (Plate) have chloride concentration above 1000 mg/l. High concentration of chloride is mostly observed in samples having high sodium content indicating highly saline nature of these shallow ground waters.

Plate

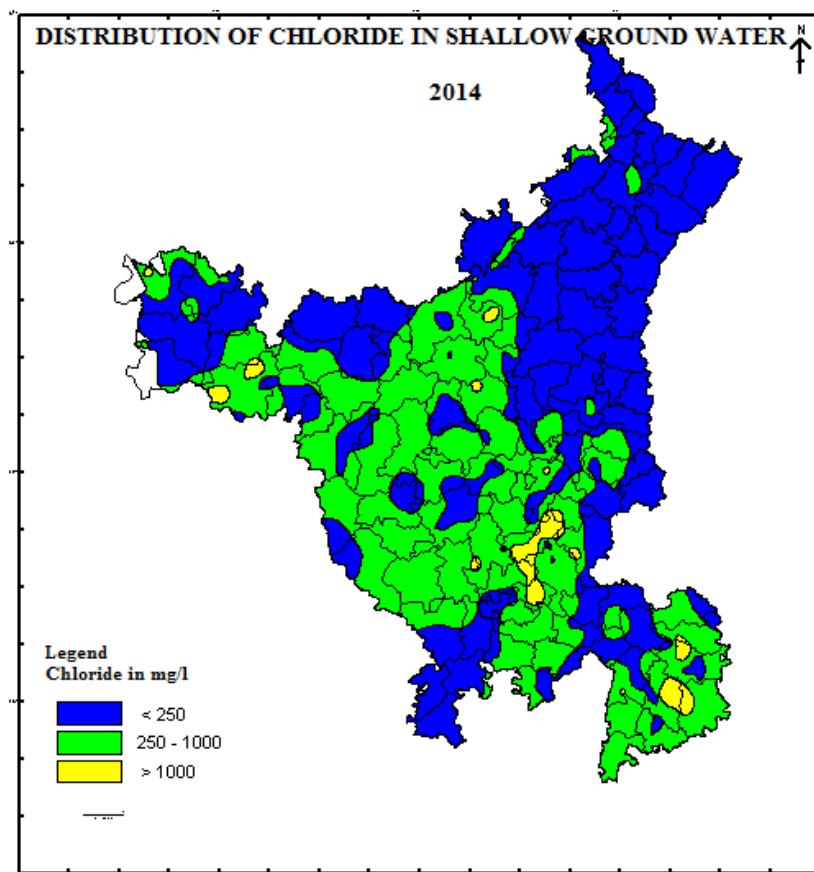
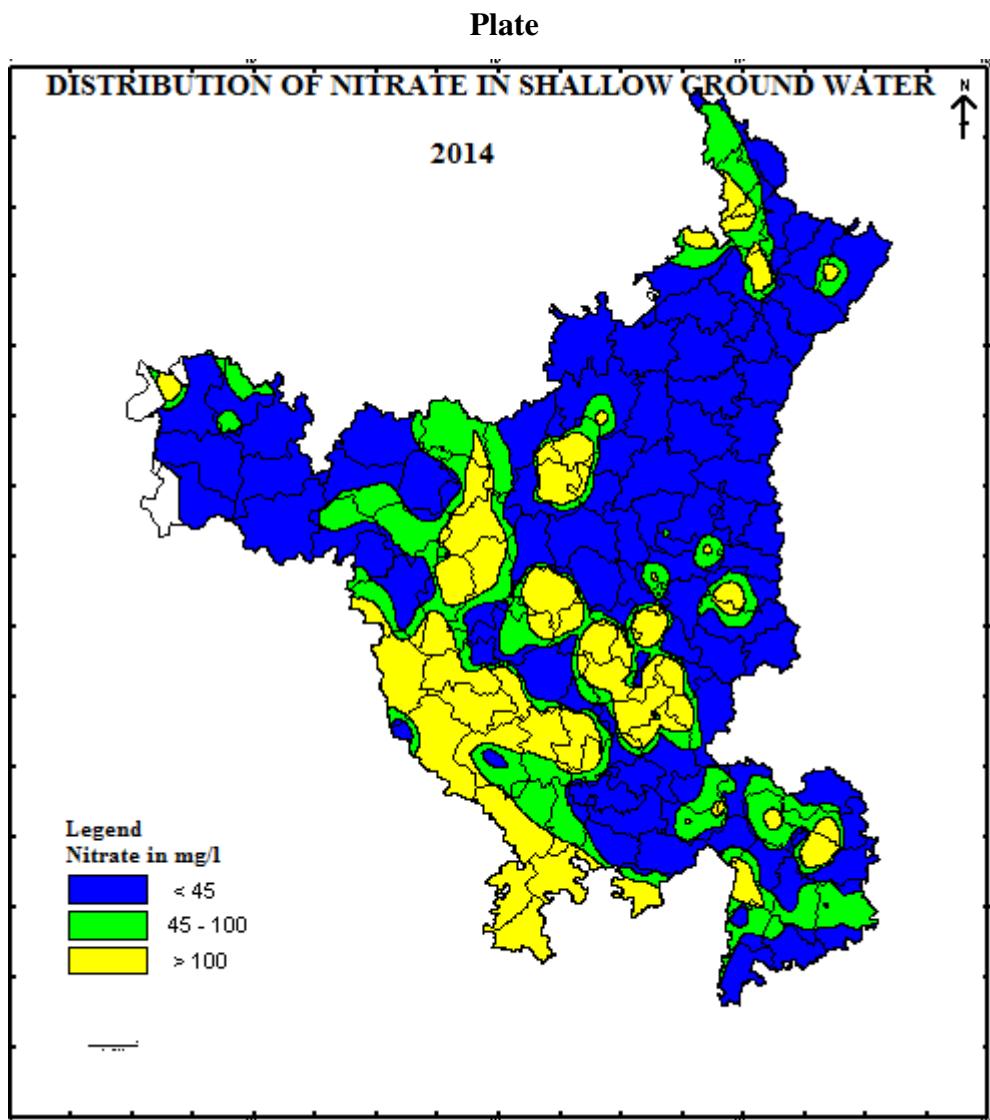


Table 6 District wise distribution of well waters of Haryana State in different classes of drinking water suitability

S.N.	District	No of Samples	EC in 25°C in µS/cm			Cl in mg/l			F in mg/l			NO ₃ in mg/l		
			<750	750-3000	>3000	<250	250-1000	>1000	<1.0	1.0-1.5	>1.5	<45	45-100	>100
1	Ambala	12	6	4	2	8	4	0	12	0	0	8	1	3
2	Bhiwani	31	3	19	9	10	19	2	20	3	8	13	5	13
3	Faridabad	16	2	12	2	6	9	1	14	2	0	10	6	0
4	Fatehabad	7	1	5	1	6	1	0	3	1	3	4	2	1
5	Gurgaon	19	6	11	2	12	7	0	13	3	3	11	4	4
6	Hissar	35	4	21	10	12	21	2	24	2	9	20	7	8
7	Jhajjar	16	1	7	8	7	3	6	8	1	7	10	2	4
8	Jind	15	2	11	2	8	6	1	9	0	6	13	0	2
9	Kaithal	19	3	10	6	12	6	1	12	0	7	15	2	2
10	Karnal	35	20	15	0	35	0	0	26	8	1	35	0	0
11	Kurukshetra	19	7	12	0	18	1	0	19	0	0	19	0	0
12	Mahendergarh	3	1	2	0	2	1	0	2	0	1	2	1	0
13	Mewat	6	1	3	2	1	3	2	5	1		4	1	1
14	Palwal	10	0	5	5	4	2	4	5	0	5	7	1	2
15	Panchkula	5	2	3	0	4	1	0	1	2	2	5	0	0
16	Panipat	17	5	11	1	16	1	0	15	1	1	7	4	6
17	Rewari	9	1	6	2	6	3	0	6	2	1	5	2	2
18	Rohtak	13	1	9	3	6	6	1	9	1	3	9	1	3
19	Sirsa	29	6	12	11	17	8	4	16	3	10	25	3	1
20	Sonepat	26	4	16	6	17	8	1	15	4	7	22	1	3
21	Yamunanagar	16	12	4	0	15	1	0	16	0	0	15	0	1
	Haryana	358	88	198	72	222	111	25	250	34	74	259	43	56

4.5 DISTRIBUTION OF NITRATE

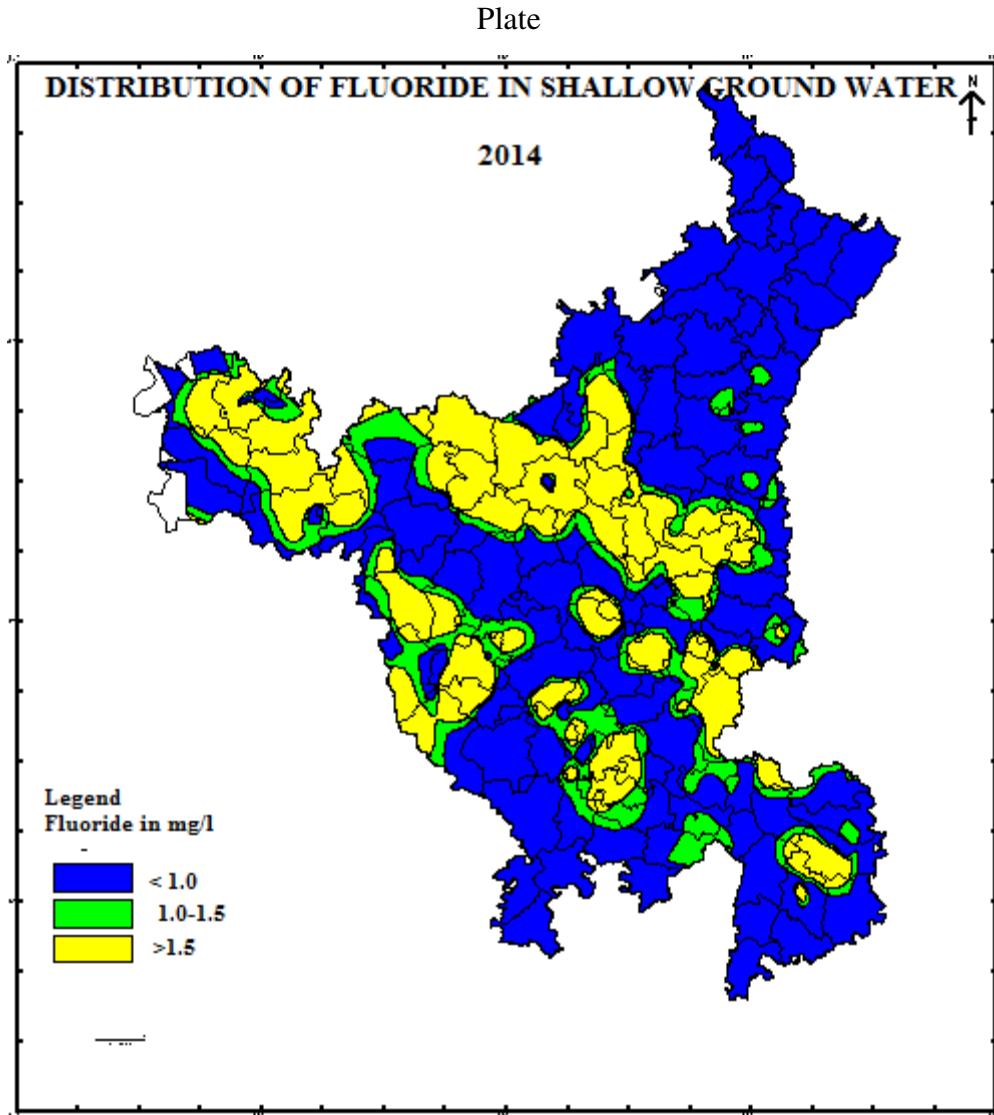
Presence of nitrate above 5.0 mg/l in ground water reflects contamination at some stage of its percolation and circulation. The probable major sources of nitrate content in ground water are excessive application of fertilizers, bacterial nitrification of organic nitrogen, seepage from animal and human wastes and atmospheric inputs. In the State, nitrate varies from nil to 852mg/l. Exceptionally high concentration of are encountered at Bas(1270mg/l) district Hissar, Wazirpur(1452 mg/l), district Jhajjar, Dadri(1683 mg/l), district Bhiwani and Dighal (1844 mg/l) in Jhajjar district. Spatial distribution of nitrate indicates that nitrate is less than 45 mg/l in majority of the areas (Plate). Out of 358 samples analyzed, 72% of the samples have nitrate within BIS limit of 45 mg/l for drinking waters (Table) and 28% have nitrate more than 45 mg/l. Out of these 31% samples, 57% of samples, mostly from districts of Ambala, Bhiwani, Gurgaon, Hissar, Jhajjar, Jind, Kaithal, Palwal, Panipat, Rewari, Rohtak,, and Sonepat districts have nitrate contents even more than 100mg/l.



4.6 DISTRIBUTION OF FLUORIDE

Fluoride, in small amounts in drinking water, is beneficial in reducing dental decay but when present in large amounts, has deleterious effects ranging from staining of tooth enamel to skeletal fluorosis. The fluoride contents in ground water of the State ranges from 0.08 to 20.0 mg/l at Kurlan in Karnal district. Spatial distribution of fluoride indicates that fluoride is less than 1.5 mg/l in 70% samples. It is between 1.0 and 1.5 mg/l in 9% samples and is above 1.5 mg/l in the remaining 21% samples (Table). Ground waters with fluoride above 1.5 mg/l are found mostly in parts of Bhiwani, Fatehabd, Gurgaon, Hissar, Jhajjar, Jind, Kaithal, Palwal, Panchkula, Rohtak, Sirsa and Sonepat districts (Plate) and are not suitable for drinking purpose. At many places, fluoride above 1.5 mg/l is observed in areas where agricultural activities are dominant. The likely causes for high fluoride in ground water are (i)

leaching from phosphatic fertilizers where it is present as an impurity and (ii) depletion of calcium either due to precipitation or exchange phenomenon.



4.7 TYPES OF WATERS

Considering the predominance of the cation and anion in the chemical composition of ground water, its type is determined and its relation with its occurrence in an area as well as with its salinity is studied. It is found that no discernible relationship between type of water and its occurrence in any particular area could be established. Nearly all types of waters are available in each district of the State. However, study of relation of water type with salinity of the water clearly indicates that nearly 30% ground waters of the State are fresh, have low salinity and predominance of calcium or magnesium or calcium + magnesium cations and bicarbonate as anion. Ground waters having intermediate salinity are mostly

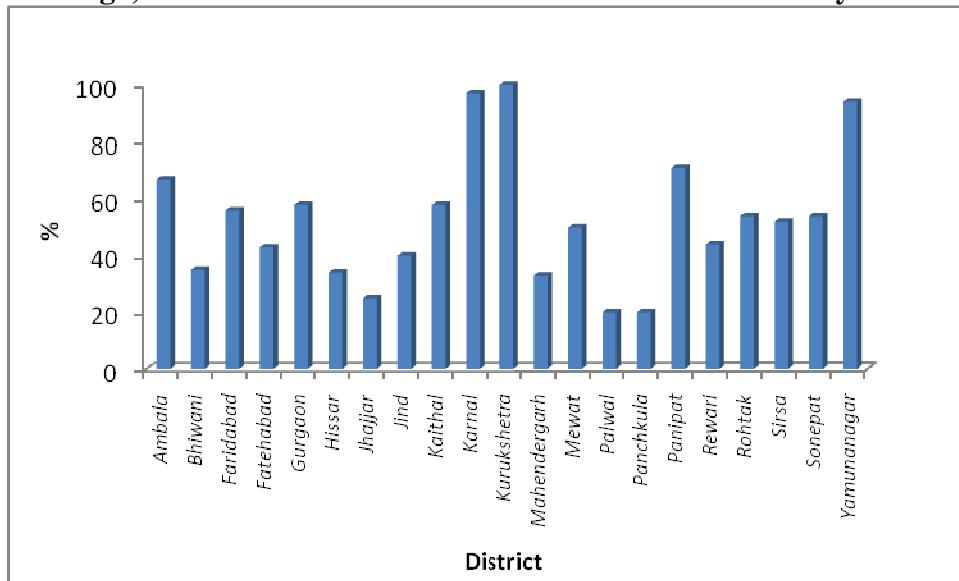
mixed cation type - HCO₃ type. At some places HCO₃-type of waters with sodium as dominant cation are also encountered in low to moderately saline ground waters. This can be attributed either to precipitation of CaCO₃ due to loss of CO₂ or dissolution of Na-salts from the topsoil layers or to ion exchange reaction during the downward percolation of water. At some isolated locations sulphate is found to be dominant anion. In ground waters, where salinity is high; mostly Na is the dominant cation and Cl or Cl + SO₄+NO₃ (Mixed anion) are dominant. permanent hardness is observed at few locations in Hissar, Jhajjar and Bhiwani district depicted by dominance of Ca-Cl. Nevertheless, a few exceptions have also been found in these simple and well-defined types of ground waters.

Suitability for drinking

Salinity, nitrate, sulphate, fluoride, hardness and alkalinity are the parameters normally considered for evaluating the suitability of drinking water. BIS have assigned desirable and permissible concentration limits for these constituents. Based on BIS recommendations, ground water occurring in the northern and north-eastern areas of the State is suitable for drinking. However, ground water at several places in the southern and western parts of the State is not suitable for drinking either due to one or more constituent exceeding the maximum permissible limits. Waters falling under different classes of suitability for drinking uses are shown in Table and district-wise distribution of potable waters based upon EC, Cl, NO₃ & F contents are shown as bar diagram in Fig 1.

On perusal of Bar diagram, it is observed that ground water occurring in the districts of Ambala, Faridabad, Gurgaon, Kaithal, Karnal, Kurukshetra, Panipat, Rohtak, Sirsa, Sonepat and Yamunanagar are mostly suitable for drinking as more than 50% water samples are having all the above quality parameters within the permissible limits. In the districts of Bhiwani, Fatehabad, Hissar, , Gurgaon, Jind, Mahendergarh, Mewat and Rewari, 30-50% water samples are having potable quality as per BIS 2012 standards. Ground water is mostly unsuitable for drinking due to one or more of these constituents exceeding the maximum permissible limits Jhajjar, Palwal and Panchkula as these districts have less than 30% ground waters having chemical parameters within the permissible limits.

Fig , Districtwise Distribution of Potable Waters in Haryana



4.8 SUITABILITY FOR IRRIGATION

The suitability of ground water for irrigation is assessed based on EC, SAR and RSC values of waters. The diagram, suggested by USSL staff by taking EC and SAR into consideration is widely used for determining the irrigational classes of water. Salinity in terms of EC varies widely from 250 $\mu\text{S}/\text{cm}$ to 21960 $\mu\text{S}/\text{cm}$ at 25°C while SAR values range from 0.16 (Naggal, district Yamunanagar) to 47.21 (Nidana, district Rohtak). Based on EC and SAR values, plot of USSL diagram indicates that most of the samples (74%) fall under C2S1, C2S2, C3S1, C3S2, C4S1, and C4S2 classes of irrigation water. Continuous use of such waters may lead to low to vary high salinity hazards, while they may not cause sodium hazards because of low SAR. The remaining 26% of water samples having C3S3, C3S4, C4S3, C4S4, and classes may lead to salinity as well as sodium hazards when used for irrigation under normal practices. However, these waters can be used for irrigation along with an appropriate quantity of gypsum.

The ground waters in the districts of Ambala, Fatehabad, Hissar, Jhajjar, Kaithal, Karnal, Kurukshetra, Panchkula, Panipat, Rohtak and Yamunanagar are mostly of C1, C2, C3 salinity and S1-S2 sodicity classes. Such waters can be used for irrigation on soils with good permeability for growing salt tolerant or semi salt tolerant crops. Addition of small quantity of gypsum may improve the permeability of the soil and avoid the sodium hazards. Ground waters from southern and western part of Haryana comprising of districts of Bhiwani, Faridabad, Gurgaon, Jind, Mohendergarh, Rewari, Sirsa, and Sonepat fall under

C4S1, C4S2, C3S3, C3S3, C4S2, C4S3 and C4S4 classes. Use of such waters for irrigation under normal conditions may lead to both high to very high salinity as well as sodium hazards.

Alkali hazards of irrigation ground waters are estimated through the computation of Residual sodium carbonate (RSC) also known as Eaton's Index. The values of RSC of ground waters are found to vary from below zero to 20.1 meq/l (Hassangarh, district Rohtak). Based on Eaton's index, it is found that 67% of the waters are rated fit, 10% marginal and the remaining 23% unfit for irrigational uses. The distribution of ground waters in various Eaton's index and irrigation rating based on USSL classification is given in table 7 .

Table.7 District wise Irrigation Rating of Well Waters of Haryana.

