GROUND WATER PROSPECTS MAP

(PREPARED FROM SATELLITE IMAGE INTERPRETATION WITH LIMITED FIELD CHECKS)

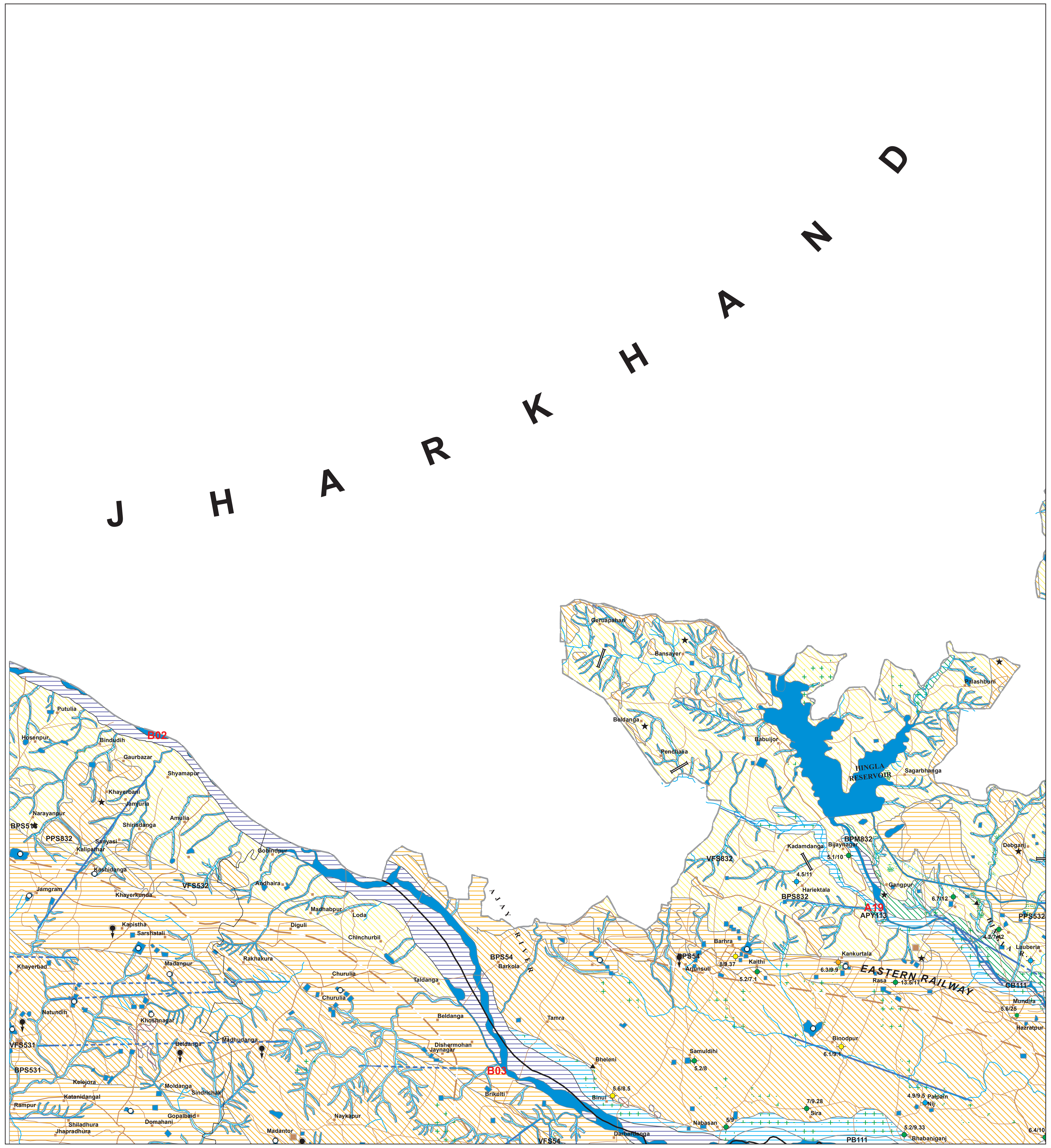
Kilometers

0 1 2 3 4 5

SCALE - 1 : 50,000

MAP SHEET NO. 73M/1

BARDDHAMAN & BIRBHUM DISTRICTS, WEST BENGAL



DATA USED : IRS - P6 LISS III FCC dated February 2006, GROUND TRUTH & WELL OBSERVATION during April-May, 2009 & Jan-Feb, 2010, Published Geological maps & Literatures.

