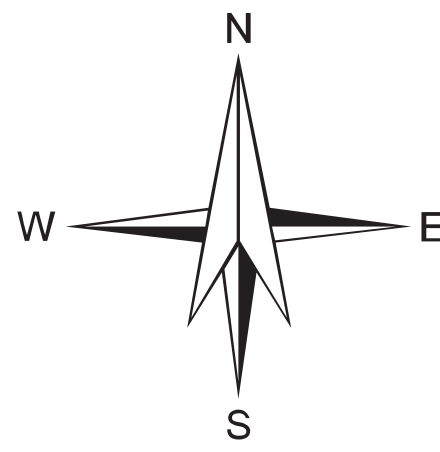
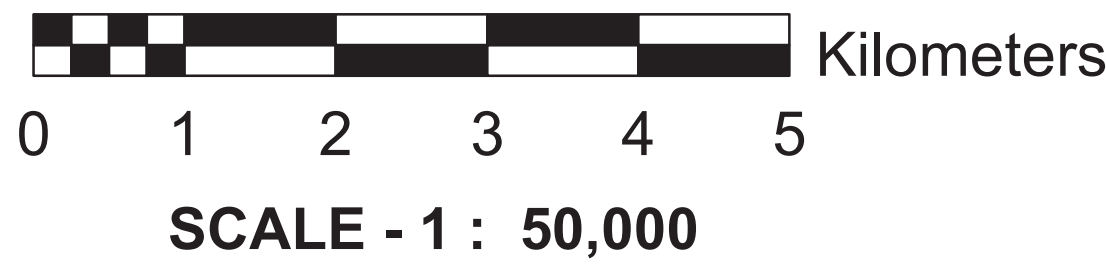