S.N.	District	EATON's INDEX			USSL Classification	
		(RSC in meq/l)				
		Safe	Marginal	Unsafe		
		<1.25	1.25-2.5	>2.5		
1	Ambala	9	1	2	C ₂ S ₁ , C ₃ S ₁ , C ₃ S ₂ , C ₄ S ₂ , C ₄ S ₃ ,	
2	Bhiwani	26	1	4	C ₂ S ₁ , C ₃ S ₁ , C ₃ S ₂ , C ₄ S ₁ , C ₄ S ₂ , C ₄ S ₄	
3	Faridabad	9	1	6	C ₂ S ₁ , C ₃ S ₁ , C ₃ S ₂ , C ₄ S ₃ , C ₄ S ₄	
4	Fatehabad	5	1	1	C ₁ S ₁ , C ₂ S ₁ , C ₃ S ₁ , C ₃ S ₂ , C ₄ S ₃ , C ₄ S ₄	
5	Gurgaon	12	4	3	C ₂ S ₁ , C ₃ S ₁ , C ₃ S ₂ , C ₃ S ₄ , C ₄ S ₂ , C ₄ S ₃ , C ₄ S ₄	
6	Hissar	31	0	4	C ₂ S ₁ , C ₃ S ₁ , C ₃ S ₂ , C ₄ S ₁ , C ₄ S ₂ , C ₄ S ₃	
7	Jhajjar	11	1	4	C ₂ S ₁ , C ₃ S ₁ , C ₃ S ₂ , C ₃ S ₄ , , C ₄ S ₂ , C ₄ S ₃	
8	Jind	9	1	5	C ₂ S ₁ , C ₃ S ₁ , C ₃ S ₂ , C ₃ S ₃ , C ₄ S ₁ , C ₄ S ₂ , C ₄ S ₄	
9	Kaithal	7	4	8	C ₂ S ₁ , C ₃ S ₁ , C ₃ S ₂ , C ₄ S ₂ , C ₄ S ₃ , C ₄ S ₄	
10	Karnal	19	9	7	C ₂ S ₁ , C ₃ S ₁ , C ₃ S ₂ , C ₄ S ₂	
11	Kurukshtera	7	4	8	C ₂ S ₁ , C ₃ S ₁ , , C ₃ S ₂	
12	Mahendergarh	2	0	1	C ₁ S ₁ , C ₃ S ₂ , C ₃ S ₃	
13	Mewat	5	1	0	C ₂ S ₁ , C ₃ S ₂ , C ₄ S ₁ , C ₄ S ₂ , C ₄ S ₃	
14	Palwal	5	2	3	C ₂ S ₁ , C ₃ S ₁ , C ₃ S ₄ C ₄ S ₂ , C ₄ S ₃ , C ₄ S ₄	
15	Panchkula	5	0	0	C ₂ S ₁ , C ₃ S ₁ , C ₄ S ₂	
16	Panipat	9	1	7	C ₂ S ₁ , C ₃ S ₁ , C ₃ S ₂ , C ₄ S ₄	
17	Rewari	6	0	3	C ₃ S ₁ , C ₃ S ₂ , C ₄ S ₃ , C ₄ S ₄	
18	Rohtak	9	0	4	C ₂ S ₁ , C ₃ S ₁ , C ₃ S ₂ , C ₄ S ₁ , C ₄ S ₄	
19	Sirsa	25	2	2	C ₂ S ₁ , C ₃ S ₁ , C ₄ S ₁ , C ₄ S ₂ , C ₄ S ₃ , C ₄ S ₄	
20	Sonepat	17	2	7	C ₂ S ₁ , C ₃ S ₁ , C ₃ S ₂ , C ₄ S ₂ , C ₄ S ₃ , C ₄ S ₄	
21	Yamunanagar	12	1	3	C ₂ S ₁ , C ₃ S ₁ , C ₃ S ₂	

4.9 SUITABILITY FOR INDUSTRIES

Industries, in general, use water for variety of works depending upon the nature and size of the industry. As such specifications for suitability of water for industries vary widely depending upon the process in each industry. Therefore, chemical quality of water and its suitability could not be discussed due to diversified nature of industries.

4.10 TEMPORAL VARIATION

The temporal changes in ground water quality are studied by considering important parameters such as salinity (EC), chloride, nitrate and fluoride contents of waters. The percent well waters falling in desirable, permissible and unsuitable classes of BIS-2012 standards during 2014 are compared with percent well waters in same classes during 2010. Table 8. shows increase or decrease of percent well water falling in various suitability classes for drinking purposes.

Table 8: Periodic Variation in Suitability Classes of Well Waters of Haryana

Parameter	Class	% of Samples					Periodic Variation 2010-14
		2010 (n=355)	2011 (n=359)	2012 (n= 331)	2013 (n=320)	2014 (n=358)	
Salinity as EC (in $\mu\text{S}/\text{cm}$ at 25°C)	<750	25	30	29	37	25	0
	750-3000	60	49	50	48	55	-5
	>3000	15	21	21	15	20	+5
Chloride as Cl (in mg/l)	<250	62	65	64	65	62	0
	250 - 1000	34	29	28	29	31	-3
	>1000	4	6	8	6	7	+3
Nitrate as NO_3 (in mg/l)	< 45	79	73	69	77	72	-7
	> 45	21	27	31	23	28	+7
Fluoride as F (in mg/l)	<1.0	57	69	62	70	70	+11
	1.0 - 1.50	18	15	15	12	9	-9
	>1.50	25	16	23	18	21	-4

n=number of samples

It is evident from the table above that there is a slight deterioration in the quality of ground water, based on the parameters considered, from 2010 to 2014, as indicated by increase in the percent samples having concentrations beyond permissible limits and decrease in percent samples having desirable quality. The ground water quality based on salinity, chloride and nitrate content shows a deterioration as there is increase of nearly 5%, 3% and 7% respectively, of samples falling above the permissible level and subsequent decrease in % samples falling under suitable(desirable) class. But a marked improvement of 11% has been observed in groundwater quality with respect to Fluoride from 2010 to 2014. On comparing the percent wells of 2013 and 2014 for potability and considering a change of + 1% as constant, it is observed that, in general, there is increase in salinity, chloride, nitrate and Fluoride content. Based on salinity and nitrate quality parameters, there is some deterioration in chemical quality of ground water of the state as there is increase in

percentage of wells falling above permissible class by 5% for these parameters. Deterioration of ground water quality by 3% is observed with respect to Fluoride. The cause of deterioration of ground water quality may be anthropogenic as no natural source for fluoride and nitrate is found in the state.

4.11 CONCLUSION & RECOMMENDATIONS

From the discussion above, it can be concluded that in Haryana

1. Shallow ground water occurring in northern and northeastern parts is suitable for drinking as well as for irrigation.
2. Shallow ground water occurring in central parts has intermediate quality and is permitted for drinking use in case there is no alternative source. However, it is suitable for irrigation on well-drained soil for salt tolerant crops such as wheat, maize, barley etc.
3. Shallow ground water occurring in southern and western parts are not suitable for drinking as well as for customary irrigation. The reason for unsuitability for drinking uses is high concentrations of either salinity or nitrate or fluoride. The reason for rejection for irrigation uses is high salinity coupled with high SAR and RSC more than 2.5 meq/l. However, these waters can be used for irrigation in conjunction with surface water.

Annexure-1						
Depth to water level (m)						
S. No.	District	Locations	May 2014	August 2014	November 2014	January 2015
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	AMBALA	Ambala Cantt	-	-	1.66	-
2.		Balana	1.58	-	-	-
3.		Dhanaura	5.19	5.20	4.51	4.70
4.		Kakru	1.56	1.68	2.15	2.01
5.		Khanahmadpur	3.88	3.59	3.00	2.45
6.		Mulana	2.81	-	2.79	-
7.		Naraingarh	12.06	-	-	-
8.		Panjokhra	3.51	-	5.11	4.03
9.		Pinjola	-	-	3.10	-
10.		Saha S	50.00	-	-	-
11.	BHIWANI	Badala	2.46	-	2.76	-
12.		Bajina	11.87	11.77	12.00	12.17
13.		Bamla	6.86	-	6.76	6.83
14.		Baundkalan	1.83	3.01	2.63	2.31
15.		Bhawani khera DW	6.39	-	6.56	6.55
16.		Bhawani Khera Pz	6.81	-	6.81	-
17.		Bohal	5.81	5.95	5.74	5.75
18.		Chirya	14.00	14.41	16.29	16.08
19.		Dadri1	2.46	-	-	-
20.		Dadri-Pz	-	-	2.11	-
21.		Dhanana	1.07	1.19	1.00	-
22.		Gopi	56.80	-	57.15	-
23.		Gurera	15.87	15.92	15.39	-
24.		Gurera-pz	14.63	-	14.87	-
25.		Haluwas	3.03	2.95	3.93	4.00
26.		Imlota	-	-	1.89	-
27.		Isharwal	18.12	-	18.21	-
28.		Jhumpa	27.70	28.00	26.24	26.49
29.		Jhumpa PZM			26.46	-
30.		Jhumpa Kalan	26.39	-	-	-
31.		Juikalan	-	-	32.00	-
32.		Juikalan Pz	28.31	-	28.51	-
33.		Lohani	8.10	8.25	8.22	-
34.		Manhairu	5.28	-	5.38	5.26
35.		Mauhala	19.18	-	19.20	19.61
36.		Mehrana	11.94	-	11.84	-
37.		Miran	1.59	-	2.33	-
38.		Miran-Pz	4.41	-	4.21	-
39.		Nayaatela	22.21	-	22.61	22.36
40.		Pataudi Khurd	11.24	-	-	-
41.		Sagban	4.17	-	-	-
42.		Sangwan PZM	4.17	-	4.20	-
43.		Sanwar	4.95	-	4.00	-
44.		Singhani-pz	70.58	-	71.73	-

45.	FARIDABAD	Siwani	13.72	13.55	13.69	13.60
46.		Sui	3.41	3.35	3.41	3.15
47.		Tosham	5.13	6.16	-	
48.		Tosham-Pz	6.93	-	6.80	6.90
49.		Achheja	6.85	-	8.50	-
50.		Badraun	7.25	-	7.75	-
51.		Baghaura	1.90	-	1.53	1.65
52.		Ballabgarh	27.60	-	1.90	-
53.		Barauli-Pz	8.80	-	10.17	--
54.		Bhopani	19.20	-	19.25	-
55.		Dighaut	10.50	-	10.70	-
56.		Hathin	10.88	-	-	-
57.		Hasanpur	-	-	19.30	-
58.		Jaindapur	9.90	-	11.58	-
59.		Jawan- Pz	16.90	-	17.95	-
60.		Kabulpur	15.90	-	18.00	-
61.		Khambi	2.90	-	2.23	-
62.		Kot	6.65	-	9.28	6.04
63.		Lakhnaka	7.75	-	7.06	-
64.		Lalwa	6.50	-	-	-
65.		NH-IV CHQ PZ S	47.22	-	50.85	-
66.		Pali2	18.10	-	21.09	-
67.		Palwal	6.22	-	7.10	-
68.		Palwal-Pz	7.64	-	-	-
69.		Pehladpur-Pz	5.50	-	6.18	-
70.		Pelak-Pz	20.20	-	-	-
71.		Rasul Pur	6.14	6.74	6.63	-
72.		Thekarka	1.29	-	-	-
73.		Tigaon-Pz	23.10	-	-	-
74.		Tumsara	6.08	-	6.04	7.38
75.	FATEHABAD	Aharwan S	55.50	-	55.70	-
76.		Badopal	2.31	2.35	2.10	2.23
77.		Jandli Kalan	3.98	-	4.60	-
78.		Mehu Wala Pz	3.00	-	2.99	-
79.		Nahla	6.91	7.19	8.30	7.72
80.		Ratia- Pz	-	-	42.10	-
81.		Sadalpur	6.38	8.23	6.93	6.93
82.		Samain	4.18	-	2.54	-
83.		Sohu	5.14	5.68	-	5.62
84.		Tohana	-	-	18.29	17.38
85.		Uklana Mandi-Pz	11.70	-	-	-
86.	GURGAON	Akaira	5.30	5.70	1.40	6.60
87.		Akbarpur	1.20	0.45	0.82	1.05
88.		Basonda Tripati-Pz	23.70	-	24.49	-
89.		Chandu Tikly	10.39	-	-	-
90.		Firozepur Jhirka	11.10	11.05	12.95	-
91.		Fazilpur Badli-Pz	-	26.05	24.68	25.00
92.		Gulaltha	-0.50	-	0.02	-
93.		Gurgaon	-	-	38.12	-
94.		Gurgaon Pz	35.97	-	-	-

95.		Indri	-	5.60	3.10	-
96.		Jaraon Pz	11.95	-	11.77	-
97.		Jhanjrola	6.12	-	4.92	-
98.		Khera Khurrampur- Pz	-	17.60	-	20.50
99.		Kadipur	-	-	33.20	-
100.		Kasan	37.60	-	37.37	-
101.		Kheri1	4.16	-	5.65	-
102.		Kherla	34.41	-	-	-
103.		Khori kalan	-	-	18.26	-
104.		Lokra – Pz	-	-	33.27	32.82
105.		Luhingakalan	3.94	-	4.42	-
106.		Malab	3.15	4.04	4.30	-
107.		Meoka-Pz	17.62	-	18.33	-
108.		Mouzabad	34.14	-	-	-
109.		Nagina	3.62	-	4.78	-
110.		Naharika-Pz	29.71	-	29.07	-
111.		Nurgarh-Pz	-	-	21.98	-
112.		Nuh1	3.08	-	-	-
113.		Pipaka	34.46	-	-	-
114.		Pipaka-Shashola	33.95	-	34.68	-
115.		Siwari-Pz	-	12.20	-	14.30
116.		Sikarwa	2.46	-	3.23	-
117.		Sohna	12.67	-	-	-
118.		Wazirpur-Pz	16.79	-	17.28	-
119.	HISAR	Adampur-Pz	3.62	-	4.52	4.50
120.		Agroha-Pz	8.52	-	8.40	-
121.		Balawas1	14.80	-	14.25	13.90
122.		Balsamand	13.25	-	14.60	-
123.		Balsamand-Pz	15.59	-	16.17	-
124.		Banbhauri-Pz	5.85	-	6.83	6.60
125.		Barwala abd	11.50	-	-	13.19
126.		Barwala 1			12.91	-
127.		Barwala-Pz	9.14	-	9.30	9.10
128.		Bas	1.40	-	1.35	-
129.		Basra	18.26	-	19.25	17.26
130.		Behbalpur-Pz	3.62	-	4.28	3.31
131.		Chanaut	4.59	-	5.80	5.44
132.		Chawdhariwas	8.88	8.93	8.98	9.43
133.		Dhamundicross	3.90	-	-	-
134.		Dhansu	4.58	4.69	4.79	-
135.		Ghaibipur	-	-	2.80	-
136.		Ghursal-Pz	8.78	-	9.00	8.80
137.		Hissar-Pz	6.44	6.96	7.96	8.05
138.		Juglan	8.33	-	8.97	-
139.		Kanoh-Pz	10.70	11.41	11.10	11.12
140.		Khanda Kheri-Pz	7.67	-	8.53	-
141.		Kherijalab-Pz	8.55	7.40	6.40	7.95
142.		Khotkalan	12.18	-	11.63	11.33
143.		Kirori	13.85	-	14.05	-
144.		Kirtan	12.47	12.55	11.40	12.60

		Mangali-Pz	4.84	5.20	5.15	5.35
145.		Mirka	-	-	4.11	2.76
146.		Mothmajri	8.02	9.97	9.01	8.72
147.		Narnaud S	11.16	-	13.30	-
148.		Rajli Cross	1.60	4.82	3.20	2.59
149.		Rajthal1	15.99	-	15.40	-
150.		Samani	4.89	4.79	-	5.19
151.		Sorkhi-Pz	3.01	-	2.52	-
152.		Umra	6.20	-	6.75	-
153.	JHAJJAR	Badli	-	-	11.74	-
154.		Bagoa	3.38	2.15	3.35	2.90
155.		Chamanpura	2.35	4.27	2.69	3.60
156.		Chhara	4.89	5.16	5.41	5.51
157.		Chuchakwas	4.24	6.06	4.16	4.26
158.		Dighal	1.88	1.77	3.25	1.77
159.		Dubhaldhan	5.54	-	4.63	-
160.		Dulhera	3.86	3.99	5.39	5.39
161.		Hasanpur	-	-	5.84	-
162.		Gabhana	2.24	-	-	-
163.		Jhajjar	3.86	3.18	3.95	4.11
164.		Kulasi	0.82	-	-	0.45
165.		Mudsa	1.37	-	0.55	-
166.		Salhawas	-	-	4.08	-
167.		Subnah	-	6.42	0.56	7.01
168.		Sankol	1.95	-	1.78	-
169.		Wazirpur	1.84	-	1.70	-
170.	JIND	Alewa Pz	30.10	-	-	-
171.		ATI Krishna1(s)	21.15	-	24.78	-
172.		Baroda	16.56	-	16.35	-
173.		Bhuslana-Pz	14.93	-	16.65	-
174.		Brahmanwas	9.69	-	8.00	-
175.		Chhabri	4.07	4.58	4.03	4.50
176.		Dhandauli Pz	13.43	-	46.85	-
177.		Dorana Pz	21.94	-	22.75	-
178.		Ghaso	14.07	-	17.47	-
179.		Jhamula	4.60	-	4.27	4.77
180.		Julana Pz	5.70	-	5.15	-
181.		Khatkaran	13.38	-	12.30	-
182.		Korar	11.76	-	10.41	10.76
183.		Lochp Pz			14.53	-
184.		Mohal Khera Pz	5.32	-	4.95	-
185.		Narwana S	2.15	-	2.85	-
186.		Narwana S-Pz	2.15	-	-	--
187.		Pillukhera	6.10	-	5.60	-
188.		Safidon (s)	14.20	-	16.15	-
189.		Safidon 1(s)	15.00	-	15.58	-
190.		Uchana	18.67	--	-	19.62
191.		Uchana Pz	17.60	-	-	-
192.	KAITHAL	Bhana-Pz	12.66	-	14.80	-
193.		Guhna	23.98	27.38	-	26.68

194.		Jakhauli-Pz	-	12.50	14.70	11.36
195.		Jandaula-Pz	29.00	-	30.85	-
196.		Jateri	18.92	-	21.05	-
197.		Kaithal S	4.17	-	-	-
198.		Kalayat	3.22	-	2.40	-
199.		Kalayat S	4.77	-	4.35	-
200.		Kathana-Pz	13.40	15.45	-	-
201.		Kelaram	6.36	-	8.38	-
202.		Kheorak-Pz	29.36	-	34.10	-
203.		Manaspatti-Pz	34.08	36.50	37.25	37.10
204.		Mataur	6.44	-	7.41	-
205.		Mundri	16.14	-	14.35	-
206.		Padla 1(s)	37.09	-	-	-
207.		Peoda_Pz	12.13	-	13.35	-
208.		Pundri(s)	21.89	-	23.82	-
209.		Rajaund-Pz	10.07	-	12.55	-
210.		Rajound S	12.85	-	-	-
211.		Sirsal-Pz	22.25	-	27.25	-
212.		Titiana 1(s)	21.34	-	-	-
213.	KARNAL	Amin S	28.56	-	29.03	-
214.		Balhera-s	5.24	-	-	-
215.		Dadupur Khurd-Pz	12.45	-	13.99	14.40
216.		Dhomsi(shallow)	23.38	-	-	-
217.		Dingar Majra-Pz	32.78	42.90	35.34	34.15
218.		Domsi D	22.07	-	-	-
219.		Faridpur-Pz	26.00	31.00	30.10	26.50
220.		Gangatheri	24.89	29.20	29.70	-
221.		Garhi Khajur S	15.52	-	17.23	-
222.		Indri	-	6.0	10.14	-
223.		Jabhalia-Pz	15.67	-	-	-
224.		Jaroli Khurd-Pz	6.42	-	6.60	-
225.		Jundla1	17.63	-	21.81	-
226.		Kalri Jagir S	3.90	-	2.31	-
227.		Kutail S	23.03	-	24.68	-
228.		Majra Roran	20.75	-	20.77	-
229.		Makhala S	7.07	-	6.75	-
230.		Mohidinpur-Pz	14.60	-	15.53	14.35
231.		Mound S	20.67	-	24.02	-
232.		Nalvi Kalan-Pz	13.70	-	12.65	-
233.		Nanhera	7.85	-	-	-
234.		Phurlak S	19.58	-	22.45	-
235.		Salwan-B	17.73	-	-	-
236.		Samblia-Pz-M	21.75	-	-	-
237.		Samblia-Pz-S	21.31	-	-	-
238.		Saunkra S	20.02	-	-	-
239.		Sugar Cane Breeding Farm	23.07	-	-	-
240.	KURUKSHETRA	Bachki-Pz	28.90	33.30	32.99	-
241.		Ban- Pz	23.94	28.31	25.79	-
242.		Baronda-Pz	19.87	23.80	19.83	18.80
243.		Berthala S	35.08	-	36.12	-

244.		Bodhni (s)	32.38	-	31.78	-
245.		Dabkhera-Pz	33.45	38.70	35.71	-
246.		Hatira (s)	21.56	-	21.87	-
247.		Ishaque S	26.51	-	26.39	-
248.		Kaulapur S	34.05	-	34.73	-
249.		Malikpur-Singhpura-Pz	31.05	37.70	31.38	-
250.		Murtzapur-Pz	24.50	25.80	26.58	-
251.		Pehowa 3 (s)	31.29	-	-	--
252.		Samalkhi-Pz	41.98	-	41.58	-
253.		Sirsala-Pz	33.37	42.29	38.37	-
254.	MAHENDRAGARH	Buwana-Pz	44.60	46.00	47.13	-
255.		Khatodra-Pz	71.78	-	75.72	-
256.		Lukhi	15.90	-	15.13	14.85
257.		Narnaul	11.36	8.40	12.78	8.20
258.	PANCHKULA	Devnagar(Panchkula)	9.86	-	9.12	8.75
259.		Dharampur	13.95	-	9.47	-
260.		Kakar Majra	11.04	-	10.30	-
261.		Khera	30.25	-	28.69	-
262.		Parwala	18.35	-	17.36	-
263.		Patwi	13.08	12.84	13.29	13.43
264.		Raipur Rani-Pz	-	4.88	-	5.62
265.		Raipurrani	11.67	4.56	13.63	-
266.	PANIPAT	Babail Pz S	12.60	-	13.05	-
267.		Babail VS-Pz	-	-	13.00	-
268.		Bhalavour Pz	-	-	10.45	-
269.		Dakadla S	20.26	-	24.62	-
270.		Dharamgarh S	-	-	14.30	-
271.		Etola-Pz-M	-	-	14.10	-
272.		Etola-Pz-S	-	-	13.90	-
273.		Hathwala-Pz	8.86	10.20	9.95	8.80
274.		Israna Pz	4.03	-	4.03	-
275.		Karhansh Pz	30.30	-	33.70	-
276.		Khalila Manjran	4.43	-	3.10	4.25
277.		Khelalla Pehl S	21.84	-	25.28	-
278.		Lohari (s)	2.08	-	1.31	-
279.		Nariana-PZ	16.65	-	18.50	17.50
280.		Nimbri- Pz	26.20	30.00	28.80	27.75
281.		Patti Kalyana S	-	-	33.80	-
282.		Puther Pz	-	-	9.12	-
283.		Sanauli Khurd-Pz	13.13	15.50	10.70	-
284.		Shahpur	4.36	-	3.68	-
285.		Sink	5.44	-	4.95	-
286.		Untilya	3.85	4.60	3.75	3.70
287.	REWARI	Urlana Kalan	11.66	-	11.90	12.56
288.		Bahu	12.31	-	10.65	-
289.		Bawal	-	-	-	20.20
290.		Bawal DW	19.80	20.30	20.34	-
291.		Bawal Pz	25.80	-	26.20	-
292.		Gangaichajat			14.43	-
		Karnawas	10.18	-	11.16	-