Designed & Developed by Hydrogeology Division, NRSC, ISRO

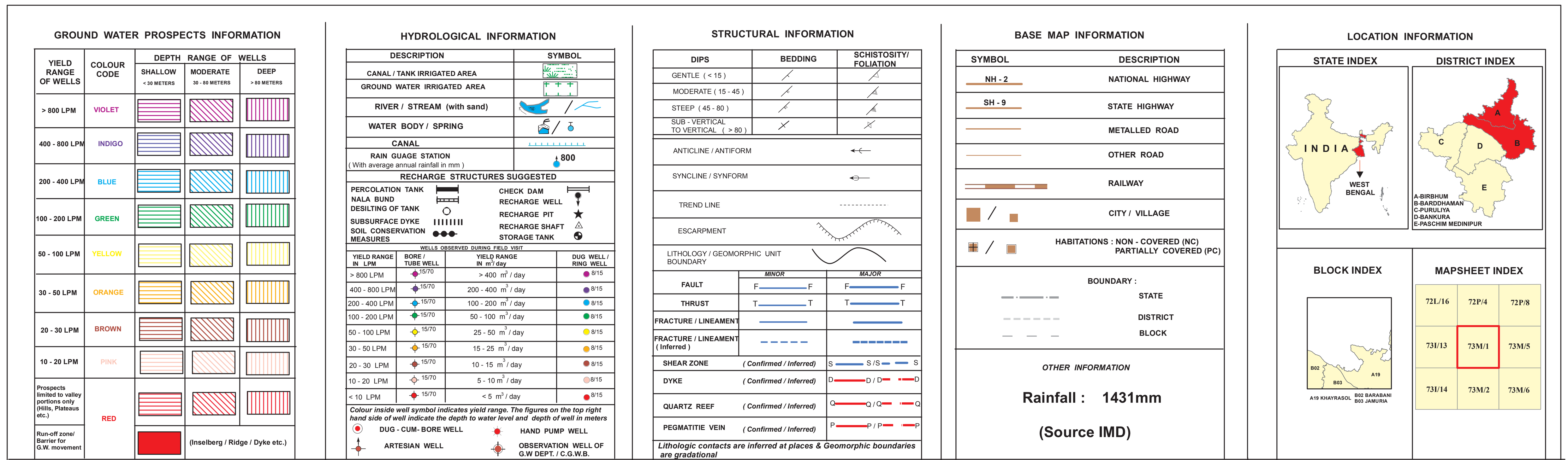
L E G E N D

MAP UNIT (HYDROGEOMORPHIC UNIT) REPRESENTED IN THE MAP WITH ALPHANUMERIC CODE (COLOUR INDICATES YIELD RANGE AND HATCHING INDICATE DEPTH RANGE)	GEOLOGICAL SEQUENCE / ROCK TYPE		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, PR = PERMEABLE ROCK, FIR = FISSURED ROCK, FR = FRACTURED ROCK, WR /= WEATHERED ROCK / WM WEATHERED MATERIAL, IR = IMPERVIOUS ROCK, IM = IMPERVIOUS MATERIAL)	TYPE OF WELLS SUITABLE (DW = DUG WELL, RW = RING WELL, BW = BORE WELL, TW = TUBE WELL, DBW / DTW = DUG CUM-BORE WELL / DUG CUM-TUBE WELL)	DEPTH RANGE OF WELLS (SUGGESTED) MIN - MAX (IN METERS)	YIELD RANGE OF WELLS (EXPECTED) (in LPM or m^3 / day)	HOMOGENEITY IN THE UNIT & SUCCESS RATE OF WELLS (PROBABILITY) VERY HIGH, HIGH, MODERATE, LOW	QUALITY OF WATER POTABLE (P) NON - POTABLE (NP) (INDICATE REASONS IF NON POTABLE)	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, RP = RECHARGE PIT, SD = SUBSURFACE DYKE, RS = RECHARGE SHAFT, ST = STORAGE TANK, SCM = SOIL CONSERVATION MEASURES)	REMARKS (PROBLEMS / LIMITATIONS)
CB111	Hugli/Bhagirathi Formation/ Present day Deposits (Present Day)	Alluvium (Sand Dominant) (111)	Channel Bar (CB)	5 - 6 / 2	Excellent	LS	TW	5-10	400-500 LPM	Very High	P	42%	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.
PB111		Alluvium (Sand Dominant) (111)	Point Bar (PB)	6 / 1	Very Good	LS	RW TW	5-10	300-400 LPM	Very High	P	7%	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.
APY113	Panskura/Arambagh/Chinsura Ganga-Koshi Formation (Early to Late Holocene)	Alluvium (Sand Dominant) (113)	Alluvial Plain Younger (APY)	5.2 - 5.63 / DW - 2	Very Good	LS	DW TW	10 - 12 20 - 30	125 - 150 m^3/day 200 - 250 LPM	Very High	P	50%	Not Required	Aquifer is formed of Sandy part of alluvium. Recharge structures not required as good recharge conditions prevail
VFS531	Gondwana Supergroup (Carboniferous to Jurassic)	Sandstone & Shale with Coal (Raniganj Formation) (531)	Valley Fill Shallow (VFS)	No wells observed	Good	LS Underlain by WM+FR	TW / BW	20 - 25	75 - 100 LPM	Moderate	P	Nil	Not Required	Aquifer conditions modified by coal mining activities Groundwater development may not be sustainable in the long run.Areas of piped water supply
BPS531			Buried Pediplain Shallow (BPS)	No wells observed	Moderate	WM+FR	DW TW / BW	5 - 10 20 - 30	10 - 15 m^3/day 30 - 50 LPM	Low	P	Nil	Not Required	Aquifer conditions modified by coal mining activities Groundwater development may not be sustainable in the long run.Areas of piped water supply
VFS54		Sandy Shale (Barren Measure) (54)	Valley Fill Shallow (VFS)	No wells observed	Moderate	LS Underlain by WM+FR	TW / BW	30 - 50	50 - 75 LPM	Moderate	P	Nil	RW / DT Moderate	Groundwater prospects moderate, recharge structures will improve the sustainability of groundwater
