GROUND WATER PROSPECTS MAP

(PREPARED FROM SATELLITE IMAGE INTERPRETATION WITH LIMITED FIELD CHECKS)

N

W E

S

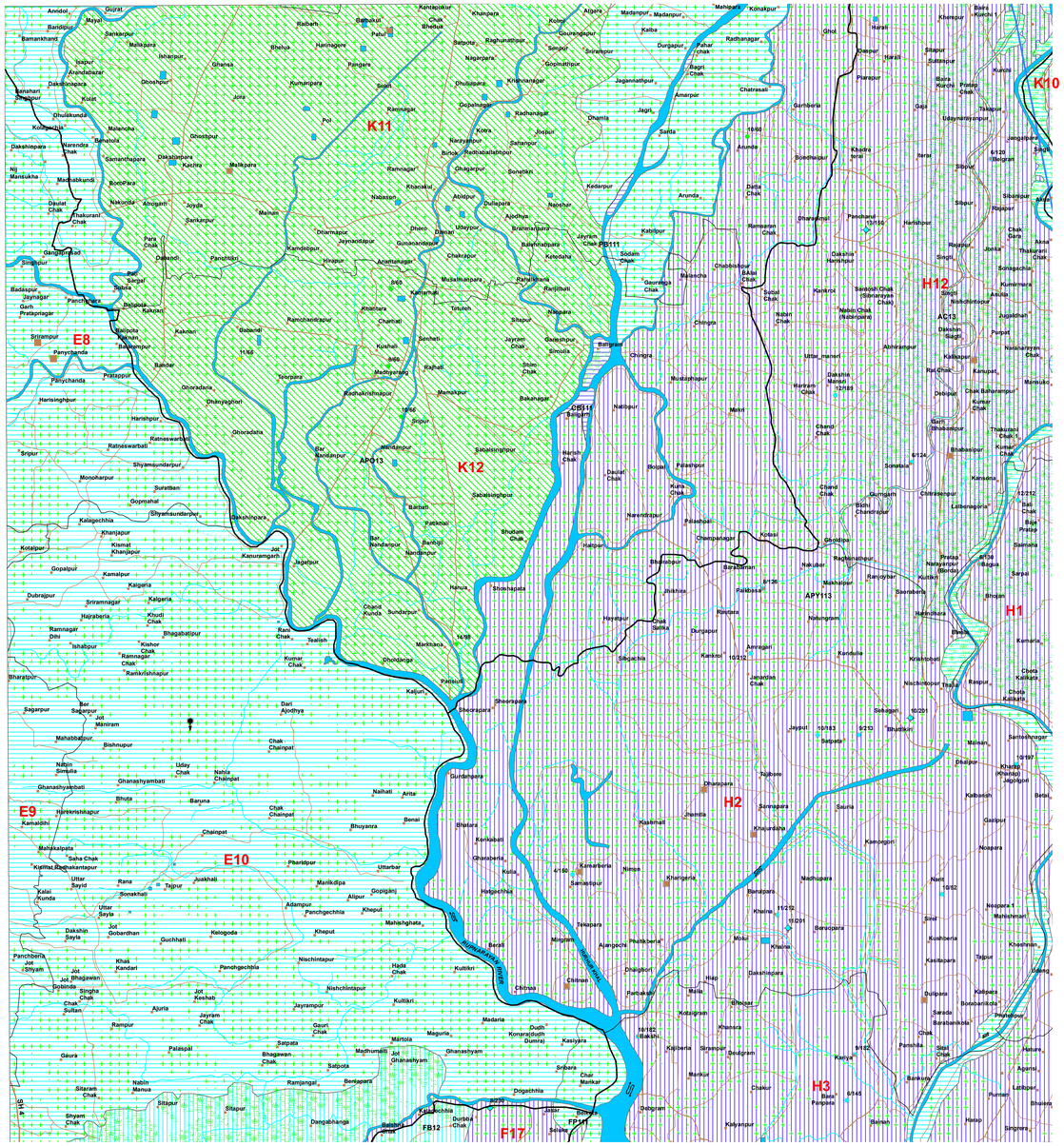
Kilometers

0 1 2 3 4 5

SCALE - 1 : 50,000

MAP SHEET NO. 73N/14

HOWRAH, HUGLI, PURBA MEDINIPUR & PASCHIM MEDINIPUR DISTRICTS, WEST BENGAL



© NRSC (ISRO), DEPT. OF SPACE, GOVT. OF INDIA DATA USED : IRS - P6 LISS III FCC dated September 2005-February 2006,GROUND TRUTH & WELL OBSERVATION during March-June, 2012 & Oct 2012-Jan 2013,Published Geological maps & Literatures. *Designed & Developed by Hydrogeology Division, NRSC, ISRO*

L E G E N D

MAP UNIT (HYDROGEOMORPHIC UNIT) REPRESENTED IN THE MAP WITH ALPHANUMERIC CODE (COLOUR INDICATES YIELD RANGE AND HATCHING INDICATE DEPTH RANGE)	GEOLOGICAL SEQUENCE / ROCK TYPE (REPRESENTED IN THE MAP WITH NUMERIC CODE)	GEOMORPHIC UNIT / LANDFORM (REPRESENTED IN THE MAP WITH ALPHABETIC CODE)	DEPTH TO WATER LEVEL PRE / POST- MONSOON (AVERAGE IN METERS) / NO. OF WELLS OBSERVED	RECHARGE CONDITIONS BASED ON AVAILABILITY OF WATER (RAINFALL & OTHER SOURCES)	GROUND WATER PROSPECTS: AQUIFER MATERIAL (LS = LOOSE SEDIMENTS CS = CONSOLIDATED FR = FISSURED ROCK FR = FRACTURED ROCK WR = WEATHERED ROCK / WM = WEATHERED MATERIAL IR = IMPERVIOUS ROCK)	GROUND WATER PROSPECTS: TYPE OF WELLS SUITABLE (DW = DUG WELL RW = RING WELL BW = BORE WELL TW = TUBE WELL DBRW = DUG CUM-BORE WELL / DTW = DUG CUM-TUBE WELL)	GROUND WATER PROSPECTS: DEPTH RANGE OF WELLS (SUGGESTED) MIN - MAX (IN METERS)	GROUND WATER PROSPECTS: YIELD RANGE OF WELLS (EXPECTED) (in LPM or m^3 / day)	GROUND WATER PROSPECTS: HOMOGENEITY IN THE UNIT & SUCCESS RATE OF WELLS (PROBABILITY) VERY HIGH HIGH MODERATE LOW	GROUND WATER PROSPECTS: QUALITY OF WATER POTABLE (P) NON - POTABLE (NP) (INDICATE REASONS IF NON POTABLE)	GROUND WATER PROSPECTS: GROUND WATER IRRIGATED AREA (APPROX . RANGE IN PERCENTAGE)	RECHARGE STRUCTURES SUITABLE & PRIORITY PT = PERCOLATION TANK CD = CHECK DAM NB = NALA BUND RW = RECHARGE WELL DT = DESILTING OF TANK RT = RECHARGE TRENCH SD = SUBSURFACE DYKE RS = RECHARGE SHAFT ST = STORAGE TANK SCM = SOIL CONSERVATION MEASURES	REMARKS (PROBLEMS / LIMITATIONS)