293.		Kosli	12.37	-	-	-
294.		Mandola-Pz	58.80	61.25	62.15	-
295.		Rholiawas-Pz	-	-	10.55	-
296.		Sangwari	18.11	-	6.74	-
297.	ROHTAK	Baland	2.15	-	2.16	-
298.		Bhal Anandpur	2.68	2.59	2.34	2.24
299.		Hassangarh	-	5.20	6.04	2.10
300.		Kansala	3.00	2.78	2.49	-
301.		Kharawar	2.70	2.70	3.29	-
302.		Lakhan Majara	1.16	-	1.19	-
303.		Madina	3.23	3.52	3.29	3.26
304.		Mahem	12.86	13.85	14.25	14.30
305.		Samargopalpur	3.55	3.06	2.64	2.24
306.		Sampla	1.41	-	1.16	-
307.		Sampla -Pz			0.76	-
308.	SIRSA	Bhuratwala-Pz	10.01	10.98	10.55	-
309.		Chormar	15.82	-	16.58	-
310.		Chptala	-	-	9.61	-
311.		Chotala-Pz	8.73	9.00	9.13	-
312.		Dabwali Dw	9.05	-	9.43	-
313.		Dabwali -Pz S	5.28	11.80	8.12	-
314.		Darba Kalan-Pz	2.37	1.45	1.62	1.78
315.		Ding	17.41	-	17.19	-
316.		Ganga			8.91	-
317.		Ghushiana	13.52	13.54	14.34	-
318.		Gigorani	4.37	5.41	5.35	-
319.		Goriwala	16.20	16.90	16.73	-
320.		Goriwala-Pz	15.47	16.00	-	-
321.		Jamal	4.03	-	5.08	-
322.		Jamal- Pz	4.50	-	-	-
323.		Kalanwali Mandi-Pz	6.65	-	7.65	-
324.		Kaluwana	10.78	-	11.30	-
325.		Karamsana	8.60	-	9.11	-
326.		Kash Ram Dhab	12.05	--	12.78	
327.		Khuyian			14.60	--
328.		Mammer Khera-Pz	18.35	-	-	-
329.		Mangala-Pz	62.20	-	-	-
330.		Manjiyana	13.91	14.38	14.51	-
331.		Mastian	-	-	14.63	-
332.		Mithri	16.60	-	17.37	
333.		Nuhian Wali	15.35	--	15.21	-
334.		Odhan Pz	14.32	-	14.29	--
335.		Panniwala Mota	9.94	9.90	9.51	-
336.		Phaggu-Pz	4.29	4.52	4.52	--
337.		Rasalia Khera	19.30	19.35	19.34	-
338.		Rori -DW			6.64	-
339.		Saktakhera	4.16	-	4.53	4.54
340.		Shergarh - DW	-	-	9.12	-
341.		Sherpura	15.13	15.01	15.00	14.98
342.		Sirs -PZ			35.88	-

343.		Sri Jiwan Nagar-B	40.30	-	43.68	-
344.		Taruwana	7.97	4.07	8.05	-
345.		Tejakhera	4.85	-	4.10	-
346.	SONIPAT	Ahulana	1.22	1.97	1.07	-
347.		Barauli - pz	-	9.41	7.85	-
348.		Barswani- DW	5.96	-	6.30	-
349.		Barwasni Pz (s)	5.49	-	6.66	-
350.		Bega -PZ			12.10	-
351.		Bhainswal	2.70	-	1.85	-
352.		Bhunderi	1.82	-	2.13	-
353.		Bichpuri 1			7.55	-
354.		Bohela	2.44	-	1.44	-
355.		Butana	4.43	2.73	3.56	-
356.		Chirana	3.50	6.00	-	-
357.		Datauli-Pz	22.42	-	25.30	-
358.		Farmana	7.00	6.60	6.30	-
359.		Garhwal	2.19	-	2.32	-
360.		Gohana - Pz			17.95	-
361.		Jagsi	1.77	-	1.17	-
362.		Janti Khurd-Pz	-	-	12.30	--
363.		Jhakauli- Pz	18.92	-	20.15	-
364.		Kami- PZ	31.75	-	34.10	-
365.		Kathura Pz	2.54	-	1.99	-
366.		Khanpur Kalan-Pz	3.66	-	5.55	--
367.		KheoraPz	24.50	-	27.20	--
368.		Lath	1.67	2.03	1.78	--
369.		Machhri	3.78	-	2.13	-
370.		Manauli-Pz	-	10.10	7.46	-
371.		Mahara	6.86	-	12.50	-
372.		Mohana Pzm	2.77	-	3.66	-
373.		Mundlana DW	6.27	-	-	5.06
374.		Mundlana- Pz	3.32	8.60	6.27	-
375.		Murthal-Pz	32.36	32.40	32.45	-
376.		Nahri	5.28	5.63	4.21	-
377.		Pinana	4.37	-	5.30	-
378.		Pugthala-Pz	5.95	6.65	6.55	-
379.		Purkhas-Pz	13.06	11.48	14.25	-
380.		Rai(Bahalgarh)	23.42	-	25.85	--
381.		Rasoi pz			13.89	--
382.		Rathdhana-Pz	21.36	23.00	21.55	--
383.		Rohat	1.42	1.04	4.39	-
384.		Rukhi-Pz	1.84	1.20	2.90	-
385.		Sisnah	6.14	-	5.95	-
386.	YAMUNANAGAR	Amadalpur	7.46	-	-	-
387.		Amadalpur-DW	-	10.05	-	-
388.		Bhambauli-1 (m)	10.77	-	-	-
389.		Bilaspur DW	3.65	-	-	-
390.		Chhachrauli S	15.89	-	16.20	-
391.		Choli	2.22	-	1.39	-
392.		Dhanauri S	12.37	-	-	-

393.	Dhaurang S	14.53	-	14.51	--
394.	Jhiwarheri S	28.64	-	31.50	--
395.	Khizrabad	15.84	-	14.87	-
396.	Mustafabad DW	8.65	8.55	8.45	7.57
397.	Mustafabad-Pz	12.90	-	13.12	-
398.	Naggal-S	4.28	-	4.92	-
399.	Radaur S	14.10	-	-	-
400.	Rasulpur	5.53	-	-	-
401.	Rasulpur DW	5.53	-	6.73	-
402.	Sabri	5.88	5.50	5.48	-
403.	Sadhaura DW	6.12	7.16	-	-
404.	Sadhaura S	5.36	-	5.06	-
405.	Shadipur	5.12	-	5.55	-

Annexure-2

S. No.	District	Locations	Seasonal Fluctuation (m)			
			(Jan 2014 - May 2014)	(May 2014 August 2014)	November 2014)	(May 2014-Jan2015)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	AMBALA	Ambala Cantt	-	-	-	-
2.		Balana	-	-	-	-
3.		Dhanaura	-0.99	-0.01	0.68	0.49
4.		Kakru	-0.15	-0.12	-0.59	-0.45
5.		Khanahmadpur	-1.02	0.29	0.88	1.43
6.		Mulana	-	-	0.02	-
7.		Naraingarh	-	-	-	-
8.		Panjokhra	-	-	-1.60	-0.52
9.		Pinjola	-	-	-	-
10.		Saha S	-	-	-	-
11.	BHIWANI	Badala	-	-	-0.30	-
12.		Bajina	-0.50	0.10	-0.13	-0.30
13.		Bamla	2.82	-	0.10	0.03
14.		Baundkalan	-	-1.18	-0.80	-0.48
15.		Bhawani khera DW	-	-	-0.17	-0.16
16.		Bhawani Khera Pz	-	-	0.00	-
17.		Bohal	-	-0.14	0.07	0.06
18.		Chirya	-	-0.41	-2.29	-2.68
19.		Dadri1	-	-	-	-
20.		Dadri-Pz	-	-	0.35	-
21.		Dhanana	-	-0.12	0.07	-
22.		Gopi	-	-	-0.35	-
23.		Gurera	-	-0.05	0.48	-
24.		Gurera-pz	-	-	-0.24	-
25.		Haluwas	-0.38	0.08	-0.90	-0.97
26.		Imlota	-	-	-	-
27.		Isharwal	-	-	-0.09	-
28.		Jhumpa	1.60	-0.30	1.46	1.21
29.		Jhumpa PZM	-	-	-	-
30.		Jhumpa Kalan	-	-	-	-
31.		Juikalan	-	-	-	-
32.		Juikalan Pz	-	-	-0.20	-
33.		Lohani	-	-0.15	-0.12	-
34.		Manhairu	-	-	-0.10	0.02
35.		Mauhala	-	-	-0.02	-0.43
36.		Mehrana	-	-	0.10	-
37.		Miran	-	-	-0.74	-
38.		Miran-Pz	-	-	0.20	-
39.		Nayaatela	-2.20	-	-0.40	-0.15
40.		Pataudi Khurd	-	-	-	-
41.		Sagban	-	-	-	-
42.		Sangwan PZM	-	-	-0.03	-
43.		Sanwar	-1.20	-	0.95	-
44.		Singhani-pz	-	-	-1.15	-
45.		Siwani	-0.32	0.17	0.03	0.12

46.		Sui	-0.11	0.06	0.00	0.26
47.		Tosham	-	-1.03	-	-
48.		Tosham-Pz	-	-	0.13	0.03
49.	FARIDABAD	Achheja	-	-	-1.65	-
50.		Badraun	-	-	-0.50	-
51.		Baghaura	-	-	0.37	0.25
52.		Ballabhgarh	--	-		-
53.		Barauli-Pz	-	-	-1.37	-
54.		Bhopani	-	-	-0.05	-
55.		Dighaut	-	-	-0.20	-
56.		Hathin	-	-	-	-
57.		Hasanpur	-	-	-	-
58.		Jaindapur	-	-	-1.68	-
59.		Jawan- Pz	-	-	-1.05	-
60.		Kabulpur	-	-	-2.10	-
61.		Khambi	-	-	0.67	-
62.		Kot	-	-	-2.63	0.61
63.		Lakhnaka	-	-	0.69	-
64.		Lalwa	-	-	-	-
65.		NH-IV CHQ PZ S	-	-	-3.63	-
66.		Pali2	-	-	-2.99	-
67.		Palwal	-	--	-0.88	-
68.		Palwal-Pz	-	-	-	-
69.		Pehladpur-Pz	-	-	-0.68	-
70.		Pelak-Pz	-	-	-	-
71.		Rasul Pur	-0.50	-0.60	-0.49	-
72.		Thekarka	-	-	-	-
73.		Tigaon-Pz	-	-	-	-
74.		Tumsara	-	-	0.04	-1.30
75.	FATEHABAD	Aharwan S	-		-0.20	-
76.		Badopal	-0.21		0.21	0.08
77.		Jandli Kalan	-	-0.04	-0.62	-
78.		Mehu Wala Pz	-	-	0.01	-
79.		Nahla	-	-0.28	-1.39	0.81
80.		Ratia- Pz	-	-	-	-
81.		Sadalpur	-	-1.85	-0.55	-0.55
82.		Samaian	-	-	1.64	-
83.		Sohu	-	-0.54	-	-0.48
84.		Tohana	-	-	-	-
85.		Ukiana Mandi-Pz	-	-	-	-
86.	GURGAON	Akaira	-	-0.40	3.90	-1.30
87.		Akbarpur	-	0.75	0.38	0.15
88.		Basonda Tripati-Pz	-	-	-0.79	-
89.		Chandu Tikly	-	-	-	-
90.		Firozepur Jhirka	-	0.05	-1.85	-
91.		Fazilpur Badli-Pz	-	-	-	-
92.		Gulaltha	-	-	-0.52	-
93.		Gurgaon	-	-	-	-
94.		Gurgaon Pz	-	-	-	-
95.		Indri	-	-	-	-
96.		Jaraon Pz	-	-	0.18	-

97.		Jhanjrola	-	-	1.20	-
98.		Khera Khurrampur-Pz	-	-	-	-
99.		Kadipur	-	-	-	-
100.		Kasan	-	-	0.23	-
101.		Kheri1	-	-	-1.49	-
102.		Kherla	-	-	-	-
103.		Khori kalan	-	-	-	-
104.		Lokra – Pz	-	-	-	-
105.		Luhingakalan	-	-	-0.48	-
106.		Malab	-	-0.89	-1.15	-
107.		Meoka-Pz	-	-	-0.71	-
108.		Mouzabad	-	-	-	--
109.		Nagina	-	-	-1.16	-
110.		Naharika-Pz	-	-	0.64	-
111.		Nurgarh-Pz	-	-	-	-
112.		Nuh1	-	-	-	-
113.		Pipaka	-	-	-	-
114.		Pipaka-Shashola	-	-	-	-
115.		Siwari-Pz	-	0.90	-	-1.20
116.		Sikarwa	-	-	-0.77	-
117.		Sohna	-	-	-	-
118.		Wazirpur-Pz	-	-	-0.49	-
119.	HISAR	Adampur-Pz	-0.09	-	-0.90	-0.88
120.		Agroha-Pz	-	-	0.12	-
121.		Balawas1	-0.85	-	0.55	0.90
122.		Balsamand	-	-	-1.35	-
123.		Balsamand-Pz	0.61	-	-0.58	-
124.		Banbhauri-Pz	0.45	-	-0.98	-0.75
125.		Barwala abd	-	-	-	-1.69
126.		Barwala 1	-	-	-	-
127.		Barwala-Pz	0.31	-	-0.16	0.04
128.		Bas	-	-	0.05	-
129.		Basra	1.03	-	-0.99	1.00
130.		Behbalpur-Pz	0.00	-	-0.66	0.31
131.		Chanaut	0.43	-	-1.21	-0.85
132.		Chawdhariwas	-0.09	-0.05	-0.10	-0.55
133.		Dhamundicross	-	-	-	-
134.		Dhansu	0.09	-0.11	-0.21	-
135.		Ghaihipur	-	-	-	-
136.		Ghursal-Pz	0.07	-	-0.22	-0.02
137.		Hissar-Pz	-	-0.52	-1.52	-1.61
138.		Juglan	-	-	-0.64	-
139.		Kanoh-Pz	-	-0.71	-0.40	-0.42
140.		Khanda Kheri-Pz	-	-	-0.86	-
141.		Kherijalab-Pz	-	1.15	2.15	0.60
142.		Khotkalan	-1.15	-	0.55	0.85
143.		Kirori	-0.57	-	-0.20	-
144.		Kirtan	-0.07	-0.08	1.07	-0.13
		Mangali-Pz	-0.06	-0.36	-0.31	-0.51
145.		Mirka	-	-	-	-

146.		Mothmajri	-0.05	-1.95	-0.99	-0.70
147.		Narnaud S	-	-	-2.14	-
148.		Rajli Cross	0.50	-3.22	-1.60	-0.99
149.		Rajthal1	-	-	0.59	-
150.		Samani	-	0.10	-	-0.30
151.		Sorkhi-Pz	-	-	0.49	-
152.		Umra	0.42	-	-0.55	-
153.	JHAJJAR	Badli	-1.88	-	-	-
154.		Bagoa	-	1.23	0.03	0.48
155.		Chamanpura	-	-1.92	-0.34	-1.25
156.		Chhara	-	-0.27	-0.52	-0.62
157.		Chuchakwas	-1.03	-1.82	0.08	-0.02
158.		Dighal	-	0.11	-1.37	0.11
159.		Dubhaldhan	-	-	0.91	-
160.		Dulhera	-	-0.13	-1.53	-1.53
161.		Hasanpur	-	-	-	-
162.		Gabhana	-	-	-	-
163.		Jhajjar	-	0.68	-0.09	-0.25
164.		Kulasi	-	-	-	0.37
165.		Mudsa	-	-	0.82	-
166.		Salhawas	-	-	-	-
167.		Subnah	-	-	-	-
168.		Sankol	-	-	0.17	-
169.		Wazirpur	-	-	0.14	-
170.	JIND	Alewa Pz	-	-	-	-
171.		ATI Krishna1(s)	-	-	-3.63	-
172.		Baroda	-	-	0.21	-
173.		Bhuslana-Pz	--	-	-1.72	-
174.		Brahmanwas	-	-	1.69	-
175.		Chhabri	-	4.58	0.04	-0.43
176.		Dhandauli Pz	-	-	-	-
177.		Dorana Pz	-	-	-0.81	-
178.		Ghaso	-	-	-3.4	-
179.		Jhamula	-	-	0.33	-0.17
180.		Julana Pz	0.30	-	0.55	-
181.		Khatkaran	-	-	1.08	-
182.		Korar	-	-	1.35	1.00
183.		Lochp Pz	-	-	-	-
184.		Mohal Khera Pz	-	-	0.37	-
185.		Narwana S	-	-	-0.70	-
186.		Narwana S-Pz	-	-	-	-
187.		Pillukhera	-	-	0.50	-
188.		Safidion (s)	-	-	-1.95	-
189.		Safidion 1(s)	-	-	-0.58	-
190.		Uchana	0.85	-	-	-0.95
191.		Uchana Pz	-	-	-	-
192.	KAITHAL	Bhana-Pz	-	-	-2.14	-
193.		Guhna	1.60	-3.40	-	-2.70
194.		Jakhauli-Pz	-	-	-	-
195.		Jandaula-Pz	-	-	-1.85	-
196.		Jateri	-	-	-2.13	-

197.		Kaithal S	-	-	-	-
198.		Kalayat	-	-	-1.85	-
199.		Kalayat S	-	-	-2.13	-
200.		Kathana-Pz	-0.25	-2.05	-	-
201.		Kelaram	-	-	-2.02	-
202.		Kheorak-Pz	-	-	-4.74	-
203.		Manaspatti-Pz	0.62	-2.42	-3.17	-3.02
204.		Mataur	-	-	-0.97	-
205.		Mundri	-	-	1.79	-
206.		Padla 1(s)	-	-	-	-
207.		Peoda_Pz	-1.43	-	-1.22	-
208.		Pundri(s)	-	-	-1.93	-
209.		Rajaund-Pz	-	-	-2.48	-
210.		Rajound S	-2.15	--	-	-
211.		Sirsal-Pz	-	-	-5.00	-
212.		Titiana 1(s)	-	-	-	-
213.	KARNAL	Amin S	-	-	-0.47	-
214.		Balhera-s	-	-	-	-
215.		Dadupur Khurd-Pz	-	-	-1.54	-1.95
216.		Dhomsi(shallow)	-	-	-	-
217.		Dingar Majra-Pz	1.42	-10.12	-2.56	-1.37
218.		Domsi D	-	-	-	-
219.		Faridpur-Pz	2.10	-5.00	-4.10	-0.50
220.		Gangatheri	-	-4.31	-4.81	-
221.		Garhi Khajur S	-	-	-1.71	-
222.		Indri	-	-	-	-
223.		Jabhalo-Pz	1.08	-	-	-
224.		Jaroli Khurd-Pz	-	-	-0.18	-
225.		Jundla1	-	-	-4.18	-
226.		Kalri Jagir S	-	-	1.59	-
227.		Kutail S	--	--	-1.65	-
228.		Majra Roran	-	-	-0.02	-
229.		Makhala S	-	-	0.32	-
230.		Mohidinpur-Pz	-	-	-0.93	0.25
231.		Mound S	-	-	-3.35	-
232.		Nalvi Kalan-Pz	-	-	1.05	-
233.		Nanhera	-	-	-	-
234.		Phurlak S	-	-	-2.87	-
235.		Salwan-B	-3.83	-	-	-
236.		Samblı-Pz-M	-	-	-	-
237.		Samblı-Pz-S	-	-	-	-
238.		Saunkra S	-	-	-	-
239.		Sugar Cane Breeding Farm	-	-	-	-
240.	KURUKSHETRA	Bachki-Pz	0.50	-4.40	-4.09	-
241.		Ban- Pz	1.76	-4.37	-1.85	-
242.		Baronda-Pz	-1.32	-3.93	0.04	1.07
243.		Berthala S	-	-	-1.04	-
244.		Bodhni (s)	-	-	0.60	-
245.		Dabkhera-Pz	-	-5.25	-2.26	-
246.		Hatira (s)	-	-	-0.31	-

247.		Ishaque S	-	-	0.12	-
248.		Kaulapur S	-	-	-0.68	-
249.		Malikpur-Singhpura-Pz	-0.05	-6.65	-0.33	-
250.		Murtzapur-Pz	0.04	-1.30	-2.08	-
251.		Pehowa 3 (s)	-	-	-	-
252.		Samalkhi-Pz	1.52	-	0.40	-
253.		Sirsala-Pz	-	-8.92	-5.00	-
254.	MAHENDRAGA RH	Buwana-Pz	-	-1.40	-2.53	-
255.		Khatodra-Pz	-1.78	-	-3.94	-
256.		Lukhi	-	-	0.77	1.05
257.		Narnaul	-2.46	2.96	-1.42	3.16
258.	PANCHKULA	Devnagar(Panchkul a)	-	-	0.74	1.11
259.		Dharampur	-	-	4.48	-
260.		Kakar Majra	-	-	0.74	-
261.		Khera	-	-	1.56	-
262.		Parwala	-	-	0.99	-
263.		Patwi	-0.24	0.24	-0.21	-0.35
264.		Raipur Rani-Pz	-	-	-	-
265.		Raipurrani	-6.47	7.11	-1.96	-
266.	PANIPAT	Babail Pz S	-	-	-0.45	-
267.		Babail VS-Pz	-	-	-	-
268.		Bhallour Pz	-	-	-	-
269.		Dakadla S	-	-	-4.36	-
270.		Dharamgarh S	-	-	-	-
271.		Etola-Pz-M	-	-	-	-
272.		Etola-Pz-S	-	-	-	-
273.		Hathwala-Pz	-0.26	-1.34	-1.09	0.06
274.		Israna Pz	-	-	0.00	-
275.		Karhansh Pz	-	-	-3.40	-
276.		Khalila Manjran	-	-	1.33	0.18
277.		Khelalla Pehl S	-	-	-3.44	-
278.		Lohari (s)	-	-	0.77	-
279.		Nariana-PZ	-	-	-1.85	-0.85
280.		Nimbri- Pz	0.28	-3.80	-2.60	-1.55
281.		Patti Kalyana S	-	-	-	-
282.		Puther Pz	-	-	-	-
283.		Sanauli Khurd-Pz	-2.23	-2.37	2.43	-
284.		Shahpur	-	-	0.68	-
285.		Sink	-	-	0.49	-
286.		Untilya	-0.55	-0.75	0.10	0.15
287.	REWARI	Urlana Kalan	-	-	-0.24	-0.90
288.		Bahu	-2.26	-	1.66	-
289.		Bawal	-	-	-0.54	-
290.		Bawal DW	-	-0.50	-0.40	-
291.		Bawal Pz	-	-	-	-
292.		Gangaichajat	-	-	-	-
293.		Karnawas	-0.58	-	-0.98	-
294.		Kosli	0.53	-	-	-
		Mandola-Pz	1.20	-2.45	-3.35	-

