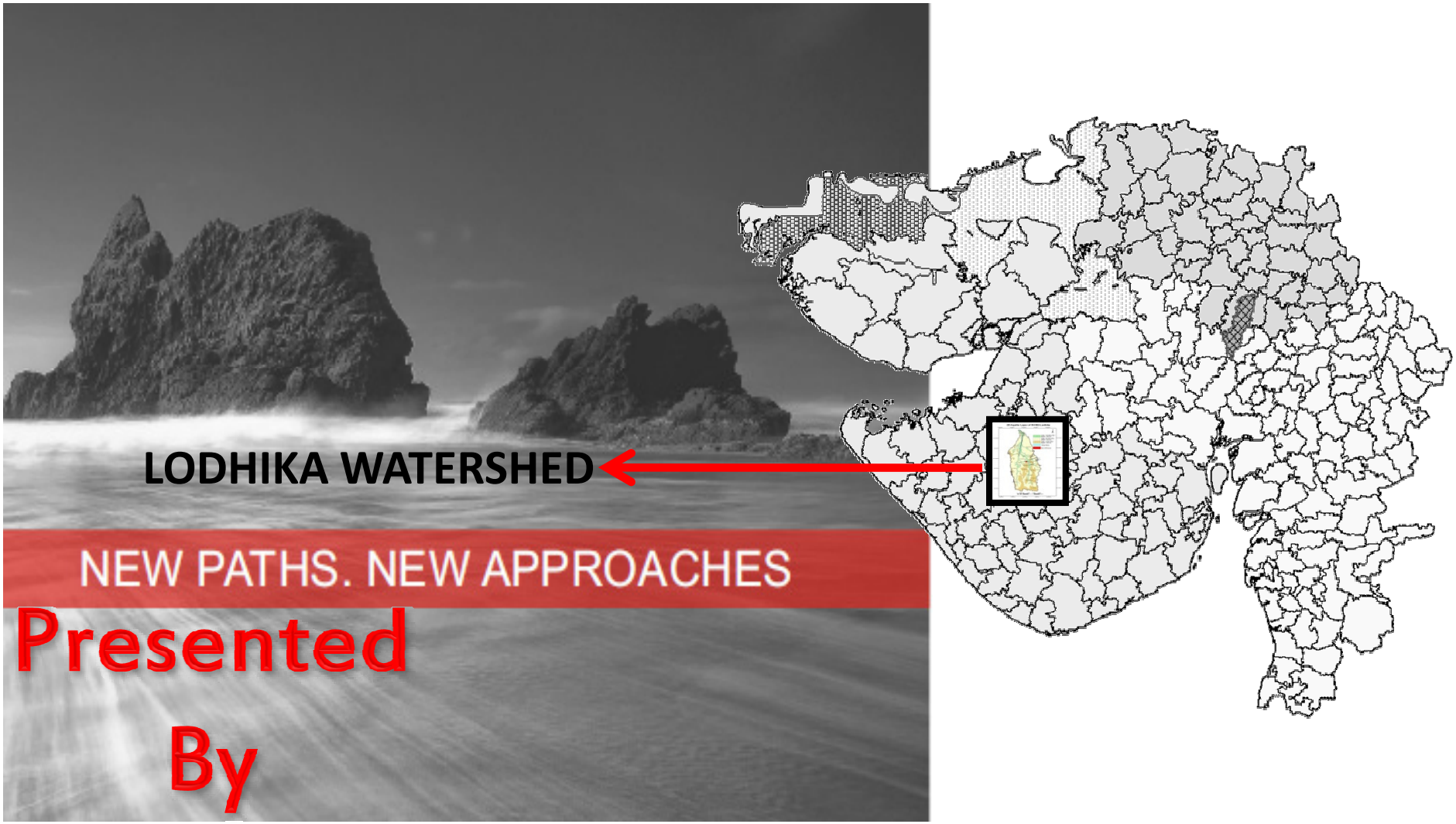
MICRO LEVEL AQUIFER MAPPING OF LODHIKA WATERSHED, RAJKOT-GUJARAT

IIC TECHNOLOGIES



Paritosh Singh Chauhan (Expert Hydrogeologist-IIC Technologies)

BACKGROUND INFORMATION OF AQUIFER MAPPING

IIC TECHNOLOGIES

The vision on Aquifer Management is:

- **to identify and map aquifers at the micro level,**
- **to quantify the available groundwater resources, and**
- **to propose plans appropriate to the scale of demand and aquifer characteristics, and institutional arrangements for participatory management.**

BACKGROUND INFORMATION OF AQUIFER MAPPING PROJECT

IIC TECHNOLOGIES

- **Aquifer mapping will help in preparing sustainable management plan,**
- **This will help achieve drinking water security,**
- **Improved irrigation facility and sustainability in water resources development in large parts of rural and many parts of urban Gujarat.**
- **It will also result in better management of vulnerable areas.**

IIC TECHNOLOGIES

TASKS FOR AQUIFER MAPPING

TASKS FOR AQUIFER MAPPING

IIC TECHNOLOGIES

Compilation of Data/Identification of Principal Aquifer units & Data Gap

- **Compilation of Existing Ground Water Data**
- **Preparation of Base map and Thematic layers**
- **Data base on Exploration wells**
- **Compilation of information of Geology, Geophysics, Hydrogeology, geochemical Hydrology**
- **Delineation of Principal Aquifers (Vertical & Lateral)**
- **Compilation of Aquifer wise water level data**
- **Compilation of Aquifer wise Draft data**

TASKS FOR AQUIFER MAPPING

IIC TECHNOLOGIES

Generation of data

- **Generation of Geological layers in 1:50,000 Scale**
- **Preparation OF Geological map**
- **Preparation of Sub surface Geology**
- **Geomorphological analysis**
- **Analysis of Land use pattern**
- **Surface & Subsurface Geolelectrical/ Gravity data Generation**
- **VES**
- **Bore hole logging**
- **2-D imaging**
- **Advanced Geophysical methods**

TASKS IDENTIFIED FOR AQUIFER MAPPING

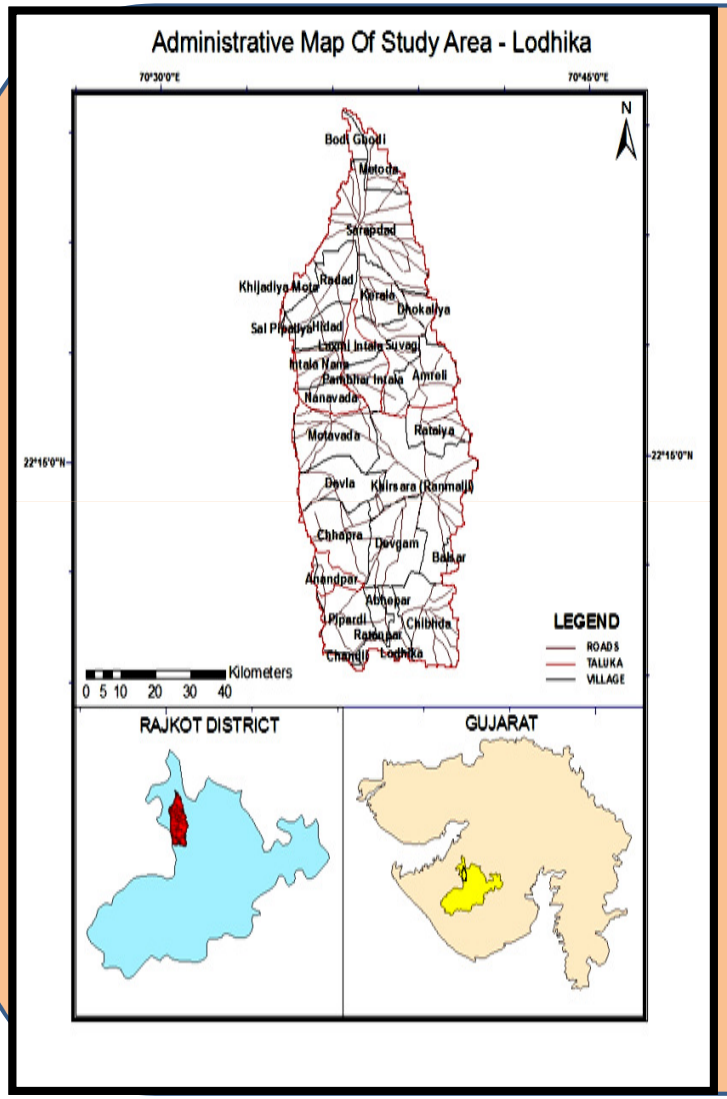
IIC TECHNOLOGIES

Hydrological information:

- **Preparation of Drainage map**
- **Demarcation of water bodies**
- **Soil infiltration studies**
- **Parameters on Ground water recharge**
- **Rainfall data analysis**
- **Canal flow, recharge structures etc**
- **Preparation of Hydrogeological maps in 1:50,000**
- **Water level monitoring**
- **Exploratory drilling**
- **Pumping tests**
- **Well inventory**

ADMINISTRATIVE INFORMATION

IIC TECHNOLOGIES

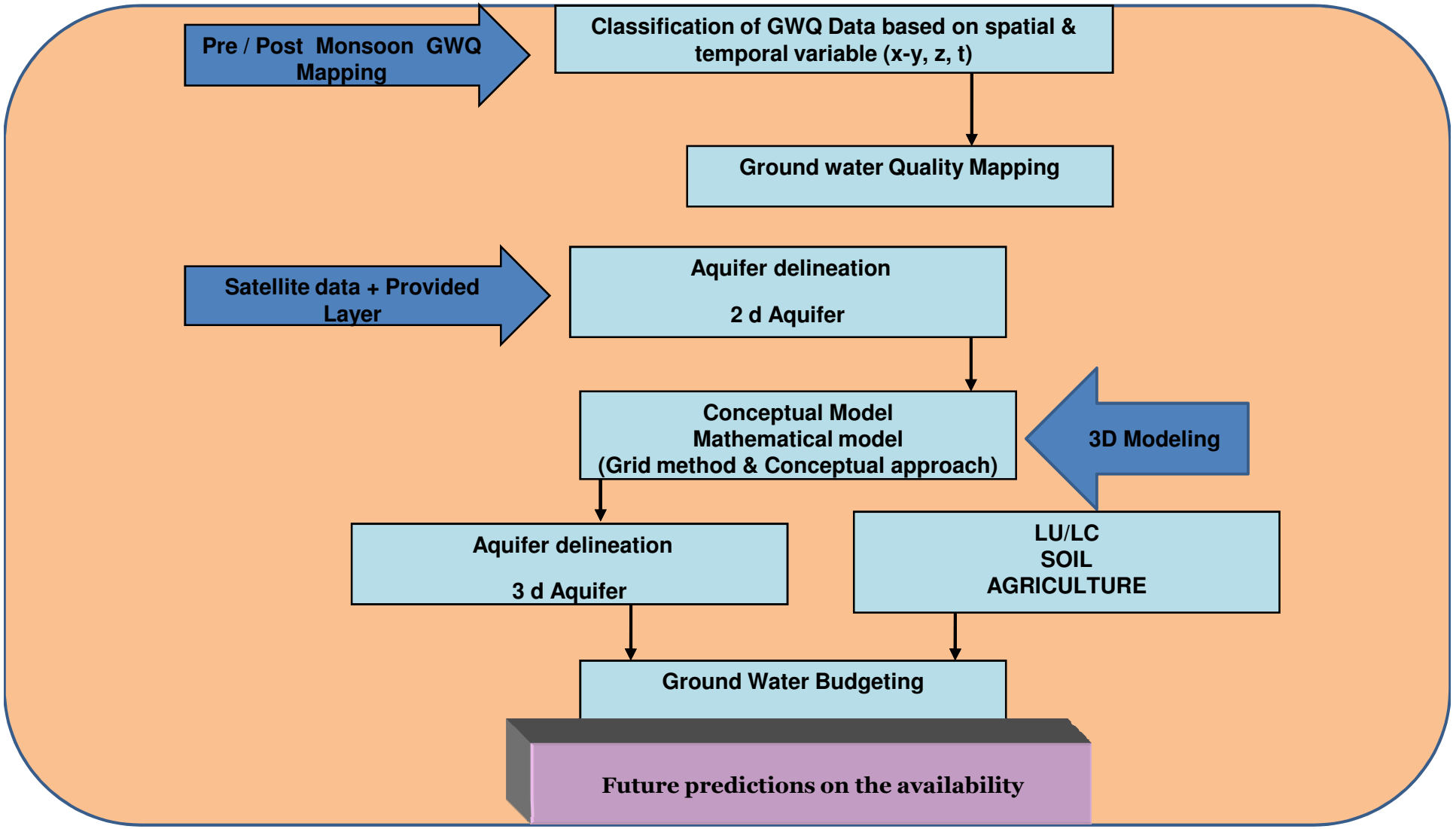


LODHIKA WATERSHED-RAJKOT

Sr No		Description
1	Location of the Study area	South of Paddharitaluka and North of Lodhikataluka
2	Total Area in Sq Km	210
3	General Hydrogeological Conditions & aquifers	Basalt
4	Reference SOI Toposheets	41F/11 & 41F/12
5	Number of Districts	1
6	Name of District	Rajkot
7	Number of Talukas	2
8	Name of Talukas	Lodhika and Paddhari
9	Number of villages	23

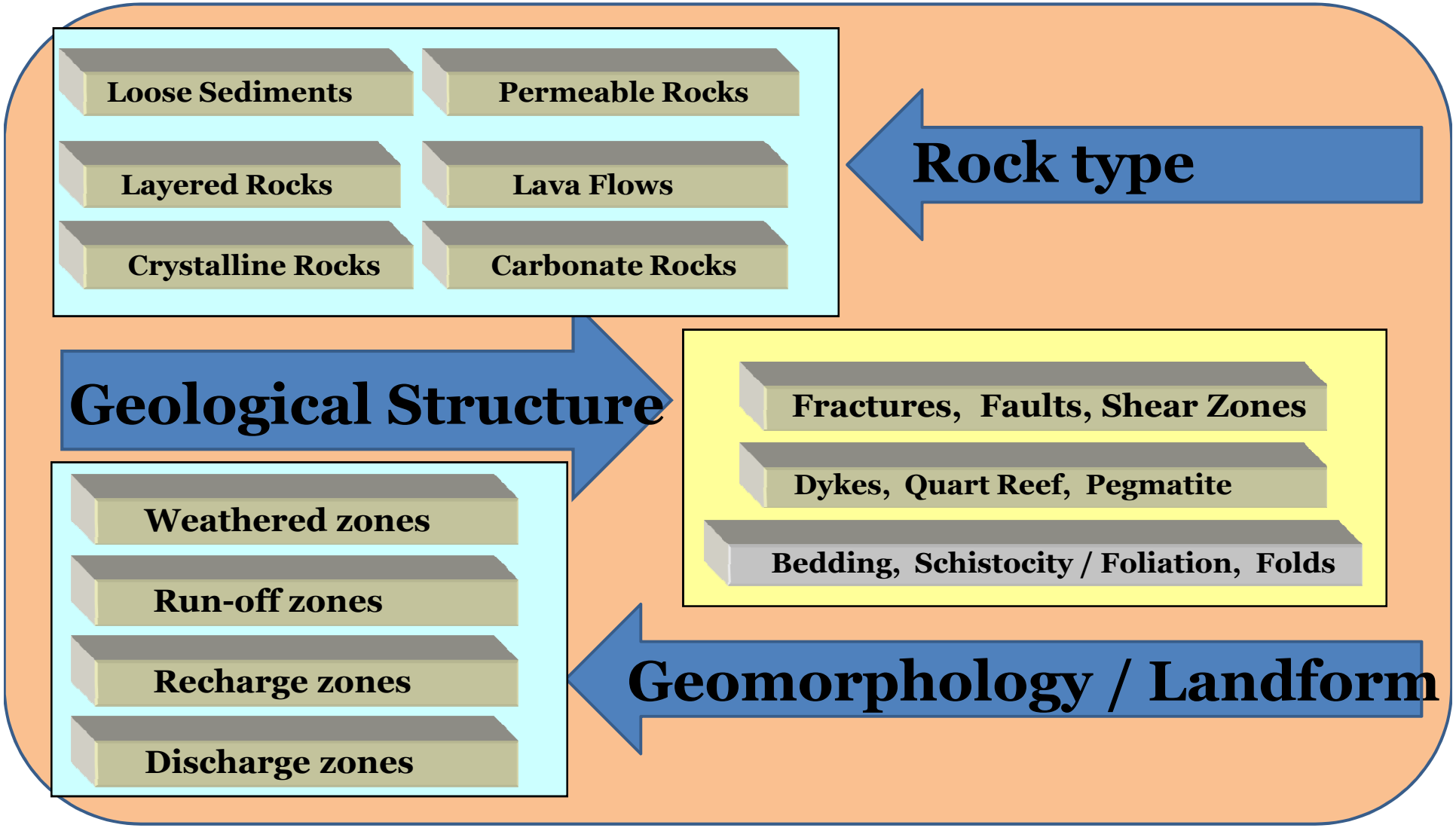
GROUND WATER AQUIFER MAPPING AND MODELING

IIC TECHNOLOGIES



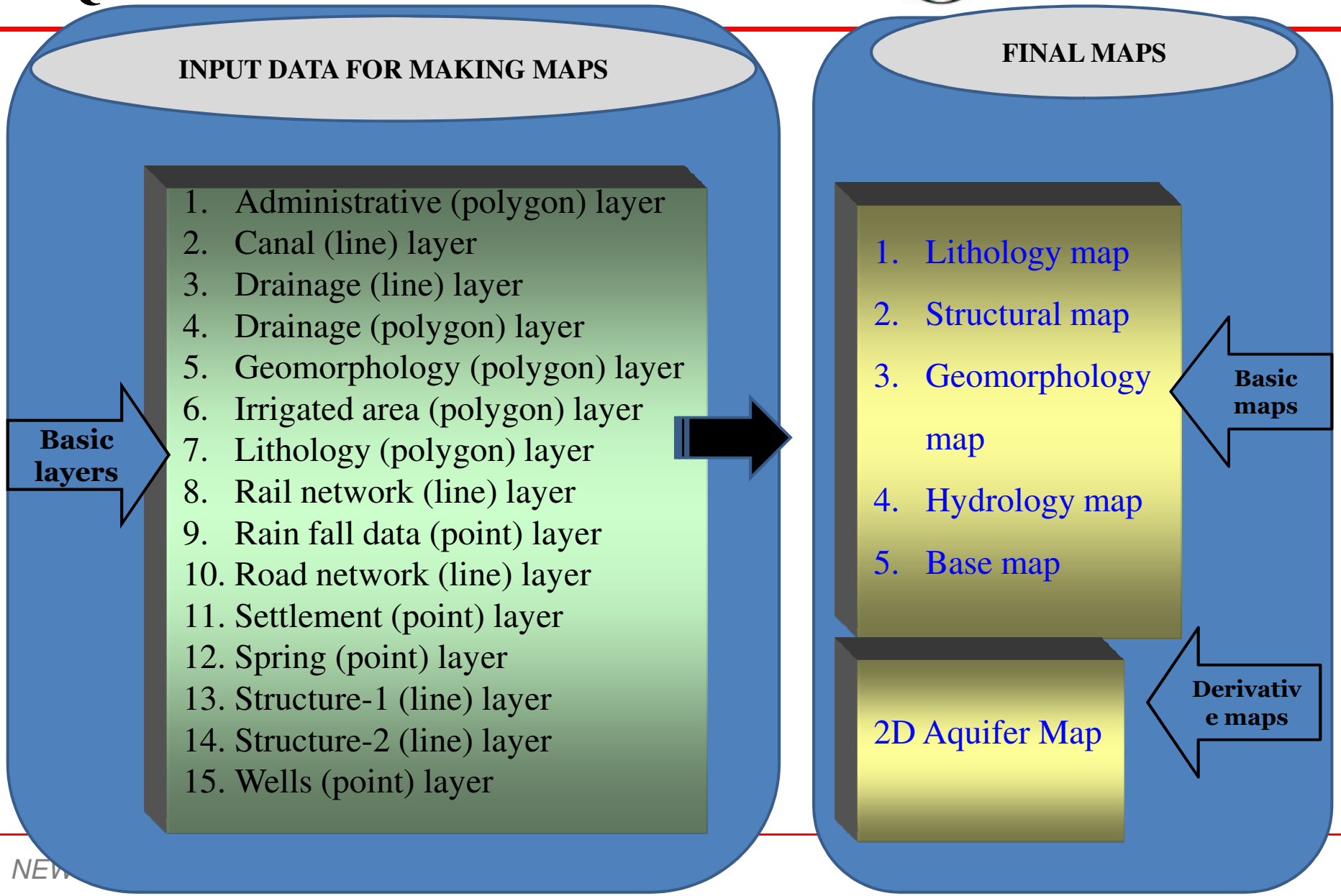
INDICATORS OF VARIATIONS IN HYDRO GEOLOGICAL PROPERTIES

IIC TECHNOLOGIES



DATA PRODUCTS FOR 2D AQUIFER MAPPING

IIC TECHNOLOGIES



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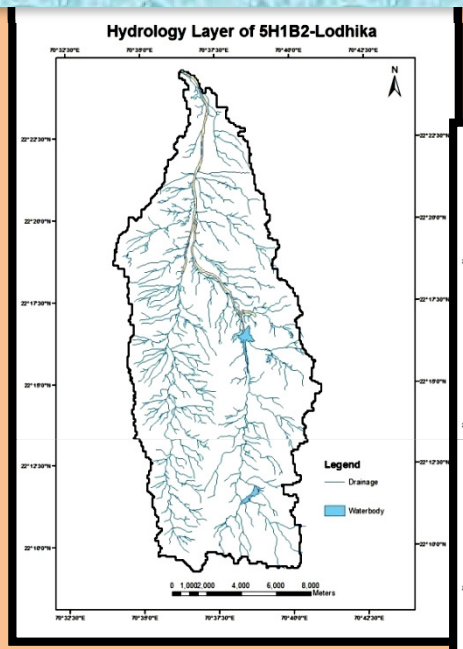
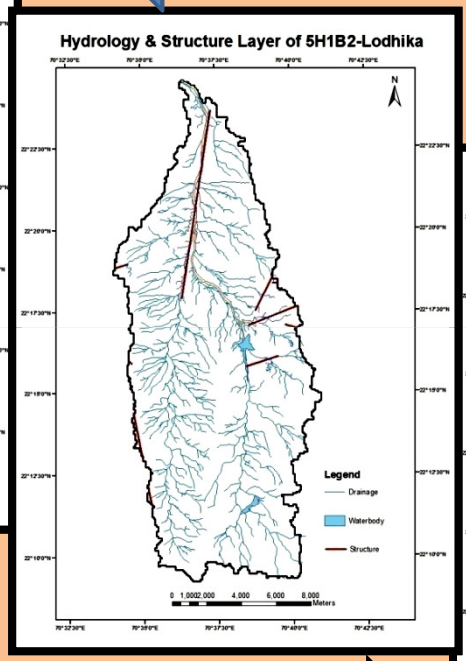
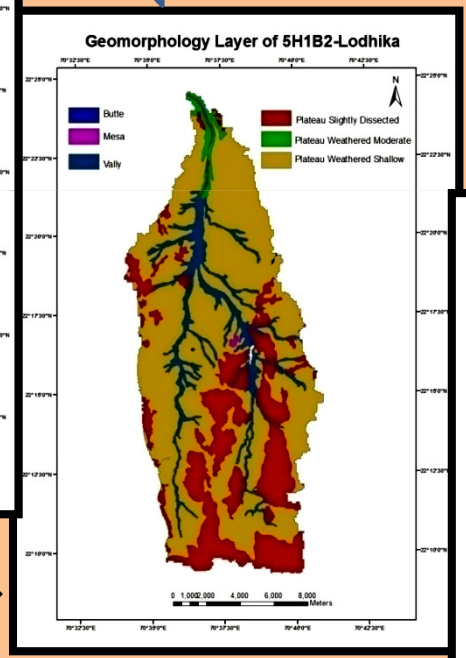
DATA PRODUCTS FOR 2D AQUIFER MAPPING



