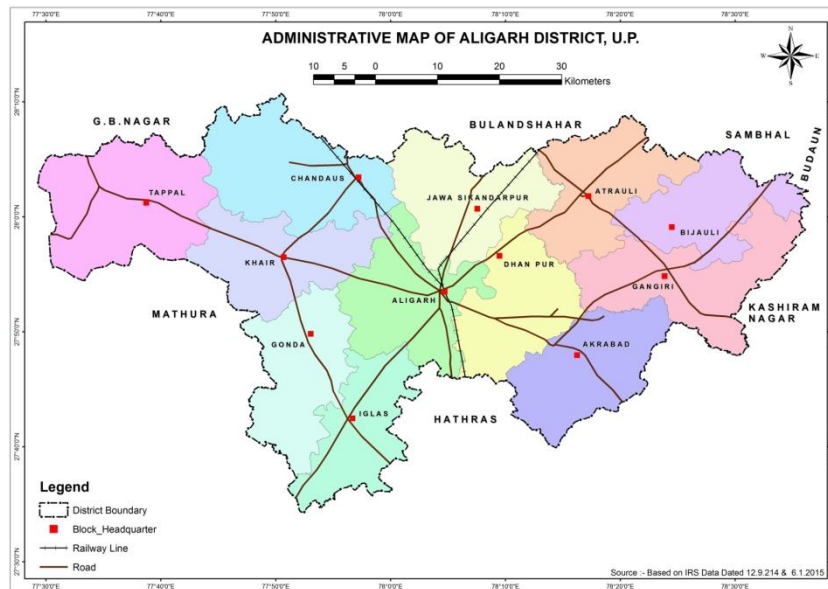


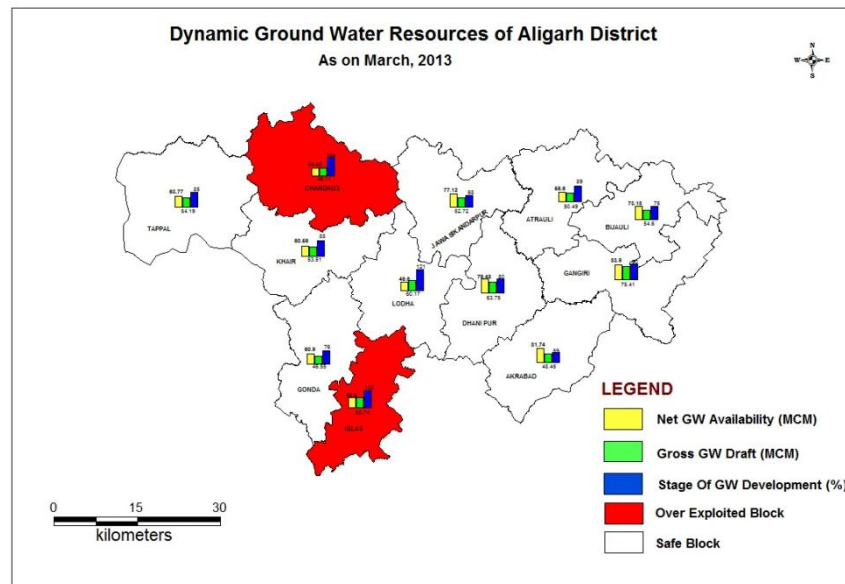
Aquifer Mapping & Ground Water Management Plan Aligarh District, U.P.



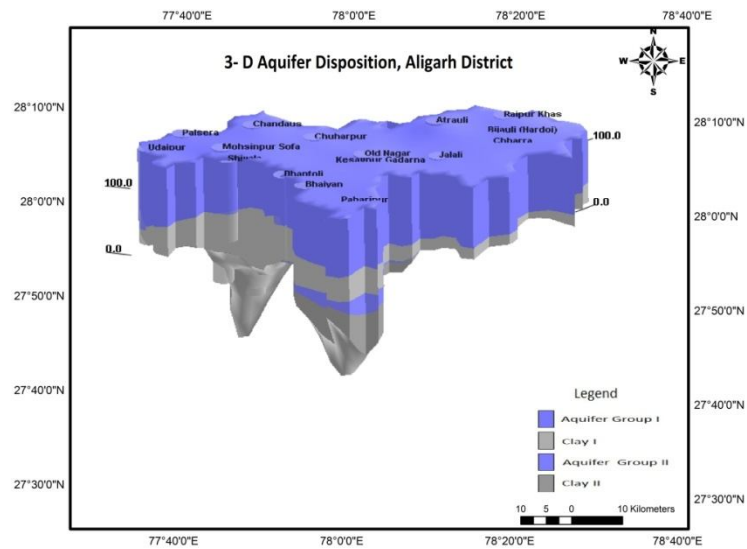
Area: 3721 Sq Km
Tehsil: 05
Block: 12
Villages: 1210