295.		Rholiawas-Pz	-	-	-	-
296.		Sangwari	-	-	-	-
297.	ROHTAK	Baland	-	-	20.15	-
298.		Bhal Anandpur	-0.75	0.09	0.34	0.44
299.		Hassangarh	-	-	-	-
300.		Kansala	-	0.22	0.51	-
301.		Kharawar	-	0.00	-0.59	-
302.		Lakhan Majara	-	-	-0.03	-
303.		Madina	-	-0.29	-0.06	-0.03
304.		Mahem	-	-0.99	-1.39	-1.44
305.		Samargopalpur	-	0.49	0.91	1.31
306.		Sampla	-	-	0.25	-
307.		Sampla -Pz	-	-	-	-
308.	SIRSA	Bhuratwala-Pz	0.09	-0.97	-0.54	-
309.		Chormar	-	-	-0.76	-
310.		Chtala	-	-	-	-
311.		Chotala-Pz	-	-0.27	-0.40	-
312.		Dabwali Dw	-	-	-0.38	-
313.		Dabwali -Pz S	-	-6.52	-2.84	-
314.		Darba Kalan-Pz	-	0.92	0.75	0.59
315.		Ding	-	-	0.22	-
316.		Ganga	-	-	-	-
317.		Ghushiana	-0.06	-0.02	-0.82	-
318.		Gigorani	-	-1.04	-0.98	-
319.		Goriwala	0.45	-0.70	-0.53	-
320.		Goriwala-Pz	0.43	-0.53	-	-
321.		Jamal	-	-	-1.05	-
322.		Jamal- Pz	-	-	-	-
323.		Kalanwali Mandi-Pz	-	-	-1.00	-
324.		Kaluwana	0.01	-	-0.52	-
325.		Karamsana	-	-	-0.51	-
326.		Kash Ram Dhab	0.80	-	-0.73	-
327.		Khuyian	-	-	-	-
328.		Mammer Khera-Pz	-	-	-	-
329.		Mangala-Pz	0.95	-	-	--
330.		Manjiyana	0.05	-0.47	-0.60	-
331.		Mastian	-	-	-	-
332.		Mithri	-	-	-0.77	-
333.		Nuhian Wali	-	-	0.14	-
334.		Odhan Pz	-	-	0.03	-
335.		Panniwala Mota	-0.12	0.04	0.43	-
336.		Phaggu-Pz	0.06	-0.23	-0.23	-
337.		Rasalia Khera	0.01	-0.05	-0.04	-
338.		Rori -DW	-	-	-	-
339.		Saktakhera	-	-	-0.37	-0.38
340.		Shergarh - DW	-	-	-	-
341.		Sherpura	-	0.12	0.13	0.15
342.		Sirs -PZ	-	-	-	-
343.		Sri Jiwan Nagar-B	-	-	-3.38	-
344.		Taruwana	-	3.90	-0.08	-
345.		Tejakhera	-	-	0.75	-

346.	SONIPAT	Ahulana	0.43	-0.75	0.15	-
347.		Barauli - pz	-	-	-	-
348.		Barswani- DW	-	-	-0.34	-
349.		Barwasni Pz (s)	-	-	-1.17	--
350.		Bega -PZ	-	-	-	-
351.		Bhainswal	-0.32	-	0.85	-
352.		Bhunderi	-	-	-0.31	-
353.		Bichpuri 1	-	-	-	-
354.		Bohela	-	-	1.00	-
355.		Butana	-1.57	1.70	0.87	--
356.		Chirana	-	-2.50	-	-
357.		Datauli-Pz	0.22	-	-2.88	-
358.		Farmana	-	0.40	0.70	-
359.		Garhwal	-	-	-0.13	-
360.		Gohana - Pz	-	-	-	-
361.		Jagsi	-	-	0.60	--
362.		Janti Khurd-Pz	-	-	-	-
363.		Jhakauli- Pz	-	-	-1.23	-
364.		Kami- PZ	0.79	-	-2.35	-
365.		Kathura Pz	-	-	0.55	-
366.		Khanpur Kalan-Pz	-	-	-1.89	-
367.		KheoraPz	-	-	-2.70	-
368.		Lath	-	-0.36	-0.11	-
369.		Machhri	0.07	-	1.65	-
370.		Manauli-Pz	-	-	-	-
371.		Mahara	-0.01	-	-0.60	-
372.		Mohana Pzm	-	-	-0.89	-
373.		Mundlana DW	-	-	-	1.21
374.		Mundlana- Pz	-	-5.28	-2.95	-
375.		Murthal-Pz	-0.56	-0.04	-0.09	-
376.		Nahri	-0.85	-0.35	1.07	-
377.		Pinana	-0.22	-	-0.93	-
378.		Pugthala-Pz	-	-0.70	-0.60	-
379.		Purkhas-Pz	-1.41	1.58	-1.19	-
380.		Rai(Bahalgarh)	-	-	-2.43	-
381.		Rasoi pz	-	-	-	-
382.		Rathdhana-Pz	-0.51	-1.64	-0.19	-
383.		Rohat	-	0.38	-2.97	-
384.		Rukhi-Pz	-	0.64	-1.06	-
385.		Sisnah	-	-	0.19	-
386.	YAMUNANAGAR	Amadalpur	-	-	-	-
387.		Amadalpur-DW	-	-	-	-
388.		Bhambauli-1 (m)	-	-	-	-
389.		Bilaspur DW	-0.54	-	-	-
390.		Chhachrauli S	-	-	-0.31	-
391.		Choli	-1.02	-	0.83	-
392.		Dhanauri S	-	-	-	--
393.		Dhaurang S	-	-	0.02	-
394.		Jhiwarheri S	-	-	-2.86	-
395.		Khizrabad	-	-	0.97	-
396.		Mustafabad DW	-0.70	0.10	0.20	1.08

397.		Mustafabad-Pz	-	-	-0.22	-
398.		Naggal-S	-	-	-0.64	-
399.		Radaur S	-	-	-	-
400.		Rasulpur	-	-	-	-
401.		Rasulpur DW	-	-	-1.20	-
402.		Sabri	-0.38	0.38	0.40	-
403.		Sadaura DW	1.03	-1.04		-
404.		Sadaura S	-	-	0.30	-
405.		Shadipur	-		-0.43	-

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Annexure-3						
S. No.	District	Locations	May 2013-May 2014	August 2013-August 2014	Nov. 2013 - Nov. 2014	Jan. 2014 - Jan. 2015
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	AMBALA	Ambala Cantt	-	-	-0.04	-
2.		Balana	0.48	-	-	-
3.		Dhanaura	1.11	-2.30	-1.21	-0.50
4.		Kakru	0.42	-1.30	-0.81	-0.60
5.		Khanahmadpur	0.29	-	-0.69	0.41
6.		Mulana	0.46	-	-0.37	-
7.		Naraingarh	2.03	-	-	-
8.		Panjokhra	1.69	-	-2.28	-
9.		Pinjola			-0.51	-
10.		Saha S		-	-	-
11.	BHIWANI	Badala	-0.61	-	-1.01	-
12.		Bajina	-0.65	-0.47	-0.65	-0.80
13.		Bamla	0.07	-	0.21	2.85
14.		Baundkalan	1.03	-1.20	-0.65	-
15.		Bhawani khera DW	-0.46	-	-0.21	-
16.		Bhawani Khera Pz	0.19	-	-0.70	-
17.		Bohal	0.97	0.00	0.41	-
18.		Chirya	1.06	-0.05	-3.50	-
19.		Dadri1	-0.07	-	-	-
20.		Dadri – Pz	-	-	0.17	-
21.		Dhanana	0.19	-0.25	0.04	-
22.		Gopi		-	-1.75	-
23.		Gurera	-0.47	0.03	0.45	-
24.		Gurera-pz	4.49	-	-0.52	-
25.		Haluwas	-0.93	-1.23	-1.50	-1.35
26.		Imlota	-	-	1.12	-
27.		Isharwal	0.28	-	-2.23	-
28.		Jhumpa	-0.71	-0.10	1.53	2.81
29.		Jhumpa PZM	-	-	-	-
30.		Jhumpa Kalan	-	-	-	-
31.		Juikalan	-	-	-	--
32.		Juikalan Pz	-8.96	-	-1.40	-
33.		Lohani	5.80	-	-0.77	-
34.		Manhairu		-	-	-
35.		Mauhala	-2.18	-	0.87	-
36.		Mehrana	2.86	-	-0.49	-
37.		Miran	3.58	-	1.38	-
38.		Miran-Pz	1.86	-	0.05	-
39.		Nayaatela	-1.95	-	-2.25	-2.35
40.		Pataudi Khurd		-	-	-
41.		Sagban	0.23	-	-	-
42.		Sangwan PZM	0.23	-	-0.21	-
43.		Sanwar	0.10	-	0.28	-

44.		Singhani-pz	-	-2.86	-
45.		Siwani	-0.12	-0.8	-0.20
46.		Sui	1.31	-	-0.07
47.		Tosham	1.28	-0.16	-
48.		Tosham-Pz	1.07	-	1.39
49.	FARIDABAD	Achheja	1.00	-	-2.85
50.		Badraun	-0.10	-	-
51.		Baghaura	2.90	-	0.11
52.		Ballabgarh	-0.61	-	-
53.		Barauli-Pz	1.32	-	-
54.		Bhopani	-0.10	-	-1.39
55.		Dighaut	0.99	-	-0.19
56.		Hathin	2.99	-	-
57.		Jaindapur		-	-2.28
58.		Jawan- Pz		-	0
59.		Kabulpur	-1.15	-	-4.90
60.		Khambi	0.81	-	-1.50
61.		Kot	3.16	-	-3.17
62.		Lakhnaka	-1.31	-	2.34
63.		Lalwa	-0.50	-	-
64.		NH-IV CHQ PZ S	1.50	-	-1.19
65.		Pali2	1.50	-	-3.44
66.		Palwal	-1.02	-	-3.10
67.		Palwal-Pz	-0.54	-	-
68.		Pehladpur-Pz		-	-
69.		Pelak-Pz		-	-
70.		Rasul Pur	0.84	-1.00	-1.14
71.		Thekarka		-	-
72.		Tigaon-Pz		-	-
73.		Tumsara	1.25	-	1.64
74.	FATEHABAD	Aharwan S	-3.91	-	0.64
75.		Badopal	0.02	-0.42	-0.06
76.		Jandli Kalan	0.14	-	-1.59
77.		Mehu Wala Pz	0.68	-	-0.30
78.		Nahla	1.61	-0.58	-0.14
79.		Ratia Pz	-	-	-0.04
80.		Sadalpur	0.68	-	0.02
81.		Samain	0.86	-	-0.37
82.		Sohu	0.37	-	-
83.		Tohana	-	-	-0.84
84.		Uklana Mandi-Pz		-	0.00
85.	GURGAON	Akaira	1.10	0.10	3.60
86.		Akbarpur	0.60	-	0.08
87.		Basonda Tripati-Pz		-	-0.72
88.		Chandu Tikly	0.21	-	-
89.		Fazilpur Badli Pz	-	-3.85	-1.98
90.		Firozepur Jhirka	2.15	-0.30	-3.55
91.		Gulaltha		-	-0.12
92.		Gurgaon	-	-	-2.37
93.		Gurgaon Pz	-0.62	-	-

94.		Indri	-	-3.40	0.18	-
95.		Jaraon Pz		-	1.10	-
96.		Jhanjrola		-	1.95	--
97.		Kasan		-	-3.27	-
98.		Khera Khurrampur-Pz	-	-0.25	-	-
99.		Kheri1	-0.11	-	-2.97	-
100.		Khori kalan	-	-	-3.20	-
101.		Kherla		-	-	-
102.		Lokra Pz	-	-	-0.47	-
103.		Luhingakalan	0.97	-	-1.37	-
104.		Malab	3.55	-0.30	-0.36	-
105.		Meoka-Pz	0.48	-	0.57	--
106.		Mouzabad	-0.24	-	-	-
107.		Nagina	2.98	-	-1.14	-
108.		Naharika-Pz		-	-0.12	-
109.		Nuh1	0.61	-	-	-
110.		Nurgarh Pz	-	-	-0.98	-
111.		Pipaka	-4.36	-	-	-
112.		Pipaka-Shashola	-3.85	-	-1.63	-
113.		Siwari Pz	-	1.30	-	-0.23
114.		Sikarwa	1.64	-	-2.29	-
115.		Sohna		-	-	-
116.		Wazirpur-Pz	-0.49	-	-0.14	-
117.	HISAR	Adampur-Pz	0.60	-	-1.00	-0.97
118.		Agroha-Pz	0.69	-	0.44	-
119.						
120.		Balawas1	0.42	-	-1.35	0.05
121.		Balsamand	1.45	-	-0.55	-
122.		Balsamand-Pz	0.41	-	-0.91	-
123.		Banbhauri-Pz	-0.03	-	-0.79	-0.30
124.		Barwala abd	-	-		-
125.		Barwala1	-	-2.37	-0.94	-
126.		Barwala-Pz	0.43	-	0.07	0.35
127.		Bas	-0.25	-	-0.78	-
128.		Basra	0.22	-	0.09	2.03
129.		Behbalpur-Pz	1.09	-	-0.54	0.31
130.		Chanaut	0.68	-	-0.09	-0.42
131.		Chawdhariwas	0.31	-0.10	-0.18	-0.64
132.		Dhamundicross	2.97	-	-	-
133.		Dhansu	0.67	0.02	-0.19	-
134.		Ghaibipur	-	-	1.35	-
135.		Ghursal-Pz		-	1.77	0.05
136.		Hissar-Pz	0.77	-0.26	-1.56	-
137.		Juglan	-0.35	-	-1.91	-
138.		Kanoh-Pz	0.49	-0.41	-0.50	-
139.		Khanda Kheri-Pz		-	-0.97	-
140.		Kherijalab-Pz	-1.25	-0.10	0.27	-
141.		Khotkalan	-1.45	-	-1.23	-0.30
142.		Kirori	-0.18	-	-1.04	-

143.		Kirtan	0.55	-0.25	-0.14	-0.20
144.		Mangali-Pz	0.75	0.06	-0.35	-0.57
145.		Mirka	-	-	-0.87	-0.36
146.		Mothmajri	0.12	-1.60	-1.34	-0.75
147.		Narnaud S	0.27	-	-	-
148.		Rajli Cross	2.48	-4.25	-2.10	-0.49
149.		Rajthal1	-1.86	-	0.15	-
150.		Samani	0.57	-	-	-
151.		Sorkhi-Pz	-0.64	-	-0.51	-
152.		Umra	1.34	-	-0.56	-
153.	JHAJJAR	Badli	-	-	-0.72	-
154.		Bagoa	1.45	-	-3.15	-1.40
155.		Chamanpura	-0.25	-2.62	-2.44	-
156.		Chhara	2.71	-	-1.30	-
157.		Chuchakwas	0.74	-0.50	1.28	1.45
158.		Dighal	0.21	-0.05	-2.22	-
159.		Dubhaldhan	0.34	-	-1.88	-
160.		Dulhera	-0.42	-1.00	-3.20	-2.56
161.		Hasanpur	-	-	-	-
162.		Gabhana	-	-	-	-
163.		Jhajjar	-0.44	-	-1.95	-
164.		Kulasi	2.08	-	-	-
165.		Mudsa	-0.19	-	1.05	-
166.		Sankol	-0.32	-	-1.46	-
167.		Subnah	-	-	0.44	-
168.		Wazirpur	0.26	-	-0.71	-
169.	JIND	Alewa Pz		-	-	-
170.		ATI Krishna1(s)	0.25	-	-	-
171.		Baroda	0.04	-	-0.01	-
172.		Bhuslana-Pz	0.26	-	0.05	--
173.		Brahmanwas	0.30	-	1.30	-
174.		Chhabri	3.05	-0.05	0.99	-
175.		Dhandauli Pz	24.95	-	-0.70	-
176.		Dorana Pz	-0.64	-	3.00	-
177.		Ghaso	0.30	-	-3.64	-
178.		Jhamula	1.76	-	1.05	-
179.		Julana Pz	0.94	-	0.30	-
180.		Khatkaran	0.46	-	1.34	-
181.		Korar	0.18	-	2.05	-
182.		Lochap Pz	-	-	-	-
183.		Mohal Khera Pz	0.96	-	-0.35	-
184.		Narwana S	1.40	-	-0.81	-
185.		Narwana S-Pz	1.40	-	-	-
186.		Pillukhera	0.08	-	0.31	-
187.		Safidon (s)	-0.70	-	-1.51	-
188.		Safidon 1(s)	-1.95	-	5.81	-
189.		Uchana	-0.47	-	-	-0.10
190.		Uchana Pz	1.75	-	-	-
191.	KAITHAL	Bhana-Pz		-	-	-
192.		Guhna	-0.39	-1.20	-	-1.10

193.		Jandaula-Pz	-1.95	-	-1.28	-
194.		Jakhauli – Pz	-	-0.90	-3.95	-0.96
195.		Jateri	0.81	-	0.76	-
196.		Kaithal S		-	-	-
197.		Kalayat	0.27	-	-0.09	-
198.		Kalayat S	-0.50	-	-0.69	-
199.		Kathana-Pz	-1.48	-2.25	-	-
200.		Kelaram	0.54	-	-2.03	-
201.		Kheorak-Pz	-0.51	-	-1.35	-
202.		Manaspatti-Pz	-0.86	-2.35	-2.43	-
203.		Mataur	0.91	-	-1.10	-2.40
204.		Mundri	0.71	-	2.41	-
205.		Padla 1(s)	-0.28	-	-	-
206.		Peoda_Pz	0.79	-	-2.50	-
207.		Pundri(s)	1.78	-	-1.00	-
208.		Rajaund-Pz	2.15	-	0.10	-
209.		Rajound S	-1.23	-	-	-
210.		Sirsal-Pz	-0.75	-	-2.09	-
211.		Titiana 1(s)	-0.62	-	-	-
212.	KARNAL	Amin S	0.16	-	0.00	-
213.		Balhera-s	1.39	-	-	-
214.		Dadupur Khurd-Pz	1.31	-	-1.07	-
215.		Dhomsi(shallow)		-	-	-
216.		Dingar Majra-Pz	2.14	-5.35	-0.09	0.05
217.		Domsi D	1.13	-	-	-
218.		Faridpur-Pz	-0.10	1.00	-1.00	1.60
219.		Gangatheri	-1.24	-2.90	-2.85	-
220.		Garhi Khajur S	0.41	-	-0.88	-
221.		Indri	-	-	0.01	-
222.		Jabhalia-Pz	3.60	-	-	-
223.		Jaroli Khurd-Pz	0.43	-	0.45	-
224.		Jundla1	0.76	-	-1.06	-
225.		Kalri Jagir S	4.19	-	4.74	-
226.		Kutail S	0.44	-	-0.38	-
227.		Majra Roran	0.08	-	0.69	-
228.		Makhala S	0.05	-	0.39	-
229.		Mohidinpur-Pz		-	0.92	-
230.		Mound S	-0.68	-	-1.54	-
231.		Nalvi Kalan-Pz		-	1.23	-
232.		Nanhera	-2.47	-	-	-
233.		Phurlak S	3.26	-	1.72	--
234.		Salwan-B	-0.15	-	-	-
235.		Sambli-Pz-M		-	-	-
236.		Sambli-Pz-S		-	-	-
237.		Saunkra S	0.56	-	-	-
238.		Sugar Cane Breeding Farm	0.03	-	-	-
239.	KURUKSHETRA	Bachki-Pz	0.25	-3.20	-2.62	-
240.		Ban- Pz	1.26	-1.81	-0.72	-
241.		Baronda-Pz	1.51	-2.40	0.77	-0.25

242.		Berthala S	0.85	-	1.31	-
243.		Bodhni (s)	-1.35	-	1.01	-
244.		Dabkhera-Pz	1.43	-4.30	-1.36	-
245.		Hatira (s)	-0.41	-	0.49	-
246.		Ishaque S	-0.09	-	1.16	-
247.		Kaulapur S	4.89	-	5.70	-
248.		Malikpur-Singhpura-Pz	-0.24	-2.10	0.03	-
249.		Murtzapur-Pz	-0.90	-0.83	-0.58	-
250.		Pehowa 3 (s)		-	-	-
251.		Samalkhi-Pz	-2.16	-	2.77	-
252.		Sirsala-Pz	0.07	-	-4.00	-
253.	MAHENDRAGA RH	Buwana-Pz	-0.70	-3.60	-4.53	-
254.		Khatodra-Pz	-0.18	-	-5.60	-
255.		Lukhi	-0.99	-	-0.82	-
256.		Narnaul	1.95	1.40	-3.16	0.70
257.	PANCHKULA	Devnagar(Panchkul a)	-0.86	-	0.05	-
258.		Dharampur	-0.25	-	-0.87	-
259.		Kakar Majra	0.22	-	-0.13	-
260.		Khera	-0.19	-	-1.02	-
261.		Parwala	-1.15	-	-1.01	-
262.		Patwi	0.55	0.70	-0.47	-0.59
263.		Raipurranji	-4.94	3.32	-0.02	-
264.	PANIPAT	Babail Pz S	-0.60	-	-0.70	-
265.		Babail VS-Pz	-	-	-	-
266.		Bhalhour Pz	-	-	2.22	-
267.		Dakadla S	1.85	-	-1.46	-
268.		Etota-Pz-M	-	-	-0.65	-
269.		Etota-Pz-S	-	-	-0.59	-
270.		Hathwala-Pz	1.59	-	-1.14	-0.20
271.		Israna Pz	-0.38	-	-0.88	-
272.		Karhansh Pz	-	-	-2.10	-
273.		Khalila Manjran	-0.05	-	-1.09	-
274.		Khelalla Pehl S	-	-	-1.26	-
275.		Lohari (s)	-	-	-0.07	-
276.		Nariana-PZ	-	-	-0.88	-
277.		Nimbri- Pz	-0.59	-0.60	-0.96	-1.27
278.		Patti Kalyana S	-	-	-2.75	-
279.		Puther Pz	-	-	-0.07	-
280.		Sanauli Khurd-Pz	-1.73	-3.65	-0.22	-
281.		Shahpur	-2.10	-	-0.82	-
282.		Sink	0.25	-	0.05	-
283.		Untilya	0.20	-1.60	-0.81	-0.40
284.		Urlana Kalan	0.22	-	1.09	-
285.	REWARI	Bahu		-	-1.25	-
286.		Bawal DW	1.10	-	-0.29	-
287.		Bawal Pz	2.20	-	-1.53	-
288.		Gangaichajat	-	-	-1.33	--
289.		Karnawas	1.47	-	-2.21	-