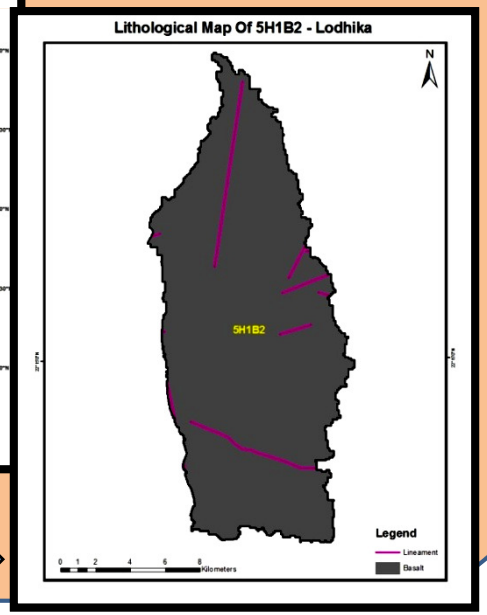
Drainage Distribution Map



Drainage Distribution Map with Structures

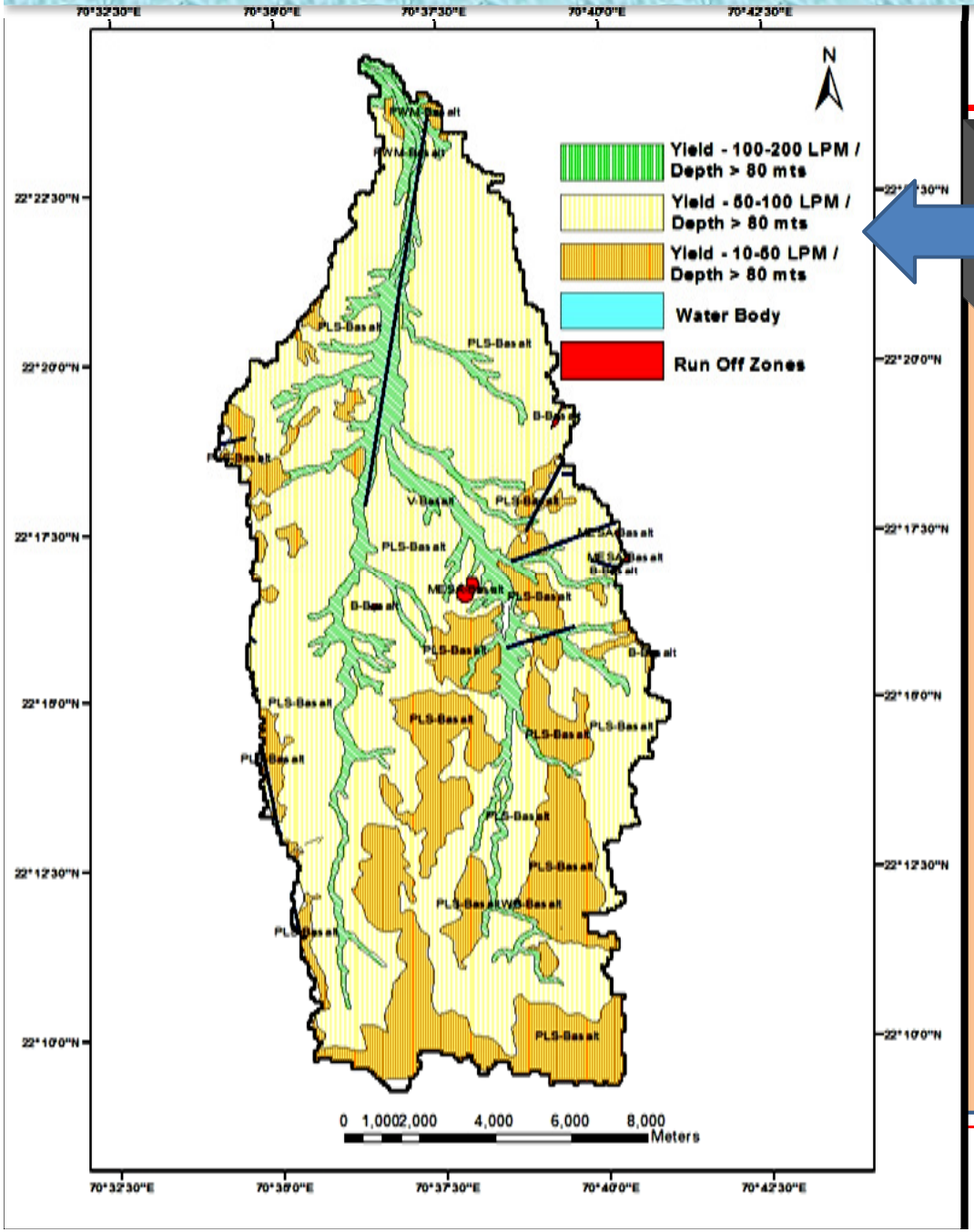


Geomorphology Map



Geology Map

LODHIKA WATERSHED-RAJKOT

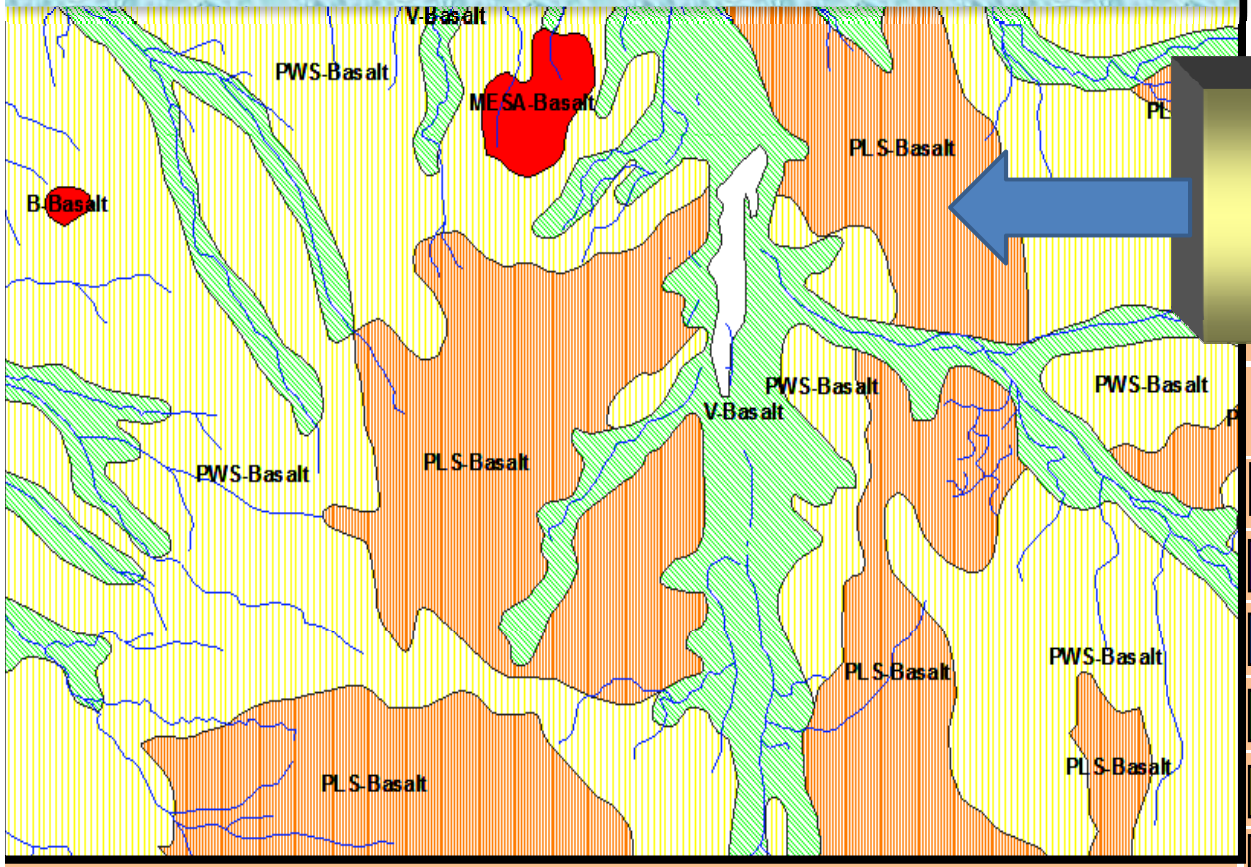


IIC TECHNOLOGIES

2 D AQUIFER MAP OF LODHIKA WATERSHED

- Drainage (line) layer
- Drainage (polygon) layer
- Geomorphology (polygon) layer
- Lithology (polygon) layer
- Structure
- Wells (point) layer

LODHIKA WATERSHED-RAJKOT



IIC TECHNOLOGIES

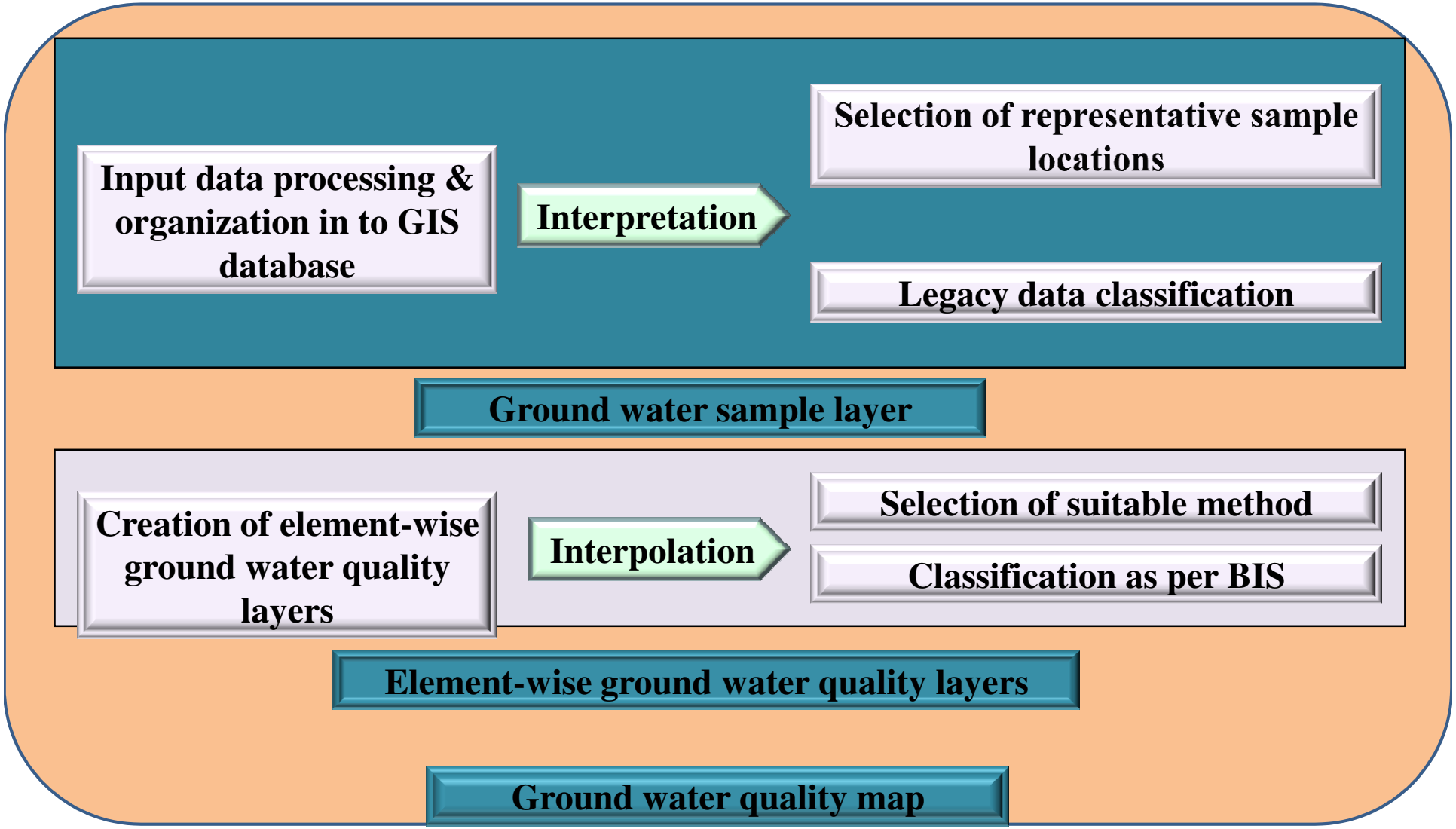
2D AQUIFER MAP OF WATERSHED-LODHIKA STUDY AREA-RAJKOT

COLOUR	YIELD RANGE OF WELLS	DEPTH RANGE OF WELLS		
		SHALLOW < 30 M	MODERATE 30 – 80 M	DEEP > 80 M
	> 800 LPM			
	400 – 800 LPM			
	200 – 400 LPM			
	100 – 200 LPM			
	50 – 100 LPM			
	30 – 50 LPM			
	20 – 30 LPM			
	10 – 20 LPM			
	Prospects limited to valley portions only			
	Run off zones / Barriers			

- PLS- PLATEAU SLIGHTLY DISSECTED
- PWS-PLATEAU SHALLOW WEATHERED
- V- VALLEY
- M-MESA
- B-BUTTE

ACTIVITIES INVOLVED IN PREPARATION OF GROUND WATER QUALITY MAPS

IIC TECHNOLOGIES



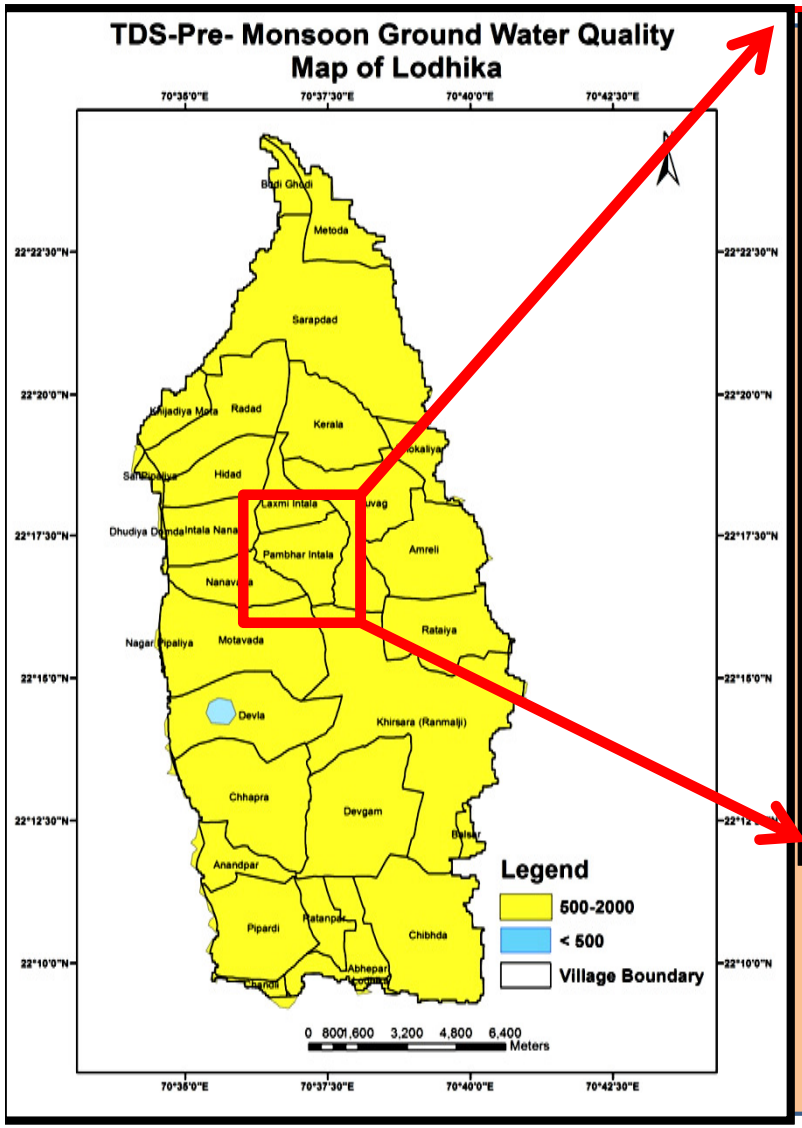
IIC TECHNOLOGIES

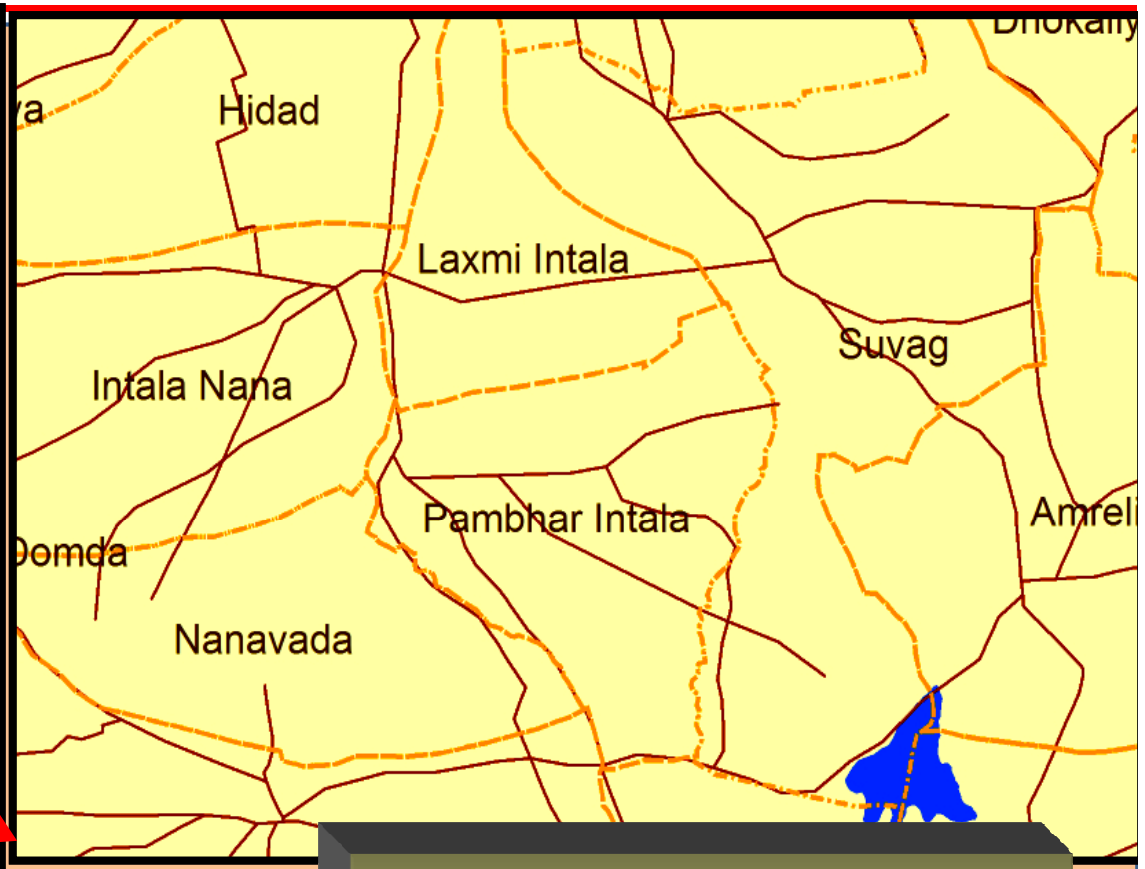
(Source: Indian Drinking Water Standards as per BIS Guideline-IS: 10500: 1991)

Sl. No	Element	Potable		Non-Potable
		Desirable limit	Permissible limit	
1	pH	6.5 to 8.5	--	<6.5 ; >8.5
2	Total Hardness (as $CaCo_3$) mg/l	< 300	300-600	> 600
3	Iron (as Fe) mg/l	< 0.3	0.3-1.0	> 1.0
4	Chlorides (as Cl) mg/l	< 250	250-1000	> 1000
5	Total Dissolved solids mg/l	< 500	500-2000	> 2000
6	Calcium (as Ca) mg/l	< 75	75-200	> 200
7	Magnesium (as Mg) mg/l	< 30	30-100	> 100
8	Nitrate (as NO_3) mg/l	< 45	45-100	> 100
9	Sulphate (as SO_4) mg/l	< 200	200-400	> 400
10	Sodium (as Na) mg/l*	--	< 20	> 20(WHO)
11	Potassium (as K) mg/l*	--	< 10	> 10
12	Alkalinity mg/l	< 200	200-600	> 600
13	Electrical Conductivity	< 300	300-600	> 600

GROUND WATER QUALITY MAPS OF LODHIKA WATERSHED

IIC TECHNOLOGIES



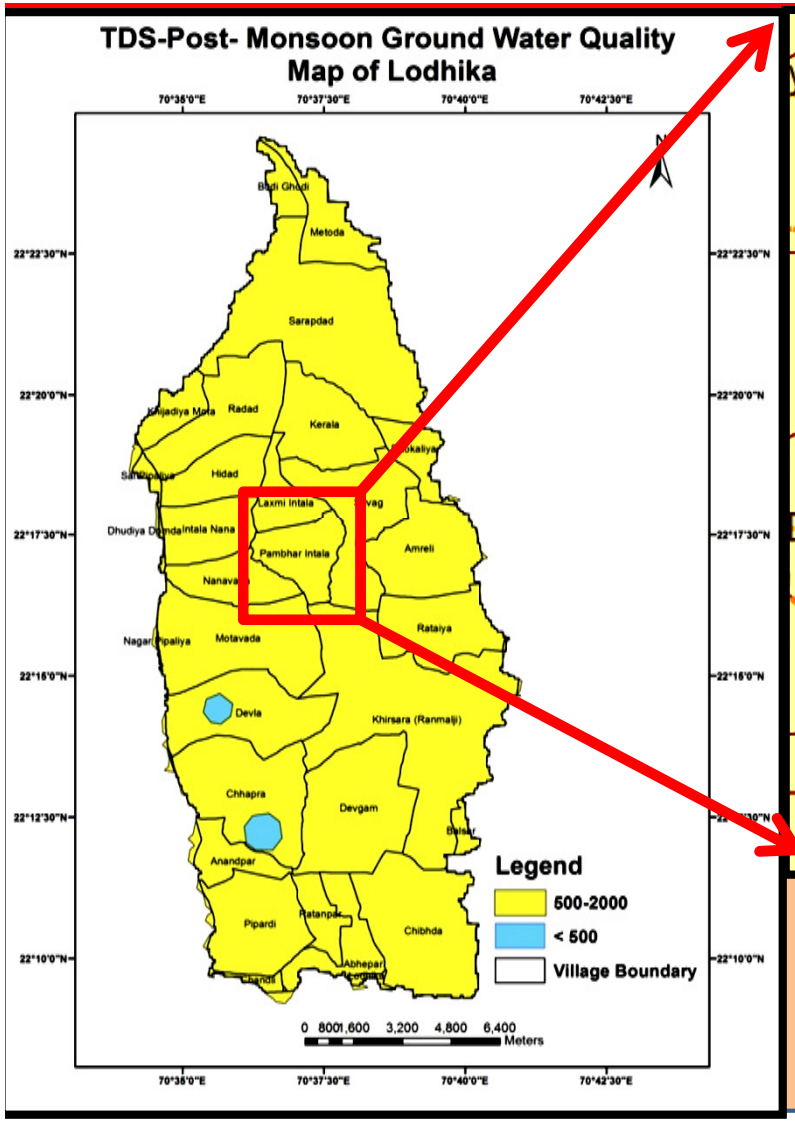


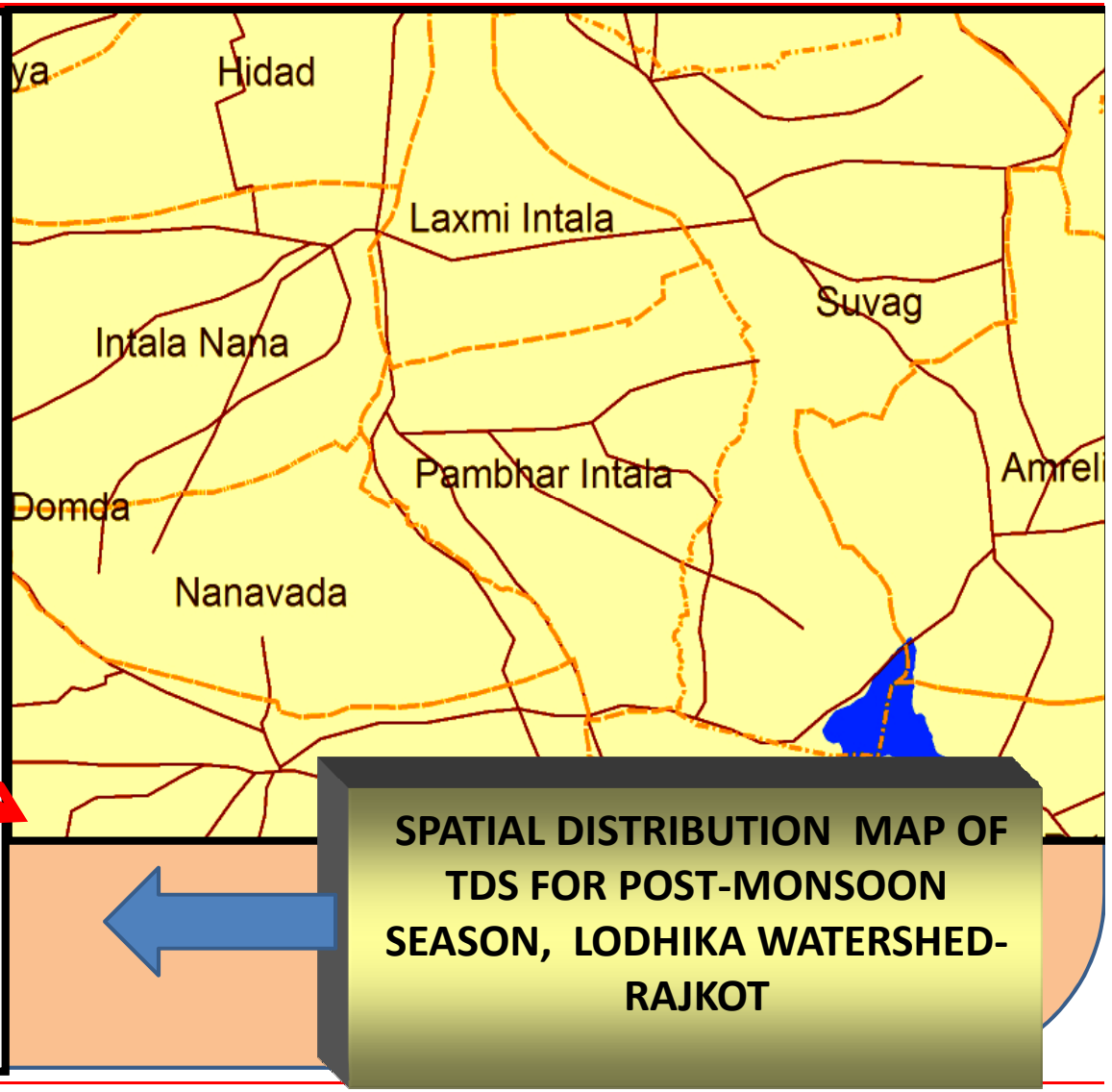
SPATIAL DISTRIBUTION MAP OF TDS FOR PRE-MONSOON SEASON, LODHIKA WATERSHED-RAJKOT