MAJOR ISSUES

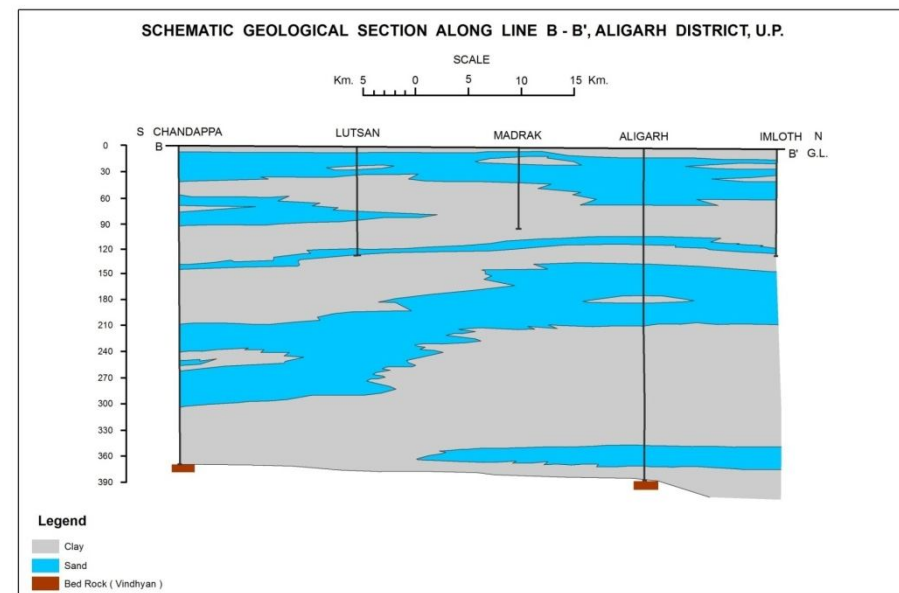
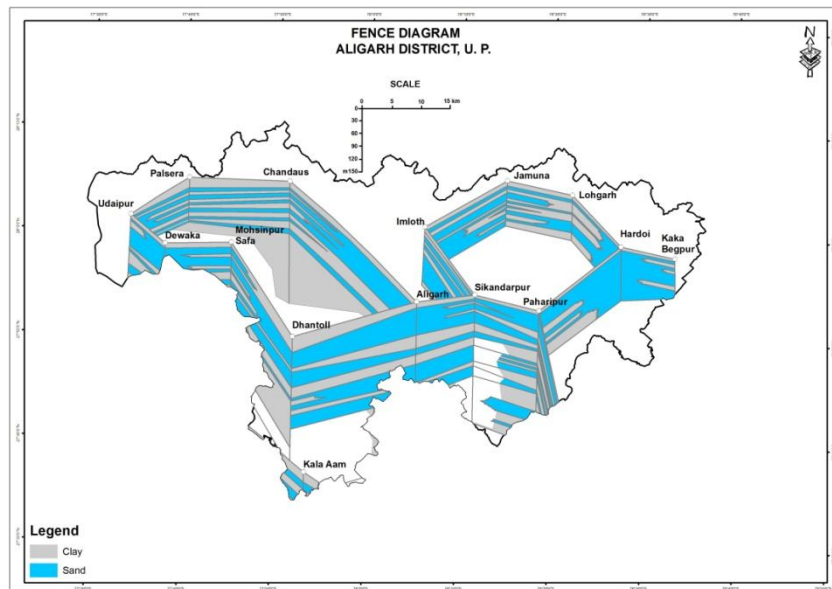
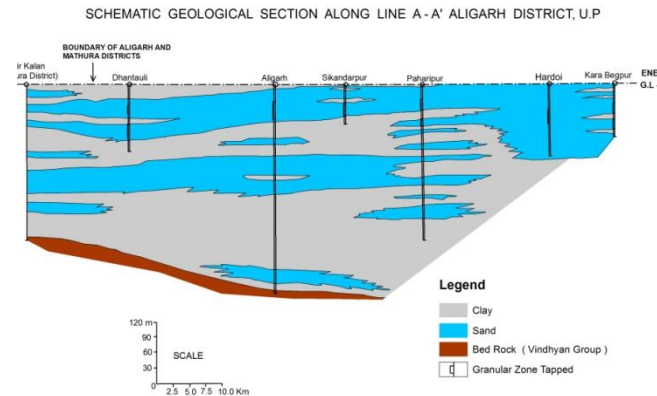
- Out of 12 blocks, 2 blocks are over exploited and one is critical.
- Second Aquifer has inferior ground water quality in terms of salinity.



