GROUND WATER PROSPECTS MAP

(PREPARED FROM SATELLITE IMAGE INTERPRETATION WITH LIMITED FIELD CHECKS)

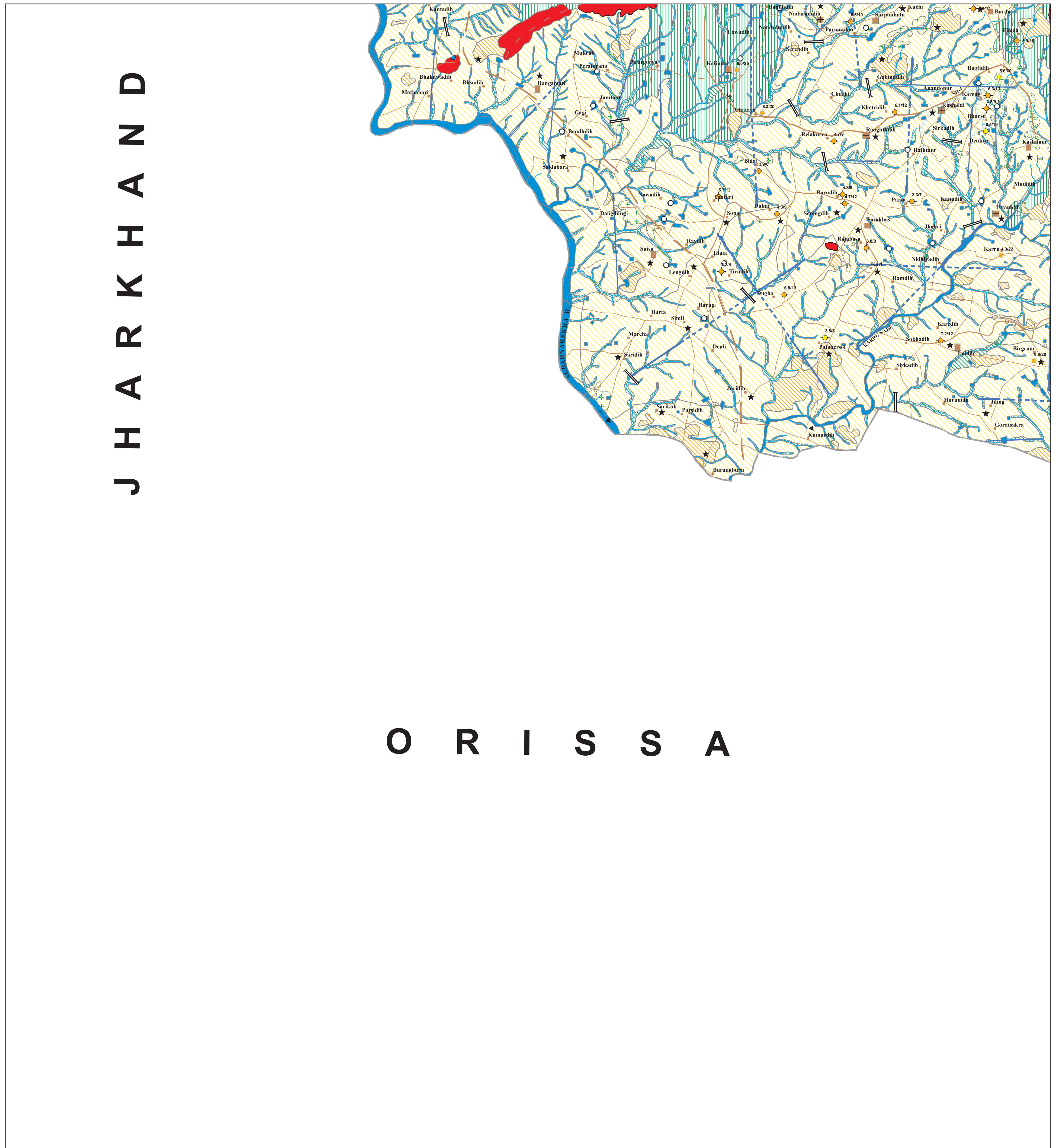
Kilometers 0 1 2 3 4 5

SCALE - 1 : 50,000

N / W / E / S

MAP SHEET NO. 73E/16

PURULIYA DISTRICT, 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, 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 / = 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, DT = DESILTING OF TANK, RP = RECHARGE PIT, SD = SUBSURFACE DYKE, RS = RECHARGE SHAFT, ST = STORAGE TANK, SCM = SOIL CONSERVATION MEASURES)	REMARKS (PROBLEMS / LIMITATIONS)
VFS832	Chhotanagpur Granite Gneiss Complex (Lower Proterozoic,2300 - 2400mill.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	10%	CD/DT Moderate	Prospects inferred as no wells observed. Recharge condition is moderate with moderate groundwater prospects
BPM832			Buried Pediplain Mederate (BPM)	No wells observed	Moderate	WM+FR	DW / TW / BW	5 - 10 / 40 - 50	15 - 25 m^3/ day / 150 - 175 LPM	Moderate	P	Nil	Not Required	Very small units without settlements, recharge structures not required
BPS832			Buried Pediplain Shallow (BPS)	2.52 - 6.59 / DW - 13 HP - 2	Limited	WM+FR	DW / TW / BW	5 -10 / 40 - 60	10 - 15 m^3/ day / 75 - 100 LPM	Low	P	10%	RP/DT 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
BJS832			Bajada Shallow (BJS)	5.94 - 6.09 / DW - 1 HP - 1	Moderate	LS Underlain by WM+FR	DW / TW / BW	10 - 15 / 90 - 100	15 - 25 m^3/ day / 150 - 175 LPM	Moderate	P	40%	Not Required	Recharge is moderate. Better yields at greater depths within fractured rock
RH832			Residual Hill (RH)	No wells observed	—	—	—	—	—	—	—	—	—	Run-off zone.Not suitable for ground water development