NEW PATHS, NEW APPROACHES

GROUND WATER QUALITY MAPS OF LODHIKA WATERSHED

IIC TECHNOLOGIES





SPATIAL DISTRIBUTION MAP OF TDS FOR POST-MONSOON SEASON, LODHIKA WATERSHED-RAJKOT

AQUIFER MAPPING

IIC TECHNOLOGIES

The Aquifer Geometry Varies

in X-Y direction-(Spatial Variation)

with depth (Vertical Variation)

& Ground water Resources availability varies With Time

Historical data to be considered for Modelling provides the Temporal variation &

Management aspects

Tasks

To decipher the

- **Spatial & Vertical disposition of Aquifers/Aquifer Geometry**
- **Generation of 2-d & 3-d GIS layers/Micro level Groundwater Maps**
- **Ground water Resources & Yield Characteristics of the Aquifers**
- **To Run a Ground water Model for planning & management of ground water Resources-watershed wise, Village wise.**

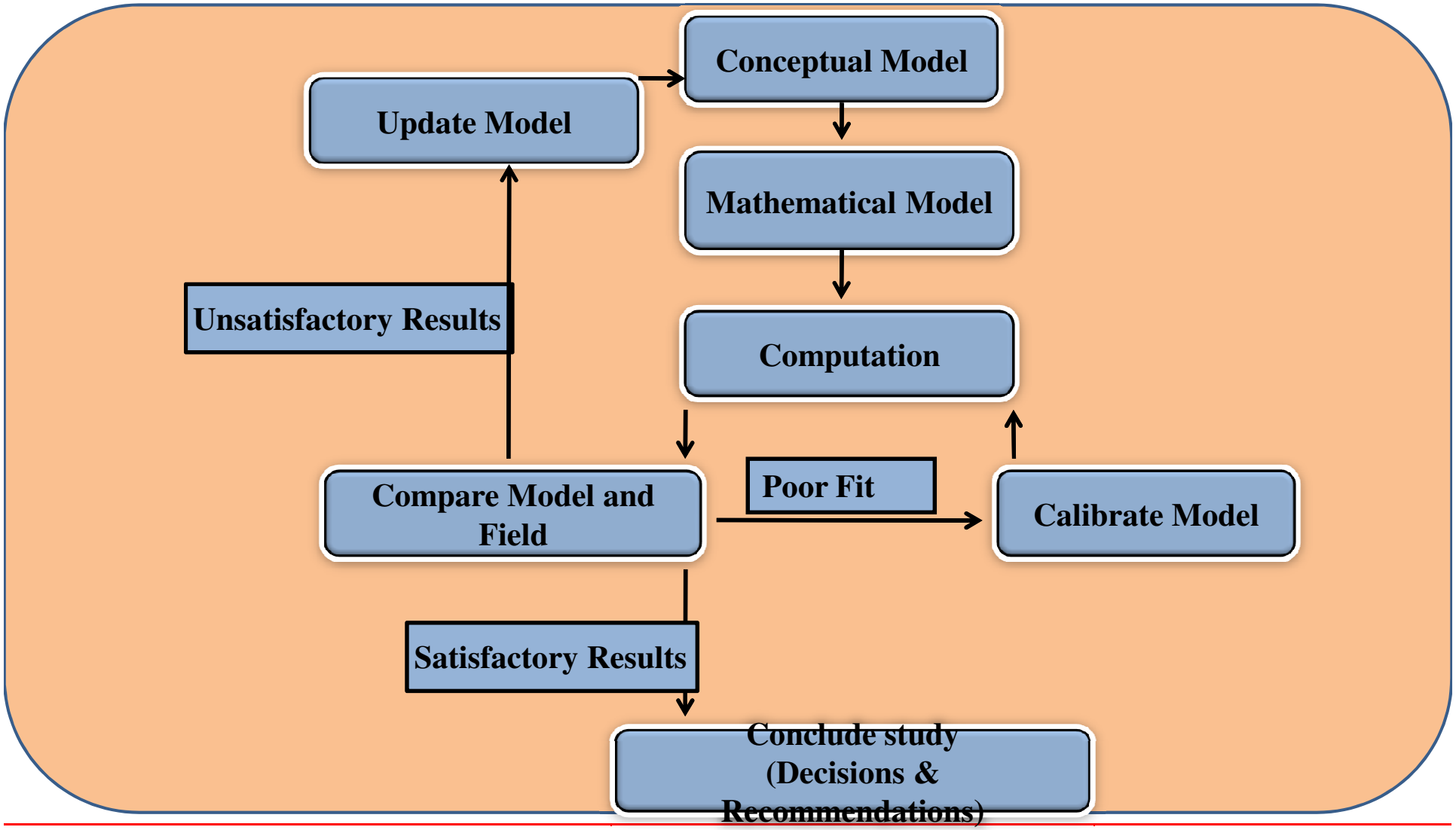
STEPS TO HYDROLOGIC MODELING

IIC TECHNOLOGIES

1. DELINEATE WATERSHED
2. OBTAIN HYDROLOGIC AND GEOGRAPHIC DATA
3. SELECT MODELING APPROACH
4. CALIBRATE/VERIFY MODEL
5. USE MODEL FOR ASSESSMENT/PREDICTION/DESIGN
6. CORRELATING WITH LU/LC, SOIL & IRRIGATION FOR BUDGETING

MODELING PROCESS

IIC TECHNOLOGIES



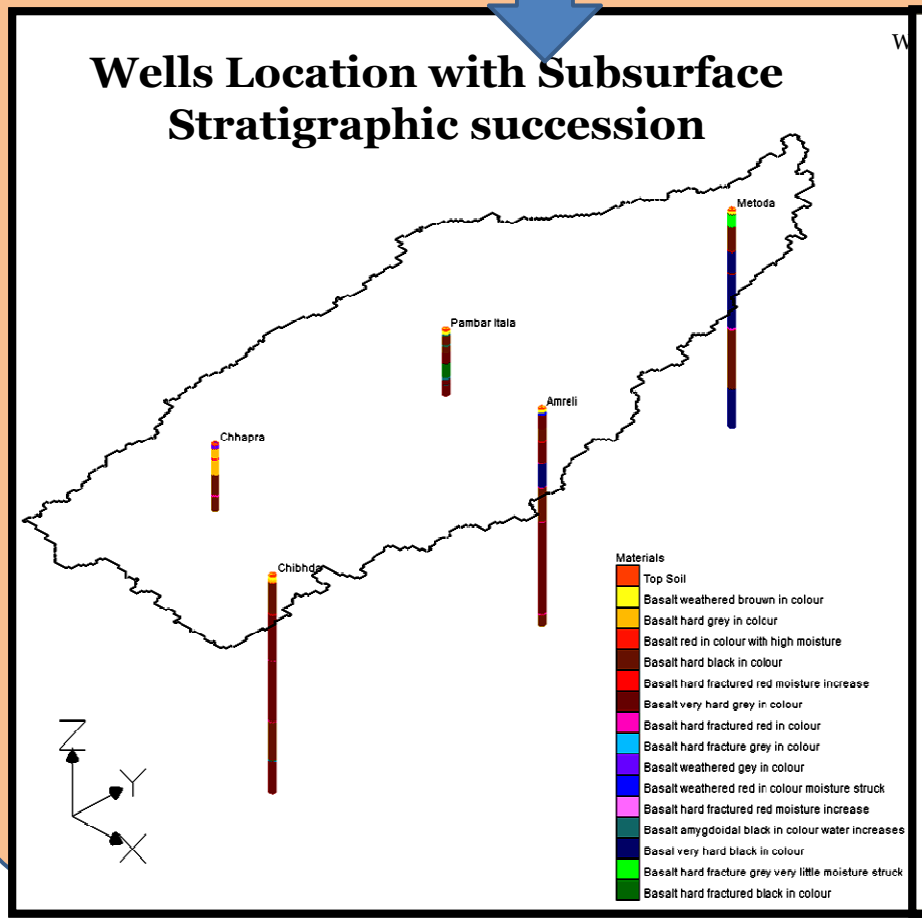
VILLAGE VISE GROUNDWATER BUDGET OF LODHIKA WATERSHED

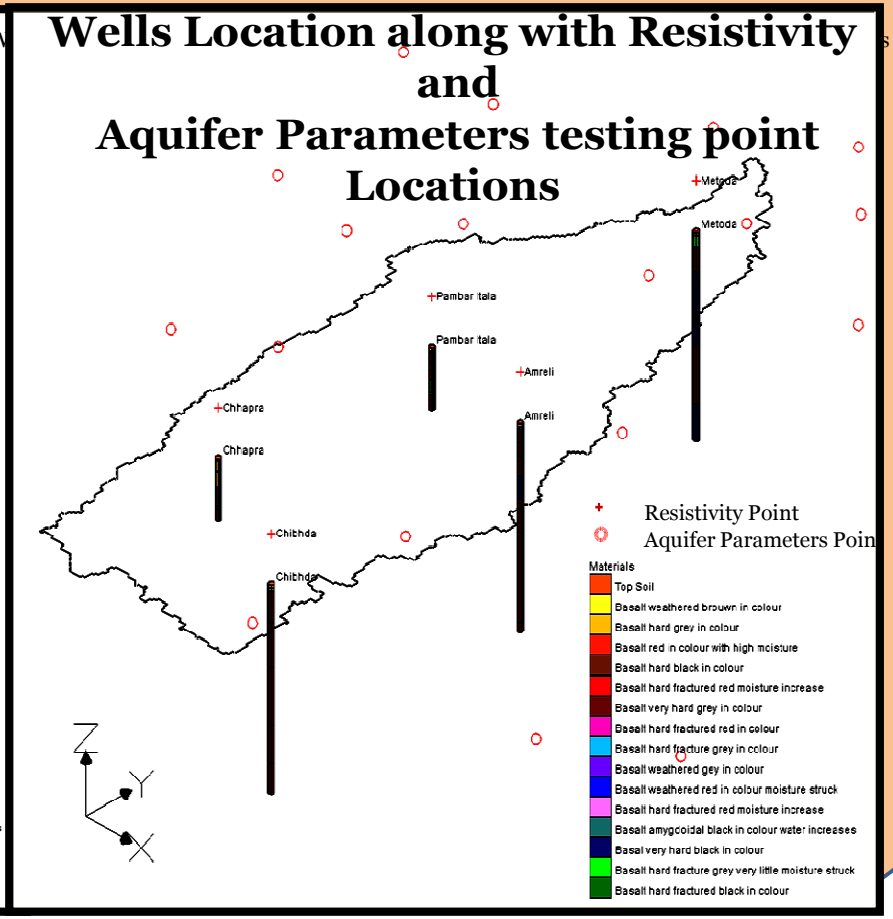
IIC TECHNOLOGIES

VILLAGE-WISE GROUND WATER RESOURCES OF WATERSHED - 5H1B2												
	DISTRICT NAME	TALUKA NAME	VILLAGE NAME	Area (Ha)	RAINFALL (mm)	RAINFALL (m)	INFILTERATION FACTOR	ANNUAL RECHARGE (Ha-m)	SPECIFIC YEILD	GROUND WATER BUDGET (Ha-M)	GROUND WATER BUDGET (M^3)	GROUND WATER BUDGET (MCM)
				(a)		(r)	(c)	(a * r * c)	(Sy)	a * r * c * Sy)		
4	RAJKOT	LODHIKA	Chandli	63.52	1200.80	1.20	0.07	5.34	0.015	0.08	800.8958281	0.000800896
5	RAJKOT	LODHIKA	Ratanpar	260.24	1200.80	1.20	0.07	21.88	0.015	0.33	3281.255772	0.003281256
6	RAJKOT	LODHIKA	Abhepar	436.74	1200.80	1.20	0.07	36.71	0.015	0.55	5506.590394	0.00550659
7	RAJKOT	LODHIKA	Pipardi	864.62	1200.80	1.20	0.07	72.68	0.015	1.09	10901.42307	0.010901423
8	RAJKOT	LODHIKA	Chibhda	1313.86	1200.80	1.20	0.07	110.44	0.015	1.66	16565.73476	0.016565735
9	RAJKOT	LODHIKA	Chhapra	1181.94	1200.80	1.20	0.07	99.35	0.015	1.49	14902.33529	0.014902335
10	RAJKOT	LODHIKA	Devgam	1243.70	1200.80	1.20	0.07	104.54	0.015	1.57	15681.11968	0.01568112
11	RAJKOT	LODHIKA	Devla	968.27	1200.80	1.20	0.07	81.39	0.015	1.22	12208.31729	0.012208317
12	RAJKOT	LODHIKA	Khirsara (Ranmalji	2618.66	1200.80	1.20	0.07	220.11	0.015	3.30	33017.15353	0.033017154
13	RAJKOT	LODHIKA	Rataiya	729.40	1200.80	1.20	0.07	61.31	0.015	0.92	9196.566772	0.009196567
14	RAJKOT	LODHIKA	Motavada	1304.48	1200.80	1.20	0.07	109.65	0.015	1.64	16447.41767	0.016447418
15	RAJKOT	PADDHARI	Nanavada	468.46	1200.80	1.20	0.07	39.38	0.015	0.59	5906.571416	0.005906571
16	RAJKOT	LODHIKA	Pambhar Intala	509.48	1200.80	1.20	0.07	42.82	0.015	0.64	6423.68442	0.006423684
17	RAJKOT	PADDHARI	Intala Nana	534.67	1200.80	1.20	0.07	44.94	0.015	0.67	6741.338368	0.006741338
18	RAJKOT	PADDHARI	Amreli	878.71	1200.80	1.20	0.07	73.86	0.015	1.11	11079.09695	0.011079097
19	RAJKOT	PADDHARI	Suvag	957.15	1200.80	1.20	0.07	80.45	0.015	1.21	12068.14942	0.012068149
20	RAJKOT	PADDHARI	Hidad	496.95	1200.80	1.20	0.07	41.77	0.015	0.63	6265.75557	0.006265756
21	RAJKOT	LODHIKA	Laxmi Intala	339.04	1200.80	1.20	0.07	28.50	0.015	0.43	4274.704922	0.004274705
22	RAJKOT	PADDHARI	Dhokaliya	295.35	1200.80	1.20	0.07	24.83	0.015	0.37	3723.867733	0.003723868
23	RAJKOT	PADDHARI	Kerala	761.87	1200.80	1.20	0.07	64.04	0.015	0.96	9605.937398	0.009605937
24	RAJKOT	PADDHARI	Radad	872.66	1200.80	1.20	0.07	73.35	0.015	1.10	11002.84433	0.011002844
25	RAJKOT	PADDHARI	Khijadiya Mota	264.25	1200.80	1.20	0.07	22.21	0.015	0.33	3331.770982	0.003331771
26	RAJKOT	PADDHARI	Sarapdad	2201.12	1200.80	1.20	0.07	185.02	0.015	2.78	27752.63242	0.027752632
27	RAJKOT	PADDHARI	Metoda	480.21	1200.80	1.20	0.07	40.36	0.015	0.61	6054.739176	0.006054739
28	RAJKOT	PADDHARI	Bodi Ghodi	184.07	1200.80	1.20	0.07	15.47	0.015	0.23	2320.802821	0.002320803
29	RAJKOT	LODHIKA	Lodhika	32.04	1200.80	1.20	0.07	2.69	0.015	0.04	404.0123732	0.000404012
30	RAJKOT	LODHIKA	Balsar	81.08	1200.80	1.20	0.07	6.82	0.015	0.10	1022.279186	0.001022279
31	JAMNAGAR	KALAVAD	Anandpar	324.92	1200.80	1.20	0.07	27.31	0.015	0.41	4096.666918	0.004096667
32	RAJKOT	PADDHARI	Sal Pipaliya	59.20	1200.80	1.20	0.07	4.98	0.015	0.07	746.393337	0.000746393
33								1742.20	Total	26.13	261330.0578	0.261330058

WELLS LOCATION WITH SUBSURFACE STRATIGRAPHIC SUCCESSION

IIC TECHNOLOGIES

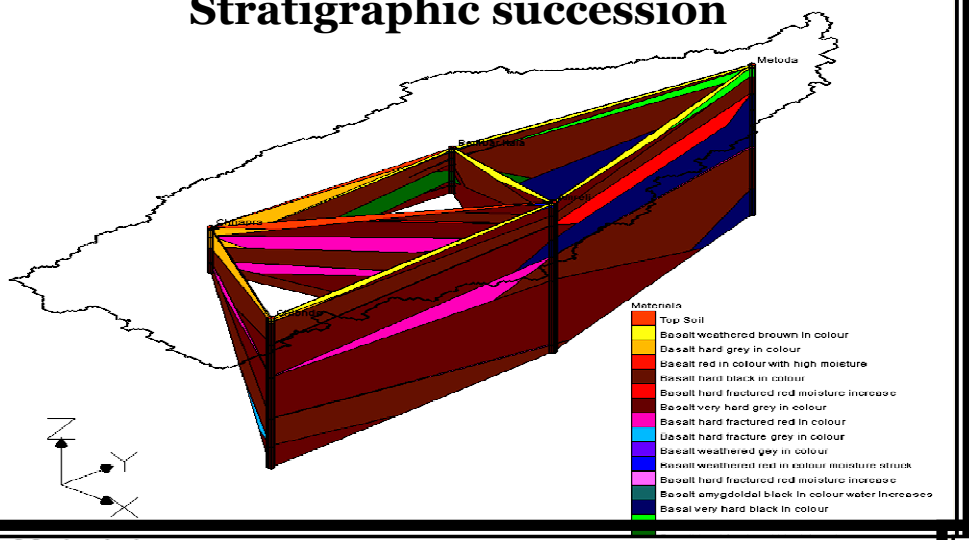




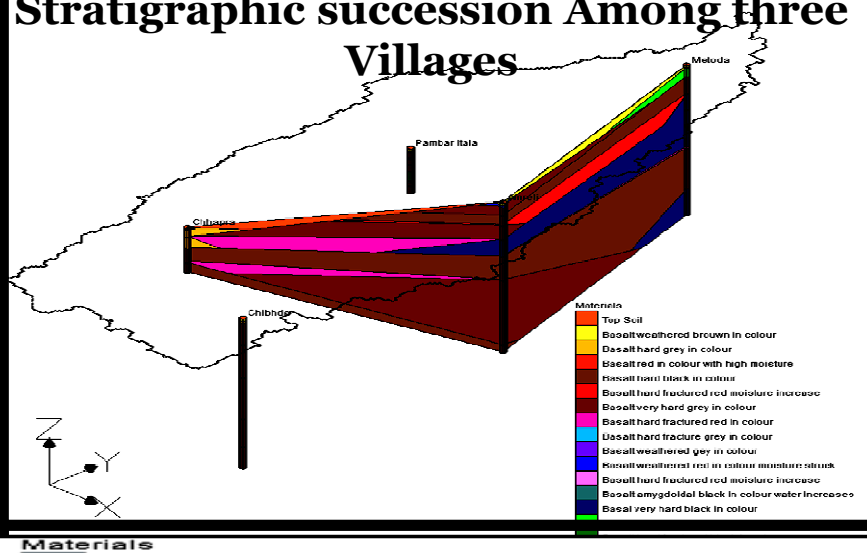
STRATIGRAPHIC SUCCESION

IIC TECHNOLOGIES

Wells Showing Subsurface Stratigraphic succession



Wells Showing Subsurface Stratigraphic succession Among three Villages



Materials

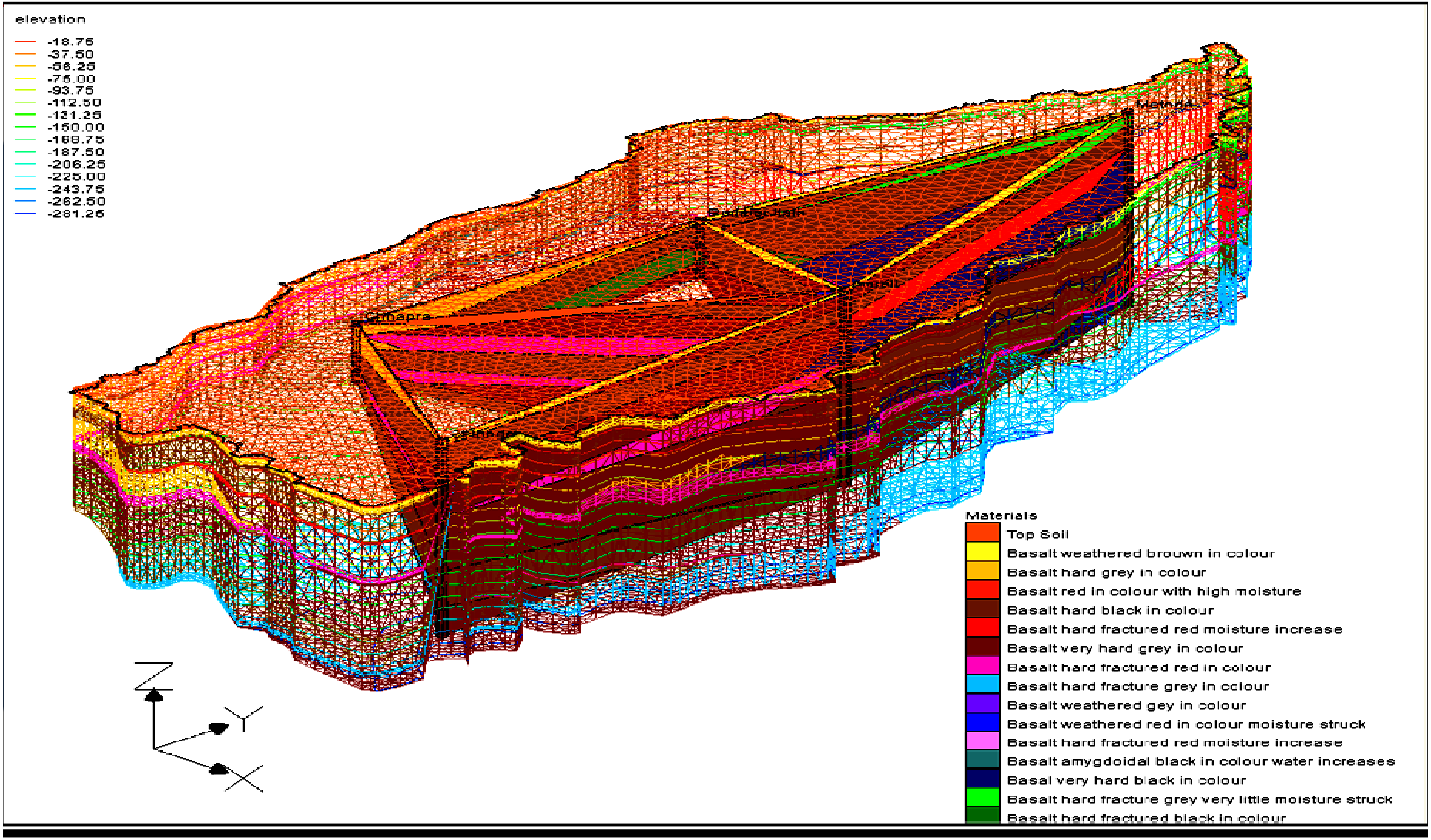
- Top Soil
- Basalt weathered brouwn in colour
- Basalt hard grey in colour
- Basalt red in colour with high moisture
- Basalt hard black in colour
- Basalt hard fractured red moisture increase
- Basalt very hard grey in colour
- Basalt hard fractured red in colour
- Basalt hard fracture grey in colour
- Basalt weathered gey in colour
- Basalt weathered red in colour moisture struck
- Basalt hard fractured red moisture increase
- Basalt amygdoidal black in colour water increases
- Basal very hard black in colour
- Basalt hard fracture grey very little moisture struck
- Basalt hard fractured black in colour

Materials

- Top Soil
- Basalt weathered brouwn in colour
- Basalt hard grey in colour
- Basalt red in colour with high moisture
- Basalt hard black in colour
- Basalt hard fractured red moisture increase
- Basalt very hard grey in colour
- Basalt hard fractured red in colour
- Basalt hard fracture grey in colour
- Basalt weathered gey in colour
- Basalt weathered red in colour moisture struck
- Basalt hard fractured red moisture increase
- Basalt amygdoidal black in colour water increases
- Basal very hard black in colour
- Basalt hard fracture grey very little moisture struck
- Basalt hard fractured black in colour