290.		Kosli		-	-0.71	-
291.		Mandola-Pz	1.32	-1.25	-0.67	-
292.		Sangwari	-5.75	-	-	-
293.	ROHTAK	Baland	-0.07	-	-1.23	-
294.		Bhal Anandpur		-1.60	-0.49	-0.31
295.		Hassangarh	-	-2.10	-1.97	4.00
296.		Kansala	0.23	-1.30	-0.76	-
297.		Kharawar	2.85	-	-1.86	-
298.		Lakhan Majara	1.54	-	-0.30	-
299.		Madina	0.38	-	-0.44	-
300.		Mahem	-0.76	-1.60	-3.26	-
301.		Samargopalpur	-0.68	-0.79	-0.53	-
302.		Sampla	-0.04	-	-0.50	-
303.	SIRSA	Bhuratwala-Pz	1.23	-	0.26	-
304.		Chormar	0.84	-	-0.24	-
305.		Chotala	-	-	-	-
306.		Chotala-Pz	1.03	0.10	-0.11	-
307.		Dabwali Dw	0.50	-	-0.28	-
308.		Dabwali -Pz S	2.09	-	-0.20	-
309.		Darba Kalan-Pz	-0.35	-0.60	-0.11	-
310.		Ding	3.00	-	0.54	-
311.		Ghushiana	0.62	-0.03	-0.44	-
312.		Gigorani	1.05	-0.70	-0.38	-
313.		Goriwala	0.78	0.45	0.04	-
314.		Goriwala-Pz	0.72	-0.05	-	-
315.		Jamal	1.63	-	0.32	-
316.		Jamal- Pz	1.22	-	-	-
317.		Kalanwali Mandi-Pz	1.21	-	-0.15	-
318.		Kaluwana	0.44	-	-0.18	-
319.		Karamsana	0.63	-	0.08	-
320.		Kash Ram Dhab	0.23	-	0.52	-
321.		Khuiyan	-	-	-0.70	-
322.		Mammer Khera-Pz	0.62	-	-	-
323.		Mangala-Pz	-0.94	-	-	-
324.		Manjiyana	0.37	-1.16	-0.88	-
325.		Mastian	-	-	-0.20	-
326.		Mithri	0.00	-	-1.69	-
327.		Nuhian Wali	-0.22	-	-0.15	-
328.		Odhan Pz	0.34	-	-0.11	-
329.		Panniwala Mota	0.59	-0.66	0.61	-
330.		Phaggu-Pz	0.21	-0.23	-0.06	-
331.		Rasalia Khera	0.02	-3.42	-0.14	-
332.		Rori- DW	-	-	0.92	-
333.		Saktakhera	0.39	-	-0.21	-
334.		Shergarh DW	-	-	-0.11	-
335.		Sherpura	0.45	0.26	0.10	0.14
336.		Sirsa -Pz	-	-	-0.98	-
337.		Sri Jiwan Nagar-B	-1.75	-	-2.91	-
338.		Taruwana	-0.01	3.50	-0.22	-
339.		Tejakhera	0.52	-	-0.20	-

340.	SONIPAT	Ahulana	1.68	0.01	0.65	-
341.		Barauli Pz	-	-0.91	0.05	-
342.		Barswani- DW	-0.82	-	-2.36	-
343.		Barwasni Pz (s)	-	-	-1.89	-
344.		Bega Pz	-		0.55	-
345.		Bhainswal	0.93	-	0.19	-
346.		Bhunderi	0.24	-	-0.27	-
347.		Bichpuri 1	-	-	-0.12	-
348.		Bohela	1.55	-	-0.35	-
349.		Butana	-0.39	-1.90	-1.56	-
350.		Chirana	-0.85	-3.45	-	-
351.		Datauli-Pz	-0.20	-	-1.74	-
352.		Farmana	0.64	0.30	0.12	-
353.		Garhwal	0.56	-	-0.53	-
354.		Gohana Pz	-		-1.38	-
355.		Jagsi	0.20	-	0.07	-
356.		Janti Khurd Pz	-		-1.40	-
357.		Jhakauli- Pz	-	-	-4.99	-
358.		Kami- PZ	0.25	-	-1.19	-
359.		Kathura Pz	-0.60	-	-0.73	-
360.		Khanpur Kalan-Pz	2.39	-	-2.21	-
361.		KheoraPz	-	-	-0.09	-
362.		Lath	0.00	-	-0.45	-
363.		Machhri	-0.67	-	-0.53	-
364.		Mahara	1.00	-	-1.28	-
365.		Manauli -Pz	-	2.25	-0.81	-
366.		Mohana Pzm	-	-	-1.41	-
367.		Mundlana- Pz	-	-	-3.62	-
368.		Mundlana DW	-1.54	-	-	0.14
369.		Murthal-Pz	-1.23	-3.00	-0.60	-
370.		Nahri		-1.59	-0.33	-
371.		Pinana	2.10	-	-0.93	-
372.		Pugthala-Pz	0.10	-0.10	-0.99	-
373.		Purkhas-Pz	-0.41	0.00	-1.23	-
374.		Rai(Bahalgarh)	-0.67	-	-2.31	-
375.		Rasoi PZ	-	-	-	-
376.		Rathdhana-Pz	-1.11	-7.20	-0.28	-
377.		Rohat	5.09	-0.18	-3.81	-
378.		Rukhi-Pz	1.53	-	-1.63	-
379.		Sisnah	0.88	-	-0.53	--
380.	YAMUNANAG AR	Amadalpur	-4.14	-	-	-
381.		Bhambauli-1 (m)	6.32	-	-	-
382.		Bilaspur DW	1.01	-	-	-
383.		Chhachrauli S	-0.54	-	-4.25	-
384.		Choli	1.15	-	-0.13	-
385.		Dhanauri S	2.08	-	-	--
386.		Dhaurang S	1.23	-	-0.61	-
387.		Jhiwarheri S	1.42	-	-1.92	-
388.		Khizrabad	0.90	-	-1.92	-
389.		Mustafabad DW	0.45	-1.25	-1.32	0.38

390.		Mustafabad-Pz		-	1.04	-
391.		Naggal-S	1.54	-	-0.65	--
392.		Radaur S	1.13	-	-	-
393.		Rasulpur		-	-	-
394.		Rasulpur DW	2.56	-	-3.38	-
395.		Sabri	1.20	-0.80	-0.25	-
396.		Sadhaura DW	2.31	0.21	2.77	--
397.		Sadhaura S	2.27	-	1.67	-
398.		Shadipur	0.78	-	-1.07	-

Annexure-4

			Decadal Mean(m)			
			May (2004- 2013)	August (2004- 2013)	November (2004-2013)	January (2005- 2014)
S. No.	District	Locations	May 2014	August 2014	November 2014	January 2015)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	AMBALA	Ambala Cantt	-	-	-0.49	-
2.		Balana	-0.59	-	-	-
3.		Dhanaura	-0.83	0.11	-0.01	-0.31
4.		Kakru	-1.85	-0.88	-0.39	-0.70
5.		Khanahmadpur	-0.62	-0.38	-0.15	-1.14
6.		Mulana	-1.57	-	-1.03	-
7.		Naraingarh	-1.55	-	-	-
8.		Panjokhra	-2.56	-	-0.44	-1.81
9.		Pinjola	-	-	-0.06	-
10.		Saha S	-	-	-	-
11.	BHIWANI	Badala	-1.08	-	-0.09	-
12.		Bajina	0.99	1.07	1.32	1.47
13.		Bamla	-1.25	-	-1.13	-1.39
14.		Baundkalan	-1.67	0.43	-0.06	-0.84
15.		Bhawani khera DW	-1.38	-	-0.93	-1.04
16.		Bhawani Khera Pz	-0.77	-	-0.08	-
17.		Bohal	-2.75	-2.39	-2.47	-2.61
18.		Chirya	0.43	1.32	3.75	3.12
19.		Dadri1	-0.25	-	-	-
20.		Dadri-Pz	-	-	-0.31	-
21.		Dhanana	-0.58	0.26	0.06	-
22.		Gopi	6.75	-	6.82	-
23.		Gurera	-0.05	0.62	-0.25	-
24.		Gurera-pz	-0.33	-	-0.06	-
25.		Haluwas	-0.48	-0.28	0.89	1.13
26.		Imlota	-	-	-0.41	-
27.		Isharwal	-0.33	-	0.07	-
28.		Jhumpa	0.20	0.51	-0.42	-0.51
29.		Jhumpa PZM	-	-	-0.33	-
30.		Jhumpa Kalan	-0.57	-	-	-
31.		Juikalan	-	-	4.19	-
32.		Juikalan Pz	4.71	-	0.39	-
33.		Lohani	-1.01	0.11	-0.57	-
34.		Manhairu	-0.80	-	-0.28	-0.09
35.		Mauhala	-1.20	-	-1.05	-0.35
36.		Mehrana	-5.09	-	-4.84	-
37.		Miran	-2.41	-	-0.78	-
38.		Miran-Pz	-0.40	-	-0.11	-
39.		Nayaatela	2.11	-	3.64	2.92
40.		Pataudi Khurd	-0.36	-	-	-
41.		Sagban	-2.44	--	-	-
42.		Sangwan PZM	-1.79	-	-1.66	-
43.		Sanwar	-0.48	-	-1.02	-
44.		Singhani-pz	10.67	-	10.77	-
45.		Siwani	0.17	0.17	0.28	0.10
46.		Sui	-1.21	-0.79	-0.51	-0.87

47.		Tosham	-1.74	-0.31	-	-
48.		Tosham-Pz	-2.03	-	-1.25	-1.14
49.	FARIDABAD	Achheja	-0.54	-	2.19	-
50.		Badraun	1.75	-	3.99	-
51.		Baghaura	-2.69	-	-2.26	-2.98
52.		Ballabgarh	1.95	-	-4.79	-
53.		Barauli-Pz	0.08	-	3.18	-
54.		Bhopani	2.83	-	3.41	-
55.		Dighaut	0.54	-	1.33	-
56.		Hathin	0.46	-	-	-
57.		Hasanpur	-	-	4.10	-
58.		Jaindapur	2.74	-	3.84	-
59.		Jawan- Pz	-	-	-	-
60.		Kabulpur	2.05	-	4.59	-
61.		Khambi	-0.55	-	-0.02	-
62.		Kot	-1.35	-	2.21	-2.10
63.		Lakhnaka	0.89	-	0.13	-
64.		Lalwa	1.51	-	-	-
65.		NH-IV CHQ PZ S	0.38	-	2.03	-
66.		Pali2	4.12	-	7.69	-
67.		Palwal	0.95	-	2.73	-
68.		Palwal-Pz	0.30	-	1.67	-
69.		Pehladpur-Pz	-	-	-1.81	-
70.		Pelak-Pz	-	-	-	-
71.		Rasul Pur	0.47	1.71	-	-
72.		Thekarka	-4.26	-	-	-
73.		Tigaon-Pz	-	-	-	-
74.		Tumsara	-1.70	-	-	-1.11
75.	FATEHABAD	Aharwan S	5.59	-	4.48	-
76.		Badopal	0.52	0.85	0.89	0.65
77.		Jandli Kalan	-0.28	-	0.66	-
78.		Mehu Wala Pz	-0.59	-	0.04	-
79.		Nahla	-0.20	0.71	1.58	1.23
80.		Ratia- Pz	-	-	0.97	-
81.		Sadarpur	-0.36	1.48	0.14	0.05
82.		Samain	0.65	-	-0.32	-
83.		Sohu	-0.51	0.19	-	0.08
84.		Tohana	-	-	3.80	4.23
85.		Uklna Mandi-Pz	1.84	-	-	-
86.	GURGAON	Akaira	-0.64	1.30	-2.66	2.73
87.		Akbarpur	-0.02	-0.02	-0.25	-0.05
88.		Basonda Tripati-Pz	-	-	0.72	-
89.		Chandu Tikly	-0.42	-	-	-
90.		Firozepur Jhirka	-0.48	-0.51	2.14	-
91.		Fazilpur Badli-Pz	-	-	2.58	2.60
92.		Gulaltha	-1.96	-	-0.73	-
93.		Gurgaon	-	-	4.49	-
94.		Gurgaon Pz	2.64	-	-	-
95.		Indri	-	3.23	1.05	-
96.		Jaraon Pz	-0.68	-	0.11	-
97.		Jhanjrola	0.14	-	-0.11	-
98.		Khera Khurrampur- Pz	-	1.08	-	4.51
99.		Kadipur	-	-	12.30	-
100.		Kasan	6.66	-	6.56	-
101.		Kheri1	0.15	-	2.42	-

102	HISAR	Kherla	0.30	-	-	-
103		Khori kalan	-	-	4.05	-
104		Lokra – Pz	-	-	2.11	4.48
105		Luhingakalan	-0.54	-	1.02	-
106		Malab	-2.06	-0.63	0.13	-
107		Meoka-Pz	-1.27	-	0.35	-
108		Mouzabad	3.92	-	-	--
109		Nagina	-1.68	-	0.94	-
110		Naharika-Pz	11.39	-	7.02	-
111		Nurgarh-Pz	-	-	1.38	-
112		Nuh1	-0.45	-	-	-
113		Pipaka	3.06	-	-	-
114		Pipaka-Shashola	3.05	-	2.42	0.39
115		Siwari-Pz	-	-0.81	-	-
116		Sikarwa	-1.00	-	1.34	-
117		Sohna	-13.11	-	-	-
118		Wazirpur-Pz	0.49	-	0.14	-
119	JHAJJAR	Adampur-Pz	-0.75	-	0.74	0.30
120		Agroha-Pz	-1.34	-	-0.45	-
121		Balawas1	-1.64	-	-1.51	-2.33
122		Balsamand	-0.97	-	0.53	-
123		Balsamand-Pz	-0.31	-	0.74	-
124		Banbhauri-Pz	0.21	-	0.77	0.94
125		Barwala abd	1.18	-	-	3.46
126		Barwala 1	-	2.45	2.77	-
127		Barwala-Pz	0.07	-	-0.92	-0.38
128		Bas	0.15	-	0.91	-
129		Basra	-0.52	-	0.59	-1.64
130		Behbalpur-Pz	-1.09	-	0.18	-0.87
131		Chanaut	-0.60	-	0.33	0.27
132		Chawdhariwas	-1.99	-1.32	-1.41	-0.92
133		Dhamundicross	-1.25	-	-	-
134		Dhansu	-1.76	-1.64	-1.24	-
135		Ghaibipur	-	-	-1.40	-
136		Ghursal-Pz	-0.38	-	-1.09	-0.32
137		Hissar-Pz	-0.77	0.09	1.13	0.83
138		Juglan	0.34	-	0.81	-
139		Kanoh-Pz	-0.49	0.24	0.30	-0.13
140		Khanda Kheri-Pz	0.01	-	0.97	-
141		Kherijalab-Pz	1.65	0.10	-0.82	0.88
142		Khotkalan	5.07	-	4.87	3.92
143		Kirori	0.08	-	0.59	-
144		Kirtan	-0.03	0.26	-0.35	0.33
145		Mangali-Pz	-1.03	-0.37	-0.05	0.01
146		Mirka	-	-	1.12	2.52
147		Mothmajri	1.36	2.55	3.29	-
148		Narnaud S	2.81	-	4.61	-
149		Rajli Cross	-1.12	3.21	1.39	0.42
150		Rajthal1	5.85	-	5.05	-
151		Samani	-1.88	-1.95	-	-1.33
152		Sorkhi-Pz	0.76	-	0.40	-
153		Umra	-1.38	-	-0.40	-
154	JHAJJAR	Badli	-	-	-0.94	-
155		Bagoa	-1.03	-1.65	0.29	-0.87
156		Chamanpura	-0.33	2.81	1.50	1.77

157		Chhara	-1.58	-0.70	-0.08	-0.59
158		Chuchakwas	-0.88	1.43	-0.14	-0.36
159		Dighal	-0.59	0.33	1.87	0.09
160		Dubhaldhan	-0.11	-	-0.32	-
161		Dulhera	-0.83	0.10	1.47	1.59
162		Hasanpur	-	-	-1.77	-
163		Gabhana	-0.09	-	-	-
164		Jhajjar	0.26	-0.20	1.13	1.13
165		Kulasi	-1.03	-	-	-0.68
166		Mudsa	-0.90	-	-0.57	-
167		Salhawas	-	-	0.61	-
168		Subnah	-	5.78	0.50	6.04
169		Sankol	0.40	-	0.23	-
170		Wazirpur	-0.42	-	0.58	-
171		Alewa Pz	-	-	-	-
172		ATI Krishna1(s)	3.46	-	6.76	-
173		Baroda	0.44	-	0.56	-
174		Bhuslana-Pz	0.27	-	0.72	-
175		Brahmanwas	0.25	-	-0.12	-
176		Chhabri	-0.86	1.57	0.92	1.17
177		Dhandauli Pz	-24.95	-	3.12	-
178		Dorana Pz	4.79	-	1.04	-
179		Ghaso	2.54	-	5.75	-
180		Jhamula	-1.50	-	-1.56	-1.26
181		Julana Pz	-0.94	-	-1.18	-
182		Khatkaran	1.19	-	0.64	-
183		Korar	3.02	-	1.61	3.59
184		Lochp Pz	-0.22	-	3.25	-
185		Mohal Khera Pz	-1.03	-	-0.14	-
186		Narwana S	-1.40	-	0.39	-
187		Narwana S-Pz	0.56	-	-	-
188		Pillukhera	2.68	-	0.78	-
189		Safidon (s)	4.14	-	3.89	-
190		Safidon 1(s)	0.82	-	2.89	-
191		Uchana	-1.75	-	-	2.62
192		Uchana Pz	-	-	-	-
193		Bhana-Pz	-	-	-0.50	-
194		Guhna	5.47	7.31		7.07
195		Jakhauli-Pz	3.42	1.30	3.80	2.36
196		Jandaula-Pz	-	-	1.28	-
197		Jateri	1.91	-	3.02	-
198		Kaithal S	-11.02	-	-	-
199		Kalayat	-0.97	-	-0.13	-
200		Kalayat S	0.24	-	1.76	-
201		Kathana-Pz	1.87	2.85	-	-
202		Kelaram	0.43	-	2.79	-
203		Kheorak-Pz	2.31	-	5.03	-
204		Manaspatti-Pz	1.82	2.81	2.79	3.69
205		Mataur	0.49	-	1.96	-
206		Mundri	3.24	-	1.98	-
207		Padla 1(s)	1.68	-	-	-
208		Peoda_Pz	-0.01	-	2.13	-
209		Pundri(s)	5.46	-	6.90	-
210		Rajaund-Pz	-1.32	-	0.60	-
211		Rajound S	3.86	-	-	-

212		Sirsal-Pz	1.87	-	3.94	-
213		Titiana 1(s)	5.78	-	-	-
214	KARNAL	Amin S	3.74	-	1.93	-
215		Balhera-s	-0.41	-	-	-
216		Dadupur Khurd-Pz	-1.05	-	0.13	3.05
217		Dhomsi(shallow)	1.00	-	-	-
218		Dingar Majra-Pz	0.76	10.08	1.34	2.59
219		Domsi D	0.27	-	-	-
220		Faridpur-Pz	1.25	-0.80	3.55	1.48
221		Gangatheri	6.63	9.22	10.66	-
222		Garhi Khajur S	1.38	-	2.66	-
223		Indri	-	-5.30	-0.83	-
224		Jabhala-Pz	-1.13	-	-	-
225		Jaroli Khurd-Pz	-0.27	-	-0.18	-
226		Jundla1	3.42	-	6.31	-
227		Kalri Jagir S	-0.74	-	-2.05	-
228		Kutail S	2.40	-	3.60	-
229		Majra Roran	6.92	-	5.47	-
230		Makhala S	0.19	-	0.10	-
231		Mohidinpur-Pz	-0.43	-	-0.30	0.90
232		Mound S	4.82	-	6.46	-
233		Nalvi Kalan-Pz	-0.30	-	-1.52	-
234		Nanhera	-0.41	-	-	-
235		Phurlak S	2.11	-	3.52	-
236		Salwan-B	3.76	-	-	-
237		Sambli-Pz-M		-	-	-
238		Sambli-Pz-S		-	-	-
239		Saunkra S	4.77	-	-	-
240		Sugar Cane Breeding Farm	-0.03	-	-	-
241	KURUKSHETRA	Bachki-Pz	-0.25	3.68	3.16	-
242		Ban- Pz	-1.01	1.65	-0.03	-
243		Baronda-Pz	-1.03	1.15	-2.72	1.28
244		Berthala S	3.66	-	3.37	-
245		Bodhni (s)	7.71	-	5.47	-
246		Dabkhera-Pz	-0.27	3.36	0.36	-
247		Hatira (s)	4.05	-	2.94	-
248		Ishaque S	4.94	-	3.98	-
249		Kaulapur S	4.68	-	3.92	-
250		Malikpur-Singhpura-Pz	-0.55	2.40	0.61	-
251		Murtzapur-Pz	1.45	0.83	0.93	-
252		Pehowa 3 (s)	6.69	-	-	-
253		Samalkhi-Pz	5.56	-	-2.45	-
254		Sirsala-Pz	0.71	-	5.09	-
255	MAHENDRAGARH	Buwana-Pz	1.63	3.60	5.82	-
256		Khatodra-Pz	1.72	-	7.41	-
257		Lukhi	1.83	-	1.13	0.86
258		Narnaul	-2.34	-3.98	0.24	-3.52
259	PANCHKULA	Devnagar(Panchkula)	0.33	-	-0.61	-0.59
260		Dharampur	0.88	-	0.35	-
261		Kakar Majra	0.46	-	-0.10	-
262		Khera	0.92	-	0.27	-
263		Parwala	-0.70	-	-0.85	-
264		Patwi	0.72	1.09	1.51	1.21
265		Raipur Rani-Pz	-	-	-	-