DHM832			Denudational Hill/ Moderately dissected (DHM)	No wells observed	—	—	—	—	—	—	—	—	—	Run-off zone.Not suitable for ground water development
VFS923	Unclassified Metamorphics(Older Metamorphics) (Archean)	Mica Schist (923)	Valley Fill Shallow (VFS)	No wells observed	Moderate	LS Underlain by WM+FR	TW / BW	30 - 50	100 - 125 LPM	Moderate	P	35%	CD/DT Moderate	Prospects inferred as no well observed. Recharge condition is moderate with moderate groundwater prospects
BPM923			Buried Pediplain Moderate (BPM)	No wells observed	Moderate	WM+FR	DW / TW / BW	5 - 10 / 40 - 50	10 - 15 m^3/ day / 100 - 125 LPM	Moderate	P	10%	Not Required	Very small units without settlements, recharge structures not required
BPS923			Buried Pediplain Shallow (BPS)	3.86 - 7.2 / DW - 5 HP - 2	Limited	WM+FR	DW / TW / BW	5 -10 / 40 - 60	5 - 10 m^3/ day / 50 - 75 LPM	Low	P	5%	RP High	Recharge structures will improve sustainability of groundwater sources
PPS923			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	Negligible	RP High	Due to high run-off and poor infiltration, recharge structures are required to maintain sustainability of ground water sources
BJS923			Bajada Shallow (BJS)	No wells observed	Moderate	LS Underlain by WM+FR	DW / TW / BW	10 - 15 / 90 - 100	10 - 15 m^3/ day / 100 - 125 LPM	Moderate	P	Negligible	Not Required	Recharge is moderate. Better yields at greater depths within fractured rocks
RH923			Residual Hill (RH)	No wells observed	—	—	—	—	—	—	—	—	—	Run-off zone, not suitable for ground water development

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.