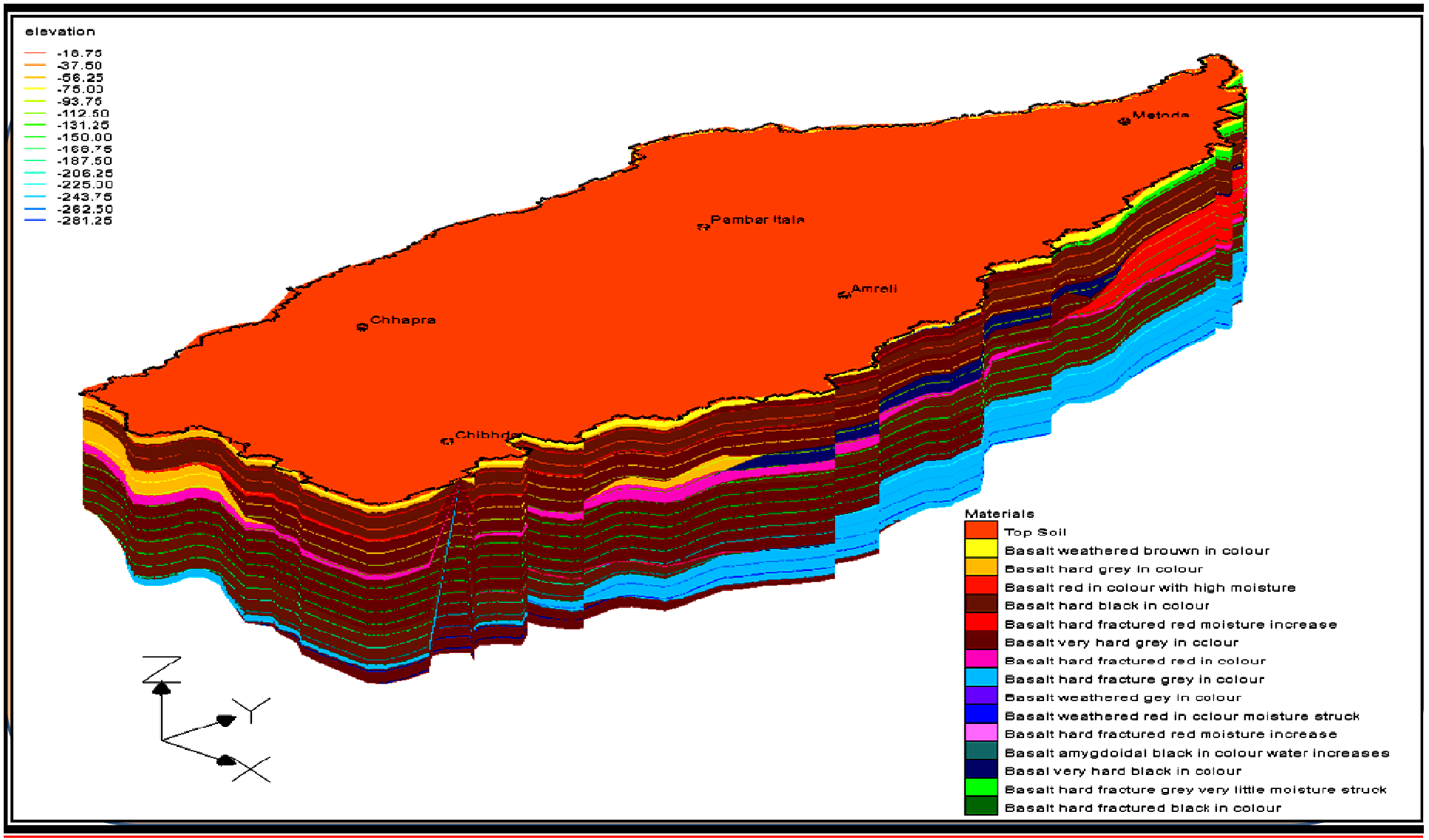
STRATIGRAPHIC MODEL

IIC TECHNOLOGIES



SOLID STRATIGRAPHIC MODEL

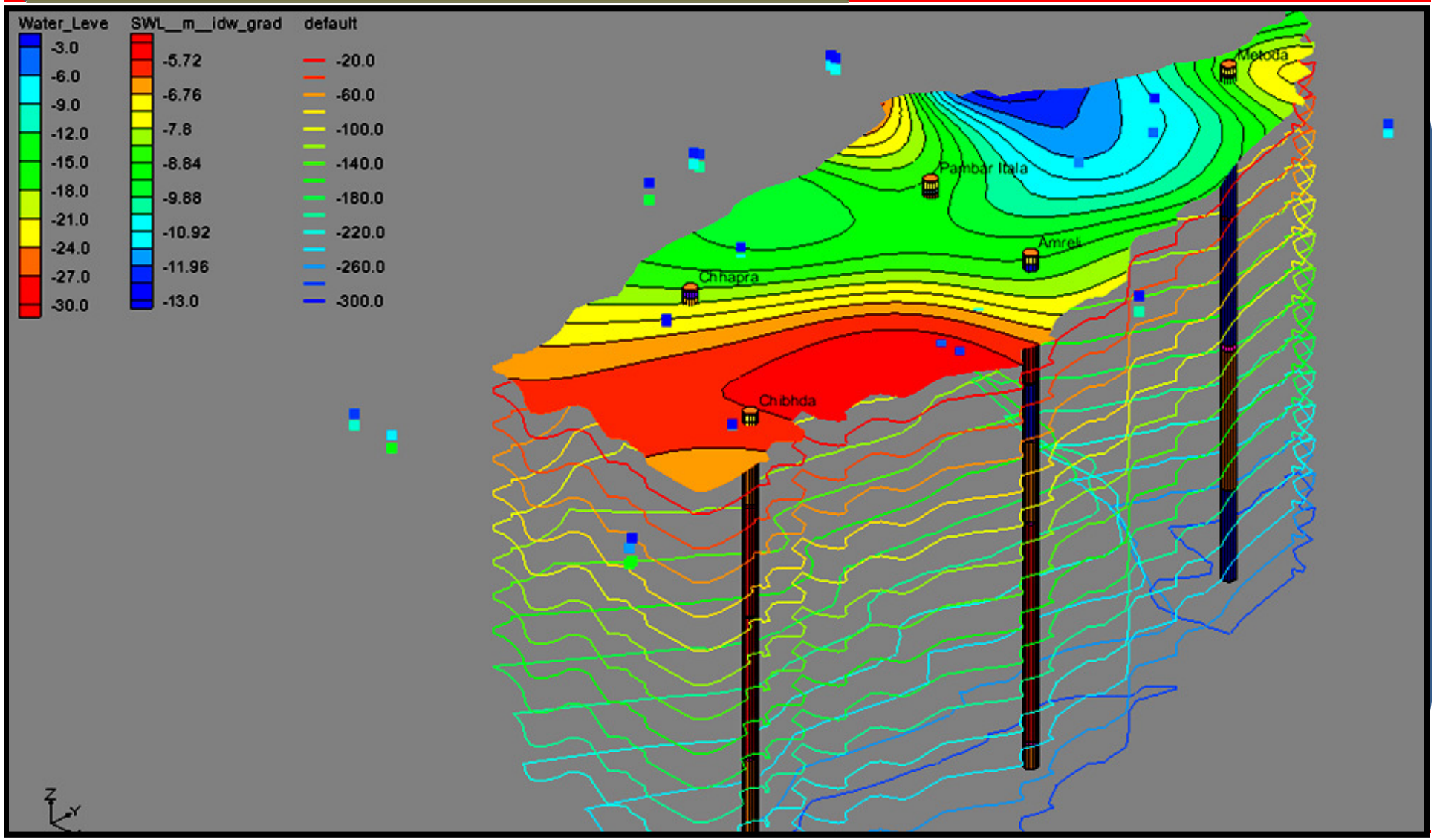
IIC TECHNOLOGIES



3D MODEL

3D DISPLAY OF STATIC WATER LEVEL

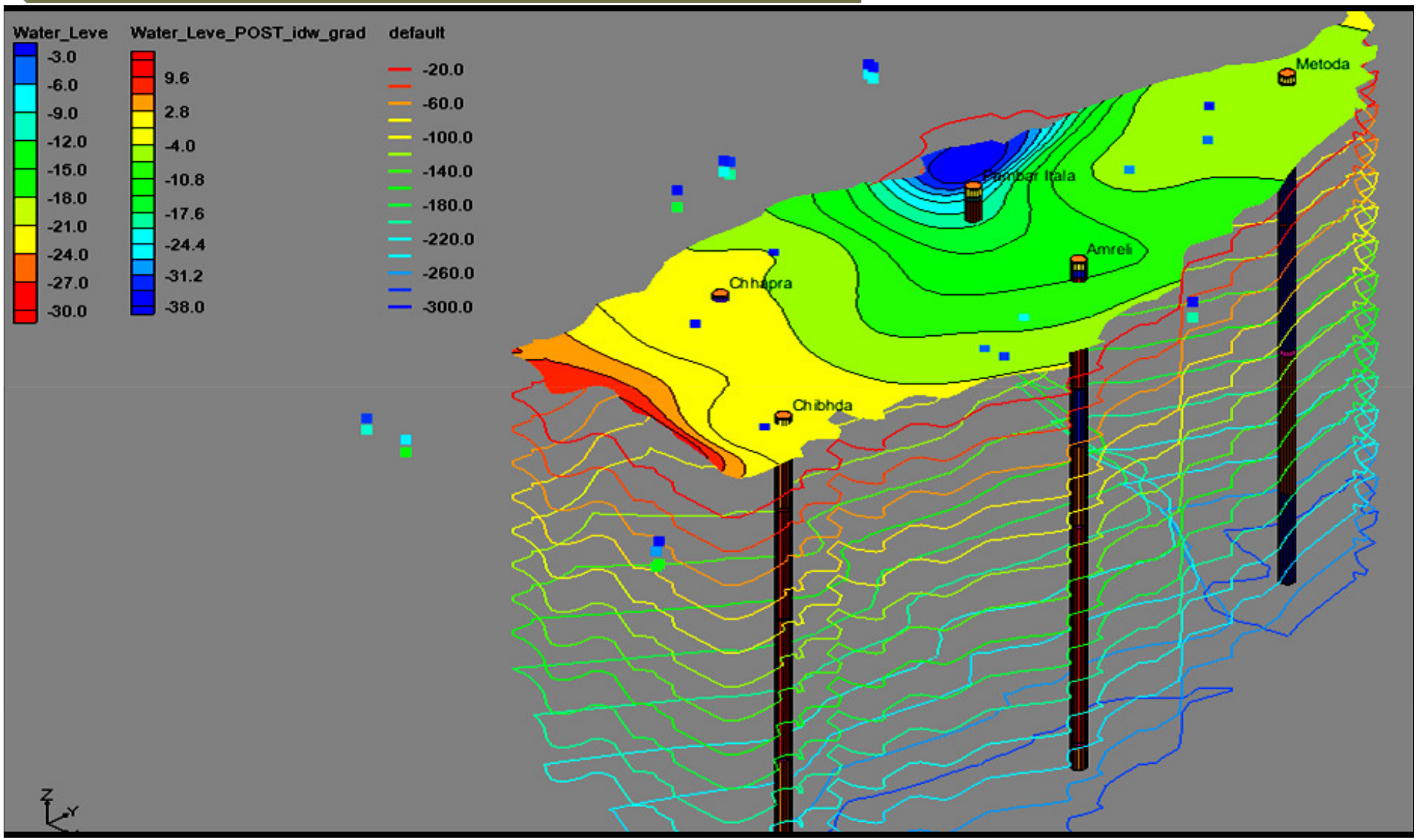
IIC TECHNOLOGIES



3D MODEL

3D DISPLAY OF WATER LEVEL(POST-MONSOON)

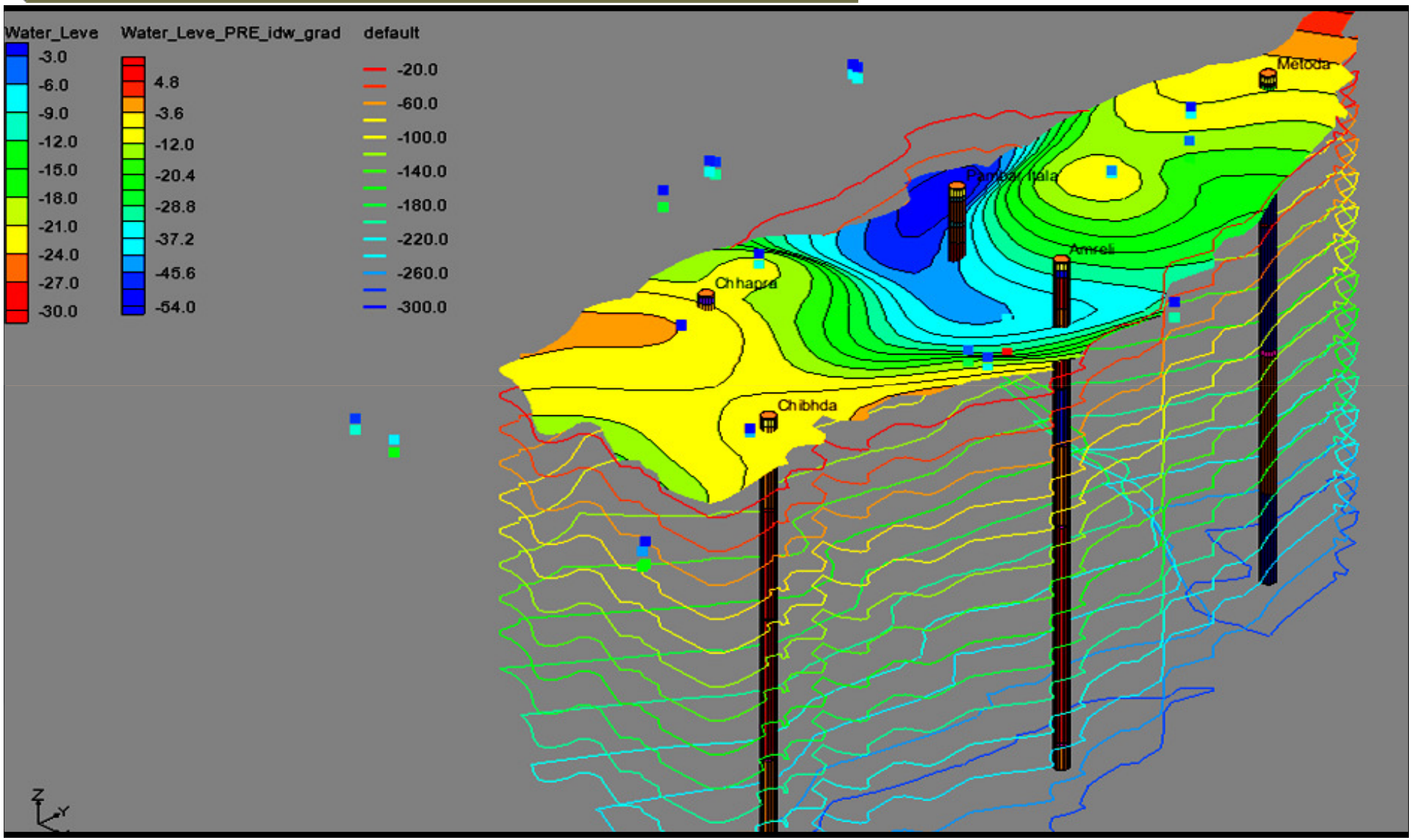
IIC TECHNOLOGIES



3D MODEL

3D DISPLAY OF WATER LEVEL(PRE-MONSOON)

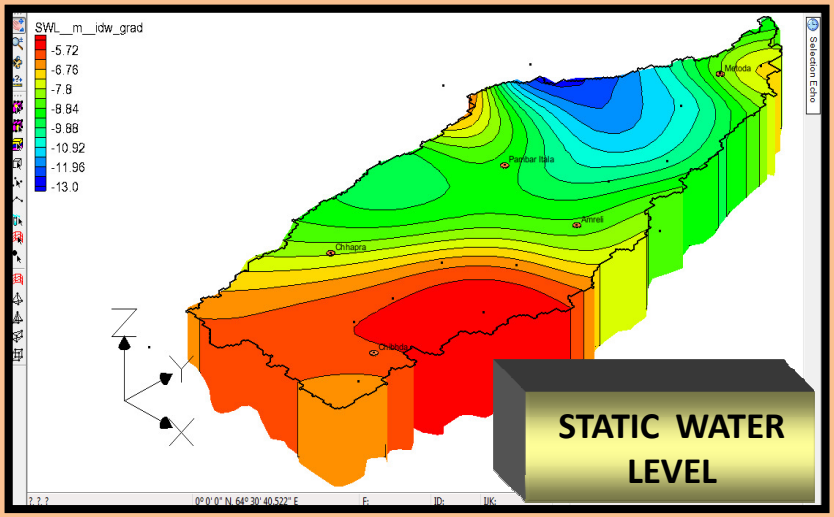
IIC TECHNOLOGIES



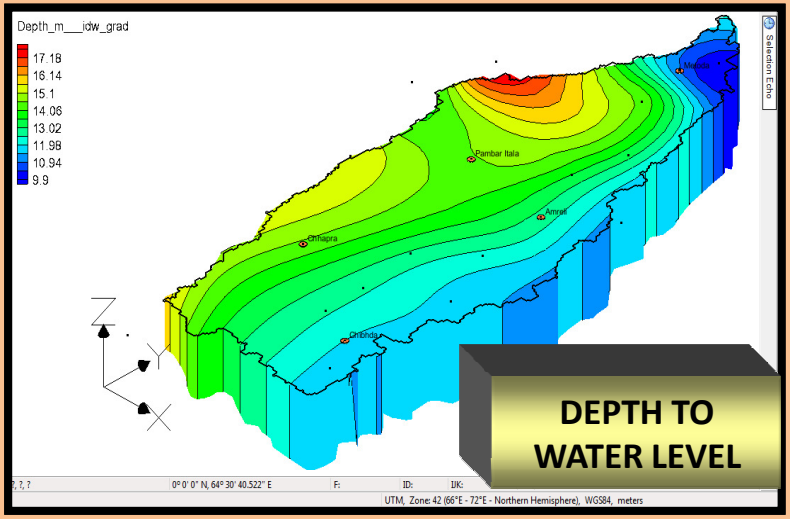
3D MODEL

3D DISPLAY OF DIFFERENT INFORMATION

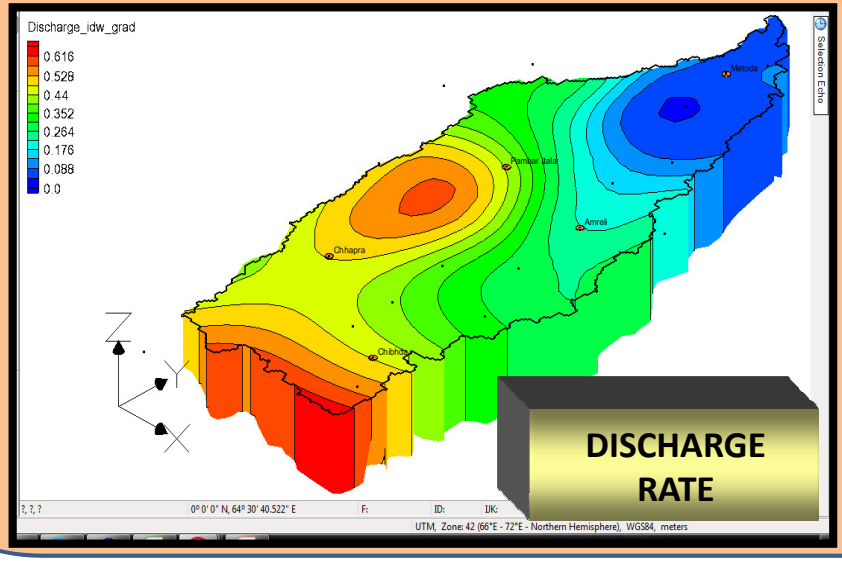
IIC TECHNOLOGIES



STATIC WATER LEVEL



DEPTH TO WATER LEVEL



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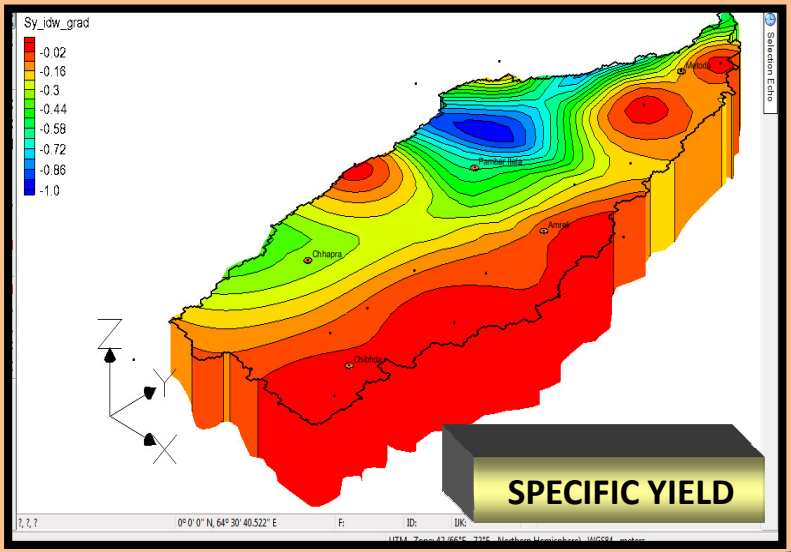


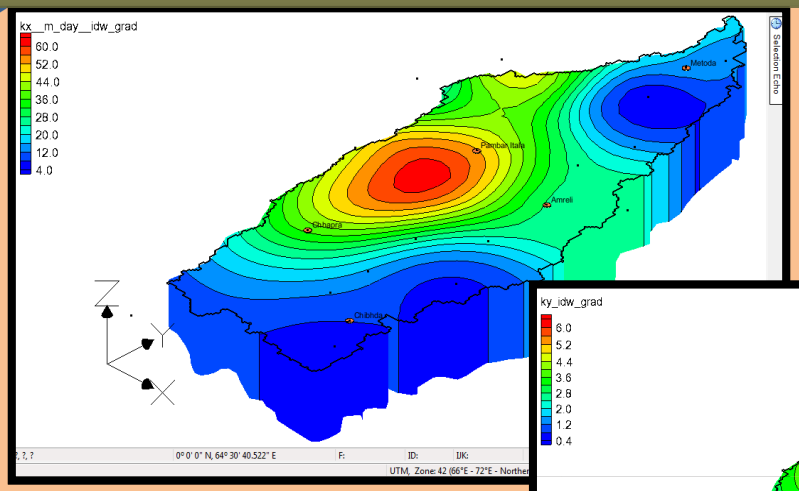
SPECIFIC YIELD

NEW PATHS, NEW APPROACHES

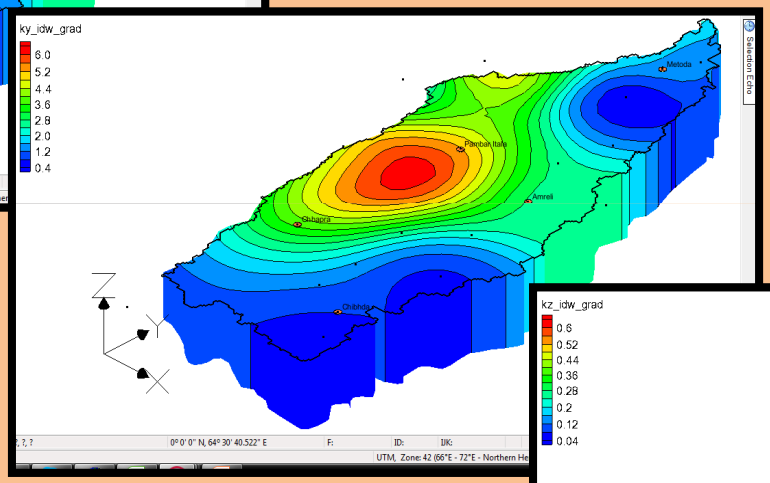
3D MODEL

3D DISPLAY HYDRAULIC CONDUCTIVITY

IIC TECHNOLOGIES



Kx



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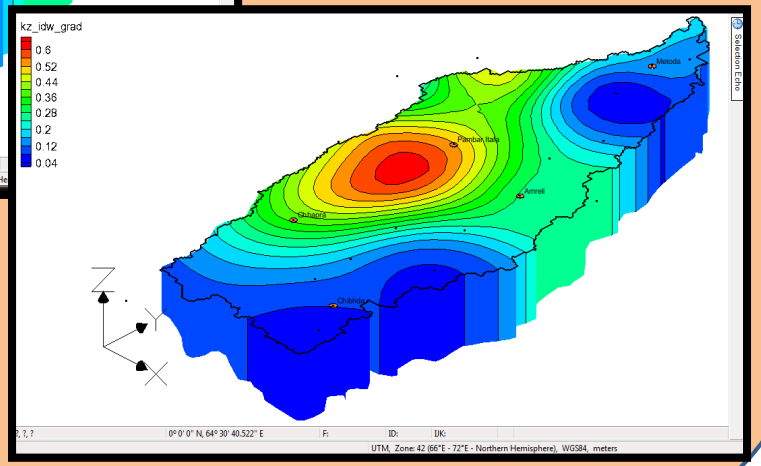