BPS54			Buried Pediplain Shallow (BPS)	4.93 - 7.05 / DW - 7	Limited	WM+FR	DW TW / BW	5 - 10 40 - 60	< 5 m^3/day 30 - 50 LPM	Low	P	10%	RW / DT High	Prospects limited along fracture zones
PPS54			Weathered Pediplain Shallow (PPS)	No wells observed	Poor	FR	DW TW / BW	5 - 10 40 - 60	< 5 m^3/day 20 - 30 LPM	Low	P	Negligible	RW / DT High	Essentially run-off zones. Recharge structures may help in limited groundwater development
VFS532		Sandstone & Shale with Coal (Barakar Formation) (532)	Valley Fill Shallow (VFS)	No wells observed	Moderate	LS Underlain by WM+FR	TW / BW	20 - 25	75 - 100 LPM	Moderate	P	Nil	CD Moderate	Aquifer conditions modified by coal mining activities Groundwater development may not be sustainable in the long run.Areas of piped water supply
PPS532			Weathered Pediplain Shallow (PPS)	No wells observed	Limited	FR	DW TW / BW	5 - 10 20 - 30	5 - 10 m^3/day 30 - 50 LPM	Low	P	Nil	Not Required	Aquifer conditions modified by coal mining activities.Groundwater development may not be sustainable in the long run.Areas of piped water supply
BPS513		Boulder Bed with Sandstone (Talchir Formation) (513)	Buried Pediplain Shallow (BPS)	No wells observed	Moderate	WM+FR	DW TW / BW	5 - 10 40 - 60	15 - 25 m^3/day 75 - 100 LPM	Low	P	Nil	RW / DT High	Weathered and Fractured Sandstone form the aquifer.Better prospects along fracture zones
VFS832	Chhotanagpur Gniessic Complex (Lower Proterozoic-2300 - 2400 mill.yrs)	Granitoid Gneiss (832)	Valley Fill Shallow (VFS)	No wells observed	Moderate	LS Underlain by WM+FR	TW / BW	30 - 50	150 - 175 LPM	Moderate	P	Negligible	CD Moderate	Prospects inferred as no wells observed. Recharge condition is moderate with moderate groundwater prospects
BPM832			Buried Pediplain Moderate (BPM)	No wells observed	Moderate	WM+FR	DW TW / BW	5 - 10 40 - 50	15 - 25 m^3/day 150 - 175 LPM	Moderate	P	50%	RP Moderate	Recharge structures will improve ground water prospects
BPS832			Buried Pediplain Shallow (BPS)	4.26 - 6.77 / DW - 5	Limited	WM+FR	DW TW / BW	5 - 10 40 - 60	10 - 15 m^3/day 75 - 100 LPM	Low	P	Negligible	RP High	Recharge structures will improve sustainability of groundwater sources
PPS832			Weathered Pediplain Shallow (PPS)	No wells observed	Poor	FR	DW TW / BW	5 -10 40 - 60	5 - 10 m^3/day 30 - 50 LPM	Low	P	Nil	RP High	Due to high run-off and poor infiltration, recharge structures are required to maintain sustainability of groundwater sources

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 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.



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
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
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 III B)
DEPARTMENT OF DRINKING WATER SUPPLY (DDWS)
MINISTRY OF RURAL DEVELOPMENT
GOVERNMENT OF INDIA
NEW DELHI