GROUND WATER PROSPECTS INFORMATION

YIELD RANGE OF WELLS	COLOUR CODE	DEPTH RANGE OF WELLS: SHALLOW < 30 METERS	MODERATE 30 - 80 METERS	DEEP > 80 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 only (Hills, Plateaus 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, NALA BUND, DESILTING OF TANK, SUBSURFACE DYKE, SOIL CONSERVATION MEASURES, CHECK DAM, RECHARGE WELL, RECHARGE PIT, RECHARGE SHAFT, STORAGE TANK

WELLS OBSERVED DURING FIELD VISIT

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	
PEGMATITIE VEIN (Confirmed / Inferred)	P___P / P — P	

Lithologic contacts are inferred at places & Geomorphic boundaries are gradational

BASE MAP INFORMATION

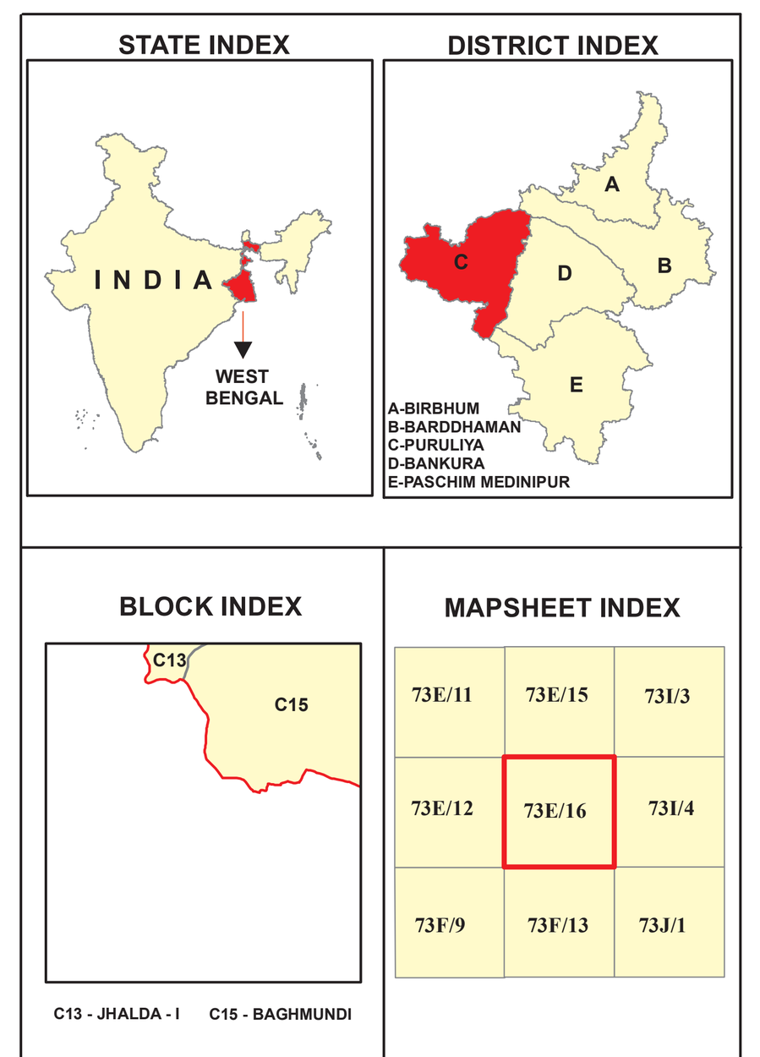
SYMBOL	DESCRIPTION
NH - 2	NATIONAL HIGHWAY
SH - 9	STATE HIGHWAY
	METALLED ROAD
	OTHER ROAD
	RAILWAY
	CITY / VILLAGE
	HABITATIONS : NON - COVERED (NC) PARTIALLY COVERED (PC)
	BOUNDARY : STATE
	DISTRICT
	BLOCK

OTHER INFORMATION

Rainfall : 1322 mm

(Source IMD)

LOCATION INFORMATION



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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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