GROUND WATER PROSPECTS MAP

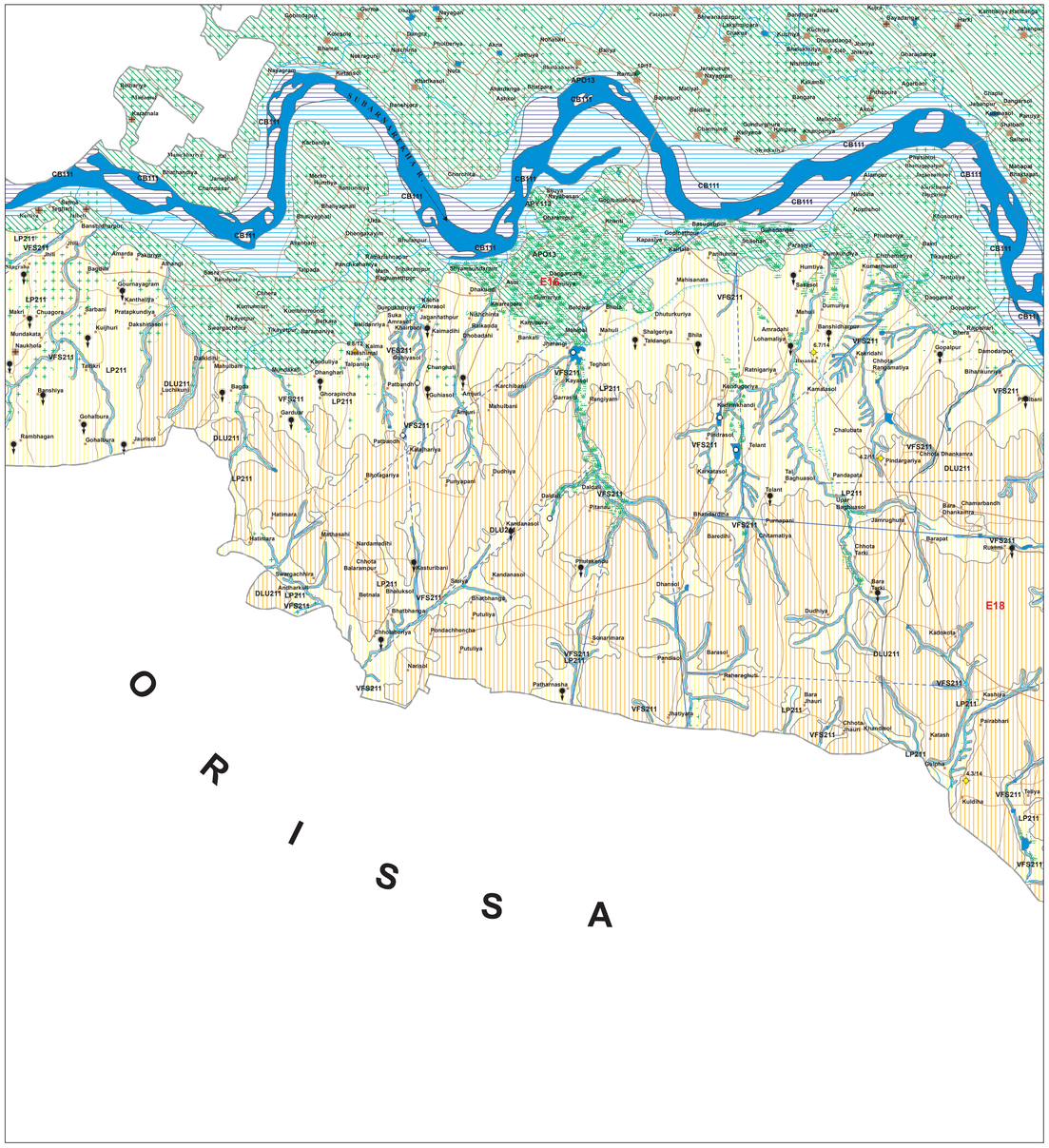
(PREPARED FROM SATELLITE IMAGE INTERPRETATION WITH LIMITED FIELD CHECKS)