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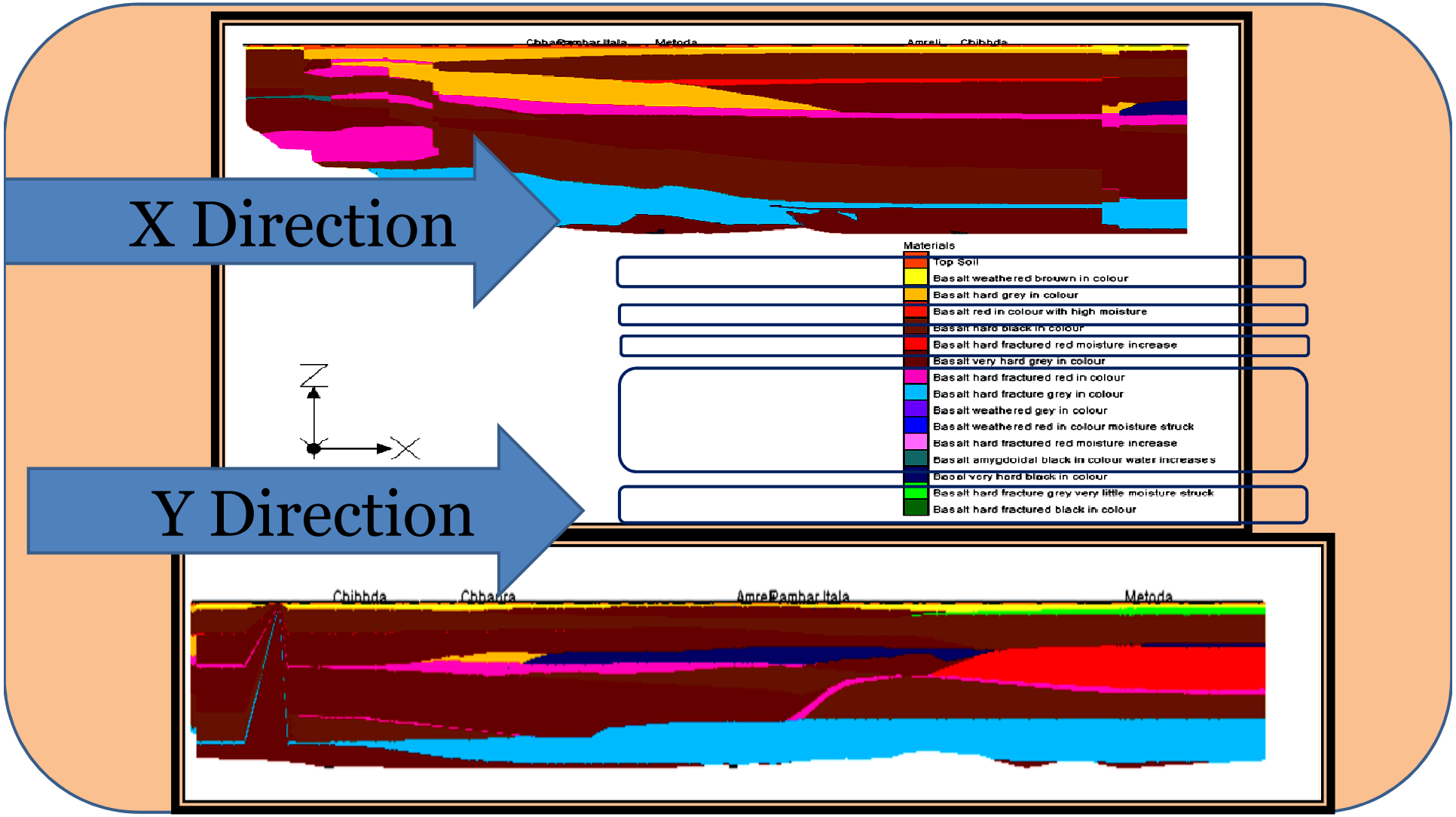
NEW PATHS, NEW APPROACHES