CB111	Hugli/Bhagirathi Formation(Present day Deposits)	Alluvium (Sand Dominant) (111)	Channel Bar (CB)	No well observed	Excellant	LS	RW TW	5-10 m	400-500 LPM	Very High	P	Nil	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.
PB111			Point Bar (PB)	No well observed	Very Good	LS	RW TW	5-10 m	300-500 LPM	Very High	P	Nil	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.
FP111			Flood Plain (FP)	No well observed	Very Good	LS	TW	<30 m	250-300 LPM	Very High	P	40	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.
FB12	Panskura/Arambagh/Chinsurah/Kalwa Formation (Early to Late Holocene)	Alluvium (Sand and Silt) (113)	Flood Basin (FB)	No well observed	Poor	LS	TW	>100 m	150-200 LPM	Low	P	Nil	Not Required	Areas of low groundwater potential. Better potential at greater depths.
APY113			Alluvial Plain Younger (APY)	11 / 7 / 21	Good	LS	TW	>150 m	400-500 LPM	High	NP (As&Fe) [At shallow depth]	53	RW Low	Areas with high Arsenic and Iron concentration.Potable water available at depth range above 150 m. Recharge of shallow aquifer recomended.
APY113			Alluvial Plain Younger (APY)	No well observed	Good	LS	TW	25-30 m	200-250 LPM	High	P	25	Not Required	Potable water available at shallow depth.
AC13	Sijua/Rampurhat Formation (Late Pleistocene-Early Holocene)	Alluvium (Sand,Silt & Clay) (13)	Abandoned Channel (AC)	No well observed	Very Good	LS	RW TW	10-15 m	250-300 LPM	Very High	P	Nil	Not Required	Areas of very high groundwater potential at shallow depth.Most suitable for extraction of groundwater.
APO13			Alluvial Plain Older (APO)	13 / 6 / 5	Moderate to Good	LS	TW	40-60 m	150-200 LPM	Moderate to High	P	69	RW Moderate to Low	Moderate groundwater potential at intermediate depths.