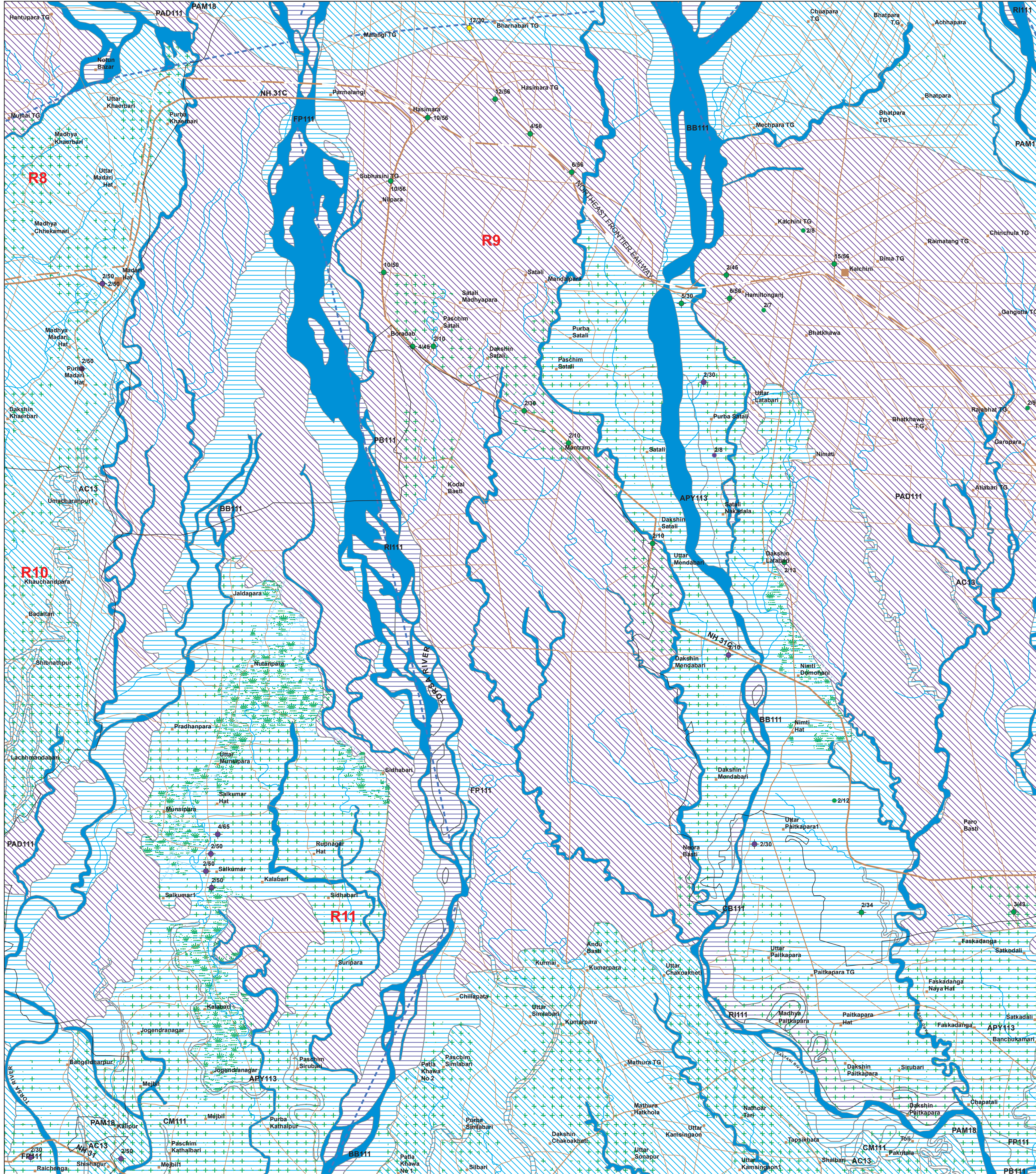
GROUND WATER PROSPECTS MAP

(PREPARED FROM SATELLITE IMAGE INTERPRETATION WITH LIMITED FIELD CHECKS)

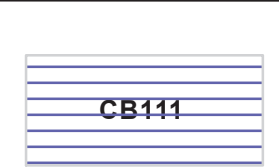
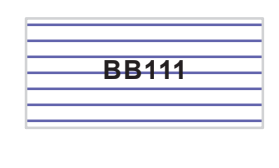
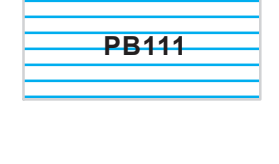
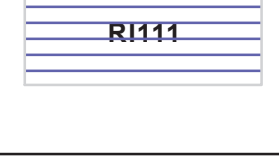
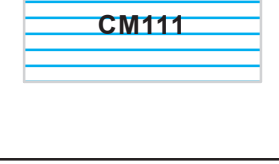
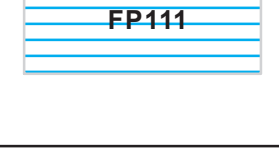

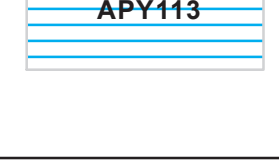
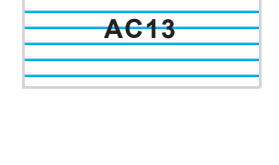



MAP SHEET NO. 78F/6

JALPAIGURI DISTRICT, WEST BENGAL



LEGEND

MAP UNIT (HYDROGEO MORPHIC 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						RECHARGE STRUCTURES SUITABLE & PRIORITY PT = PERCOLATION TANK CD = CHECK DAM NB = NALA-BEDGE RW = RIVER-WEIR DT = DRAINAGE OF TANK BP = BARGE-POLE RS = RECHARGE STRUCTURE DT = DRAINAGE TANK DSW = SOIL CONSERVATION MEASURES	RE MARKS (PROBLEMS / LIMITATIONS)		
					AQUIFER MATERIAL LS = LOOSE SEDIMENTS PS = PERMEABLE ROCK FR = FISSURED ROCK RM = RECHARGE MATERIAL RW = WEATHERED ROCK / WEATHERED MATERIAL RI = IMPERVIOUS ROCK	TYPE OF WELLS SUITABLE DW = DOW WELL NW = NONG WELL RW = RIVER WELL TW = TUBE WELL DWW = DOW CUM DOWE WELL DWW = DOW CUM DOWE 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)			GROUND WATER IRRIGATED AREA (APPROX. RANGE IN PERCENTAGE)	
	Shargaon Formation / Present Day Deposits (Present Day)	Channel Bar (CB)	No Well Observed	Excellent	LS	TW	5-10 m	400-500 LPM	Very High	P	Nil	Not Required	Highly productive shallow aquifer with good recharge from the river base flow.	
		Braid Bar (BB)	No Well Observed	Excellent	LS	TW	5-10 m	400-500 LPM	Very High	P	65	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.	