STRATIGRAPHY OF THE AREA IN X & Y DIRECTION VIEW

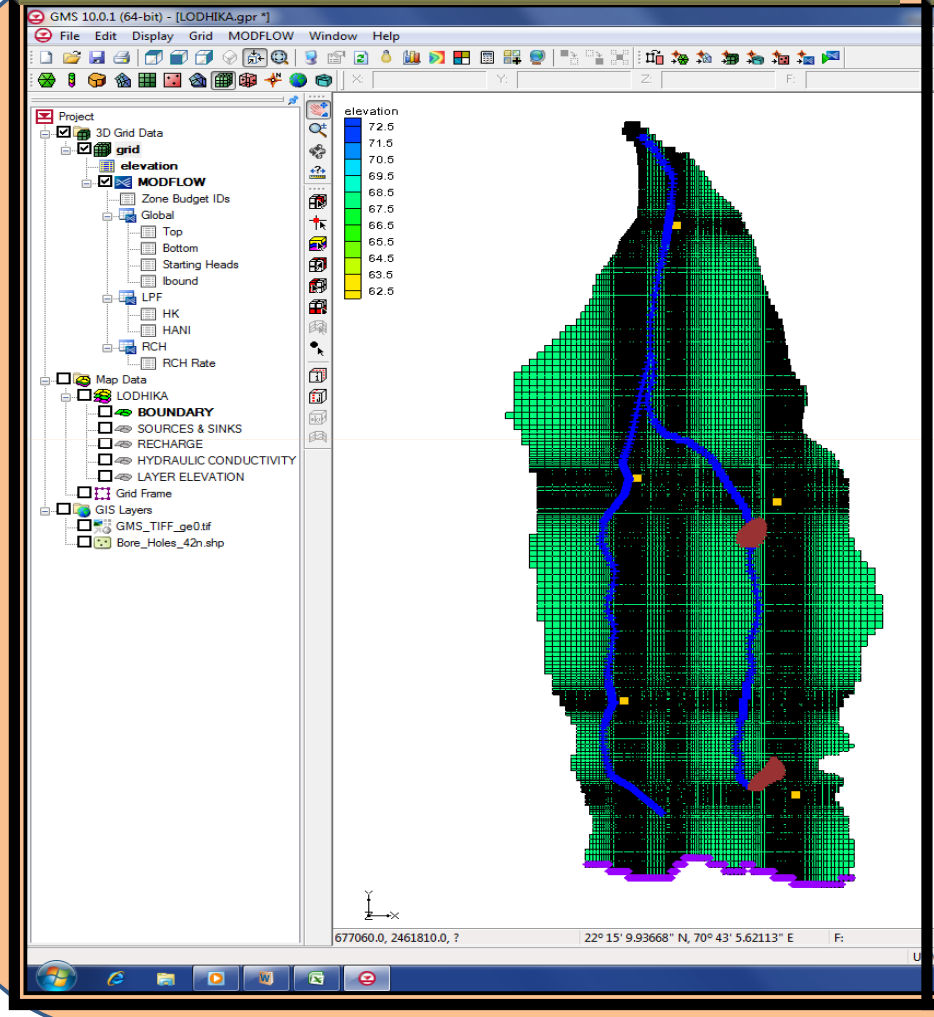
IIC TECHNOLOGIES



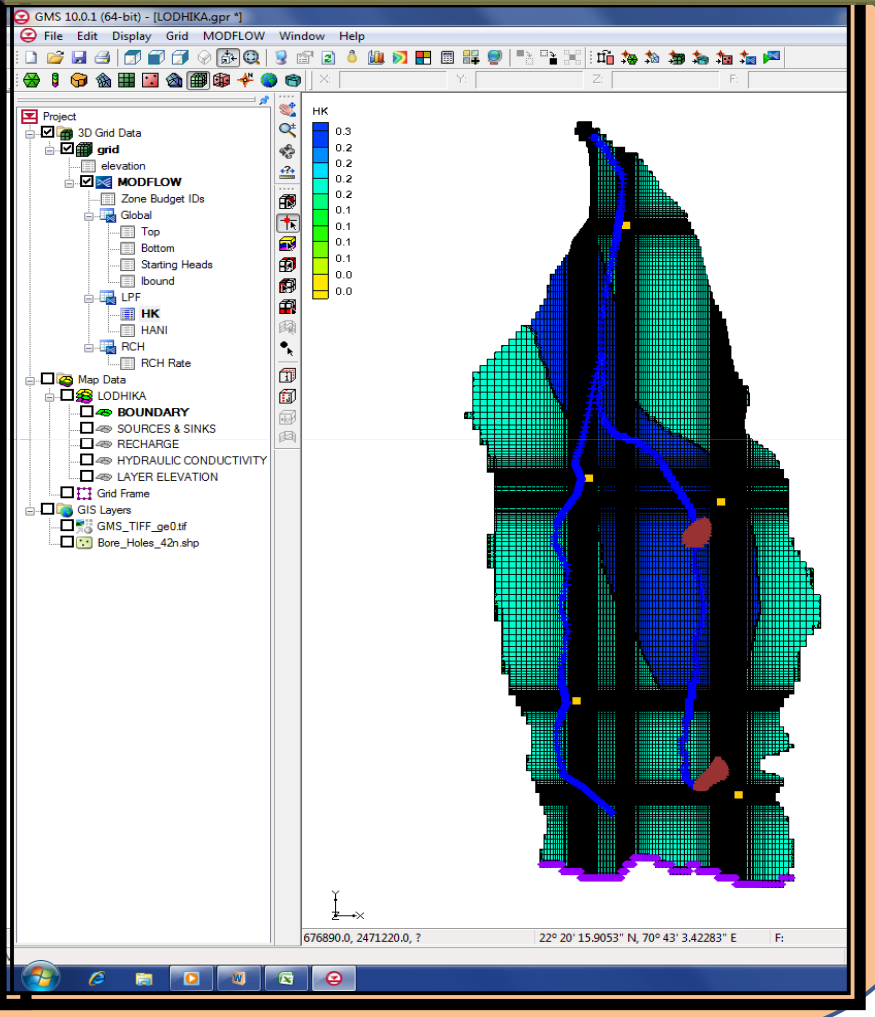
CONCEPTUAL MODEL WITH ELEVATION & CONDUCTIVITY VARIATIONS

IIC TECHNOLOGIES

ELEVATION



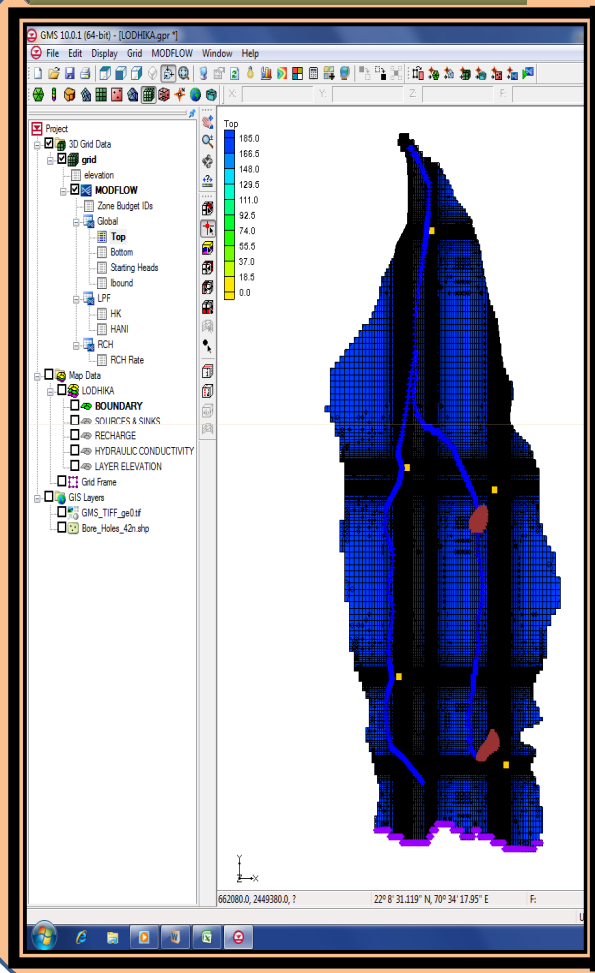
HYDRAULIC CONDUCTIVITY



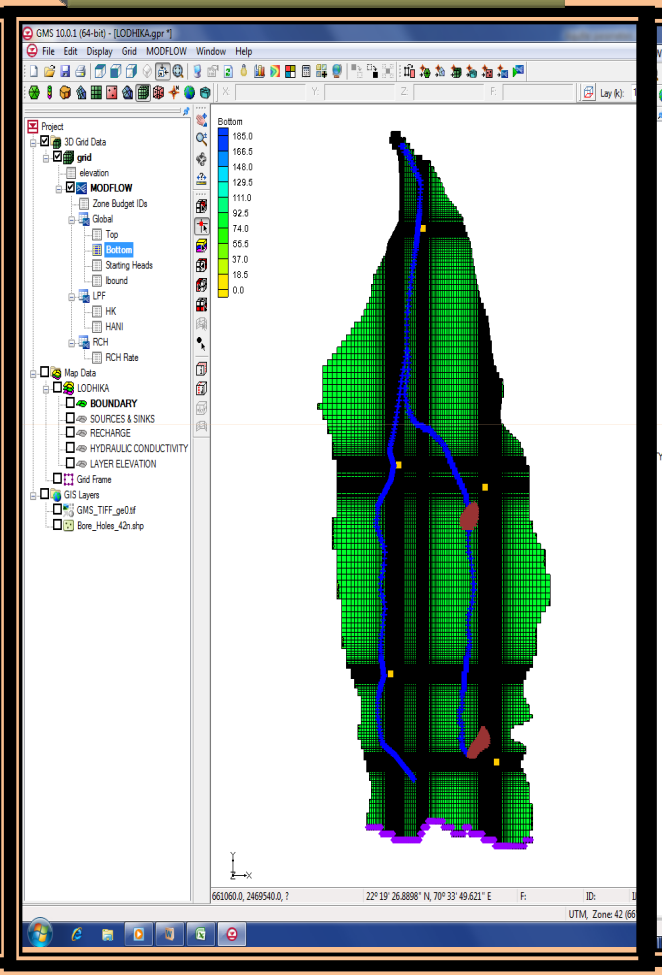
CONCEPTUAL MODEL SHOWING TOP , BOTTEM ELEVATIONS & STARTIN HEADS VALUE

IIC TECHNOLOGIES

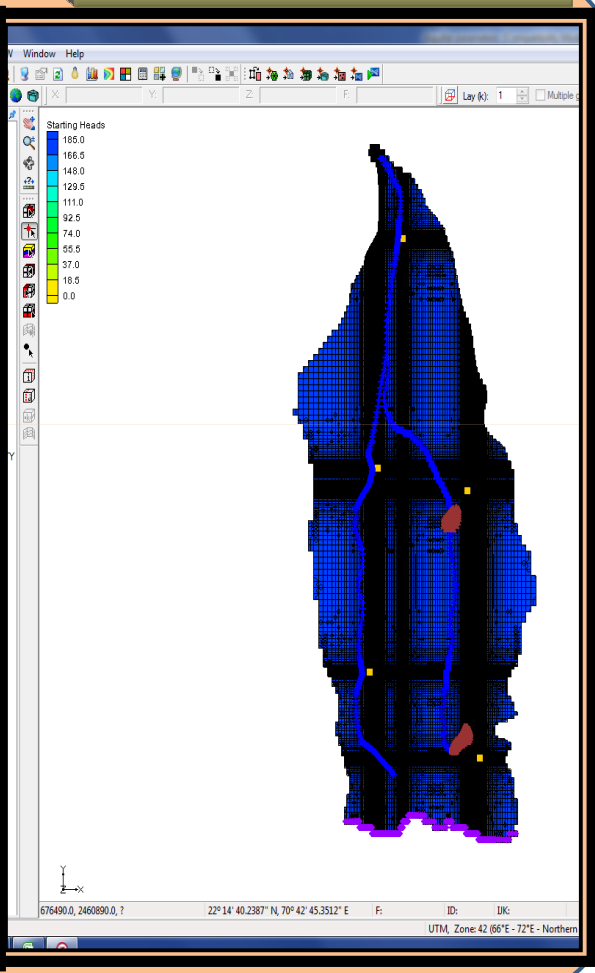
TOP ELEVATION



BOTTEM ELEVATION



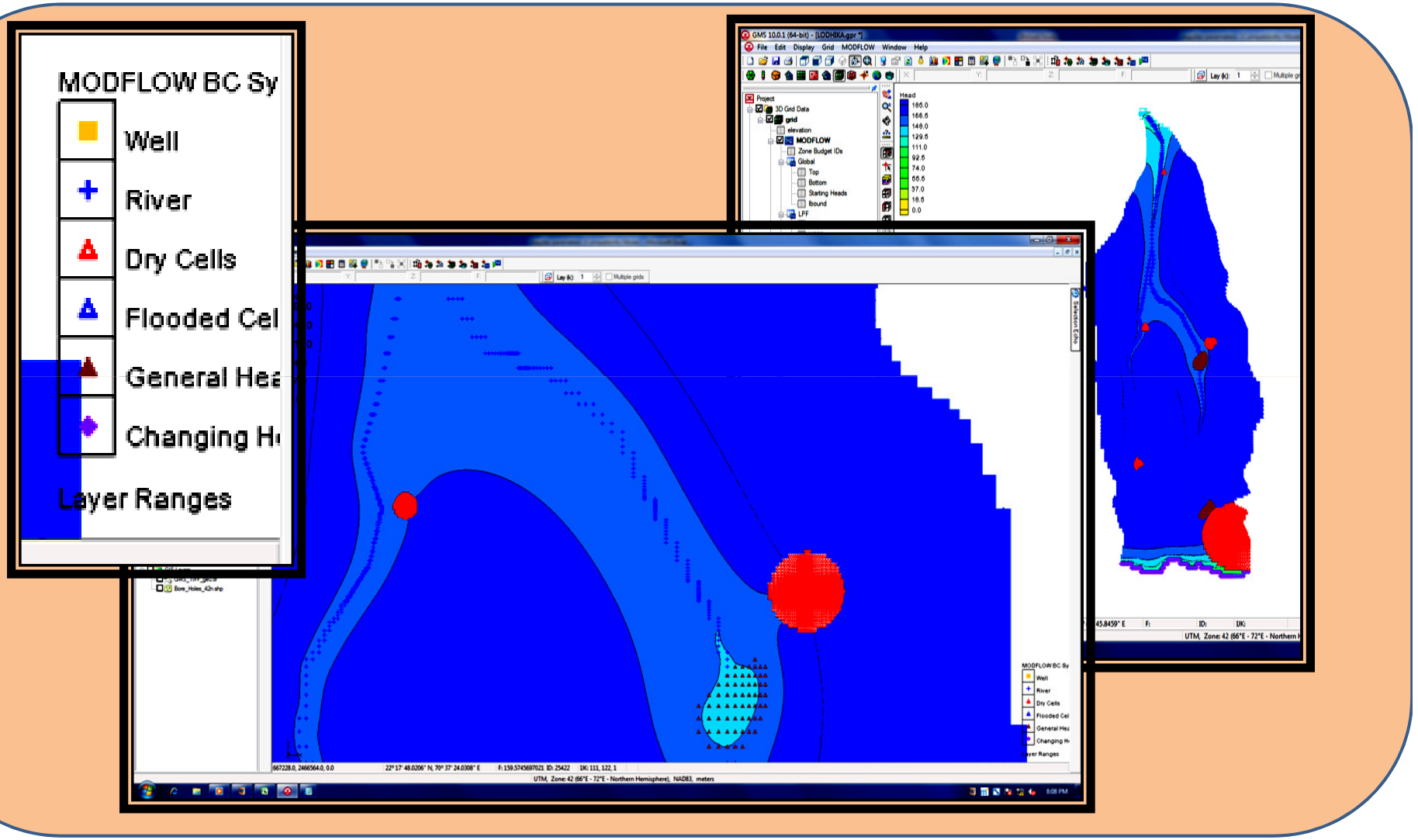
STARTING HEAD



NEW PATHS, NEW APPROACHES

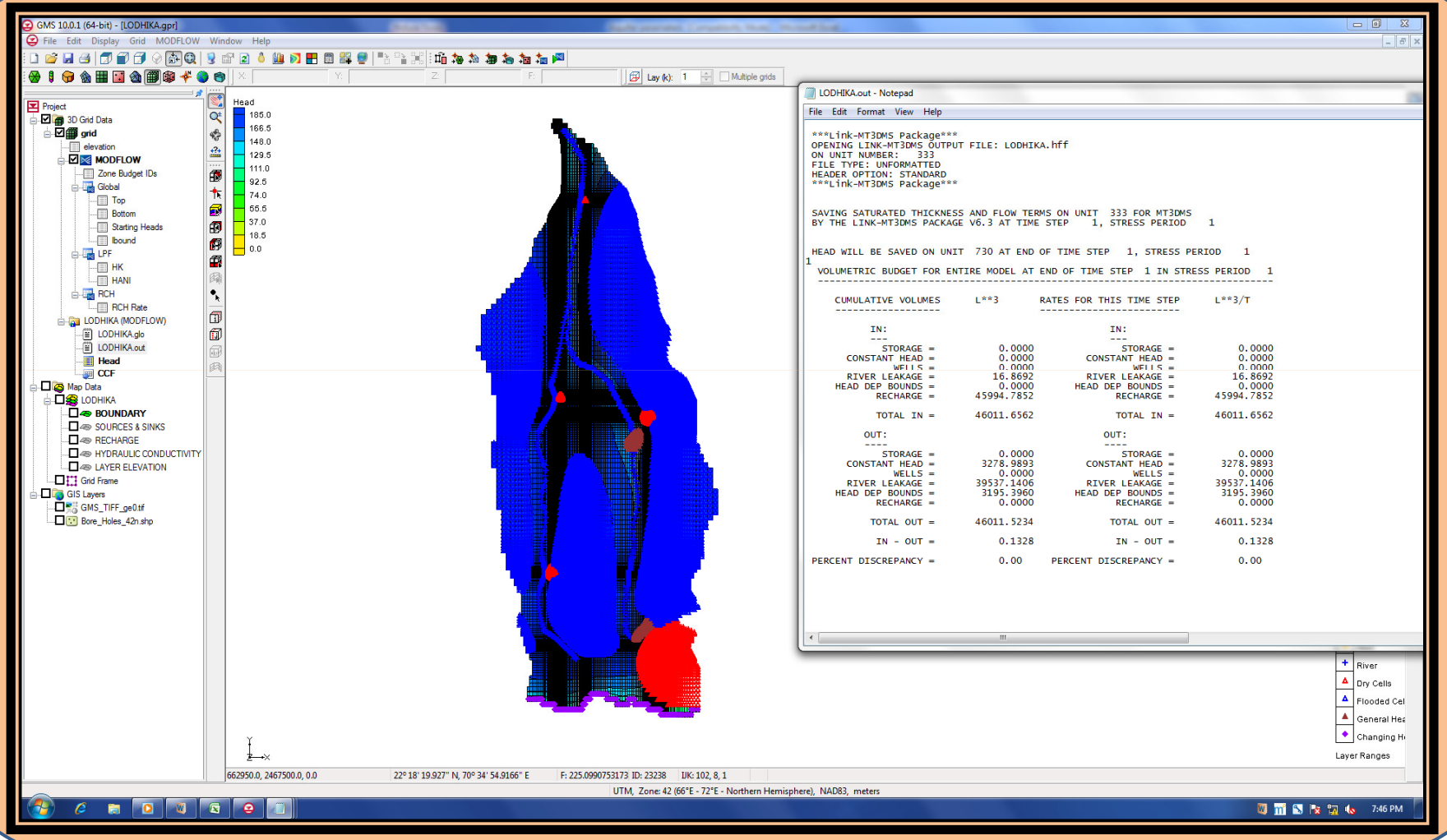
CONCEPTUAL MODEL SHOWING DIFFERENT HEADS IN MODEL CLOSER VIEW

IIC TECHNOLOGIES



CONCEPTUAL MODEL SHOWING DIFFERENT HEADS WITH BUDGET

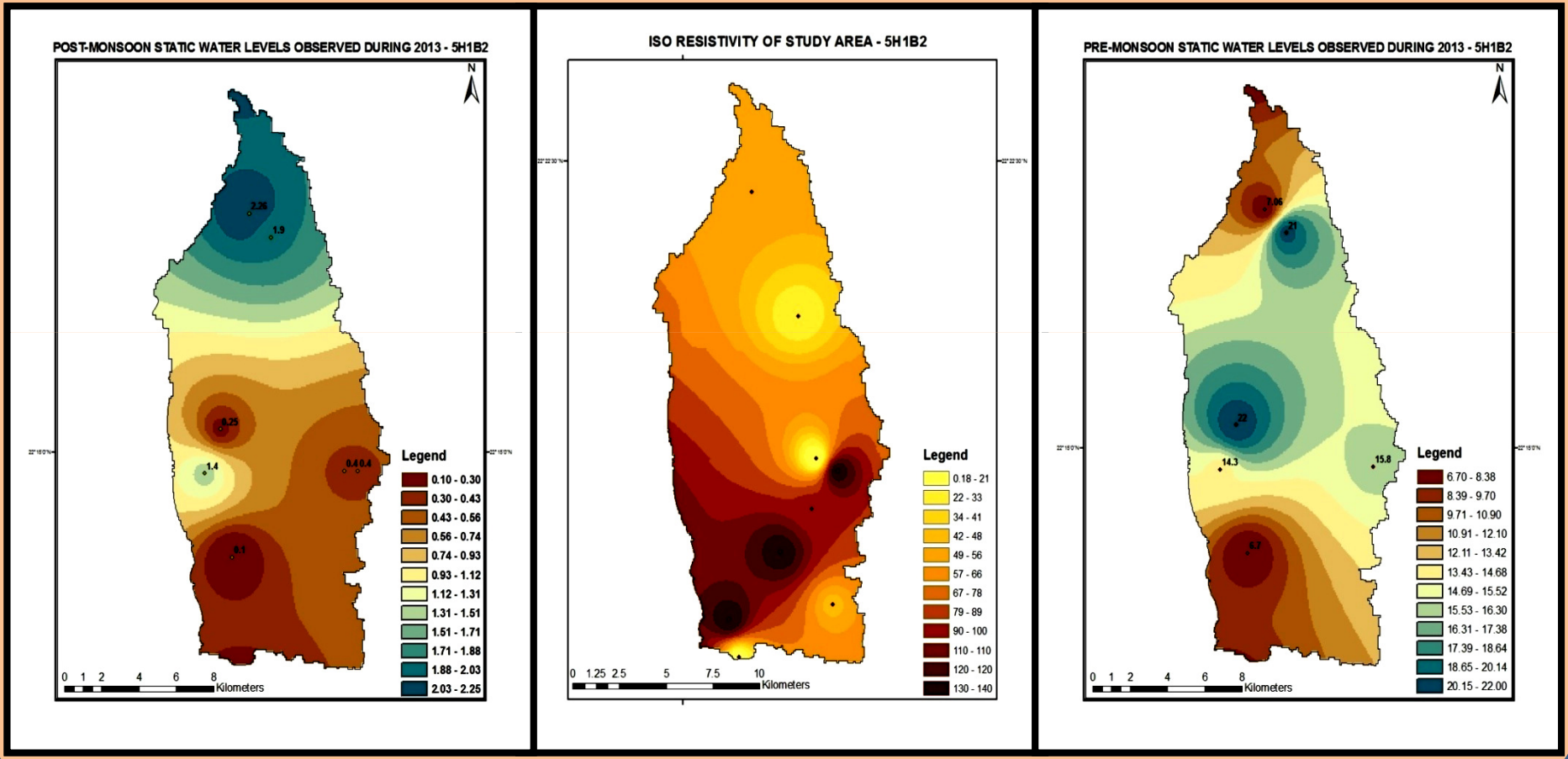
IIC TECHNOLOGIES

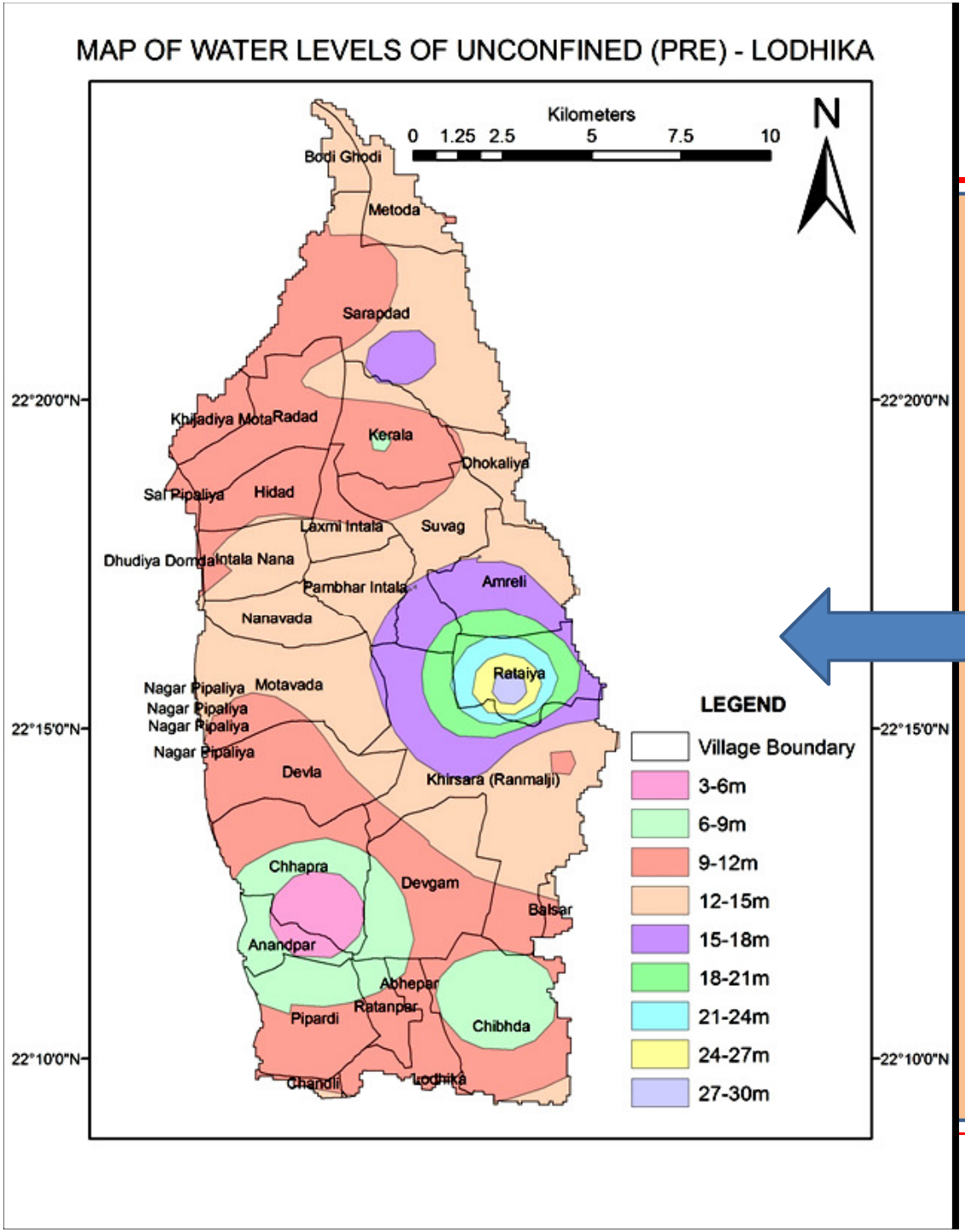


NEW PATHS, NEW APPROACHES

MAP SHOWING WATER LEVEL SPATIAL DISTRIBUTION MAP FOR PRE /POST MONSOON & ISORESISTIVITY MAP

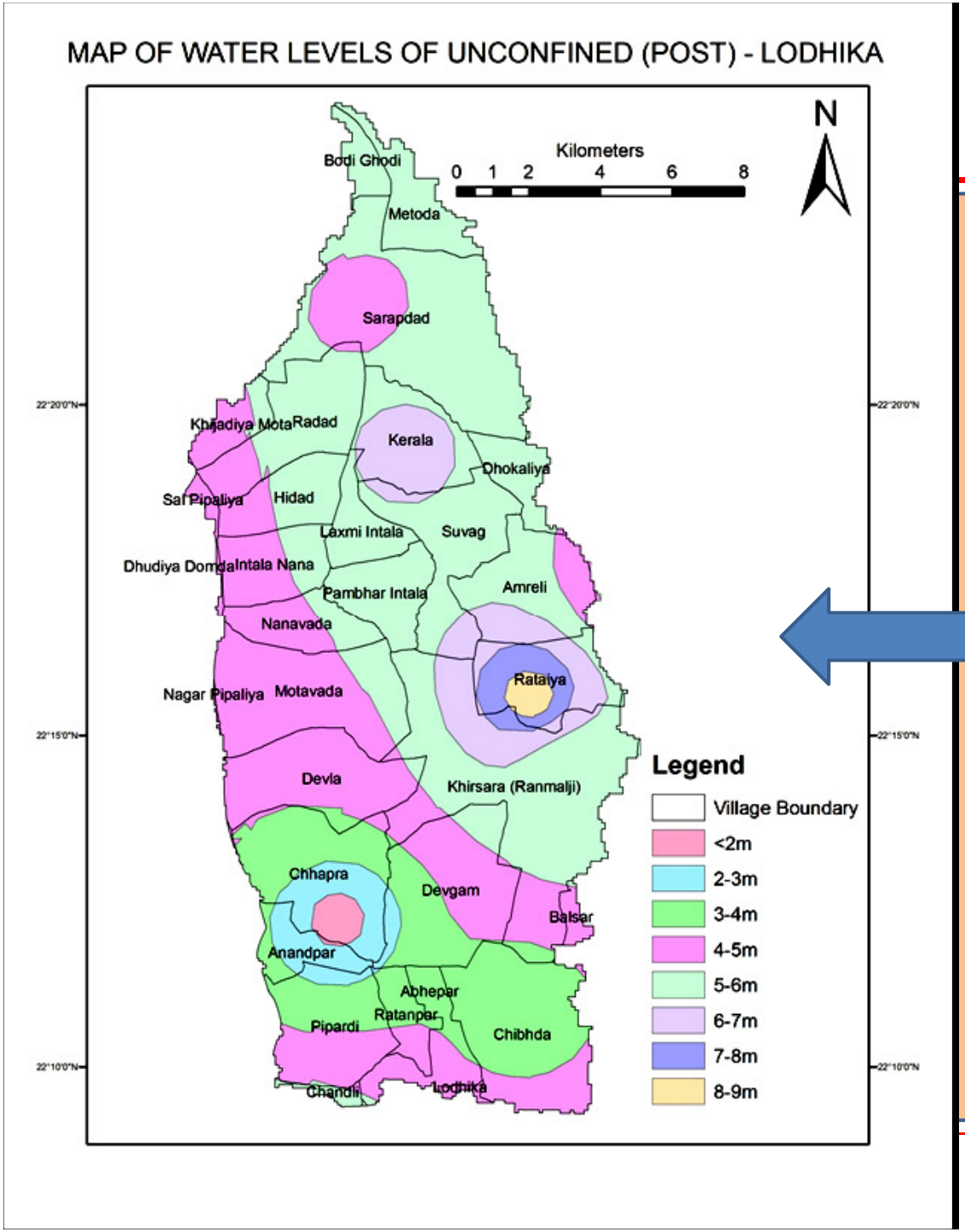
IIC TECHNOLOGIES





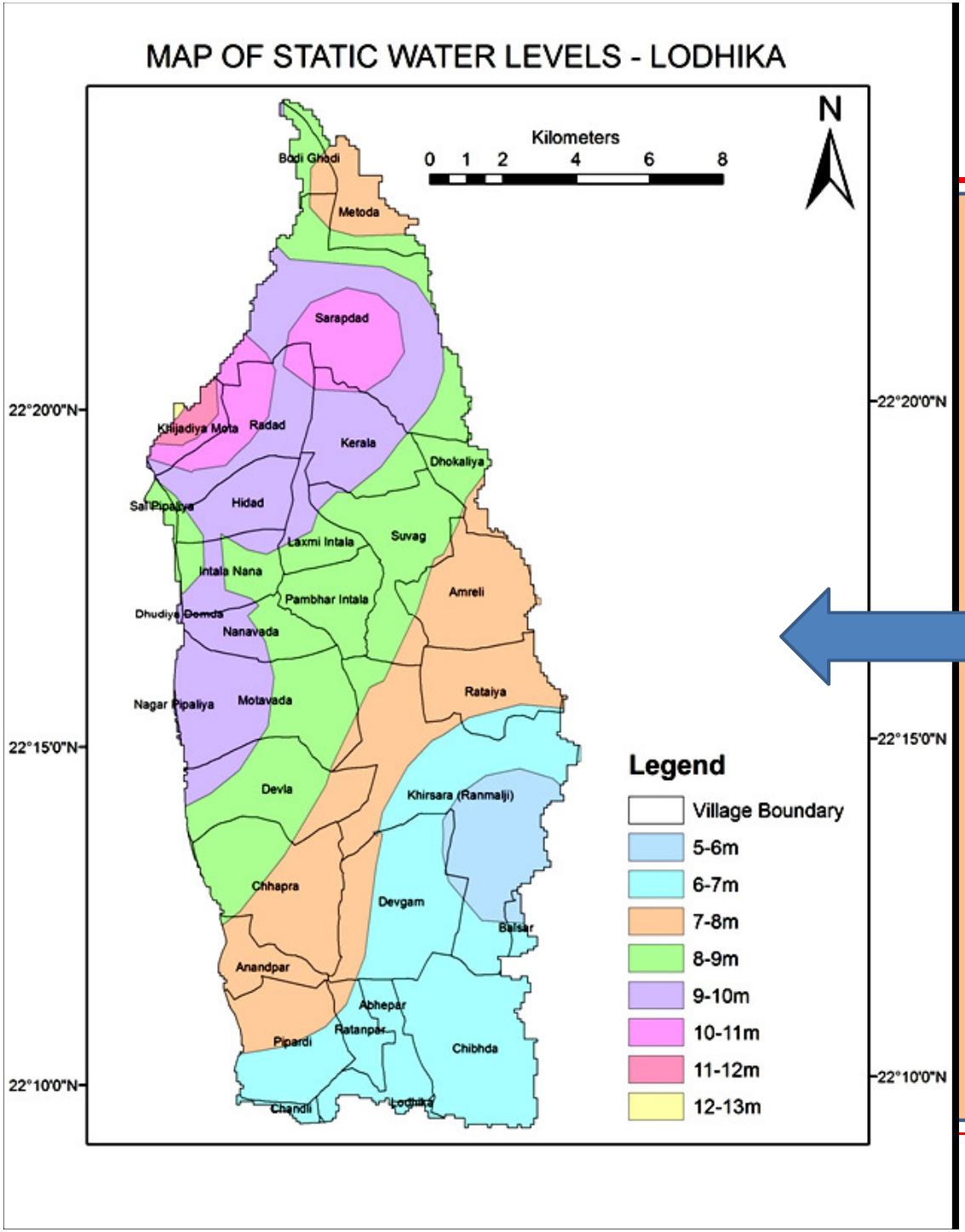
IIC TECHNOLOGIES

SPATIAL DISTRIBUTION MAP OF WATER LEVEL FOR PRE-MONSOON SEASON, LODHIKA WATERSHED- RAJKOT



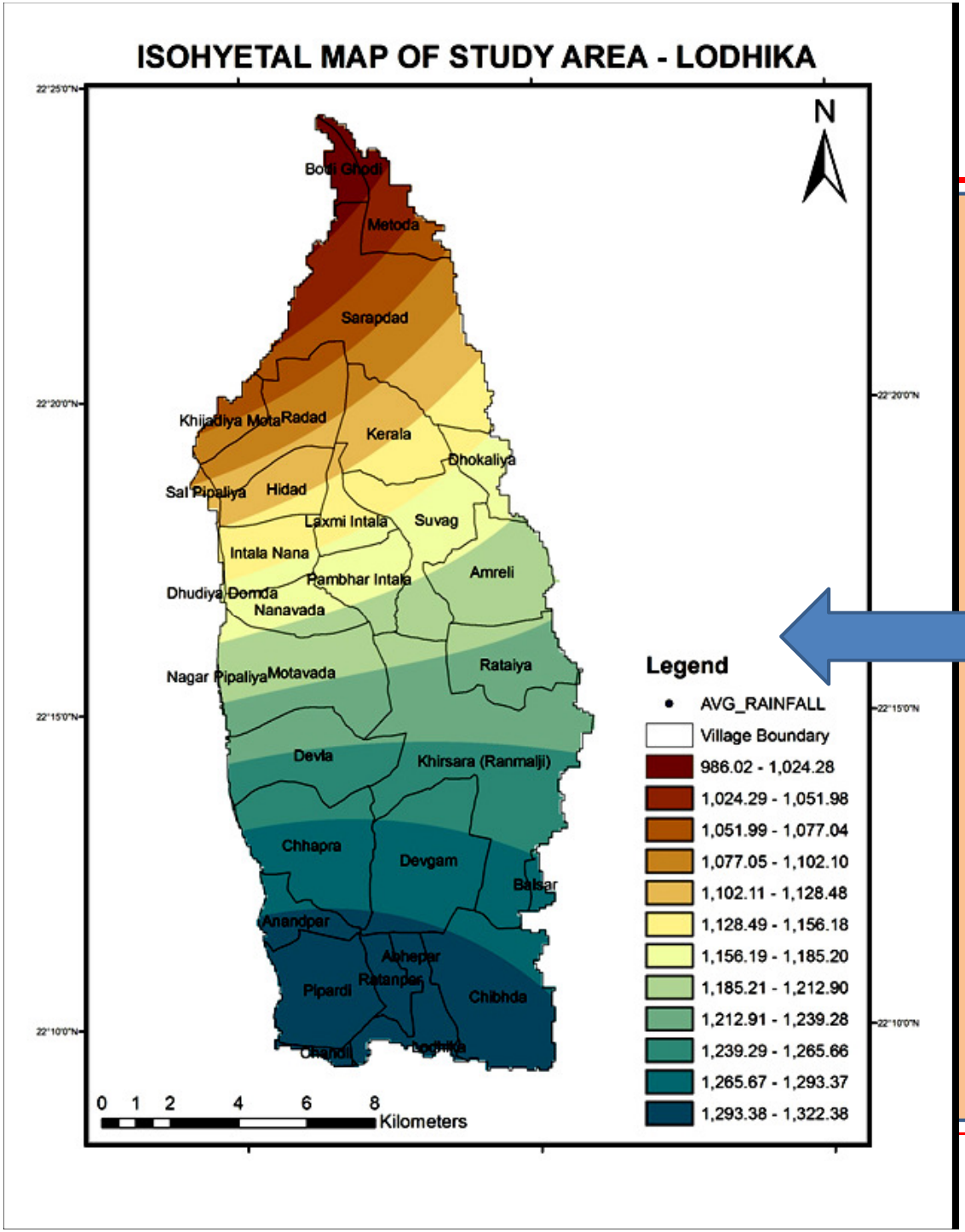
IIC TECHNOLOGIES

SPATIAL DISTRIBUTION MAP OF WATER LEVEL FOR POST-MONSOON SEASON, LODHIKA WATERSHED- RAJKOT



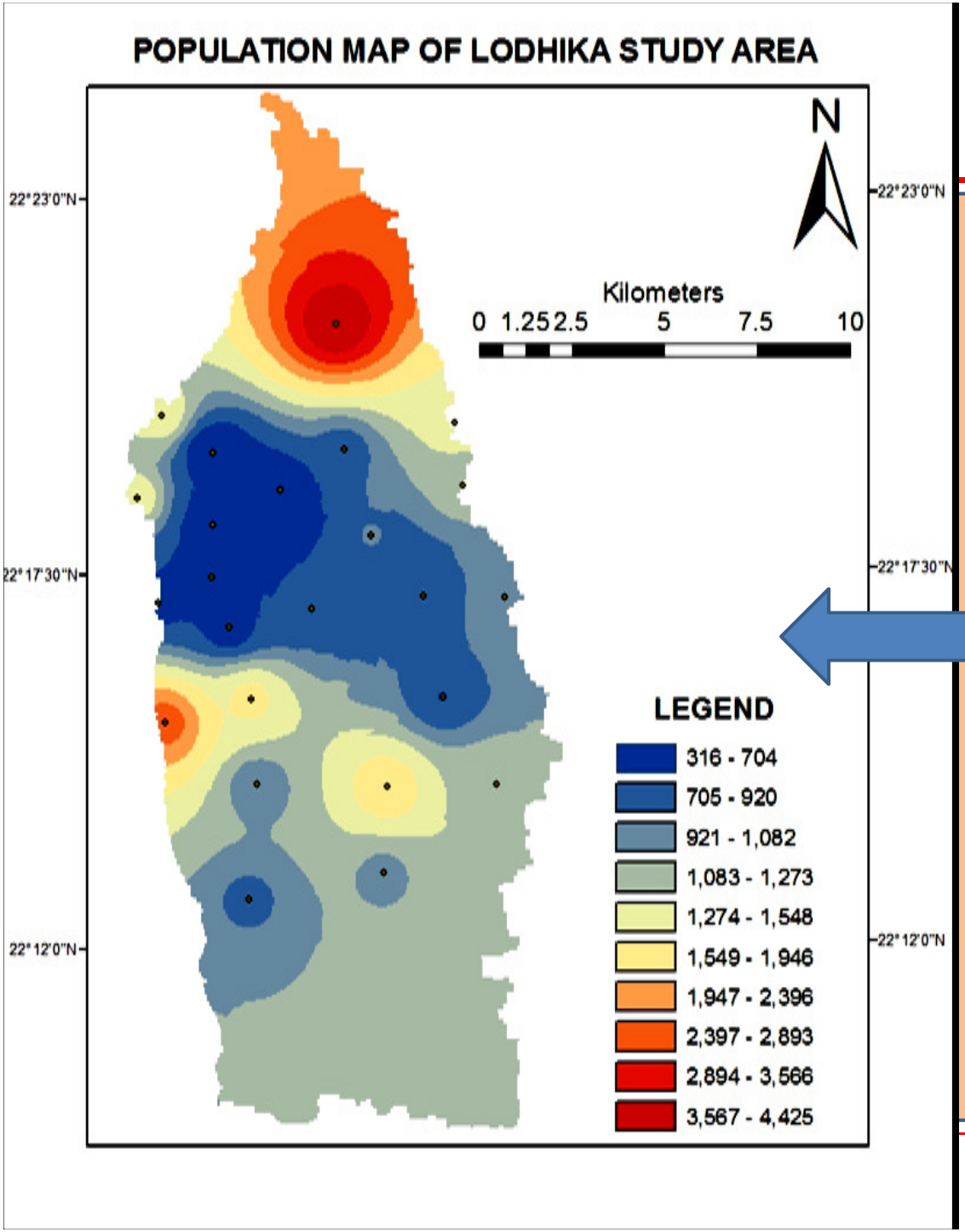
IIC TECHNOLOGIES

SPATIAL DISTRIBUTION MAP OF STATIC WATER LEVEL, LODHIKA WATERSHED- RAJKOT



IIC TECHNOLOGIES

SPATIAL DISTRIBUTION MAP OF RAINFALL, LODHIKA WATERSHED-RAJKOT

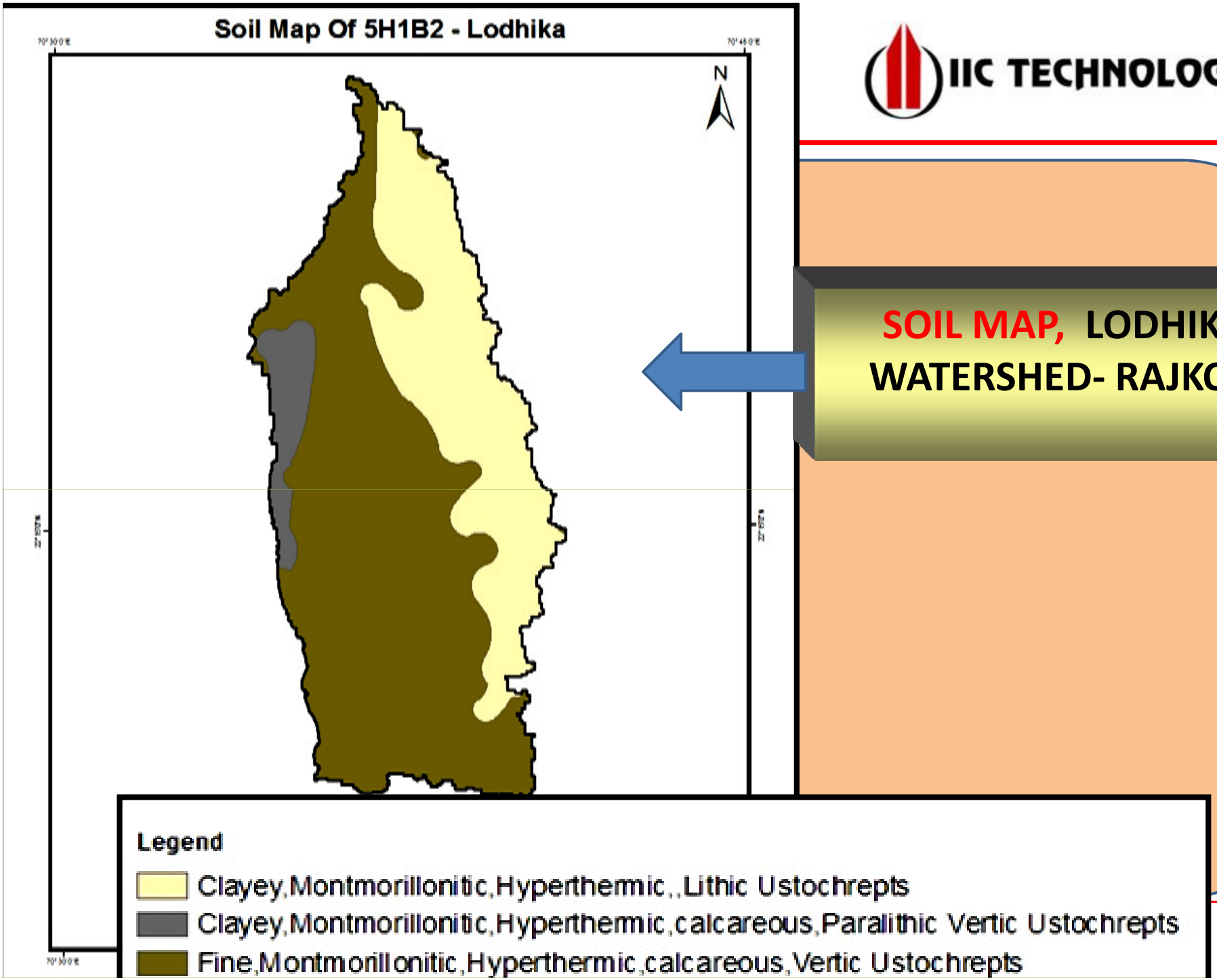


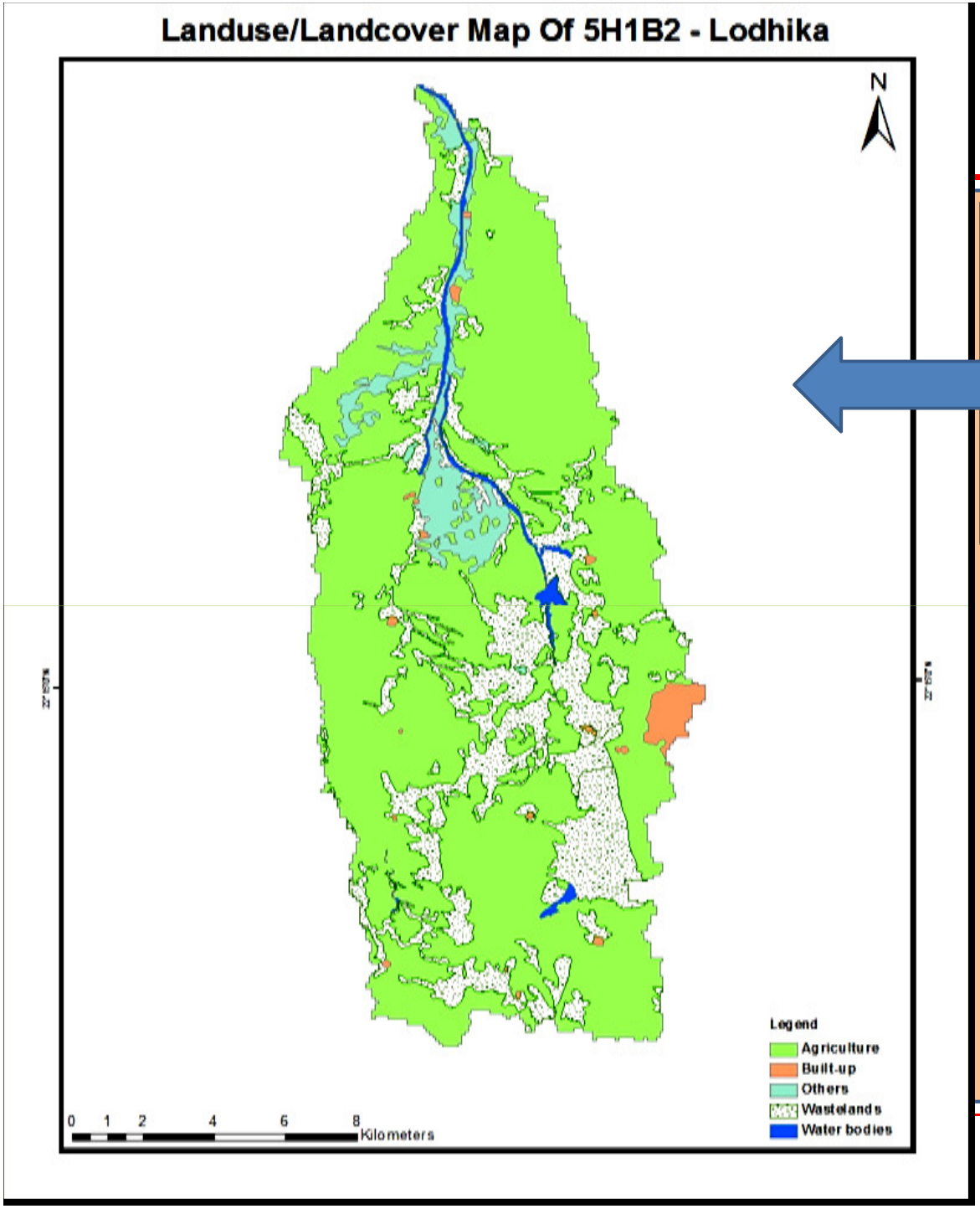
IIC TECHNOLOGIES

SPATIAL DISTRIBUTION MAP OF POPULATION , LODHIKA WATERSHED-RAJKOT