AQUIFER DISPOSITIONS



- Aquifer Group I: down to around 114 m (Fresh & Saline)
- Aquifer Group II: 120-300 (Saline)

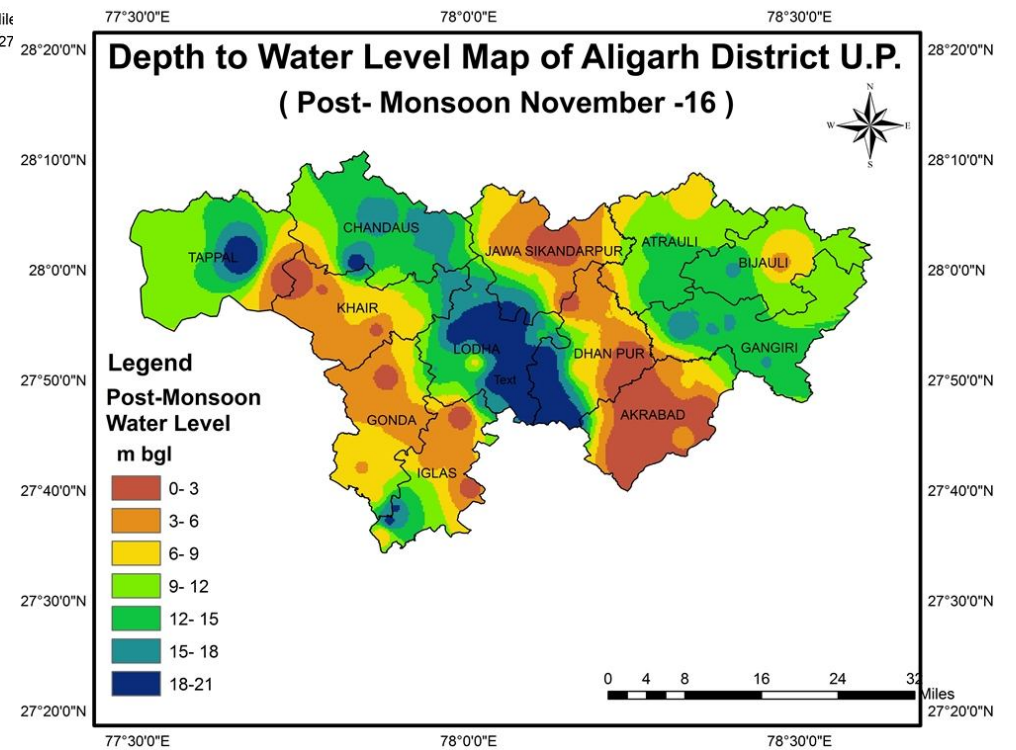
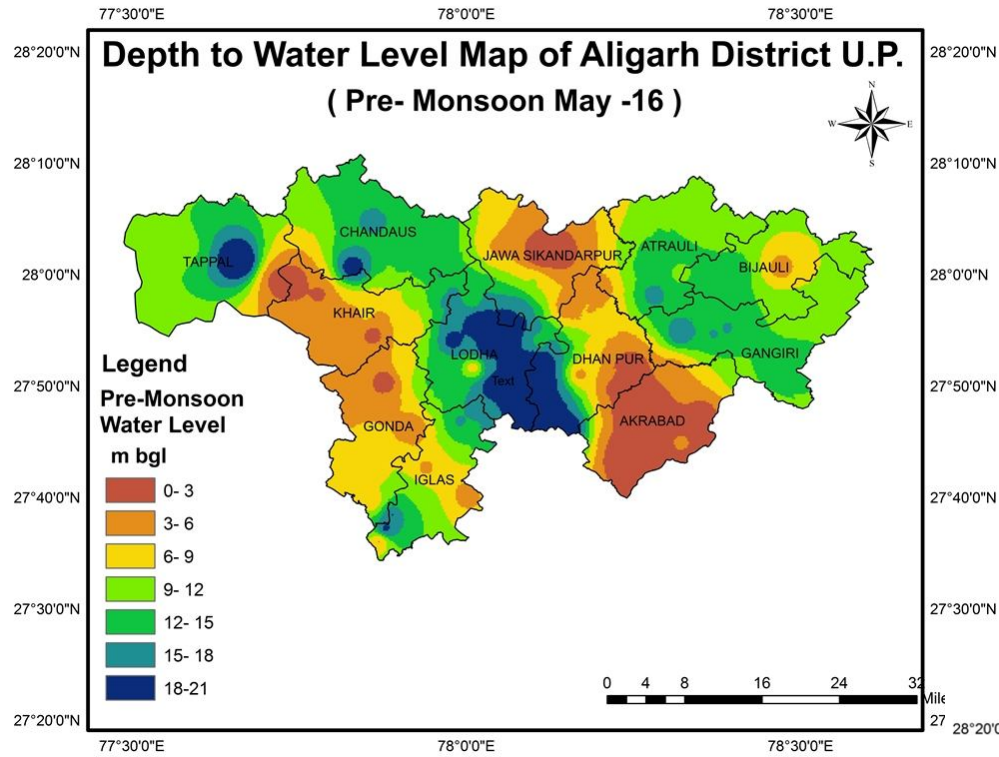