		Point Bar (PB)	No Well Observed	Very Good	LS	RW TW	5-10 m	300-400 LPM	Very High	P	Nil	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.	
		River Island (RI)	No Well Observed	Very Good	LS	TW	5-10 m	400-500 LPM	High	P	Nil	Not Required	Highly productive aquifer in shallow depth. Good recharge	
		Cut-off Meander (CM)	No Well Observed	Very Good	LS	RW TW	10-20 m	300-400 LPM	Very High	P	Nil	Not Required	Highly productive aquifer in shallow depth. Good recharge	
		Flood Plain (FP)	$\frac{2}{2}$ 1	Very Good	LS	TW	10-30 m	250-350 LPM	Very High	P	Nil	Not Required	Receives good recharge and forms shallow aquifer. Overall quality of the water is potable.	
		Piedmont Alluvium Deep (PAD)	$\frac{6}{4}$ 19	Good	LS	TW	60-80 m	400-500 LPM	Low to Moderate	P	Nil	Not Required	Good ground water prospect at greater depth as the principal aquifer occurs below PAM.	
	Sargam Formation (Lithomorphous)	Alluvium (Sand and Silt) (113)	$\frac{3}{2}$ 12	Good	LS	TW	25-30 m	200-250 LPM	High	P	35	Not Required	Highly productive aquifer at shallow depth with good recharge.	
		Alluvium (Sand, Silt & Clay) (13)	Abandoned Channel (AC)	No Well Observed	Excellent to Very Good	LS	RW TW	10-15 m	250-300 LPM	Very High	P	Nil	Not Required	Highly productive shallow aquifers with good recharge from base flow.
		Alluvium (Gravel Dominant) (18)	Piedmont Alluvium Moderate (PAM)	$\frac{5}{4}$ 9	Good	LS	TW	40 - 60m	300-400 LPM	Low to Moderate	P	25	Not Required	Good ground water prospect at moderate depth along piedmont slope.
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.														