IIC TECHNOLOGIES

SOIL MAP, LODHIKA WATERSHED- RAJKOT



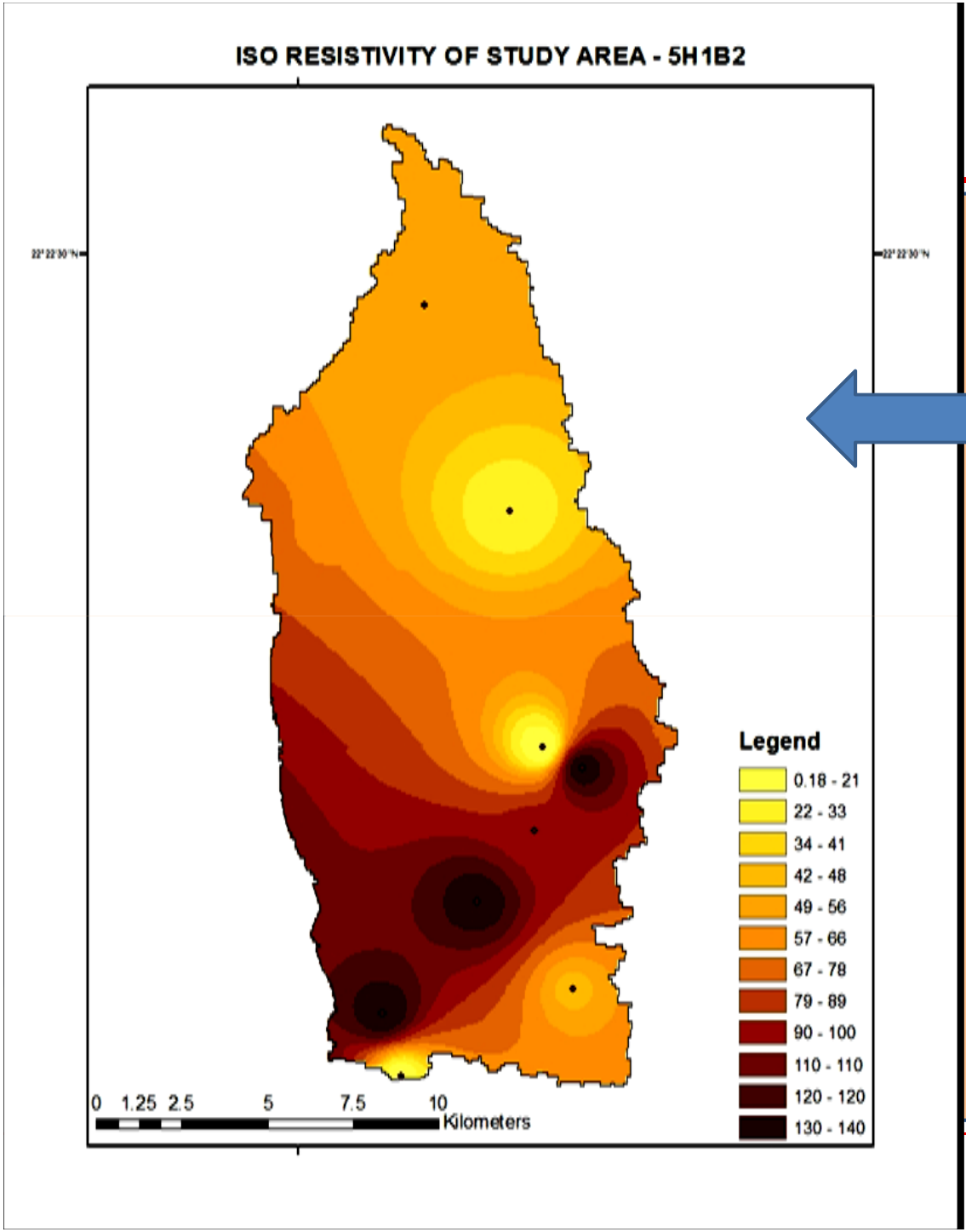


IIC TECHNOLOGIES

LANDUSE / LANDCOVER MAP, LODHIKA WATERSHED-RAJKOT

Legend

- Agriculture
- Built-up
- Others
- Wastelands
- Water bodies

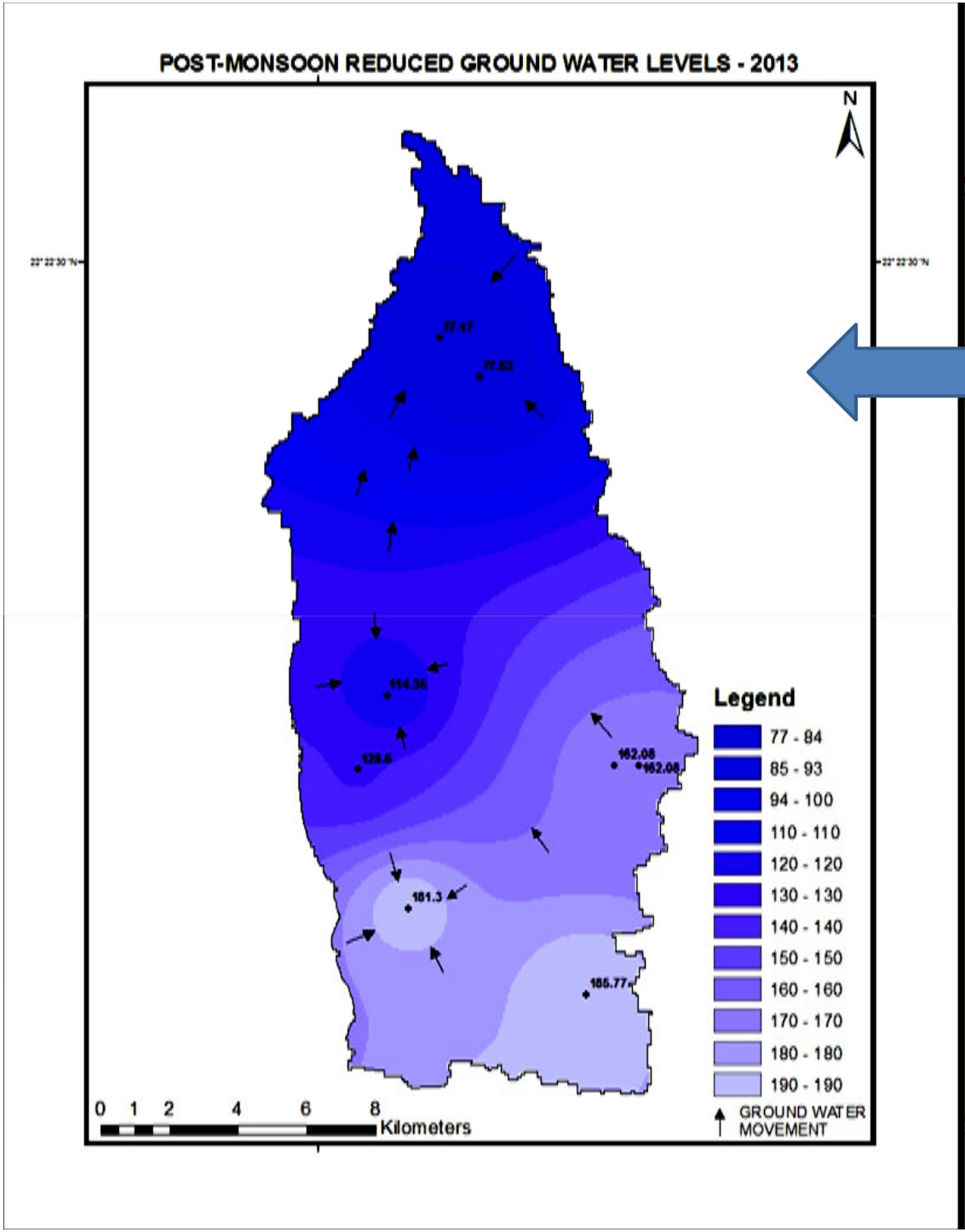


IIC TECHNOLOGIES

ISO RESISTIVITY MAP, LODHIKA WATERSHED- RAJKOT

Legend

- 0.18 - 21
- 22 - 33
- 34 - 41
- 42 - 48
- 49 - 56
- 57 - 66
- 67 - 78
- 79 - 89
- 90 - 100
- 110 - 110
- 120 - 120
- 130 - 140

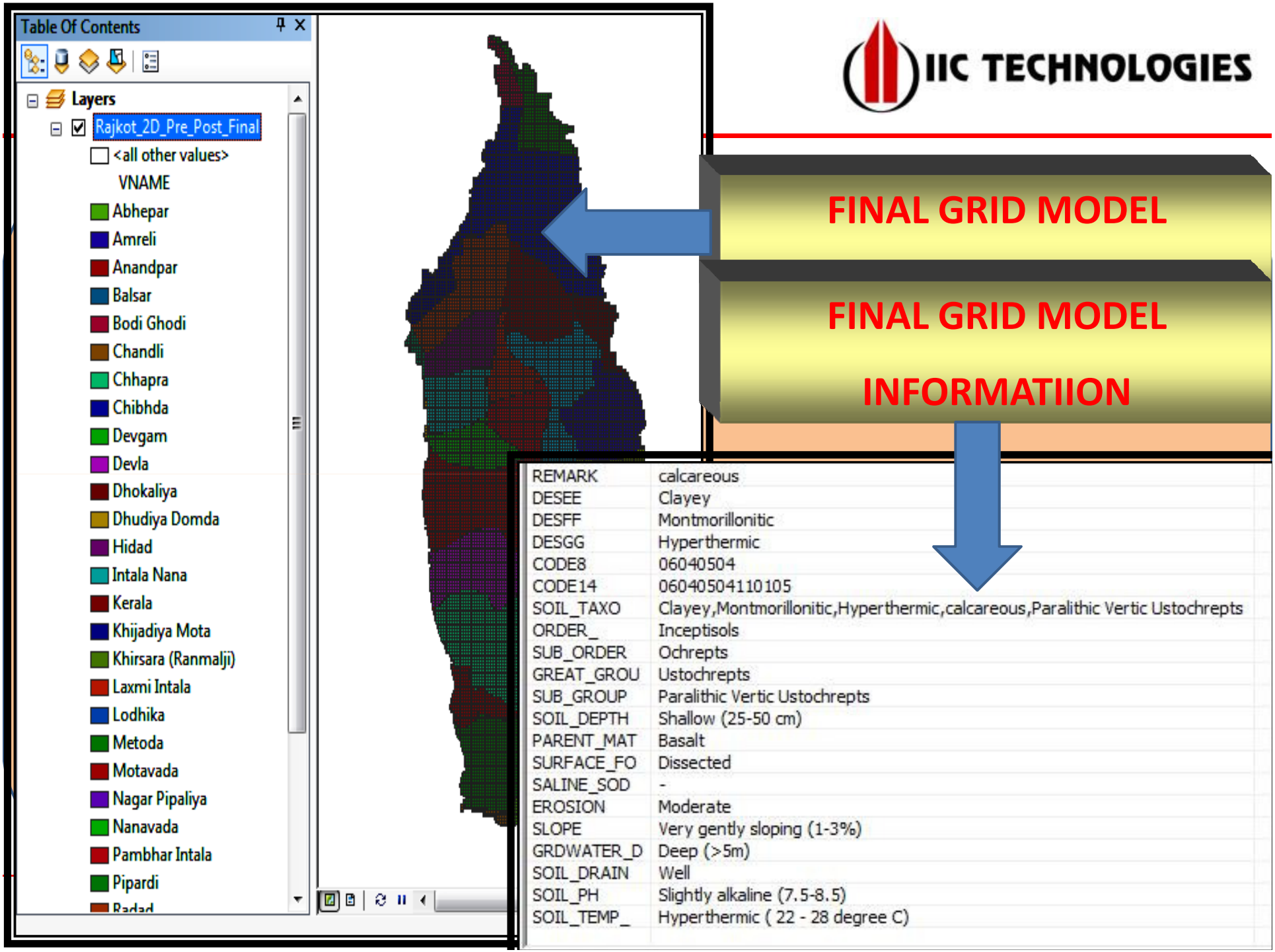


IIC TECHNOLOGIES

REDUSED WATER LEVEL MAP, LODHIKA WATERSHED-RAJKOT

Legend

- 77 - 84
- 85 - 93
- 94 - 100
- 110 - 110
- 120 - 120
- 130 - 130
- 140 - 140
- 150 - 150
- 160 - 160
- 170 - 170
- 180 - 180
- 190 - 190
- GROUND WATER MOVEMENT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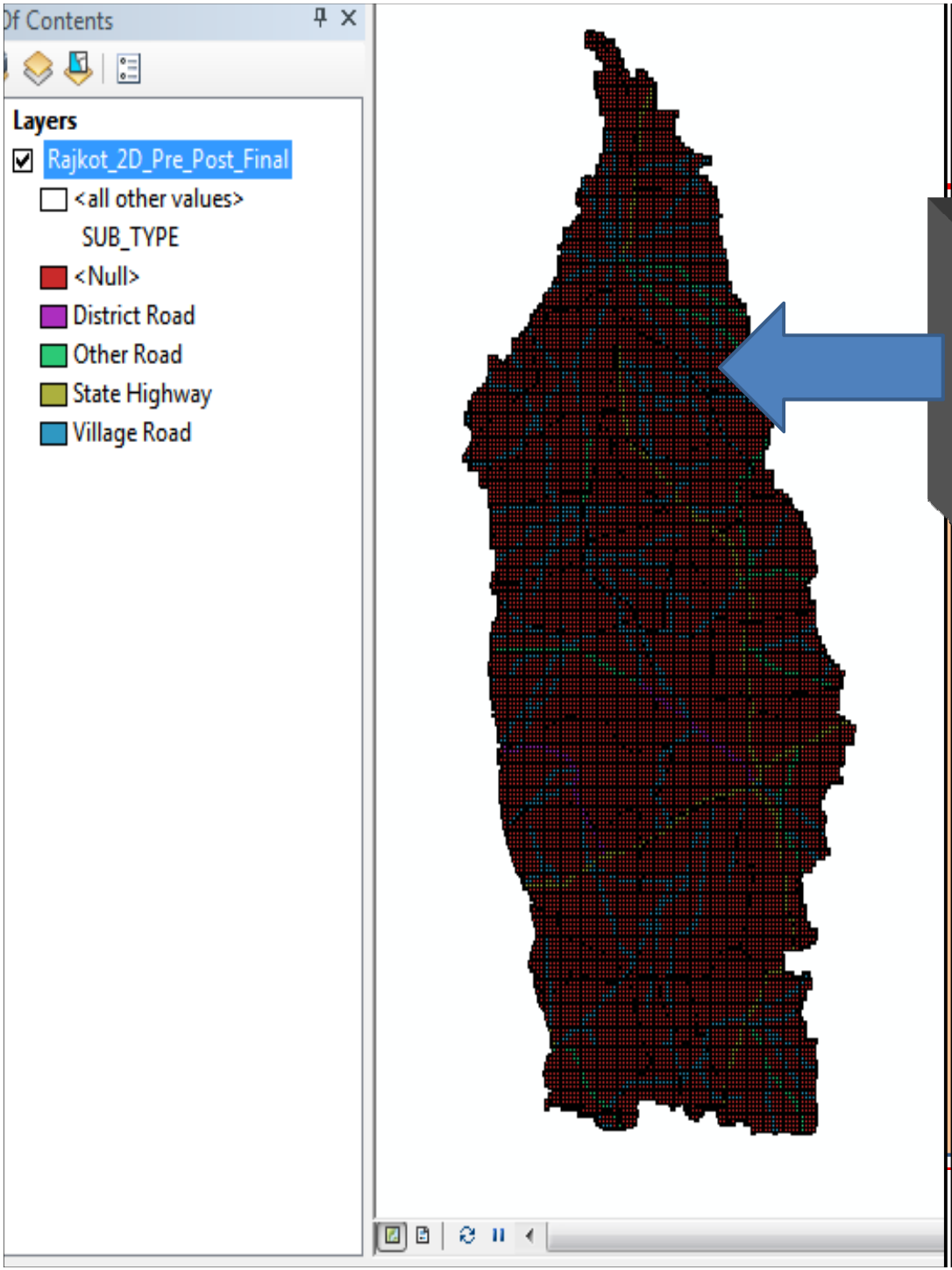
Anandpar
Balsar
Bodi Ghodi
Chandli
Chhapra
Chibhda
Devgam
Devla
Dhokaliya
Dhudiya Domda
Hidad
Intala Nana
Kerala
Khijadiya Mota
Khirsara (Ranmalji)
Laxmi Intala
Lodhika
Metoda
Motavada
Nagar Pipaliya
Nanavada
Pambhar Intala
Pipardi
IIC TECHNOLOGIES
FINAL GRID MODEL
FINAL GRID MODEL
INFORMATIION
REMARK calcareous
DESEE Clayey
DESFF Montmorillonitic
DESGG Hyperthermic
CODE8 06040504
CODE14 06040504110105
SOIL_TAXO Clayey,Montmorillonitic,Hyperthermic,calcareous,Paralithic Vertic Ustochrepts
ORDER_ Inceptisols
SUB_ORDER Ochrepts
GREAT_GROU Ustochrepts
SUB_GROUP Paralithic Vertic Ustochrepts
SOIL_DEPTH Shallow (25-50 cm)
PARENT_MAT Basalt
SURFACE_FO Dissected
SALINE_SOD -
EROSION Moderate
SLOPE Very gently sloping (1-3%)
GRDWATER_D Deep (>5m)
SOIL_DRAIN Well
SOIL_PH Slightly alkaline (7.5-8.5)
SOIL_TEMP_ Hyperthermic (22 - 28 degree C)