GW Resources (MCM) up to 300m in Aligarh District

Block	Aquifer-I (Unconfined)					Aquifer-II (confined)		Aquifer-I+II	
	Dynamic GW Resources (MCM)		Static GW Resources (MCM)		Total GW Resources (MCM)	Confined aquifer Static GW Resources (MCM)		Total GW Resources (MCM)	
	Fresh	saline	Fresh	saline	Fresh	Fresh	saline	Fresh	saline
1AKRABAD	81.7	0	819.2	0.0	901.0	0.0	1197.9	901.0	1197.9
2ATARAULI	56.6	0	459.8	0.0	516.4	0.0	1200.2	516.4	1200.2
3BIJAULI	73.2	0	1279.3	0.0	1352.5	0.0	1111.7	1352.5	1111.7
4CHANDAU S	44.5	0	796.8	531.2	841.3	0.0	1570.6	841.3	2101.8
5DHANIPUR	79.5	0	588.6	392.4	668.1	0.0	1330.6	668.1	1723.0
6GANGIRI	83.9	0	560.0	373.3	643.9	0.0	1575.3	643.9	1948.7
7GONDA	60.9	0	653.8	435.9	714.7	0.0	1401.1	714.7	1836.9
8IGLAS	58.5	0	458.6	305.7	517.1	0.0	1014.5	517.1	1320.2
9JAWAN	77.1	0	949.8	0.0	1026.9	0.0	1242.2	1026.9	1242.2
10KHAIR	60.6	0	368.5	245.7	429.1	0.0	1324.4	429.1	1570.1
11LODHA	49.6	0	440.0	293.3	489.6	0.0	1309.9	489.6	1603.2
12TAPPAL	63.8	0	591.4	591.4	655.2	0.0	1844.0	655.2	2435.3
Total	789.9	0.0	8054.5	3168.9	8755.5	0.0	16122.4	8755.5	19291.2

Block-wise irrigation from different sources

Block	Area Irrigated by Canal (ha)	Area Irrigated by Ground Water (ha)	Contribution of GW (%)	Irrigation Intensity %
AKRABAD	4736	21004	81.6	179
ATARAULI	36	23487	99.8	158
BIJAULI	865	18883	95.6	131
CHANDAU S	850	27713	97.0	150
DHANIPUR	4818	23592	83.0	257
GANGIRI	150	29450	99.5	125
GONDA	2310	25264	91.6	151
IGLAS	818	21716	96.4	153
JAWAN	2661	24550	90.2	164
KHAIR	4768	27430	85.2	151
LODHA	42	21867	99.8	140
TAPPAL	1729	31415	94.8	166
TOTAL	23783	296371	92.6	152