F____F/ ____/ — — — *These are fault / fracture zones, which generally act as conduits for movement of ground water in hard rocks. Along these zones, the yields are significantly higher and wells are likely to be sustainable for longer duration. However, the inferred fractures need to be confirmed by detailed ground surveys.*

D____D /Q____Q / P____P
D— — D /Q— — Q / P— — P — These are dykes, quartz reefs and pegmatite veins, which generally act as barriers for ground water movement.

N.B.-The depth range and yield range of wells may vary within the unit because of certain inhomogeneities. Fractures/Lineaments which are clearly observed / inferred from the satellite image are indicated on the map. There could be some obscured fractures which also influence the ground water prospects. Locations of the recharge structures shown in the map are tentative. This map is useful for narrowing down the target zones,and exact location on the ground for wells and recharge structures should be identified based on follow-up ground hydrogeological/geophysical surveys.

GROUND WATER PROSPECTS INFORMATION

YIELD RANGE OF WELLS	COLOUR CODE	DEPTH RANGE OF WELLS: SHALLOW (<30 METERS)	MODERATE (30 - 60 METERS)	DEEP (>60 METERS)
> 800 LPM	VIOLET			
400 - 800 LPM	INDIGO			
200 - 400 LPM	BLUE			
100 - 200 LPM	GREEN			
50 - 100 LPM	YELLOW			
30 - 50 LPM	ORANGE			
20 - 30 LPM	BROWN			
10 - 20 LPM	PINK			
Prospects limited to valley portions, paddy fields, Plateau etc.)	RED			
Run-off zone/ Barrier for G.W. movement			(Inselberg / Ridge / Dyke etc.)	

HYDROLOGICAL INFORMATION

DESCRIPTION	SYMBOL
CANAL / TANK IRRIGATED AREA	
GROUND WATER IRRIGATED AREA	
RIVER / STREAM (with sand)	
WATER BODY / SPRING	
CANAL	
RAIN GUAGE STATION (With average annual rainfall in mm)	800

RECHARGE STRUCTURES SUGGESTED

PERCOLATION TANK		CHECK DAM	
NALA BUND		RECHARGE WELL	
DESILTING OF TANK		RECHARGE PIT	
SUBSURFACE DYKE		RECHARGE SHAFT	
SOIL CONSERVATION MEASURES		STORAGE TANK	

WELL OBSERVED DURING PRE-M. PERIOD

YIELD RANGE IN LPM	BORE / TUBE WELL	YIELD RANGE IN m^3/day	DUG WELL / RING WELL
> 800 LPM	16/70	> 400 m^3 / day	8/15
400 - 800 LPM	16/70	200 - 400 m^3 / day	8/15
200 - 400 LPM	16/70	100 - 200 m^3 / day	8/15
100 - 200 LPM	16/70	50 - 100 m^3 / day	8/15
50 - 100 LPM	16/70	25 - 50 m^3 / day	8/15
30 - 50 LPM	16/70	15 - 25 m^3 / day	8/15
20 - 30 LPM	16/70	10 - 15 m^3 / day	8/15
10 - 20 LPM	16/70	5 - 10 m^3 / day	8/15
< 10 LPM	16/70	< 5 m^3 / day	8/15

Colour inside well symbol indicates yield range. The figures on the top right hand side of well indicate the depth to water level and depth of well in meters

DUG - CUM - BORE WELL — HAND PUMP WELL
ARTESIAN WELL — OBSERVATION WELL OF G.W DEPT. / C.G.W.B.