© NRSC (ISRO), DEPT. OF SPACE, GOVT. OF INDIA. DATA USED : IRS - P6 LISS III FCC dated February 2009, March 2009 & Nov 2011, GROUND TRUTH & WELL OBSERVATION during February-March 2011, Published Geological maps & Literatures. Designed & Developed by Hydrology Division, NRSC, ISRO

GROUND WATER PROSPECTS INFORMATION			HYDROLOGICAL INFORMATION			STRUCTURAL INFORMATION			BASE MAP INFORMATION			LOCATION INFORMATION																																																																																																																																																																		
<table><tr><th>YIELD RANGE OF WELLS</th><th>COLOUR CODE</th><th>DEPTH RANGE OF WELLS</th></tr><tr><td>> 800 LPM</td><td>VIOLET</td><td>SHALLOW (0-10 METERS)</td></tr><tr><td>400 - 800 LPM</td><td>INDIGO</td><td>MODERATE (10-25 METERS)</td></tr><tr><td>200 - 400 LPM</td><td>BLUE</td><td>DEEP (25-50 METERS)</td></tr><tr><td>100 - 200 LPM</td><td>GREEN</td><td></td></tr><tr><td>50 - 100 LPM</td><td>YELLOW</td><td></td></tr><tr><td>30 - 50 LPM</td><td>ORANGE</td><td></td></tr><tr><td>20 - 30 LPM</td><td>BROWN</td><td></td></tr><tr><td>10 - 20 LPM</td><td>PINK</td><td></td></tr><tr><td>Prospects with low yield (less than 10 LPM)</td><td>RED</td><td></td></tr></table>	YIELD RANGE OF WELLS	COLOUR CODE	DEPTH RANGE OF WELLS	> 800 LPM	VIOLET	SHALLOW (0-10 METERS)	400 - 800 LPM	INDIGO	MODERATE (10-25 METERS)	200 - 400 LPM	BLUE	DEEP (25-50 METERS)	100 - 200 LPM	GREEN		50 - 100 LPM	YELLOW		30 - 50 LPM	ORANGE		20 - 30 LPM	BROWN		10 - 20 LPM	PINK		Prospects with low yield (less than 10 LPM)	RED		<table><tr><th>DESCRIPTION</th><th>SYMBOL</th></tr><tr><td>CANAL / TANK IRRIGATED AREA</td><td></td></tr><tr><td>GROUND WATER IRRIGATED AREA</td><td></td></tr><tr><td>RIVER / STREAM (with sand)</td><td></td></tr><tr><td>WATER BODY / SPRING</td><td></td></tr><tr><td>CANAL</td><td></td></tr><tr><td>RAIN GUAGE STATION (With average annual rainfall in mm)</td><td></td></tr><tr><td>RECHARGE STRUCTURES SUGGESTED</td><td></td></tr><tr><td>PERCOLATION TANK</td><td></td></tr><tr><td>NALA BUND</td><td></td></tr><tr><td>DEBTLING OF TANK</td><td></td></tr><tr><td>SUBSURFACE DYKE</td><td></td></tr><tr><td>SOIL CONSERVATION MEASURES</td><td></td></tr><tr><td>WELLS</td><td></td></tr><tr><td>WELL RANGE</td><td></td></tr><tr><td>WELL DEPTH</td><td></td></tr><tr><td>WELL YIELD</td><td></td></tr><tr><td>WELL TYPE</td><td></td></tr><tr><td>WELL STATUS</td><td></td></tr><tr><td>WELL LOCATION</td><td></td></tr></table>	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)		RECHARGE STRUCTURES SUGGESTED		PERCOLATION TANK		NALA BUND		DEBTLING OF TANK		SUBSURFACE DYKE		SOIL CONSERVATION MEASURES		WELLS		WELL RANGE		WELL DEPTH		WELL YIELD		WELL TYPE		WELL STATUS		WELL LOCATION		<table><tr><th>DIPS</th><th>BEDDING</th><th>SCHISTOSITY / FOLIATION</th></tr><tr><td>GENTLE (< 15°)</td><td></td><td></td></tr><tr><td>MODERATE (15 - 45°)</td><td></td><td></td></tr><tr><td>STEEP (45 - 80°)</td><td></td><td></td></tr><tr><td>SUB- VERTICAL TO VERTICAL (> 80°)</td><td></td><td></td></tr><tr><td>ANTICLINE / ANTIFORM</td><td></td><td></td></tr><tr><td>SYNCLINE / SYNFORM</td><td></td><td></td></tr><tr><td>TREND LINE</td><td></td><td></td></tr><tr><td>ESCAPMENT</td><td></td><td></td></tr><tr><td>LITHOLOGY / GEOMORPHIC UNIT BOUNDARY</td><td></td><td></td></tr><tr><td>FAULT</td><td></td><td></td></tr><tr><td>THRUST</td><td></td><td></td></tr><tr><td>FRACTURE / LINEAMENT</td><td></td><td></td></tr><tr><td>FRACTURE / LINEAMENT (Inferred)</td><td></td><td></td></tr><tr><td>SHEAR ZONE</td><td></td><td></td></tr><tr><td>DYKE</td><td></td><td></td></tr><tr><td>QUARTZ REEF</td><td></td><td></td></tr><tr><td>PEGMATITE VEIN</td><td></td><td></td></tr><tr><td>Lithologic contacts are inferred at places & Geomorphic boundaries are gradational</td><td></td><td></td></tr></table>	DIPS	BEDDING	SCHISTOSITY / FOLIATION	GENTLE (< 15°)			MODERATE (15 - 45°)			STEEP (45 - 80°)			SUB- VERTICAL TO VERTICAL (> 80°)			ANTICLINE / ANTIFORM			SYNCLINE / SYNFORM			TREND LINE			ESCAPMENT			LITHOLOGY / GEOMORPHIC UNIT BOUNDARY			FAULT			THRUST			FRACTURE / LINEAMENT			FRACTURE / LINEAMENT (Inferred)			SHEAR ZONE			DYKE			QUARTZ REEF			PEGMATITE VEIN			Lithologic contacts are inferred at places & Geomorphic boundaries are gradational			<table><tr><th>SYMBOL</th><th>DESCRIPTION</th></tr><tr><td>NH - 2</td><td>NATIONAL HIGHWAY</td></tr><tr><td>SH - 9</td><td>STATE HIGHWAY</td></tr><tr><td></td><td>METALLED ROAD</td></tr><tr><td></td><td>OTHER ROAD</td></tr><tr><td></td><td>RAILWAY</td></tr><tr><td></td><td>CITY / VILLAGE</td></tr><tr><td></td><td>HABITATIONS : NON - COVERED (NC) PARTIALLY COVERED (PC)</td></tr><tr><td></td><td>BOUNDARY :</td></tr><tr><td></td><td>INTERNATIONAL</td></tr><tr><td></td><td>STATE</td></tr><tr><td></td><td>DISTRICT</td></tr><tr><td></td><td>BLOCK</td></tr></table> <p>OTHER INFORMATION</p> <p>Rainfall : 3102 mm</p> <p>Nearest Rain gauge Station : Jalpaiguri (Source IMD)</p>	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	<table><tr><th>STATE INDEX</th><th>DISTRICT INDEX</th></tr><tr><td></td><td></td></tr><tr><th>BLOCK INDEX</th><th>MAPSHEET INDEX</th></tr><tr><td></td><td><table><tr><td>78F1</td><td>78F5</td><td>78F9</td></tr><tr><td>78F2</td><td>78F6</td><td>78F10</td></tr><tr><td>78F3</td><td>78F7</td><td>78F11</td></tr></table></td></tr></table>	STATE INDEX	DISTRICT INDEX			BLOCK INDEX	MAPSHEET INDEX		<table><tr><td>78F1</td><td>78F5</td><td>78F9</td></tr><tr><td>78F2</td><td>78F6</td><td>78F10</td></tr><tr><td>78F3</td><td>78F7</td><td>78F11</td></tr></table>	78F1	78F5	78F9	78F2	78F6	78F10	78F3	78F7	78F11
YIELD RANGE OF WELLS	COLOUR CODE	DEPTH RANGE OF WELLS																																																																																																																																																																												
> 800 LPM	VIOLET	SHALLOW (0-10 METERS)																																																																																																																																																																												
400 - 800 LPM	INDIGO	MODERATE (10-25 METERS)																																																																																																																																																																												
200 - 400 LPM	BLUE	DEEP (25-50 METERS)																																																																																																																																																																												
100 - 200 LPM	GREEN																																																																																																																																																																													
50 - 100 LPM	YELLOW																																																																																																																																																																													
30 - 50 LPM	ORANGE																																																																																																																																																																													
20 - 30 LPM	BROWN																																																																																																																																																																													
10 - 20 LPM	PINK																																																																																																																																																																													
Prospects with low yield (less than 10 LPM)	RED																																																																																																																																																																													
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)																																																																																																																																																																														
RECHARGE STRUCTURES SUGGESTED																																																																																																																																																																														