266		Raipurani	-0.44	-7.68	0.86	-
267	PANIPAT	Babail Pz S	0.60	-	1.65	-
268		Babail VS-Pz	-	-	3.43	-
269		Bhallocr Pz	-	-	-2.60	-
270		Dakadla S	0.05	-	-3.46	-
271		Dharamgarh S	-	-	2.44	-
272		Etola-Pz-M	-	-	0.65	-
273		Etola-Pz-S	-	-	0.59	-
274		Hathwala-Pz	-1.24	0.35	0.47	-0.37
275		Israna Pz	0.46	-	1.60	-
276		Karhansh Pz	1.67	-	2.55	-
277		Khalila Manjran	-0.12	-	0.71	0.90
278		Khelalla Pehl S	6.16	-	7.13	-
279		Lohari (s)	0.10	-	0.41	-
280		Nariana-PZ	1.30	-	2.12	2.29
281		Nimbri- Pz	1.82	1.54	1.30	3.56
282		Patti Kalyana S	-	-	8.39	-
283		Puther Pz	-	-	0.17	-
284		Sanauli Khurd-Pz	1.55	4.03	-0.42	-
285		Shahpur	1.22	-	2.38	-
286	REWARI	Sink	-0.39	-	0.10	-
287		Untilya	-0.07	1.73	1.40	0.86
288		Urlana Kalan	0.41	-	-0.18	1.41
289		Bahu	-0.40	-	-1.41	-
290		Bawal	-	-	-	-0.15
291		Bawal DW	-0.19	-0.06	0.18	-
292		Bawal Pz	-0.82	-	1.12	-
293		Gangaichajat	-	-	5.99	-
294		Karnawas	-1.09	-	1.46	-
295		Kosli	-1.24	-	-	-
296		Mandola-Pz	-2.16	1.25	1.65	-
297		Rholiawas-Pz	-	-	0.56	-
298		Sangwari	6.30	-	-4.55	-
299	ROHTAK	Baland	-0.28	-	-4.99	-
300		Bhal Anandpur	-0.42	-	0.52	0.30
301		Hassangarh	-	-0.10	0.55	-4.49
302		Kansala	-1.29	-0.61	-0.21	-
303		Kharawar	-0.33	1.23	1.74	-
304		Lakhan Majara	-1.75	-	-1.28	-
305		Madina	-1.03	-0.42	-0.22	-0.40
306		Mahem	1.85	2.75	4.22	3.95
307		Samargopalpur	0.54	0.54	0.17	-0.07
308		Sampla	-0.39	-	-0.63	-
309		Sampla -Pz	-	-	-2.12	-
310	SIRSA	Bhuratwala-Pz	-0.93	-	-0.22	-
311		Chormar	0.68	-	1.24	-
312		Chptala	-	-	1.46	-
313		Chotala-Pz	-0.72	-0.10	0.07	-
314		Dabwali Dw	-0.53	-	0.44	-
315		Dabwali -Pz S	-4.59	1.19	-0.88	-
316		Darba Kalan-Pz	0.40	0.30	0.15	0.29
317		Ding	3.00	-	3.05	-
318		Ganga	-	-	0.95	-
319		Ghushiana	-0.53	-0.75	0.44	-
320		Gigorani	-0.66	0.76	0.69	-

321	SONIPAT	Goriwala	0.96	1.09	0.58	-
322		Goriwala-Pz	-0.56	-0.08	-	-
323		Jamal	-3.62	-	-2.12	-
324		Jamal- Pz	-0.71	-	-	-
325		Kalanwali Mandi-Pz	-5.32	-	0.15	-
326		Kaluwana	0.27	-	0.82	-
327		Karamsana	-1.93	-	-1.22	-
328		Kash Ram Dhab	1.74	-	1.97	-
329		Khuyian		-	-	-
330		Mammer Khera-Pz	-0.67	-	-	-
331		Mangala-Pz	1.92	-	2.58	-
332		Manjiyana	1.35	2.14	1.88	-
333		Mastian	-	-	1.17	-
334		Mithri	3.30	-	3.81	-
335		Nuhian Wali	2.12	-	1.69	-
336		Odhan Pz	0.74	-	1.21	-
337		Panniwala Mota	-0.01	0.18	-0.30	-
338		Phaggu-Pz	-0.21	0.23	-0.04	-
339		Rasalia Khera	1.83	2.03	1.39	-
340		Rori -DW	-	-	0.65	-
341		Saktakhera	-0.95	-	-0.40	-0.42
342		Shergarh - DW	-	-	0.11	-
343		Sherpura	-0.11	-0.25	-0.16	-0.25
344		Sirsra -PZ	-	-	1.66	-
345		Sri Jiwan Nagar-B	7.25	-	8.26	-
346		Taruwana	0.96	-2.80	1.15	-
347		Tejakhera	-0.56	-	-0.83	-
348	SONIPAT	Ahulana	-2.18	-0.97	-1.60	-
349		Barauli - pz		-0.75	-0.31	-
350		Barswani- DW	1.52	-	2.32	-
351		Barwasni Pz (s)	1.01	-	2.43	-
352		Bega -PZ	-	-	-0.08	--
353		Bhainswal	-1.92	-	-1.19	-
354		Bhunderi	-2.28	-	-1.47	-
355		Bichpuri 1	-	-	2.22	-
356		Bohela	-1.24	-	-0.24	-
357		Butana	0.55	-0.34	1.06	-
358		Chirana	-0.47	2.72	-	--
359		Datauli-Pz	0.54	-	1.51	---
360		Farmana	-1.88	-1.48	-1.68	--
361		Garhwal	-0.95	-	0.02	-
362		Gohana - Pz	-	-	2.82	-
363		Jagsi	-0.63	-	-0.07	-
364		Janti Khurd-Pz	-	-	0.43	-
365		Jhakauli- Pz	-0.37	-	2.95	-
366		Kami- PZ	1.22	-	0.96	-
367		Kathura Pz	-0.14	-	0.39	--
368		Khanpur Kalan-Pz	-2.39	-	1.12	-
369		KheoraPz	-0.12	-	1.51	-
370		Lath	-0.11	1.24	0.78	-
371		Machhri	0.56	-	0.30	-
372		Manauli-Pz	-	-	-	-
373		Mahara	-1.01	-	0.82	-
374		Mohana Pzm	-1.42	-	0.61	-
375		Manauli – Pz	-	-2.06	0.32	--

376	YAMUNANAGAR	Mundlana DW	1.54	-	2.68	3.48
377		Mundlana-Pz	-0.65	4.02	0.73	-
378		Murthal-Pz	1.23	3.00	0.65	-
379		Nahri	0.80	1.22	0.06	-
380		Pinana	-1.55	-	0.60	-
381		Pugthala-Pz	-0.75	0.03	1.30	-
382		Purkhas-Pz	0.70	-0.44	2.31	-
383		Rai(Bahalgarh)	0.25	-	1.08	-
384		Rasoi pz	-	-	-	-
385		Rathdhana-Pz	1.02	7.20	0.31	-
386		Rohat	-1.08	-0.57	3.54	-
387		Rukhi-Pz	-1.12	-0.20	1.28	-
388		Sisnah	-0.70	-	0.19	-
389		Amadalpur	2.55	-	-	-
390		Amadalpur-DW		-	-	-
391		Bhambauli-1 (m)	-4.63	-	-	-
392		Bilaspur DW	-1.65	-	-	-
393		Chhachrauli S	1.44	-	2.75	-
394		Choli	-0.57	-	0.10	-
395		Dhanauri S	-0.65	-	0.21	-
396		Dhaurang S	-0.16	-	-	--
397		Jhiwarheri S	-0.23	-	2.44	-
398		Khizrabad	-0.39	-	0.57	-
399		Mustafabad DW	0.57	1.19	1.45	0.09
400		Mustafabad-Pz	-0.61	-	0.17	-
401		Naggal-S	-1.13	-	0.02	-
402		Radaur S	-0.30	-	-	-
403		Rasulpur		-	-	-
404		Rasulpur DW	-1.55	-	1.02	-
405		Sabri	-0.71	-0.40	-0.24	-
406		Sadhaura DW	-1.26	0.35	-3.26	-
407		Sadhaura S	-1.00	-	-0.47	-
408		Shadipur	-1.13	-	0.47	-

Annexure V

Results of chemical analysis of water samples from NHS in Haryana (2014)

SR	LOCATION	WELL NO.	pH	EC in μS/cm	CO ₃	HCO ₃	Cl	SO ₄	NO ₃	F	PO4	Ca	Mg	Na	K	SiO ₂	T.H	SAR	RSC
				<-----					-mg/l----->									meq/l	
				at 25°C															

1 District Ambala

1	Balana	53B-3C2	8.1	2091	0	503	257	350	55	0.65	1.53	55	72	330	60	27	434	6.89	-0.4
2	Pinjola	53B-3C3	8.51	1338	92	376	108	85	1.5	0.39	0.45	37	31	177	97	21	219	5.20	4.9
3	Kakru	53B-3D8	8.62	2926	99	383	288	385	129	0.50	0.15	10	115	280	260	29	500	5.45	-0.4
4	Panjokhera	53B-3D9	8.51	3857	118	327	654	430	143	0.73	0.04	14	144	508	172	21	628	8.82	-3.2
5	Naraingarh	53F-3A1	8.34	286	6.6	134	18	0	6.1	0.39	0.03	17	12	25	1.3	24	92	1.13	0.6
6	Mulana	53F-3A4	7.88	3971	0	67	857	448	460	0.61	0.03	282	149	371	6.0	25	1317	4.45	-25.2
7	Dhanaura	53F-3A12	8.29	572	0	160	83	38	2.1	0.26	0.03	27	13	80	2.6	24	122	3.15	0.2
8	Khan Amdalpur	53F-4B3	8.26	375	0	187	36	0	0	0.37	0.05	17	25	26	2.8	14	148	0.93	0.1
9	Seha	53B-3DP3	8.3	482	0	274	14	19	3.7	0.56	0.02	14	30	49	1.3	22	158	1.70	1.3
10	Ambala Race Course	53B3DP5D	8.48	991	33	381	83	19	0	0.90	0.03	12	38	150	0.9	12	184	4.82	3.7
11	Nagal	53B-3C1	LEAKED																
12	Uplana	53F-3AP2	8.33	695	13	140	112	45	27	0.61	0.03	35	28	70	3.4	22	204	2.13	-1.3

2 District Bhiwani

1	Siwani	44P-1C1	8.91	3092	48	415	497	360	245	2.22	nd	10	164	480	2.1	25	701	7.90	-5.6
2	Miran	44P-1C3	8.40	2224	12	55	311	380	252	0.14	nd	164	41	175	142	29	580	3.17	-10.3
3	Ishwarwal	44P-1C4	8.74	2177	60	116	343	160	365	0.52	nd	26	113	230	118	27	530	4.35	-6.7
4	Gurera	44P-1C5	7.98	4008	0	110	993	420	233	0.31	nd	44	285	410	7.8	28	1281	4.98	-23.8
5	Bhiwani	53D-1AP2	8.29	1096	0	128	113	288	8.9	0.65	nd	46	36	142	4.4	19	265	3.81	-3.2
6	Badala	53D-1B6	8.98	1879	42	262	365	148	3.9	3.86	0.01	24	100	240	3.5	17	470	4.81	-3.7
7	Bajina	44P-2D2	8.25	3730	0	183	489	600	730	0.29	nd	216	198	320	12	36	1356	3.78	-24.1
8	Bohal	44P-1D3	8.48	663	18	159	44	118	8.5	1.5	nd	30	55	26	2.6	21	300	0.65	-2.8
9	Hetampura	44P-2D6	8.40	1820	9	152	259	110	357	0.64	nd	120	58	86	169	23	540	1.61	-8.0
10	Jui Kallan	44P-2D3	8.75	868	24	244	77	102	5.8	2.75	nd	16	6.1	183	1.2	14	65	9.87	3.5

SR	LOCATION	WELL NO.	pH	EC in	CO ₃	HCO ₃	Cl	SO ₄	NO ₃	F	PO4	Ca	Mg	Na	K	SiO ₂	T.H	SAR	RSC
			µS/cm	<-----	mg/l	----->	meq/l												
at 25°C																			
11	Dhanana	53D-1A1	8.51	661	24	116	51	120	0	0.68	nd	36	22	72	3.4	17	180	2.33	-0.9
12	Bawanikhera	53D-1A2	8.34	3182	6.0	146	365	1024	30	3.07	nd	90	128	475	7.6	20	751	7.54	-12.4
13	Bamla	53D-1A3	8.40	1105	12	153	190	136	3.1	0.7	nd	28	35	165	1.7	22	215	4.91	-1.4
14	Sui	53D-1A4	8.54	2148	24	323	489	100	27	0.72	nd	44	75	200	240	30	420	4.25	-2.3
15	Baund Kallan	53D-1B5	8.65	1928	42	104	424	164	74	0.76	nd	54	108	150	73	26	580	2.71	-8.5
16	Naya Atela	53D-2A1	9.06	1192	48	421	69	56	81	0.56	nd	8	8.5	280	2.6	26	55	16.44	7.4
17	Halluwas	53D-2A2	8.47	4328	24	262	1073	344	88	0.65	nd	32	212	430	296	35	951	6.06	-13.9
18	Lohani	53D-2A5	8.10	2927	0	183	343	530	425	0.19	nd	150	164	150	132	35	1051	2.01	-18.0
19	Dadri	53D-2B2	8.29	8552	0	275	1263	1760	1683	2.55	nd	106	482	1360	16	26	2245	12.48	-40.4
20	Sanwar	53D-2B4	8.26	1762	0	110	409	148	8.1	0.79	nd	100	66	151	3.2	17	520	2.88	-8.6
21	Mehrana	53D-2B5	8.56	2401	24	226	486	54	290	0.45	nd	28	129	290	2.5	30	600	5.15	-7.5
22	Chiriya	53D-3B1	8.75	3067	42	287	635	340	61	2.01	nd	16	156	440	2.9	21	680	7.33	-7.5
23	Jhumpa	44P-1C2	8.72	1392	60	330	150	66	140	2.48	nd	20	117	115	0.7	23	530	2.17	-3.2
24	Manheru	53D-2A4	7.75	1825	0	98	373	208	139	0.21	nd	106	52	220	2.1	38	480	4.38	-8.0
25	Pataudi	44P-1DP3	9.25	4374	96	866	745	200	150	19.2	0.092	16	51	1050	3.9	17	250	28.91	12.4
26	Sagban	44P-1DP4	8.61	548	24	134	40	42	22	1.39	nd	38	23	18	40	26	190	0.57	-0.8
27	Baliandpur		8.66	1478	36	305	175	160	31	1.15	nd	28	83	83	135	33	410	1.78	-2.0
28	Tosham	44P-1D1	8.43	834	12	323	73	50	12	0.85	0.008	26	58	31	64	34	305	0.77	-0.4
29	Kalanagar	53D-1B1	8.27	2908	0	519	562	260	48	0.77	nd	40	167	340	23	21	786	5.27	-7.2
30	Gopi	44P-2DP1	9.14	4058	120	592	599	650	19	0.45	0.031	10	50	950	3.8	28	230	27.22	9.1
31	Singwani	44P-2DP4	8.15	2478	0	305	391	280	222	0.88	0.004	16	28	530	2.6	23	155	18.51	1.9

3 District Faridabad

1	Pali	53H-3AP2	9.08	2911	106	416	559	240	18	0.75	nd	27	45	615	27	28	250	16.92	5.3
2	Bhopani	53H-3BP5	8.41	737	33	255	63	4.8	18	1	nd	12	31	97	3.5	22	158	3.36	2.1
3	Tigori	53H-4BP16	8.3	1679	0	148	375	145	46	0.68	nd	39	50	255	2.0	34	301	6.39	-3.6
4	Jawan	53H-4BP5	9.3	2870	185	389	368	275	23	1.5	nd	8	42	595	8.0	31	194	18.59	8.7

SR	LOCATION	WELL NO.	pH	EC in μS/cm	CO ₃	HCO ₃	Cl	SO ₄	NO ₃	F	PO4	Ca	Mg	Na	K	SiO ₂	T.H	SAR	RSC
					<-----	mg/l----->	meq/l												
at 25°C																			
5	Kabulpur	54E-3BP9	8.9	1251	79.2	356	111	95	14	1.05	nd	8.2	36	240	5.0	25	168	8.05	5.1
6	Amarpura	53H-4BP9	8.3	2719	0	201	389	700	40	0.91	nd	16	98	482	16	28	444	9.95	-5.6
7	Nh Iv	53H-3BP3	8.29	2104	0	161	542	186	18	0.73	nd	2.0	37	427	19	27	158	14.77	-0.5
8	Bamnikhera	53H-4B7	8.93	1878	79	282	208	200	100	0.71	nd	37	27	308	76	31	204	9.38	3.2
9	Khambi	54E-1BP2	8.96	3562	99	510	625	450	28	0.48	nd	35	66	752	10	27	357	17.31	4.5
10	Dighaut	53H-4BP3	8.18	1375	0	201	240	150	74	0.36	nd	22	50	203	8.5	23	260	5.48	-1.9
11	Balabgarh	53H-3BP1	8.76	2931	19.8	289	615	275	81	0.81	nd	49	79	488	30	24	449	10.02	-3.6
12	Barauli	53H-4BP2	8.76	1854	20	201	386	230	10	0.75	nd	18	69	312	6.0	26	332	7.45	-2.7
13	Sikri	53H-3BP6	8.8	4611	66	282	1087	450	70	0.75	nd	41	193	702	40	27	898	10.19	-11.1
14	Pehladpur		8.7	545	20	154	69	10	24	0.5	nd	20	32	50	3.7	30	184	1.61	-0.5
15	Kot	54E-1A7	8.3	2797	40	248	622	270	63	0.72	nd	61	125	381	4.0	30	669	6.41	-8.0
16	Badraun	53H-4BP4	8.95	1038	66	289	122	10	16	0.23	nd	12	22	180	39	30	122	7.08	4.5

4 District Fatehabad

1	Samain	44O-2D3	8.69	1560	42	429	204	175	29	0.97	nd	33	103	74	198	13	505	1.43	-1.7
2	Tohana	44O-2D1	9.04	1430	59	338	147	106	101	2.23	nd	16	35	271	8.6	8.6	185	8.69	3.8
3	Badopal	44O-3C1	8.22	4530	0	97	386	1850	61	0.19	nd	152	113	801	24	18	845	11.99	-15.3
4	Jandli Kalan	44O-2CP5	8.3	840	0	181	77	220	18	1.09	nd	87	49	40	4.8	16	412	0.85	-5.4
5	Aharwan	44O-2CP4	8.92	1647	83	302	182	290	24	0.53	nd	29	93	235	9.2	14	453	4.79	-1.4
6	Ratia	44O-2CP2	8.68	435	24	193	7	70	0.6	2.23	nd	16	20	73	3.2	9.9	124	2.87	1.5
7	Mehuwala		8.62	2160	36	254	302	500	70	3.01	nd	37	78	369	13	10	412	7.90	-2.9

5 District Gurgaon

1	Kherla	53H3AP6	7.42	1146	0	215	154	80	120	0.39	0.17	94	31	95	5	19	363	2.17	-3.7
2	Shahsola		7.91	605	0	251	63	27	26	0.66	0.12	43	26	59	1.5	22	216	1.75	-0.2
3	Kashan	53D3DP3	8.04	1255	0	156	155	185	137	0.47	0.11	59	21	190	3	21	235	5.41	-2.1
4	Pataudi	44P-1DP3	8.45	1010	35	203	112	85	78	0.38	0.05	20	19	188	1.8	23	127	7.23	1.9
5	Haily Mandir	53D-3DP6	8.51	2665	59	311	470	310	109	1.55	0.02	16	48	550	2	22	235	15.53	2.3

SR	LOCATION	WELL NO.	pH	EC in μS/cm	CO ₃	HCO ₃	Cl	SO ₄	NO ₃	F	PO4	Ca	Mg	Na	K	SiO2	T.H	SAR	RSC
					<-----	mg/l----->	meq/l												
at 25°C																			
6	Manchana	53D-3DP8	8.48	1975	47	239	358	220	20	1.19	0.02	24	26	398	2.5	22	167	13.40	2.1
7	Jamalpur	53D-3DP11	8.22	725	0	287	70	33	54	0.33	0.02	27	29	103	1.8	21	186	3.28	1.0
8	Gurgaon	53D-3DP5	8.12	870	0	490	21	68	46	1.75	0.01	24	26	172	2	22	167	5.79	4.7
9	Jaraon		8.04	365	0	167	14	64	0.24	1.2	0.00	24	26	28	0.2	22	167	0.94	-0.6
10	Basonda		8.14	1735	0	347	344	105	17	0.39	0.00	24	33	319	4	18	196	9.92	1.8
11	Chandu	53D-3DP7	8.36	625	24	180	56	54	43	0.34	0.025	24	38	67	5.7		216	1.98	-0.6
12	Jhanjrola	53H-3AP9	8.19	300	0	96	28	68	0.07	0.28	nd	39	14	13	3	11	157	0.45	-1.5
13	Wazirpur	53D-2C5	8.64	1580	71	347	140	210	111	2.01	0.025	12	31	350	2.5	18	157	12.13	4.9
14	Meoka	53D-3DP9	8.41	1230	71	383	84	160	34	1.3	nd	27	26	262	2.4	21	176	8.63	5.2
15	Manesar	53D-3DP12	7.48	2510	0	120	765	19	10	0.19	nd	106	38	355	7.5	26	421	7.53	-6.4
16	Maozabad	53D-	7.68	3035	0	359	709	165	21	0.6	nd	90	69	449	2	25	510	8.66	-4.3
17	Sikarwa	54E-1A3	8.25	3073	0	181	639	335	99	0.76	nd	82	124	265	222	23	715	4.31	-11.3
18	Luhinge Kalan	54E-1A5	8.99	1670	92	235	261	135	3.2	0.88	nd	29	62	252	1.0	31	327	6.07	0.4
19	Gulatha	54E-1A8	8.35	584	6.6	201	69	0.0	25	0.68	nd	31	20	61	3.5	24	158	2.11	0.4