STRUCTURAL INFORMATION

DIPS	BEDDING	SCHISTOSITY/ FOLIATION
GENTLE (< 15)		
MODERATE (15 - 45)		
STEEP (45 - 80)		
SUB - VERTICAL TO VERTICAL (> 80)		

ANTICLINE / ANTIFORM

SYNCLINE / SYNFORM

TREND LINE

ESCARPMENT

LITHOLOGY / GEOMORPHIC UNIT BOUNDARY

	MINOR	MAJOR
FAULT	F F	F F
THRUST	T T	T T
FRACTURE / LINEAMENT		
FRACTURE / LINEAMENT (Inferred)		
SHEAR ZONE (Confirmed / Inferred)	S S	S /S S
DYKE (Confirmed / Inferred)	D D	D / D D
QUARTZ REEF (Confirmed / Inferred)	Q Q	Q /Q Q
PEGMATITE VEIN (Confirmed / Inferred)	P P	P / P P

Lithologic contacts are inferred at places & Geomorphic boundaries are gradational

BASE MAP INFORMATION

SYMBOL	DESCRIPTION
NH - 2	NATIONAL HIGHWAY
SH - 9	STATE HIGHWAY
	METALLED ROAD
	OTHER ROAD
	RAILWAY
	CITY / VILLAGE
	HABITATIONS : NON - COVERED (NC) PARTIALLY COVERED (PC)

BOUNDARY :

INTERNATIONAL
STATE
DISTRICT
BLOCK

OTHER INFORMATION

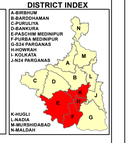
Rainfall : 1477 mm

(Source IMD)

LOCATION INFORMATION

STATE INDEX

DISTRICT INDEX



BLOCK INDEX

MAPSHEET INDEX

73N09	73N13	79B01
73N10	73N14	79B02
73N11	73N15	79B03

H1-ARY11
H2-ARY12
H3-BASIN I
H12-EGRIYARAYAMPUR
F17-PANSKURA X

PREPARED BY

GEOINFORMATICS & REMOTE SENSING CELL
W.B. STATE COUNCIL OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF SCIENCE AND TECHNOLOGY
GOVERNMENT OF WEST BENGAL
4TH FLOOR, BIKASH BHAVAN
SALT LAKE, KOLKATA 700 091

TECHNICAL GUIDANCE & QUALITY CHECK

इसरो ISRO

NATIONAL REMOTE SENSING CENTRE
INDIAN SPACE RESEARCH ORGANISATION (ISRO)
DEPT. OF SPACE, GOVT. OF INDIA
BALANAGAR, HYDERABAD - 500 625

PARTICIPATING ORGANIZATIONS

SURVEY OF INDIA
GEOLOGICAL SURVEY OF INDIA
PHED, GOVT. OF WEST BENGAL
STATE WATER INVESTIGATION DIRECTORATE, GOWB
P.S.MAPS (LAND RECORD), GOVT OF WEST BENGAL

METHODOLOGY & PROJECT EXECUTION

इसरो ISRO

NATIONAL REMOTE SENSING CENTRE
INDIAN SPACE RESEARCH ORGANISATION (ISRO)
DEPT. OF SPACE, GOVT. OF INDIA
BALANAGAR, HYDERABAD - 500 625

SPONSORED BY

RAJIV GANDHI NATIONAL DRINKING WATER MISSION (PHASE IV)
DEPARTMENT OF DRINKING WATER SUPPLY (DDWS)
MINISTRY OF DRINKING WATER & SANITATION
GOVERNMENT OF INDIA
NEW DELHI