PERCOLATION TANK																																																																																																																																																																														
NALA BUND																																																																																																																																																																														
DEBTLING OF TANK																																																																																																																																																																														
SUBSURFACE DYKE																																																																																																																																																																														
SOIL CONSERVATION MEASURES																																																																																																																																																																														
WELLS																																																																																																																																																																														
WELL RANGE																																																																																																																																																																														
WELL DEPTH																																																																																																																																																																														
WELL YIELD																																																																																																																																																																														
WELL TYPE																																																																																																																																																																														
WELL STATUS																																																																																																																																																																														
WELL LOCATION																																																																																																																																																																														
DIPS	BEDDING	SCHISTOSITY / FOLIATION																																																																																																																																																																												
GENTLE (< 15°)																																																																																																																																																																														
MODERATE (15 - 45°)																																																																																																																																																																														
STEEP (45 - 80°)																																																																																																																																																																														
SUB- VERTICAL TO VERTICAL (> 80°)																																																																																																																																																																														
ANTICLINE / ANTIFORM																																																																																																																																																																														
SYNCLINE / SYNFORM																																																																																																																																																																														
TREND LINE																																																																																																																																																																														
ESCAPMENT																																																																																																																																																																														
LITHOLOGY / GEOMORPHIC UNIT BOUNDARY																																																																																																																																																																														
FAULT																																																																																																																																																																														
THRUST																																																																																																																																																																														
FRACTURE / LINEAMENT																																																																																																																																																																														
FRACTURE / LINEAMENT (Inferred)																																																																																																																																																																														
SHEAR ZONE																																																																																																																																																																														
DYKE																																																																																																																																																																														
QUARTZ REEF																																																																																																																																																																														
PEGMATITE VEIN																																																																																																																																																																														
Lithologic contacts are inferred at places & Geomorphic boundaries are gradational																																																																																																																																																																														
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																																																																																																																																																																													
STATE INDEX	DISTRICT INDEX																																																																																																																																																																													
BLOCK INDEX	MAPSHEET INDEX																																																																																																																																																																													
	<table><tr><td>78F1</td><td>78F5</td><td>78F9</td></tr><tr><td>78F2</td><td>78F6</td><td>78F10</td></tr><tr><td>78F3</td><td>78F7</td><td>78F11</td></tr></table>	78F1	78F5	78F9	78F2	78F6	78F10	78F3	78F7	78F11																																																																																																																																																																				
78F1	78F5	78F9																																																																																																																																																																												
78F2	78F6	78F10																																																																																																																																																																												
78F3	78F7	78F11																																																																																																																																																																												
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 INDIAN SPACE RESEARCH ORGANISATION (ISRO) DEPT. OF SPACE, GOVT. OF INDIA BALANAGAR, HYDERABAD - 500 625	PARTICIPATING ORGANIZATIONS PHED, GOVT. OF WEST BENGAL GEOINFORMATICS & REMOTE SENSING CELL W.B. STATE COUNCIL OF SCIENCE AND TECHNOLOGY/GOWB STATE WATER INVESTIGATION DIRECTORATE, GOWB	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 IV) DEPARTMENT OF DRINKING WATER SUPPLY (DDWS) MINISTRY OF DRINKING WATER AND SANITATION (MDWS) GOVERNMENT OF INDIA NEW DELHI																																																																																																																																																																										