6 District Hissar

1	Uklana	44O-2D2	8.76	3590	36	181	554	740	157	2.65	nd	37	85	664	13	18	443	13.74	-4.7
2	Agroha	44O-3C2	8.88	3310	59	302	512	720	69	0.77	nd	10	118	613	15	26	526	11.81	-3.3
3	Siwani	44O-3C3	8.63	2145	24	181	526	200	53	0.11	nd	33	83	245	182	13	422	5.18	-4.7
4	Sahu	44O-3D6	8.63	2330	36	483	119	630	20	5.4	nd	25	45	483	11	22	247	13.36	4.2
5	Bhambhauri	53C-3AP3	9.18	2675	190	580	379	95	9.9	4.71	0.02	41	55	509	7	24	330	12.22	9.3
6	Rajli Cross	44O-3D8	8.45	298	12	97	14	66	0	0.53	nd	37	18	9.8	1.7	15	165	0.33	-1.3
7	Kirori	44O-3D9	8.44	2415	24	73	449	300	272	0.24	nd	62	163	166	65	28	824	2.51	-14.5
8	Balsamand	44O-4B2	8.33	7590	18	212	1425	1750	17	1.18	0.11	190	268	1133	36	15	1576	12.41	-27.4
9	Khanda Kheri	53C-4AP1	8.38	1470	24	290	183	288	13	0.48	nd	95	43	196	5.9	26	412	4.19	-2.7
10	Channaut	44O-4D1B	8.01	4060	0	242	814	390	489	0.66	0.01	161	275	235	100	24	1535	2.61	-26.7
11	Chadhriwas	44O-4C3	8.57	1725	30	175	168	560	24	2.89	nd	58	170	92	11	11	845	1.38	-13.0
12	Basra	44O-4C5	8.47	2620	18	139	330	800	6.8	2.6	nd	87	95	380	14	5.5	608	6.71	-9.3

SR	LOCATION	WELL NO.	pH	EC in μS/cm	CO ₃	HCO ₃	Cl	SO ₄	NO ₃	F	PO4	Ca	Mg	Na	K	SiO ₂	T.H	SAR	RSC
					<-----	mg/l----->	at 25°C	meq/l											
13	Kirtan	44O-4C6	8.34	1520	12	121	337	250	11	0.23	nd	70	70	139	89	20	465	2.81	-6.9
14	Dhansu	44O-4D4	7.77	2869	0	181	498	260	481	0.27	nd	218	121	173	77	26	1041	2.33	-17.9
15	Umra	44O-4D5	8.11	2190	0	72	463	440	11	0.48	0.28	202	95	135	6	24	896	1.96	-16.7
16	Adampur	44O-3BP2	8.69	4299	36	266	498	1300	75	0.45	nd	29	148	798	22	13	680	13.30	-8.1
17	Balawas	44P-1D5	9.1	2092	131	580	302	12	114	0.36	0.32	33	153	139	166	21	711	2.27	-0.4
18	Mothmajra	53C-4A2	8.79	1210	36	241	119	322	19	0.84	nd	39	45	236	6	25	258	6.11	-0.5
19	Rampur Damundi	53C-4A3	8.34	2675	24	314	576	200	72	0.51	nd	78	128	197	177	26	721	3.19	-8.5
20	Bas	53C-4A5	8.2	6277	0	97	948	1150	1270	0.84	nd	330	410	394	234	31	2513	3.42	-48.6
21	Gainpura	53C-3A9	8.84	3015	71	326	519	540	96	1.92	nd	25	233	334	14	30	1019	4.55	-12.7
22	Narnaud	53C4AP1S	8.41	2607	36	326	309	320	249	0.82	nd	33	48	464	7	24	278	12.07	0.9
23	Kheri Jalab	53C-3AP4	8.72	1437	24	109	253	320	30	0.83	nd	41	85	171	20	17	453	3.50	-6.4
24	Hissar	54O-4CP2	7.92	6570	0	169	1404	1550	6.5	0.84	nd	111	248	1138	7.5	24	1298	13.75	-23.2
25	Sorkhi	53C-4AP2	8.68	2560	36	193	582	210	75	0.33	nd	41	135	198	178	26	659	3.36	-8.8
26	Mangali	44O-4CP3	9.04	5560	107	616	912	1100	119	2.4	nd	16	85	1284	6	13	391	28.30	5.9
27	Kanoh	44O-3DP4	8.59	1635	36	169	323	155	62	0.24	nd	29	108	144	31	24	515	2.76	-6.4
28	Sadalpur	44O-3B4	8.66	740	30	175	49	195	18	0.41	nd	29	65	48	21	11	340	1.13	-2.9
29	Rajthal	53C-3A7	8.55	440	24	157	14	68	5.3	0.7	nd	41	22	31	2.8	23	196	0.97	-0.5
30	Juglan	44O-3D7	8.59	1076	53	61	91	300	13	0.63	nd	45	33	146	5.6	25	268	4.03	-2.2
31	Mohel Khera	53C-2AP3	8.65	465	36	109	49	84	2.8	1.14	nd	29	50	12	7	21	278	0.31	-2.6
32	Ghaso Khurd	53C-2A6	8.35	1070	24	181	225	62	11	0.43	nd	74	78	28	13	28	505	0.54	-6.3
33	Dhandoli	53C-1AP1	8.54	960	48	459	63	36	12	0.45	nd	33	50	137	6.2	30	288	3.51	3.4
34	Baroda		8.86	4005	59	350	484	1175	12	8.22	nd	41	120	775	17	26	578	13.81	-4.2
35	Jallana		8.08	1640	0	278	140	370	28	2.95	nd	99	85	109	5.5	20	597	1.94	-7.4

SR	LOCATION	WELL NO.	pH	EC in μS/cm	CO ₃	HCO ₃	Cl	SO ₄	NO ₃	F	PO4	Ca	Mg	Na	K	SiO ₂	T.H	SAR	RSC
				<-----	mg/l	----->													meq/l
				at 25°C															

7 District Jhajjar

1	Salawas	53D-3B2	9.00	1111	108	134	132	75	14	8.62	nd	10	3.6	255	0.4	25	40	17.59	5.0
2	Chuchakwas	53D-2C3	8.14	4467	0	73	1329	264	75	1.64	nd	257	187	410	9.8	45	1411	4.75	-27.0
3	Bagoa	53D-2B8	9.14	1419	114	165	223	52	27	1.25	nd	14	55	150	114	25	260	4.04	1.3
4	Jhajjar	53D-2C2	8.53	1265	24	31	223	205	40	0.46	nd	70	63	88	3.2	31	435	1.84	-7.4
5	Dighal	53D-1C2	8.48	16980	30	513	3250	2040	1844	0.52	nd	70	347	1118	3765	21	1601	12.15	-22.6
6	Chamanpura	53D-2C1	8.66	1329	30	85	124	372	1.5	0.76	nd	50	88	91	9.1	17	485	1.79	-7.3
7	Chhara	53D-2C7	9.25	4964	138	555	701	480	515	1.7	nd	10	94	364	1090	18	410	7.81	5.5
8	Gabhana	53D-2DP2	8.48	1080	30	421	106	3.6	41	1.88	nd	34	40	123	56	28	250	3.39	2.9
9	Dulehra	53D-2D9	8.60	4896	36	165	1344	365	108	0.46	nd	60	233	508	280	23	1111	6.64	-18.3
10	Kulasi	53D-1D11	9.15	1244	120	299	62	100	0.3	15.2	nd	10	2.4	296	7.9	10	35	21.82	8.2
11	Sankhol	53D-2D1	8.67	485	30	128	16	59	7.3	4.69	nd	30	28	18	23	12	190	0.57	-0.7
12	Majra	53D-2BP2	8.10	5850	0	61	1767	490	37	0.24	nd	481	243	430	4.8	21	2202	3.99	-43.0
13	Dubal Dhan	53D-2B6	8.19	5030	0	49	818	ND	ND	0.32	nd	417	199	252	194	21	1861	2.54	-36.4
14	Wazirpur	53D-2C5	8.40	7191	12	85	1241	820	1452	0.28	nd	168	428	413	650	22	2182	3.85	-41.8
15	Mundsa	53D-2B7	8.79	2468	84	140	391	400	15	2.69	nd	26	58	452	5.2	24	305	11.29	-1.0
16	Subnah	53D-3C8	8.23	4530	0	116	1344	315	11	0.88	nd	140	195	557	1.0	30	1151	7.14	-21.1

8 District Jind

1	Korar	53C-2A5	8.38	2286	59	580	309	130	15	0.84	0.03	58	88	293	16	28	505	5.66	1.3
2	Bhusalana	53C-3BP2	8.94	1040	59	483	49	31	0	0.93	nd	16	43	175	2.7	18	216	5.17	5.5
3	Chabri	53C-3B3	8.77	1965	47	351	154	420	23	2.1	nd	33	90	270	7	18	453	5.52	-1.7
4	Jhanj Kalan	53C-3B7	8.76	6860	48	363	1109	1960	19	0.99	nd	37	185	1441	16	27	855	21.46	-9.5
5	Pillu Khera	53C-3B9	9.18	1470	83	532	77	110	11	4.25	0.270	25	27	298	2.3	19	175	9.84	8.0
6	Brahamanwas	53C-4B2	7.74	2820	0	133	856	114	12	0.27	nd	243	130	137	8.2	22	1144	1.76	-20.6
7	Jamula	53C-4B3	8.71	1050	36	145	218	86	5.4	0.83	nd	29	90	37	48	26	443	0.77	-5.3
8	Safidon	53C-3C1	8.34	430	24	145	21	24	3.1	2.95	nd	45	17	16	3	15	185	0.52	-0.5

SR	LOCATION	WELL NO.	pH	EC in μS/cm	CO ₃	HCO ₃	Cl	SO ₄	NO ₃	F	PO4	Ca	Mg	Na	K	SiO ₂	T.H	SAR	RSC
					<-----	mg/l----->	at 25°C	meq/l											
9	Nahla	44O-3D1	8.27	250	0	97	14	75	2.2	0.38	nd	37	17	5.4	3.1	4.1	165	0.18	-1.7
10	Kishanpura	53C-3BP3	9.14	1315	83	411	84	98	26	1.65	nd	12	52	215	5.5	24	247	5.99	4.6
11	Alewa	53C-3B1	9.18	1897	119	881	63	68	3.9	4	0.01	16	38	411	5	24	196	12.76	14.5
12	Dudhana(Dorana)	53C-2BP3	8.31	2390	36	495	288	336	15	0.24	nd	29	115	308	19	23	546	5.74	-1.6
13	Uchana	53C-3A1	8.86	2460	59	302	365	320	195	0.77	nd	29	90	415	11	29	443	8.58	-1.9
14	Narwana	53C-3C2	8.86	3950	59	471	484	810	3.5	18	0.07	41	45	811	12	17	289	20.81	3.9
15	Khatkaran	53C-3A2	8.12	1760	0	206	422	52	113	0.18	nd	111	73	149	7	29	577	2.70	-8.2

9 District Kaithal

1	Titiana	53B-4BP2	Leaked																
2	Padla	53C-1BP1	7.7	1553		696	119	100	14	0.28	nd	67	79	159	10	27	494	3.12	1.6
3	Guhna	53C-1B3	8.37	2757		543	320	550	0.8	0.72	nd	76	87	419	12.0	21	546	7.79	-2.0
4	Kalayat	53C-2B2	7.54	4831		439	871	980	45	0.26	nd	303	216	448	18.0	31	1645	4.81	-25.7
5	Mataur	53C-2B6	7.61	6837		763	912	1000	852	1.62	nd	130	180	1125	71.0	25	1067	15.00	-8.8
6	Kelram	53C-2B3	7.79	7398		610	1157	1600	57	1.85	nd	139	128	1360	17.0	21	872	20.02	-7.5
7	Kaithal	53C-1BP2	8.00	2718		964	211	178	70	4.6	nd	59	49	451	15.0	25	347	10.51	8.8
8	Mundri	53C-1C7	8.29	626		317	6.7	45	4.9	0.81	nd	27	17	25	97	18	137	0.93	2.4
9	Pundri	53C-1C4	7.64	1731		708	160	100	6.1	0.64	nd	93	66	178	7.4	26	504	3.45	1.5
10	Jateri	53C-2C7	7.05	1082		439	88	65	15	0.3	nd	86	70	74	13	28	389	1.44	-2.9
11	Rajaund	53C-2B4	8.02	2346		336	228	550	0	0.68	nd	34	28	450	3.3	15	200	13.84	1.5
12	Jakhiali	53C-2BP4	7.95	4266		781	517	850	26	3.72	nd	36	35	950	13	19	231	27.03	8.1
13	Bhama	53C-2CP4	8.09	2150		744	112	400	8.6	0.74	nd	57	49	386	7.6	17	342	9.06	5.3
14	Sisala	53C-2CP5	8.16	882		537	17	0	2.7	0.7	nd	51	19	116	7.4	21	205	3.52	4.7
15	Kathana	53C-2BP5	8.15	3477		1330	313	250	29	8.3	nd	15	12	828	6.6	19	84	38.66	20.1
16	Peoda	53C-1BP5	8.14	3322		464	527	325	126	9.46	nd	34	38	572	175	23	242	16.02	2.8
17	Kheorak	53C-1BP3	7.63	2460		1081	150	100	15	0.51	nd	69	55	414	8.2	28	399	9.02	9.7
18	Manaspati	53C-1BP4	7.42	2050		848	216	64	11	1.86	nd	63	77	273	9.2	32	473	5.46	4.4

SR	LOCATION	WELL NO.	pH	EC in μS/cm	CO ₃	HCO ₃	Cl	SO ₄	NO ₃	F	PO4	Ca	Mg	Na	K	SiO2	T.H	SAR	RSC
<-----mg/l----->																			
19	Guhla		Leaked																

at 25°C

SR	LOCATION	WELL NO.	pH	EC in μS/cm	CO ₃	HCO ₃	Cl	SO ₄	NO ₃	F	PO4	Ca	Mg	Na	K	SiO2	T.H	SAR	RSC
				<-----	mg/l	----->													meq/l
				at 25°C															

10 District Karnal

1	Dhomsi	53G-1AP4	7.82	721		415	20	5	16	1.07	nd	53	27	65	7	25	242	1.81	1.9
2	Indri	53G-1AP8	8.06	344		176	6.7	20	0.2	1.18	nd	38	14	10	3.4	24	152	0.35	-0.2
3	Karnalcity Inst	53C-2DP1	8.02	598		365	24	5	0.2	1.24	nd	44	28	52	4.6	25	226	1.51	1.5
4	Salwan	53C-2C6	8.84	1073	31	251	105	145	21	0.63	nd	19	69	102	24	28	331	2.44	-1.5
5	Bala	53C-2D10	8.3	596		264	17	65	8.5	0.62	nd	34	20	65	6	27	168	2.19	1.0
6	Jundala	53C-2D2	7.64	1391		666	99	55	11	0.67	nd	59	54	172	12	29	368	3.89	3.5
7	Charpura	53G-1AP2	8.08	423		232	10	65	0	0.52	nd	32	10	67	3	23	121	2.65	1.4
8	Sheikhpura	53G-2AP1	7.71	698		339	17	95	0	0.42	nd	67	34	39	4.7	28	310	0.97	-0.6
9	Kutail	53G-2AP4	7.94	1002		566	12	25	16	0.72	nd	74	13	132	5.9	26	236	3.72	4.5
10	Karirwali	53G-2AP6	7.94	490		277	14	15	0	0.89	nd	48	23	29	4.6	26	194	0.86	0.3
11	Ghari Khajur	53G-2AP3	8.25	683		321	14	65	1.3	0.8	nd	51	36	37	3.6	24	273	0.97	-0.2
12	Badhera	53C-1D7	8.11	488		239	10	40	0	1.22	nd	32	22	40	2.2	25	168	1.33	0.5
13	Nanhera	53G-1AP6	7.96	457		277	14	0	0	0.95	nd	36	13	44	4.1	27	142	1.60	1.7
14	Makhla	53G-1AP10	8.09	488		151	24	90	0	0.45	nd	29	8.9	64	2.8	20	110	2.67	0.3
15	Kalri Jagsi	53G-1AP7	8.13	335		182	10	10	0	0.28	nd	21	5.1	44	3.1	21	74	2.23	1.5
16	Salarpur	53G-1AP12	7.57	1013		440	14	140	0	0.26	nd	90	12	119	5.4	17	273	3.13	1.7
17	Phurlak	53C-2DP6	7.89	576		226	34	55	14	0.9	nd	55	29	21	3.2	15	257	0.57	-1.4
18	Daulatpur Khurd	53C-1DP12	8.11	400		239	10	0	0.4	0.7	nd	66	3.3	20	4.1	23	179	0.65	0.4
19	Sangoi	53G-1AP13	7.58	705		383	17	0	25	0.27	nd	84	14	36	7.1	25	268	0.96	0.9
20	Jaroli Khurd	53G-1AP11	7.33	809		459	24	0	0.9	0.4	nd	74	38	26	10	18	342	0.61	0.7
21	Nalvi Kalan	53G-2AP8	8.23	497		245	10	50	0	0.65	nd	25	7.7	78	2.3	18	95	3.50	2.1
22	Mohidinpur	53G-2AP7	8.19	512		264	10	35	0	1.34	nd	25	10	78	2	21	105	3.34	2.3
23	Faridpur	53G-3AP4	8.30	627		301	10	70	0	0.77	nd	32	23	73	2.6	20	173	2.40	1.4
24	Dongar Majra	53C-2DP10	8.24	799		402	16	60	5.5	0.7	nd	27	28	115	4.4	27	184	3.70	2.9
25	Karnal I Cssri	53C-2DP8	7.78	797		352	14	80	7.3	1.28	nd	61	26	66	5.3	28	257	1.78	0.6

SR	LOCATION	WELL NO.	pH	EC in	CO ₃	HCO ₃	Cl	SO ₄	NO ₃	F	PO4	Ca	Mg	Na	K	SiO ₂	T.H	SAR	RSC
			µS/cm	<-----	mg/l	----->	meq/l												
at 25°C																			
26	Kurlan	53C-2CP8	8.56	2509	37	1112	211	0	1.4	20	nd	25	36	506	18	24	210	15.17	15.2
27	Jashala	53C-2CP6	8.18	1916		572	160	240	25	1.16	nd	53	45	294	7.9	23	315	7.18	3.0
28	Gangatheri	53C-3B8	7.96	1404		578	85	150	16	0.92	nd	61	75	135	7.7	26	462	2.74	0.3
29	Biana	53G-1AP9	8.06	431		214	6.7	35	0	0.41	nd	27	14	42	2.8	23	126	1.63	1.0
30	Newal	53G-2AP2	8.35	492	19	153	80	5	0	0.74	nd	27	10	70	3.1	23	110	2.92	1.0
31	Majri Roran	53C-1CP4	7.64	1615		585	208	65	15	0.4	nd	67	64	189	13	20	431	3.96	1.0
32	Jalmana	53C-2CP7	7.93	1695		691	102	200	9.3	0.68	nd	97	70	174	11	28	530	3.29	0.7
33	Sambhli		8.25	981		346	14	180	4.8	0.96	nd	42	33	117	7.1	23	242	3.28	0.9
34	Saunkura	53C-2DP6	7.62	851		509	17	16	7.2	1.24	nd	59	31	88	6.5	27	273	2.31	2.8
35	Mound	53C-2CP2	7.71	1282		679	31	110	11	0.7	nd	52	41	189	8.1	28	310	4.76	5.2

11 District Kurukshetra

1	Barthala	53B-4DP9	7.47	815		436	31	30	6.7	0.28	nd	72	33	52	5.4	28	316	1.27	0.8
2	Kaulpur	53B-4DP10	7.39	455		268	17	0	0	0.24	nd	37	9.8	48	5	28	133	1.81	1.7
3	Bam	53G-1AP12	7.54	787		464	17	10	14	0.56	nd	84	27	45	6.8	31	322	1.09	1.2
4	Samalakhi	53B-2BP14	7.37	1092		567	58	25	23	0.51	nd	94	41	83	7.2	22	403	1.80	1.2
5	Baronda	53B-1AP15	7.3	823		513	6.7	0	18	0.36	nd	53	43	51	6.6	31	311	1.26	2.2
6	Sisaula	53P-4DP7	7.57	563		353	20	0	1.9	0.72	nd	45	19	54	5.4	30	189	1.70	2.0
7	Malikpur Singhpura	53B-4DP13	7.9	870		555	20	10	3.1	0.36	nd	57	45	70	6.8	26	327	1.68	2.6
8	Hatira	53C-1DP9	7.58	519		244	27	25	3.2	0.55	nd	47	14	44	3.8	18	174	1.45	0.5
9	Thana	53C-1CP6	7.66	1845		1037	27	60	0.6	0.54	nd	65	47	269	7	28	357	6.21	9.9
10	Murtajapur	53C-1DP12	7.69	490		256	20	10	8.1	0.42	nd	59	17	16	2.9	30	219	0.47	-0.1
11	Bachki	53B-4DP12	7.91	743		391	44	20	1.2	0.73	nd	39	21	100	4.8	20	184	3.21	2.7
12	Ishaq	53B-4BP3	7.71	1588		342	293	145	0	0.38	nd	78	37	225	7.2	23	347	5.26	-1.3
13	Pehowa	53B-1C1	7.83	1254		683	48	35	9.1	0.64	nd	59	38	162	11	27	305	4.05	5.1
14	Shabad	53B-4DP1	7.94	639		378	10	8	0.3	0.3	nd	57	16	53	3.4	22	209	1.60	2.0
15	Santokhpur	53B-4CP4	7.25	917		586	14	10	11	0.72	nd	53	16	141	5.4	26	199	4.36	5.6