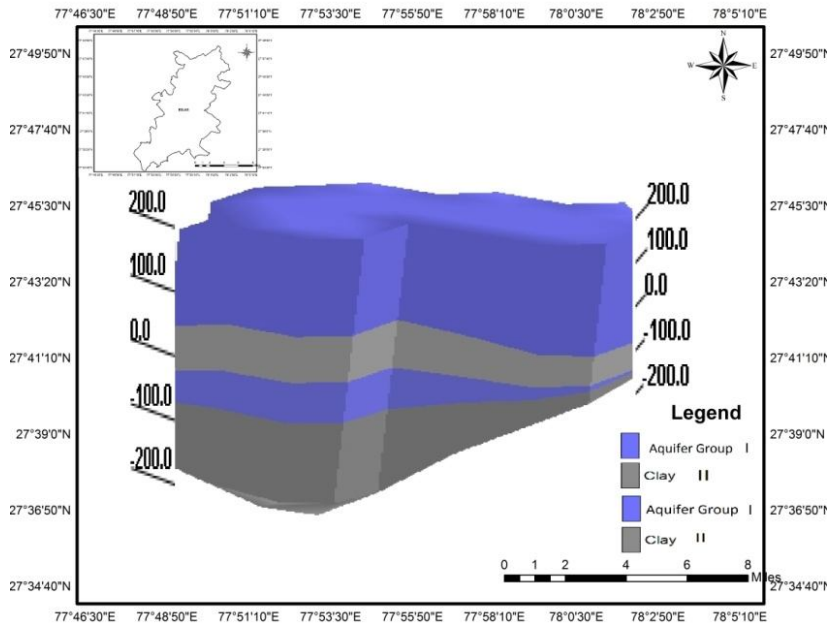
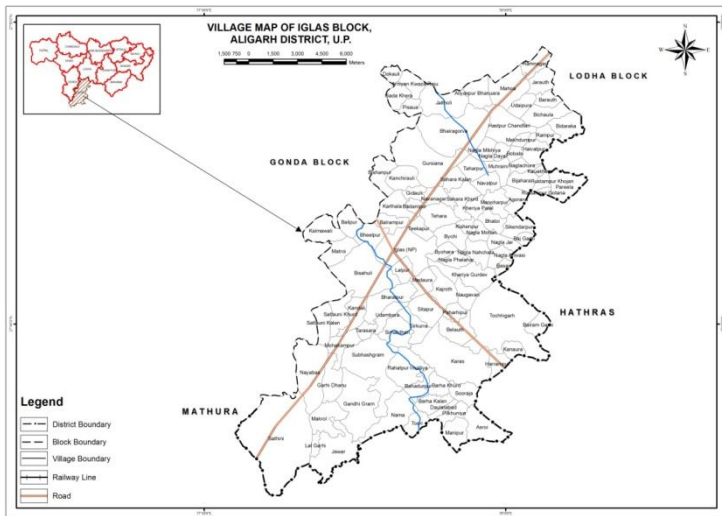


Management Plan Strategy

Block	Category	Water level trend (cm/year) 2004-2013		Average post monsoon	Water level below 5 m Col f-5	Volume of sub surface potential MCM	Net area sown (ha)	Net irrigated area (ha)	Management plan
		Pre	Post						
IGLAS	OE	24.92	6.39	10.42	5.42	203.0297	21795	21716	Intervention required
CHANDAUS	OE	17.89	20.02	15.48	10.48	607.7763	28509	27713	Do
AKRABAD	SAFE	-33.81	-28.00	3.9	-1.1	-48.65344	21406	21004	No intervention required since gross and net irrigated area is nearly equal.
ATARAULI	SAFE	-27.08	-20.44	11.3	6.3	279.2089	23217	23487	Do
BIJAULI	SAFE	-3.36	6.10	10.8	5.8	238.0942	18789	18883	Do
DHANIPUR	SAFE	-0.08	2.27	11.46	6.46	317.3855	23974	23592	Do
GANGIRI	SAFE	12.85	5.09	13.8	8.8	511.8911	29417	29450	Do
GONDA	SAFE	-10.43	-9.87	4.85	-0.15	-7.760136	25108	25264	Do
JAWAN	SAFE	0.19	-6.13	6.7	1.7	77.97723	24580	24550	Do
KHAIR	SAFE	-1.37	-3.70	8.1	3.1	151.6054	27748	27430	Do
LODHA	SAFE	-13.95	-17.32	15.9	10.9	527.1903	21603	21867	Do
TAPPAL	SAFE	-7.13	-5.68	11.64	6.64	452.1022	31102	31415	Do

- Ground water issues can be addressed by focussing on measures to increase recharge and reducing the draft . It can be managed by a mix of measures such as:
SUPPLY SIDE MANAGEMENT
- Water conservation and Artificial Recharge to ground water
 On Farm Activities and
DEMAND SIDE MANAGEMENT
- Adoption of techniques to enhance water Use Efficiency