Kilometers
0 1 2 3 4 5

SCALE - 1 : 50,000

MAP SHEET NO. 73J/16

PASCHIM MEDINIPUR DISTRICTS, WEST BENGAL



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; CRM = CONSOLIDATED ROCK; FSR = FISSURED ROCK; FR = FRACTURED ROCK; WR = WEATHERED ROCK / MIXED MATERIAL; IR = IMPERVIOUS ROCK)	TYPE OF WELLS SUITABLE (DW = DUG WELL; BW = BORE WELL; TW = TUBE WELL; DBW = DUG CUM-BORE WELL / DTW = 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; RT = RECHARGE PIT; ST = RECHARGE PIT; SD = SUBSURFACE DYKE; RS = RECHARGE SHAFT; ST = STORAGE TANK; SCM = SOIL CONSERVATION MEASURES	REMARKS (PROBLEMS / LIMITATIONS)
APY113	Paraskura/Aamlagh Formation (Early to Late Holocene) — Alluvium (Sand Dominant) (113)	Alluvial Plain Younger (APY)	No wells observed	Very Good	LS	DW / TW	10 - 12 m / 20 - 30 m	100 - 125 m^3/day / 200-250 LPM	Very High	P	Nil	Not Required	Aquifer is formed of sandy part of alluvium. Recharge structures are not required as good recharge condition prevails
APO13	Siuar Rampurhat Formation (Lt. Pleistocene to Early Holocene) — Alluvium (Sand with Silt and Clay) (13)	Alluvial Plain Older (APO13)	7.5 - 10.0 / DW - 1 HP - 1	Good	LS	DW / TW	10 - 15 m / 40 - 60 m	50 - 75 m^3/day / 150 - 200 LPM	High	P	20%	Not Required	Aquifer is formed of sandy part of alluvium. Recharge structures are not required as good recharge condition prevails
VFS211	Lalgarh/Illambazar Formation (Middle to Upper Pleistocene) — Laterite (Ferricrete-hard crust, lateritic nodules and lithomarge clay) (211)	Valley Fill Shallow (VFS)	No wells observed	Moderate	LS Underlain by WM + FR	TW / BW	40 - 50 m	50 - 100 LPM	Moderate	P	30%	DT Moderate	Recharge structure will increase the sustainability of ground water prospects
LP211		Lateritic Plain (LP) (Lithomarge Clay)	6 .7 - 6.8 / DW - 2	Limited	WM + FR	DW / TW / BW	15 - 20 m / 50 - 60 m	15 - 25 m^3/day / 50 - 100 LPM	Moderate	P	75%	RW / DT High	Recharge wells have high priority as the lithomarge clay layer needs to be penetrated to recharge underlying aquifer formed of weathered material and fractured rock
DLU211		Dissected Lateritic Upland (DLU) (Hard Crust and lateritic nodules)	4.2 - 4.3 / DW - 2	Poor to limited	WM + IR (Impervious Material)	TW / BW	80 -100 m	30 - 50 LPM	Low	P	Negligible	Not Required	Essentially run-off zone where hard crust is present. Areas of lateritic nodules are recharge zones with deep water table conditions.Primarily forest areas with sparse settlements.Not suitable for large scale development of ground water.

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 (< 20 METRES)	MODERATE (20 - 40 METRES)	DEEP (> 40 METRES)
> 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 only (Hills, Plateaus etc.) / Run-off zone/ Barrier for G.W. movement	RED			(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

WELLS OBSERVED DURING PRE-MON

YIELD RANGE IN LPM	BORE / TUBE WELL	YIELD RANGE IN m^3 / day	DUG WELL / RING WELL
> 800 LPM	15/70	> 400 m^3 / day	8/15
400 - 800 LPM	15/70	200 - 400 m^3 / day	8/15
200 - 400 LPM	15/70	100 - 200 m^3 / day	8/15
100 - 200 LPM	15/70	50 - 100 m^3 / day	8/15
50 - 100 LPM	15/70	25 - 50 m^3 / day	8/15
30 - 50 LPM	15/70	15 - 25 m^3 / day	8/15
20 - 30 LPM	15/70	10 - 15 m^3 / day	8/15
10 - 20 LPM	15/70	5 - 10 m^3 / day	8/15
< 10 LPM	15/70	< 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
DYKE (Confirmed / Inferred)	D D	D D
QUARTZ REEF (Confirmed / Inferred)	Q Q	Q Q
PEGMATITE VEIN (Confirmed / Inferred)	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 : STATE
	DISTRICT
	BLOCK

OTHER INFORMATION

Rainfall : 1542mm

(Source IMD)

LOCATION INFORMATION

STATE INDEX: INDIA — WEST BENGAL

DISTRICT INDEX: A-BIRBHUM; B-BARDHAMAN; C-PURULIYA; D-BANKURA; E-PASCHIM MEDINIPUR

BLOCK INDEX: E16 GOPIBALLAVPUR; E18 NAYAGRAM

MAPSHEET INDEX

73J/11	73J/15	73N/3
73J/12	73J/16	73N/4
73K/9	73K/13	73O/1

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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.

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