SR	LOCATION	WELL NO.	pH	EC in μS/cm	CO ₃	HCO ₃	Cl	SO ₄	NO ₃	F	PO4	Ca	Mg	Na	K	SiO ₂	T.H	SAR	RSC
					<-----	mg/l----->	meq/l												
16	Amin	53C-1DP6	7.86	786		500	20	0	11	0.72	nd	57	16	97	5.7	31	209	2.93	4.0
17	Jadaula	53C-1CP8	7.95	871		211	37	205	5.4	0.62	nd	32	14	149	3.4	20	137	5.53	0.7
18	Matahana	53C-1D9	7.45	796		494	6.7	20	5.4	0.82	nd	65	27	73	6.7	32	276	1.92	2.6
19	Badram	53H-4BP4	8.2	672		409	24	0	12	0.44	nd	34	20	91	4.8	22	168	3.06	3.4

12 District Mahendergarh

1	Lukhi	53D-3A2	8.57	1314	59	359	119	155	23	2.01	0.022	20	17	288	3.9	22	118	11.45	5.5
2	Bowana	53D-3B7	8.04	2185	0	311	435	210	68	0.56	0.012	63	43	373	6.5	17	333	8.88	-1.6
3	Mohindergarh	53D-4AP2	8.24	250	0	108	11	40	1.7	0.3	0.004	27	14	7.5	2.6	8	127	0.29	-0.7

13 District Mewat

1	Akbarpur	53H-4A2	8.76	2143	33	195	389	275	28	1.5	nd	37	61	352	6.0	23	342	8.28	-2.5
2	Kheri Kankar	54E-1A6	8.17	3632	0	54	1171	90	5.1	0.6	nd	300	156	214	8.0	27	1393	2.49	-27.0
3	Malab	53H-4A5	8.66	6039	79	94	1160	950	418	0.5	0.24	102	127	655	860	31	776	10.23	-11.3
4	Nagina	54A-1D1	8.84	2084	59	235	309	250	47	1	nd	27	53	352	5.0	27	286	9.06	0.1
5	Nuh	53H-4A3	8.88	715	20	195	94	0	15	0.21	nd	22	15	105	2.0	26	117	4.22	1.5
6	Akaira	53D-4D3	8.3	2515	0	342	486	245	8	0.56	nd	45	57	414	23	28	347	9.67	-1.3

14 District Palwal

1	Palwal	53H-4B1	9.25	2285	178	571	160	185	24	4.79	nd	18	16	499	8.0	27	112	20.49	13.0
2	Hodel	54E-1BP1	8.35	4439	13	356	914	720	19	0.9	nd	88	267	521	6.0	27	1317	6.25	-20.0
3	Hathin	53H-4AP6	7.98	8579	0	107	2498	680	58	0.46	nd	433	447	745	2.5	28	2920	6.00	-56.6
4	Palwal	53H-4B1	9.25	2285	178	571	160	185	24	4.79	nd	18	16	499	8.0	27	112	20.49	13.0
5	Rasulpur	53H-4B9	9.19	1909	145	436	184	190	1.3	0.98	nd	10	16	447	3.0	24	92	20.29	10.2
6	Tumsara	53H-4B2	8.85	5922	112	302	1272	750	103	0.81	nd	18	216	955	172	29	934	13.60	-10.0
7	Bhagaula	53H-4B3	8.91	9809	165	792	1706	1265	781	0.85	nd	27	186	1252	1520	30	832	18.89	1.9
8	Lalwa	53H-4B10	8.91	1093	53	262	101	50	13	1.75	nd	10	47	133	4.0	26	219	3.91	1.7
9	Mandokla	53H-4AP5	8.92	2765	79	315	549	250	11	3.05	nd	18	97	480	9.0	27	444	9.91	-1.1
10	Lakhnaka	53H-4AP4	8.74	4700	66	188	1035	600	25	4.55	nd	59	102	875	5.0	24	567	16.00	-6.0

SR	LOCATION	WELL NO.	pH	EC in μS/cm	CO ₃	HCO ₃	Cl	SO ₄	NO ₃	F	PO4	Ca	Mg	Na	K	SiO ₂	T.H	SAR	RSC
				<-----	mg/l	----->													meq/l
				at 25°C															

15 District Panchkula

1	Maharauli	53B1D2	7.4	525	0	263	28	1	21	0.09	nd	59	21	17	1.2	23	235	0.48	-0.4
2	Khera	53B-1D3	7.83	910	0	359	63	10	88	0.19	0.24	82	47	28	4	25	399	0.61	-2.1
3	Dharampur	53B-1D1	7.73	690	0	287	56	0	46	0.25	0.015	63	33	23	1.1	20	294	0.58	-1.2
4	Kakar Majra	53F-3A10	7.3	1410	0	454	119	85	118	0.59	nd	39	74	149	1.6	22	402	3.23	-0.6
5	Patwi	53B-3D2	7.26	2590	0	610	372	240	133	0.58	nd	47	103	361	3.5	22	500	6.75	-0.8

16 District Panipat

1	Shimla Maulana	53C-3DP6	8.04	770	0	326	61	49	0	0.74	0.026	51	47	41	6	24	320	1.00	-1.1
2	Babail	53G-3AP3	8.40	511	12	206	32	33	0	1.23	0.037	30	24	43	2.9	17	176	1.42	0.3
3	Sonali Khurd		8.02	970	0	308	18	224	0	0.72	0.033	53	33	115	3.2	20	267	3.06	-0.3
4	Nimbri		8.14	1507	0	580	46	300	25	0.61	0.033	77	89	147	8.7	25	559	2.71	-1.7
5	Israna	53C-3DP2	8.17	2885	0	743	303	344	113	3.29	0.022	39	32	585	29	21	229	16.82	7.6
6	Khalila Majra	53C-3C6	8.21	2462	0	864	111	456	2.4	2.65	0.04	36	39	520	5.7	21	251	14.30	9.2
7	Seenk	53C-3CP2	8.29	777	0	405	11	58	25	2	0.097	32	30	98	17	19	203	2.99	2.6
8	Urlana Kalan	53C-3CA5	7.94	1920	0	562	196	224	50	1.05	0.037	96	75	185	69	24	549	3.44	-1.7
9	Lohari	53C-3DP8	8.55	3600	30	1015	228	624	19	5.95	0.06	15	6.4	860	6.5	14	64	46.85	16.4
10	Untila	53C-3D1	8.22	1582	0	465	107	270	8	1.41	0.033	40	47	250	5	17	293	6.35	1.8
11	Karhans	53G-4AP7	8.09	582	0	302	23	25	6.1	1	0.037	47	25	41	5.1	26	219	1.20	0.5
12	Dikalda	53G-4AP4	8.45	931	12	338	28	156	0	1.19	0.058	19	9	195	2.7	17	85	9.23	4.3
13	Hathwala	53G-4AP6	8.15	460	0	242	7.1	35	0	0.75	0.026	26	19	47	3.4	18	144	1.71	1.1
14	Bilaspur	53G-4A4	7.96	785	0	223	125	15	0.07	0.49	0.04	72	39	18	5.1	22	341	0.42	-3.1
15	Tajpur	53G-3AP1	8.36	687	6	350	12	50	7.1	0.89	0.026	30	23	96	2.5	18	171	3.21	2.5
16	Khalila Pehlad	53C-3DP5	8.89	1107	65	417	28	48	11	3.38	0.022	13	12	225	3.7	21	80	10.82	7.4
17	Naraina		8.06	550	0	115	69	44	5.6	2.4	0.011	26	18	52	3.3	13	139	1.92	-0.9

17 District Rewari

1	Koshali	53D-3B9	8.4	4954	118	574	751	1000	15	1.62	0.07	51	152	932	8	29	755	14.78	-1.7
2	Bohu	53D-3B1	8.52	2332	82	574	119	460	20	0.96	0.025	20	45	433	63	28	235	12.29	7.4

SR	LOCATION	WELL NO.	pH	EC in μS/cm	CO ₃	HCO ₃	Cl	SO ₄	NO ₃	F	PO4	Ca	Mg	Na	K	SiO ₂	T.H	SAR	RSC
					<-----	mg/l----->	meq/l												
3	Khatodra	53D-3AP3								Leaked									
4	Mandala	53D-4BP4	8.13	825	0	263	108	75	50	0.71	nd	39	19	140	6	18	176	4.60	0.8
5	Nangal Jamalpur		7.89	1482	0	191	211	170	148	0.21	0.004	63	71	138	2.6	20	451	2.83	-5.9
6	Karanwas	53D-4C6	8.29	1470	0	616	190	36	25	0.76	0.012	31	91	174	2.4	19	451	3.56	1.1
7	Bawal	53D-4C2	8.13	1650	0	359	232	160	133	0.32	nd	39	129	123	4.2	22	627	2.14	-6.7
8	Balawas	44P-1D5	8.14	5040	0	825	884	800	96	1.36	0.022	35	100	1080	5	22	500	21.04	3.5
9	Sangwari	53D-4C8	8.3	1690	0	371	260	220	20	1.05	nd	39	31	319	3.5	21	225	9.26	1.6

18 District Rohtak

1	Rohtak	53D-1C1	8.70	1720	42	146	77	605	0.9	4.18	nd	36	67	267	4.8	14	365	6.08	-3.5
2	Lakhan Majra	53C-4B6	8.57	1871	30	171	409	196	14	0.65	0.08	48	86	195	71	26	475	3.90	-5.7
3	Nidana	53D-1A1	9.30	3653	132	787	128	890	125	8.11	0.07	12	11	941	5.8	13	75	47.21	15.8
4	Meham	53D-1B2	8.62	985	30	116	219	48	8.7	0.3	nd	24	64	70	36	28	325	1.69	-3.6
5	Madina	53D-1B3	8.77	5254	48	281	803	680	695	0.56	nd	24	178	456	736	21	790	7.05	-9.6
6	Samargopalpur	53D-1C4	8.50	2980	30	513	712	28	36	0.53	1.06	56	151	206	280	45	760	3.25	-5.8
7	Sampla	53D-1D2	8.98	2255	72	482	438	0.4	53	1.06	nd	12	64	261	258	18	295	6.63	4.4
8	Kansala	53D-1D8	9.27	2516	120	506	281	312	21	8.05	0.02	10	49	528	3.2	20	225	15.26	7.8
9	Hassangarh	53D-1D10	8.87	764	42	201	73	48	9.6	0.78	nd	14	52	47	41	19	250	1.30	-0.3
10	Bhalund	53C-1C8	8.69	768	30	159	37	176	3.2	0.35	nd	22	22	125	1.5	28	145	4.51	0.7
11	Bhalaut	53D-1C5	8.29	1785	0	244	325	230	23	0.65	nd	44	45	288	4.5	28	295	7.30	-1.9
12	Jasia	53C-4C2	7.58	5443	0	220	1132	820	620	0.63	nd	168	463	285	157	24	2327	2.57	-42.9
13	Kharawar	53D-1C3	8.95	686	54	232	20	68	0.2	0.7	nd	10	27	115	0.8	22	135	4.29	2.9

19 District Sirsa

1	Dabwali	44K-1C1	8.05	3680	0	109	477	975	31	0.18	0.05	124	143	192	389	4	896	2.79	-16.2
2	Goriwala	44K-IC5	8.08	2798	0	411	323	640	19	1.67	0.06	87	75	427	24	29	525	8.10	-3.8
3	Teja Khera	44K-IC6	8.29	320	0	109	7	125	30	0.2	0.06	36	35	6.7	2.8	2.6	237	0.19	-2.9
4	Mangala	44K-3DP6	8.67	1205	24	242	119	280	2.5	0.77	0.08	29	35	224	5	15	216	6.63	0.4
5	Mamar Khera	44K-2CP2	8.63	955	24	242	112	105	22	0.24	0.88	37	25	59	160	18	196	1.84	0.9
6	Mangiana	44K-1D1	8.35	1135	24	230	126	230	4.9	0.36	0.05	33	45	102	128	15	268	2.71	-0.8

SR	LOCATION	WELL NO.	pH	EC in μS/cm	CO ₃	HCO ₃	Cl	SO ₄	NO ₃	F	PO4	Ca	Mg	Na	K	SiO ₂	T.H	SAR	RSC
					<-----	mg/l----->	meq/l												
at 25°C																			
7	Nuhianwali	44K-1D6	8.95	3525	95	544	562	520	47	1.26	0.06	25	128	616	20	30	587	11.04	0.3
8	Bhurtawala	44K-3DP2	8.5	420	24	109	14	135	1.1	0.76	0.05	49	30	20	5	14	247	0.56	-2.3
9	Sakta Khera	44K-1C2	8.39	8785	4	121	1369	2000	382	0.44	0.05	62	183	1589	121	18	906	22.95	-16.0
10	Siri Jiwan Nagar	44K-2C2A	8.97	1385	65	392	77	260	7.9	0.76	0.11	29	58	233	12	17	309	5.75	2.4
11	Rasila Khera	44K-2D1	8.92	1195	59	338	105	210	29	2.93	0.07	12	50	245	6.6	25	237	6.94	2.8
12	Panniwala Mota	44K-2D5	8.45	455	24	145	21	90	5.9	0.47	0.06	33	26	19	46	16	196	0.60	-0.6
13	Phagu	44O-2AP6	7.97	21960	0	157	5088	7400	1.2	0.36	0.05	552	826	4775	57	20	4779	30.06	-92.9
14	Kalanwali	44K-1DP3	8.47	270	24	36	70	21	0	0.08	0.05	29	25	5	4.4	16	176	0.16	-2.1
15	Karamsana	44K-3C4	8.17	3225	0	290	526	680	27	2.96	0.06	103	133	420	13	19	803	6.44	-11.3
16	Mithri	44K-1DP1	8.37	4010	24	314	421	1150	98	2.04	0.06	66	90	765	11	15	536	14.39	-4.7
17	Rori	44O-2A1	7.94	370	0	181	14	105	0.86	1.67	0.04	41	28	18	23	12	216	0.53	-1.4
18	Kashi Ram Ka Was	44K-3C3	8.03	3230	0	266	477	825	23	0.94	0.05	272	43	430	16	15	855	6.39	-12.7
19	Ding	44O-3B5	8.49	4185	30	477	372	1200	24	2.67	0.07	49	63	846	17	18	381	18.85	1.2
20	Gigorani	44O-3A2	8.17	5440	0	193	779	1650	25	1.69	0.06	185	188	800	68	13	1236	9.90	-21.5
21	Sherpura	44O-3A6	8.54	9880	18	224	1348	2700	25	4.23	0.09	177	203	1714	20	14	1277	20.87	-21.3
22	Chormar	44K-1D3	9.08	1440	71	459	56	250	1.9	10.8	0.07	8.2	28	336	5	10	134	12.55	7.2
23	Odhan	44K-1D3	8.33	1975	36	326	147	420	89	6.59	0.07	37	45	364	9	16	278	9.51	1.0
24	Ghusiana	44O-3A3	8.71	755	36	145	49	165	7	1.42	0.06	45	40	64	6.7	16	278	1.67	-2.0
25	Jamal	44K-3D2	8.56	8210	48	193	1320	2100	18	0.48	1.88	461	283	908	26	3.9	2318	8.21	-41.5
26	Kaluana	44K-2C5	8.18	2761	0	109	147	1250	21	0.99	0.05	173	130	300	12	25	968	4.20	-17.5
27	Taruana	44O-2A3	8.91	1275	48	363	161	80	2.7	0.23	0.05	16	65	64	192	18	309	1.59	1.4
28	Goriwala	44K-IC5	8.5	715	30	139	35	180	20	0.86	0.05	49	50	41	6.7	14	330	0.98	-3.3
29	Shergarh		8.38	2115	48	411	246	390	12	1.1	0.06	66	165	104	90	24	845	1.56	-8.5

20 District Sonepat

1	Jakhiali	53H-1AP6	7.83	1431	0	393	127	232	30	0.16	0.026	70	83	118	7.6	23	517	2.26	-3.9
2	Manauli	53H-1AP7	8.14	532	0	254	8.9	52	0.4	1.5	0.043	17	7.8	95	3	17	75	4.79	2.7
3	Shahpur	53C-3D2	7.98	643	0	338	12	43	15	0.94	0.033	47	35	42	5.1	18	261	1.13	0.3

SR	LOCATION	WELL NO.	pH	EC in μS/cm	CO ₃	HCO ₃	Cl	SO ₄	NO ₃	F	PO4	Ca	Mg	Na	K	SiO ₂	T.H	SAR	RSC
					<-----	mg/l----->	meq/l												
at 25°C																			
4	Pugthala	53C-4DP7	7.53	1138	0	592	57	50	14	0.34	0.037	79	70	69	6.3	28	485	1.36	0.0
5	Mundalana	53C-4D5	8.40	1853	12	761	71	200	24	7.8	0.017	8.6	0	460	2.8	13	22	43.20	12.4
6	Jagsi	53C-4C6	8.15	2507	0	544	324	364	24	2.04	0.014	47	79	410	6.4	20	442	8.48	0.1
7	Butana	53C-4C5	7.86	4032	0	604	606	620	108	1.11	0.033	102	114	640	9.6	24	724	10.35	-4.6
8	Garhwal	53C-4C12	8.08	1604	0	502	121	215	4.5	1.94	0.08	47	43	245	9.1	19	293	6.21	2.3
9	Bhunderi	53C-4C13	7.98	1759	0	489	178	164	5.5	0.12	2.91	89	32	215	9.4	15	357	4.97	0.9
10	Ahulana	53C-4C10	7.57	5444	0	574	1090	650	103	0.27	0.15	162	163	720	160	28	1076	9.55	-12.1
11	Mahra	53C-4C14	7.85	1164	0	502	111	39	1.7	0.72	0.04	53	58	97	34	23	373	2.19	0.8
12	Rukhi	53C-4C7	8.00	2528	0	369	442	340	6.7	1.59	0.033	83	93	335	8.3	17	591	6.00	-5.7
13	Bhainswal Kalan	53C-4D3	7.92	1100	0	538	46	82	2	1.33	0.033	81	58	70	6.2	24	442	1.45	0.0
14	Farmana	53D-1D6	8.29	4278	0	1239	698	208	11	0.32	1.72	139	102	535	255	38	767	8.41	5.0
15	Sisanah	53D-1D1	8.11	2018	0	572	182	310	16	0.87	0.113	79	80	138	190	17	527	2.62	-1.1
16	Rohat	53D-1D5	8.15	3332	0	1196	253	332	8.7	0.73	0.033	40	25	430	470	16	203	13.14	15.5
17	Nahri	53H-1A7	7.37	908	0	417	82	15	3.2	0.22	0.0517	79	28	64	27	22	314	1.58	0.6
18	Rathdhana	53H-1AP9	7.80	1714	0	695	89	208	26	0.6	0.0307	70	69	225	7.8	24	458	4.57	2.2
19	Kheora	53H-1AP1	8.21	711	0	362	12	40	16	1.92	0.0407	21	13	122	3.3	18	107	5.16	3.8
20	Murthal	53G-4AP12	8.01	1508	0	465	107	192	23	0.96	0.04	49	48	206	6	20	320	5.01	1.2
21	Datuli	53G-4AP10	8.29	1432	0	405	64	232	1.6	0.4	0.0407	17	34	230	5.4	26	181	7.41	3.0
22	Purkhas	53C-4DP8	7.87	6732	0	398	912	1640	198	0.47	0.011	124	205	1080	16	20	1151	13.84	-16.5
23	Machhri	53C-4D1	7.78	706	0	296	25	60	6.2	0.3	0.022	60	36	25	4.5	14	298	0.63	-1.1
24	Pinana	53C4D13	8.11	5572	0	1425	834	390	68	1.76	0.196	77	122	693	500	21	693	11.44	9.5
25	Lath	53C-4D2	7.92	880	0	326	55	78	18	1.33	0.033	62	30	79	3.1	12	277	2.06	-0.2
26	Khanpur Kalan	53C-4DP5	8.07	2219	0	398	296	305	9.4	1.68	0.011	98	26	345	1.8	17	352	8.01	-0.5

21 District Yamunanagar

1	Sadhura	53F-3AP3	8.39	934	46	314	112	0	36	0.47	0.03	16	38	124	46	23	194	3.85	2.8
2	Rasulpur	53F-3A5	8.22	644	0	154	54	140	0.0	0.2	0.03	39	31	60	1.4	22	225	1.74	-2.0
3	Sabri	53F-3A9	8.39	454	13	214	7.2	19	0.2	0.13	0.05	19	17	50	2	22	117	2.01	1.6
4	Bilaspur	53F-3B1	8.48	494	13	160	40	34	27	0.37	0.04	19	20.0	61	1	30	133	2.33	0.5

SR	LOCATION	WELL NO.	pH	EC in	CO ₃	HCO ₃	Cl	SO ₄	NO ₃	F	PO4	Ca	Mg	Na	K	SiO2	T.H	SAR	RSC
			μS/cm	<-----	mg/l	----->	meq/l												
at 25°C																			
5	Khijrabad	53F-3B6	8.46	321	13	147	11	0	11	0.13	0.02	43	4	18	3.3	19	122	0.70	0.4
6	Choli	53F-3B7	8.78	1858	79	347	239	50	143	0.4	0.03	12	60	247	81	28	276	6.46	2.8
7	Mustafabad	53F-4A7	8.74	1557	33	234	289	101	2.0	0.48	0.02	17	41	189	131	5.1	214	5.66	0.7
8	Amdalpur	53F-4B3	8.88	643	39	234	11	29	22	0.13	0.03	10	16	13	159	30	92	0.59	3.3
9	Shadipur	53F-4B5	8.3	457	0	154	14	96	0.0	0.45	0.03	37	26	18	7	15	199	0.55	-1.5
10	Sadhura Pz	53F-3AP3	8.3	285	0	114	14	29	14	0.2	0.02	29	12	14	3.1	15	122	0.55	-0.6
11	Radaur	53F4AP3S	8.48	331	13	127	29	10	0.0	0.42	0.02	31	13	19	4	27	133	0.72	-0.1
12	Dhaurang	53F-4A3	8.6	414	13	194	18	14	12	0.26	0.02	14	30	32	4.6	26	158	1.11	0.4
13	Jiwakheri	53F-4AP7	8.7	536	39	180	11	38	0.0	0.42	0.02	16	27	53	7.7	27	148	1.88	1.2
14	Mustafabad	53F-4A7	8.69	1031	33	180	155	75	0.0	0.42	0.03	19	27	157	9.8	15	158	5.43	0.9
15	Chacrauli	53F-4B1	LEAKED																
16	Naggal	53F-4BP4	8.57	304	6.6	134	11.0	18	0.7	0.4	0.04	41	10.0	5	2.2	13	143	0.163	-0.5