GROUND WATER MANAGEMENT IN IGLAS BLOCK



MAJOR ISSUES

- The block has been categorised as over-exploited.
- 92% area under GW irrigation. Only 8% area under canal Network

Proposed Interventions in Iglas Block

	Check Dams of 10000 cum Capacity (Nos)	Drain/stream development (Length in km x 10 to 15m x 1.5m)	Nala Bunds of 7500 cum Capacity (Nos)	Revival of Ponds with RW Average area 0.49 ha x 3m); deepening by 0.5m	On-farm Activities (Area in ha)	Water Use Efficiency (WUE) Measures (Area in ha)
No. Of Structures	4	10	70	182	3500	300
Cost Rs	40	78.75	140	637	490	180

Total cost (Rs in Lakh) : 1565.75
5% Provision for O & M (Rs in Lakh): 78.28
5% Provision for Impact Assessment (Rs in Lakh): 78.28
Grand Total (Rs in Lakh): 1722.31

Enhancing Water Use Efficiency

DEMAND SIDE MANAGEMENT

Efficient irrigation

- In flood/furrow irrigation method more than 50% of applied water is wasted through seepage to deeper level, localized inundation causes loss through evaporation and it leaches out the nutrients from the plant.
- While through drip & sprinkler irrigation wastage of irrigational water could be minimized. The conveyance losses (mainly seepage & evaporation) can be saved upto 25 to 40% through utilization of HDPE pipes.

Diversification of cropping pattern

- Alternate cropping system having lower requirement of water are better option.
- Summer paddy and maize need to be avoided which are grown over substantial area in the block.
- Large scale adoption of rice-wheat rotation system is the main reason of over exploitation of groundwater. Late sown wheat/peas are replaced by spring maize which consumes more water. Suggested cropping pattern are as under.
- **Kharif-** Maize, cotton, sorghum, pulses, groundnut
- **Rabi-** Mustard, gram, pulses, vegetable
- By adopting suggested cropping pattern 20 to 30% of irrigation water saving is possible.

Proposed Interventions in Aligarh District

Block	No. Of Structures/Cost	Check Dams of 10000 cum Capacity (Nos)	Drain/stream development (Length in km x 10 to 15m x 1.5m)	Nala Bunds of 7500 cum Capacity (Nos)	Revival of Ponds with RW Average area 0.49 ha x 3m); deepening by 0.5m	On-farm Activities (Area in ha)	Water Use Efficiency (WUE) Measures (Area in ha)
Iglas	No. Of Structures	4	10	70	182	3500	300
	Cost Rs	40	78.75	140	637	490	180
Chandaus	No. Of Structures	4	10	70	162	3500	300
	Cost Rs	40	78.75	140	567	490	180

Block	Total cost (Rs in Lak)	5% Provision for O & M (Rs in Lakh)	5% Provision for Impact assessment (Rs in Lakh)	Grand Total (Rs in Lakh)
Iglas	1565.75	78.29	78.29	1722.33
Chandaus	1495.75	74.79	74.79	1645.33
District G Total	3061.50	153.08	153.08	3367.65

Summarised Expected Benefits	Iglas Block	Chandaus Block	District Total
Total Expected Annual Recharge (MCM)	10.52	10.15	20.67
Provision for supplemental irrigation (MCM)	7.01	6.65	13.66
Total Saving from On-farm Activities & WUE Measures (MCM)	1.32	1.32	2.64
Total Saving from Recharge/ Conservation (MCM)	17.53	16.8	34.33
Total Recharge/ Saving (MCM)	18.82	18.12	36.94
Estimates based upon Resource Estimation as on 31.03.2013			

Projected Impact On Status Of Groundwater Resource & Development In Aligarh District

Block	Net G.W. Availability (Ham)	Additional Recharge from RWH & Recharge (ham)	Total Net G.W. Availability after intervention (Ham)	Existing G.W Draft for all purpose (ham)	Saving of Ground water through projects (ham)	Net GW draft after interventions (ham)	Present stage of G.W. development (%)	Projected stage of G.W. Dev. (in %)
Iglas	5850	1052	6902	5974	834.29	5140.04	102.12	74.47
Chandaus	4448	1015	5463	5974	797.00	5177.33	104.00	94.76

Estimates based upon Resource Estimation as on 31.03.2013

Thanks