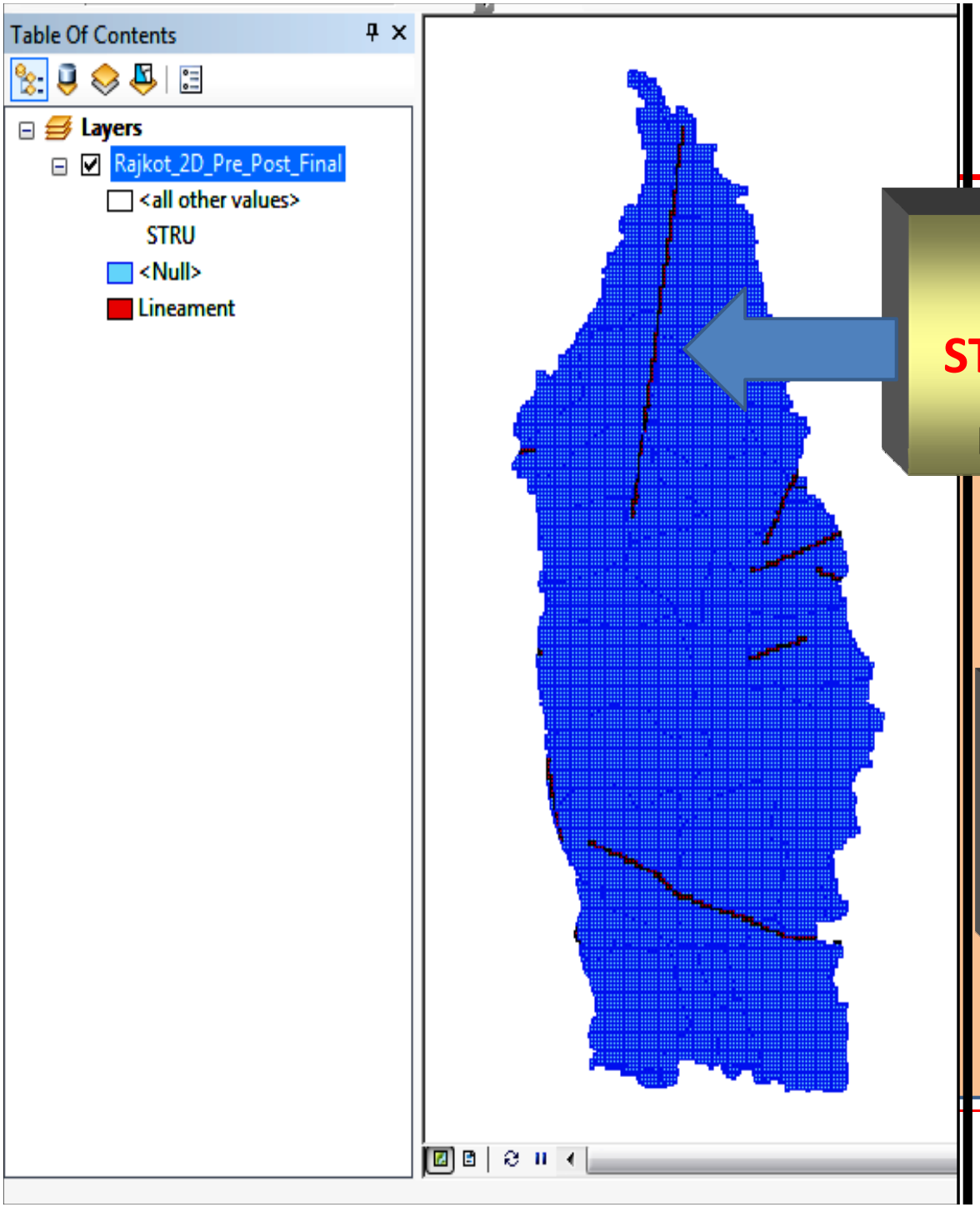
IIC TECHNOLOGIES

FINAL GRID MODEL

BASE MAP INFORMATION

LODHIKA WATERSHED- RAJKOT

ROADS
VILLAGE BOUNDARY
TALUK BOUNDARY
DISTRICT BOUNDARY



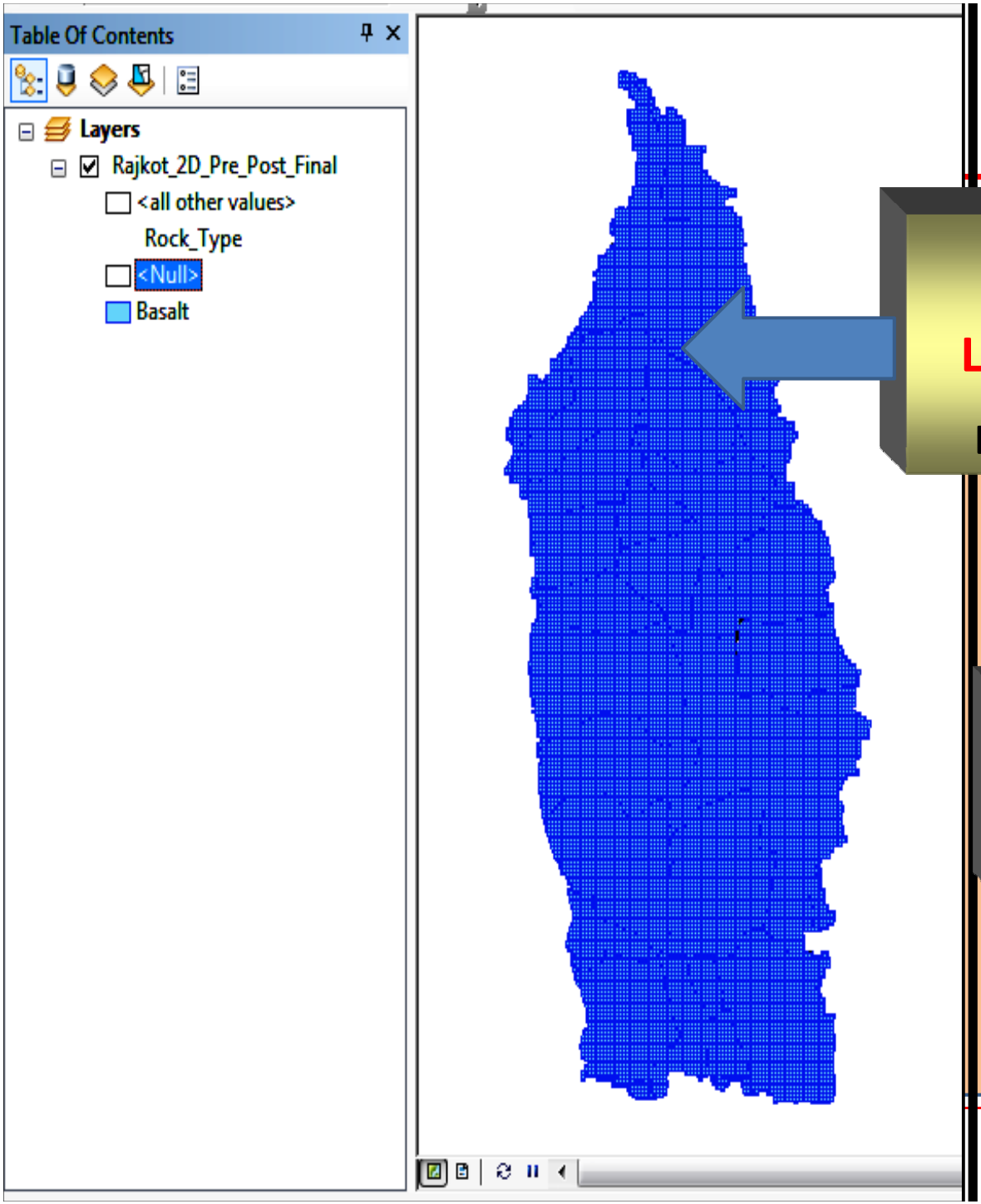
IIC TECHNOLOGIES

FINAL GRID MODEL

STRUCTURAL INFORMATION

LODHIKA WATERSHED- RAJKOT

LINEAMENTS
VILLAGE BOUNDARY
TALUK BOUNDARY
CANAL



IIC TECHNOLOGIES

FINAL GRID MODEL

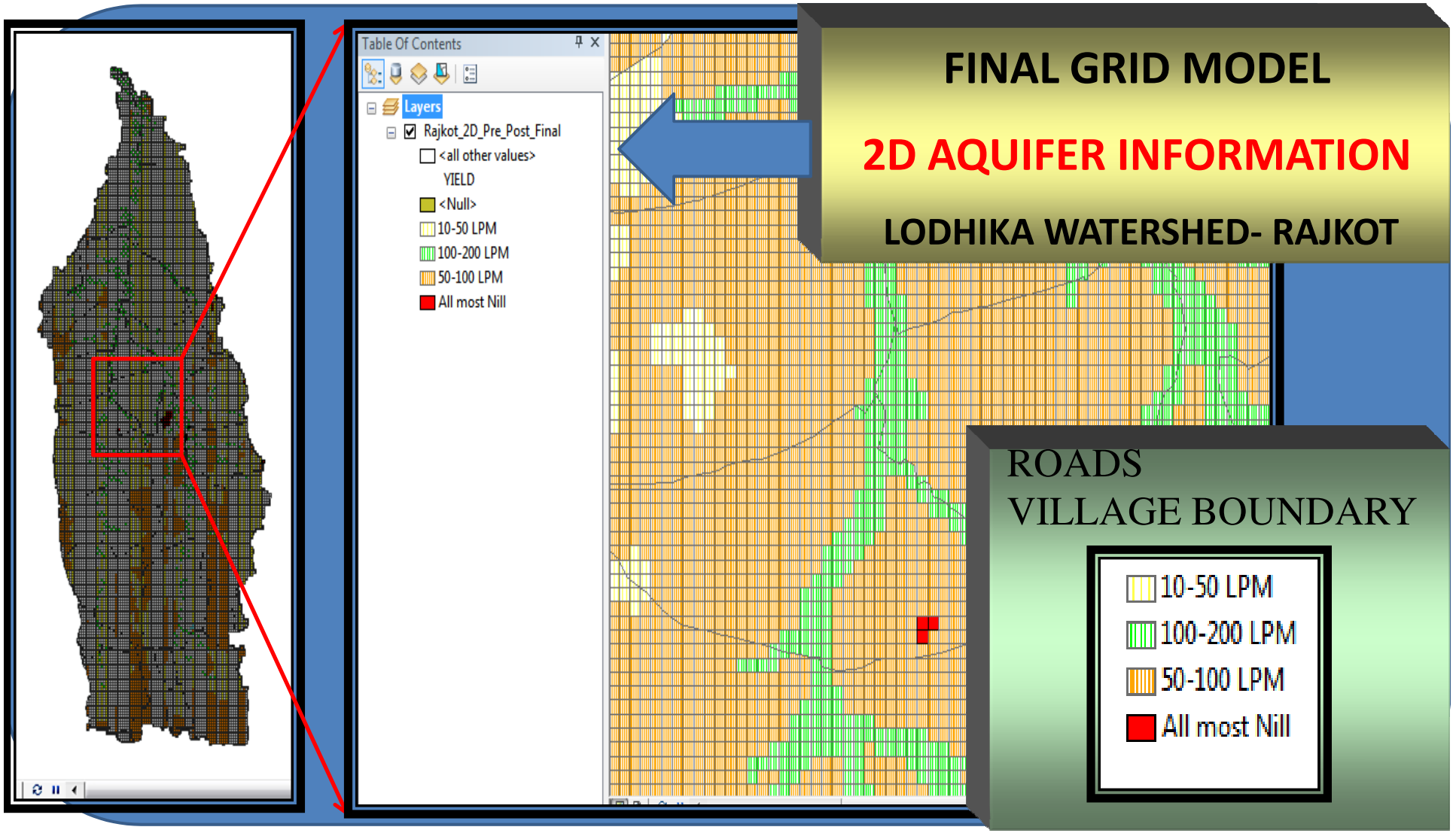
LITHOLOGY INFORMATION

LODHIKA WATERSHED- RAJKOT

VILLAGE BOUNDARY

BASALT

IIC TECHNOLOGIES



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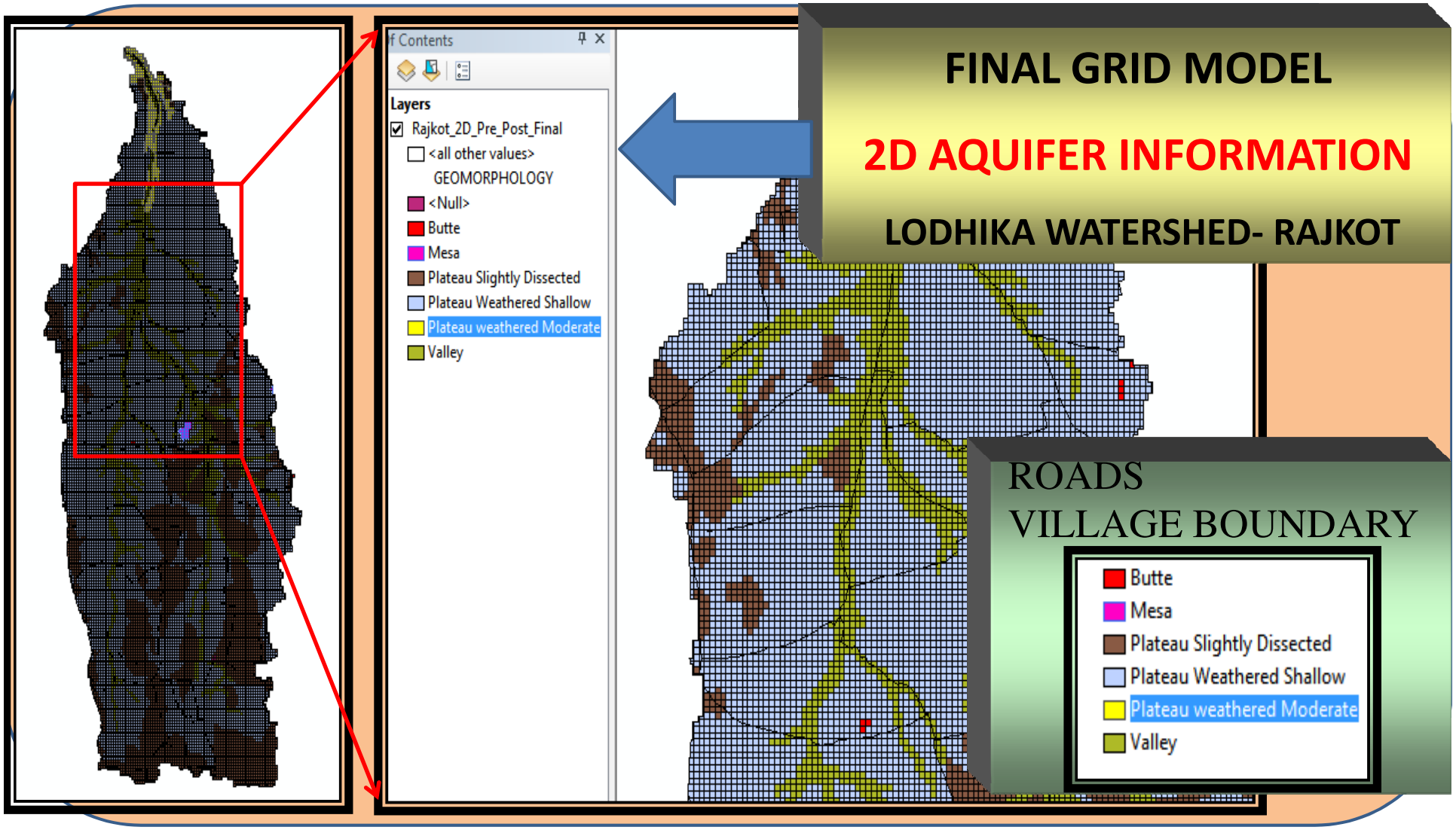
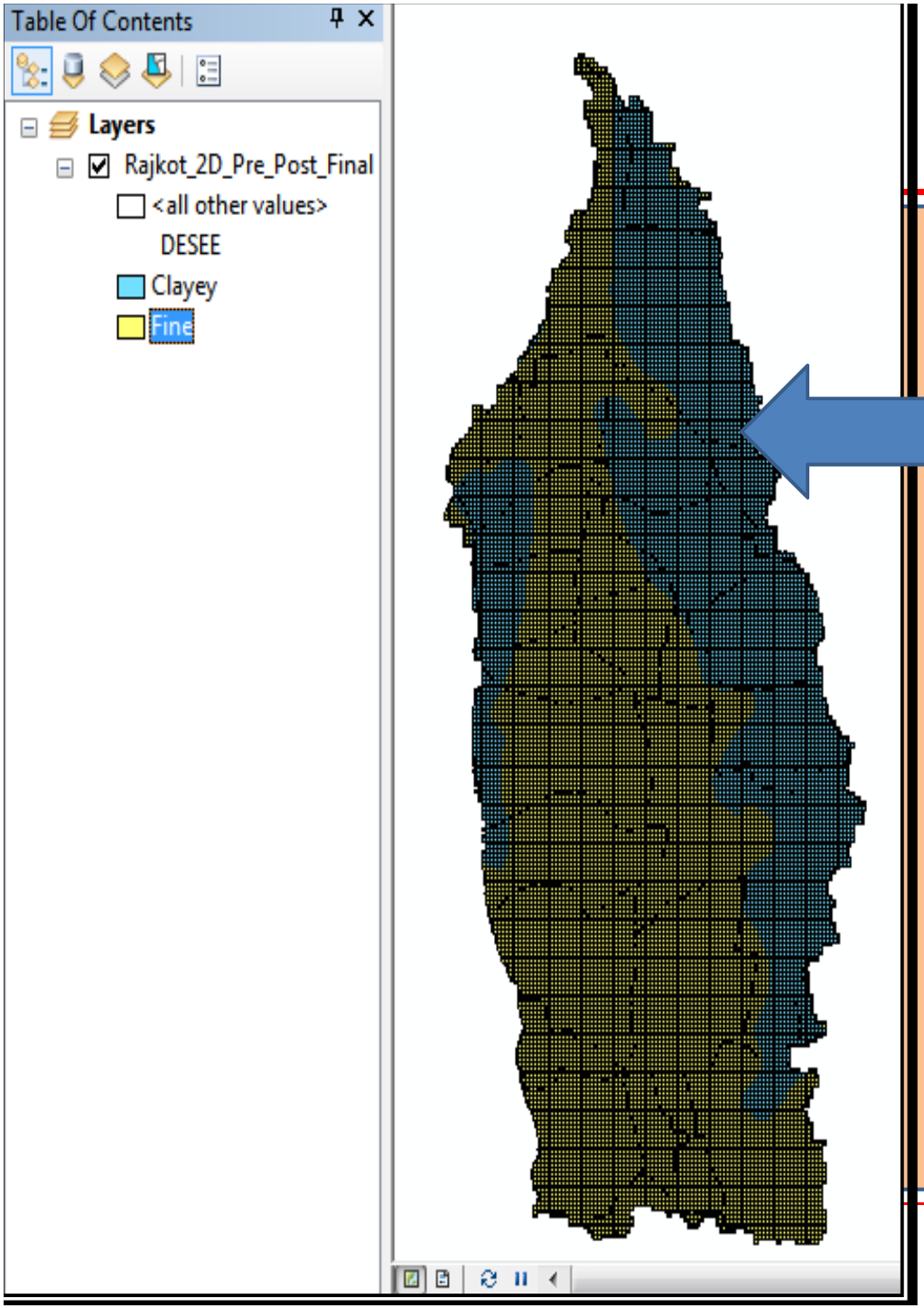




IIC TECHNOLOGIES

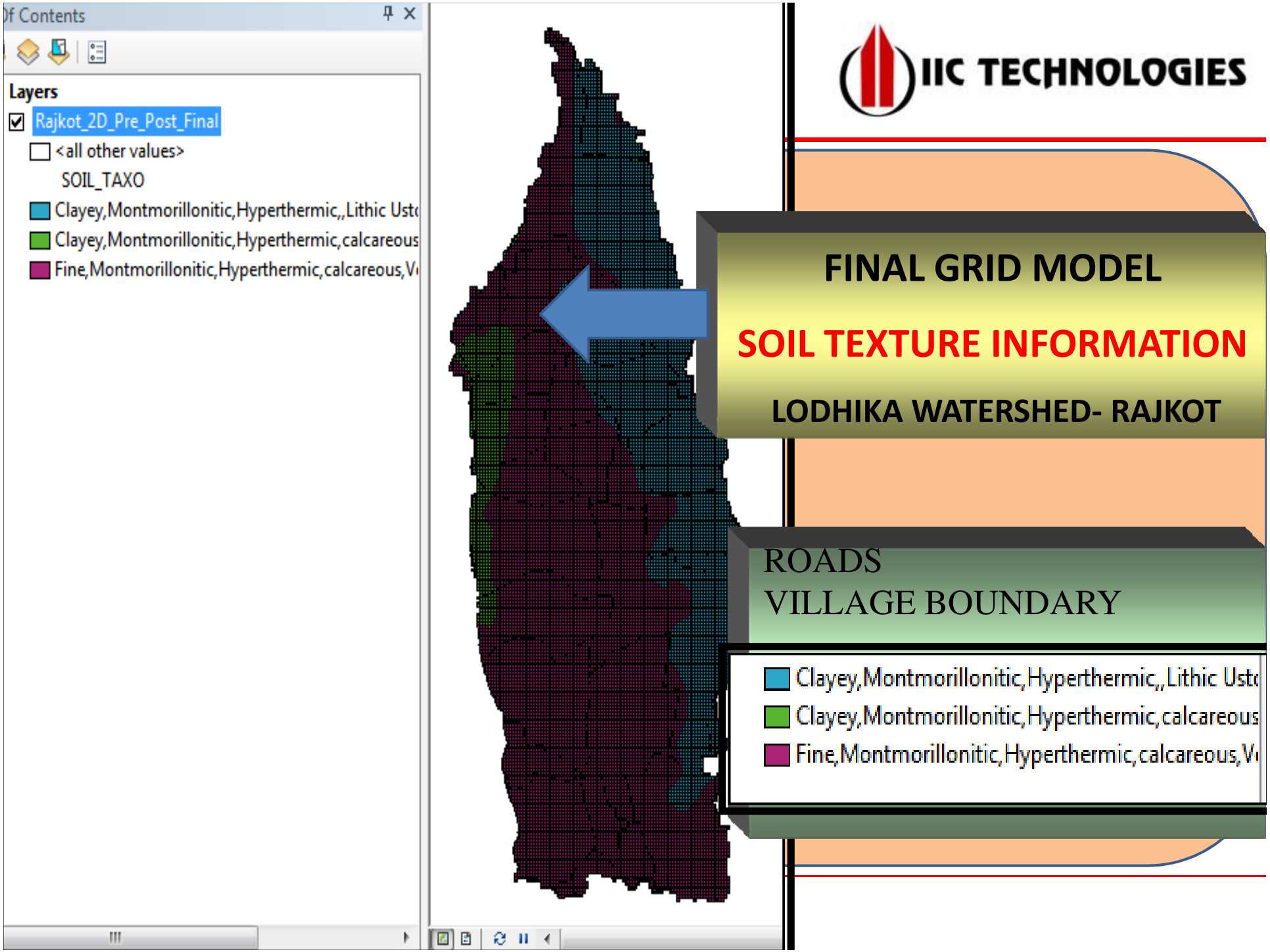
FINAL GRID MODEL

SOIL TYPE INFORMATION

LODHIKA WATERSHED- RAJKOT

ROADS
VILLAGE BOUNDARY

Clayey
Fine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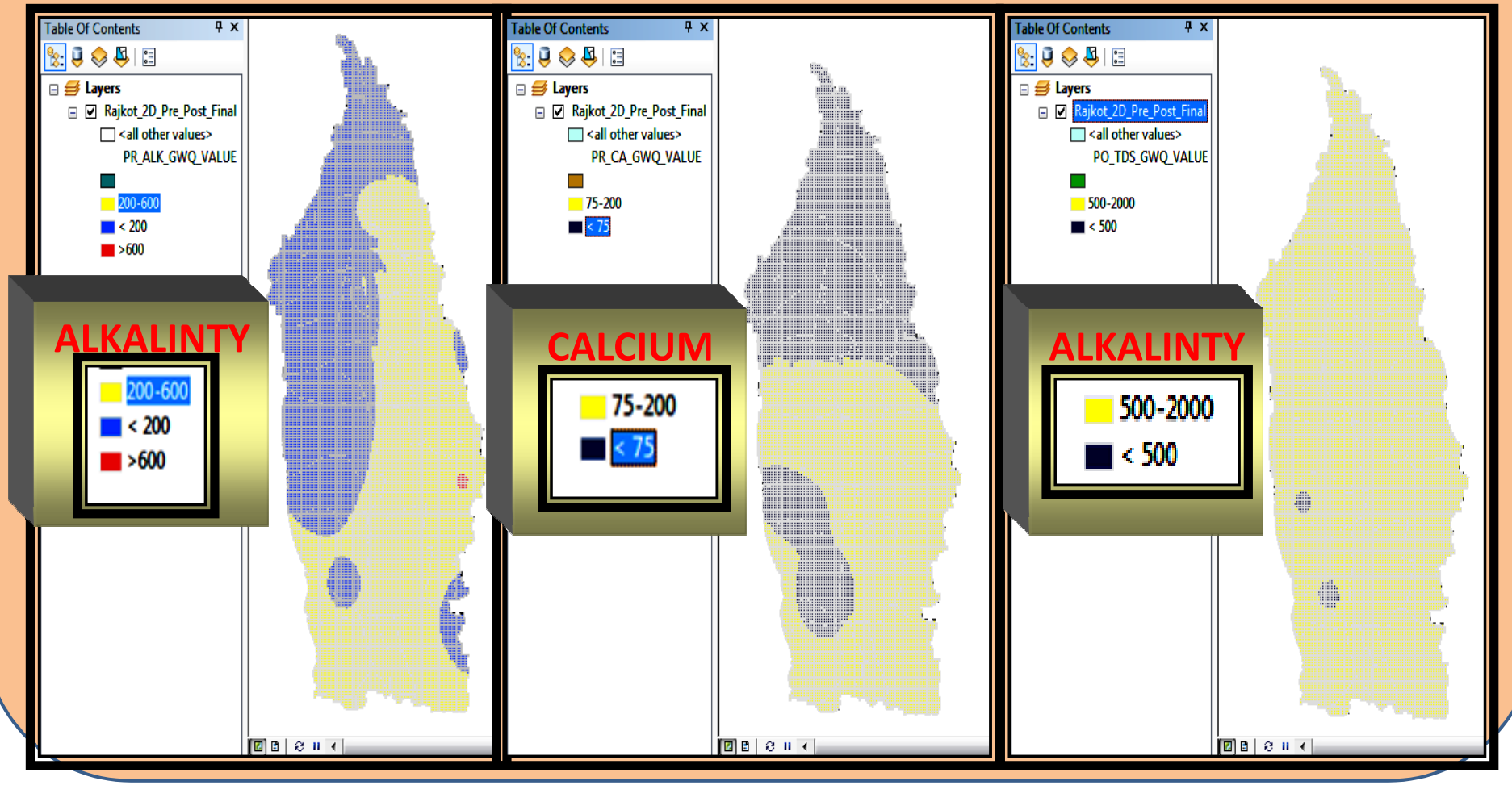
SOIL_TAXO
Clayey,Montmorillonitic,Hyperthermic,,Lithic Usto
Clayey,Montmorillonitic,Hyperthermic,calcareous
Fine,Montmorillonitic,Hyperthermic,calcareous,V
IIC TECHNOLOGIES
FINAL GRID MODEL
SOIL TEXTURE INFORMATION
LODHIKA WATERSHED- RAJKOT
ROADS
VILLAGE BOUNDARY
Clayey,Montmorillonitic,Hyperthermic,,Lithic Usto
Clayey,Montmorillonitic,Hyperthermic,calcareous
Fine,Montmorillonitic,Hyperthermic,calcareous,V

FINAL GRID MODEL

GROUND WATER QUALITY INFORMATION

LODHIKA WATERSHED- RAJKOT

IIC TECHNOLOGIES



FINAL GRID MODEL

DIFFERENT INFORMATION

LODHIKA WATERSHED- RAJKOT

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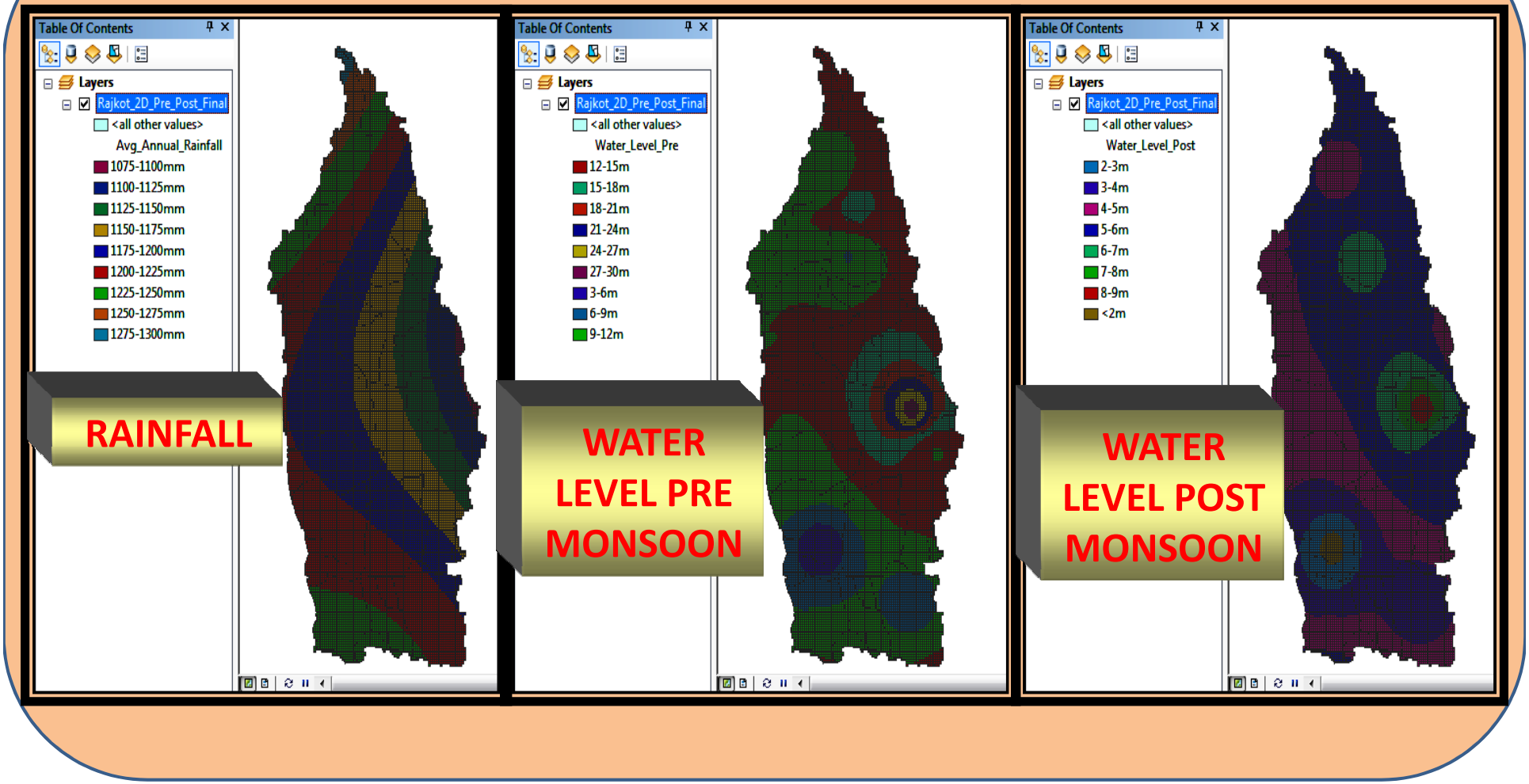
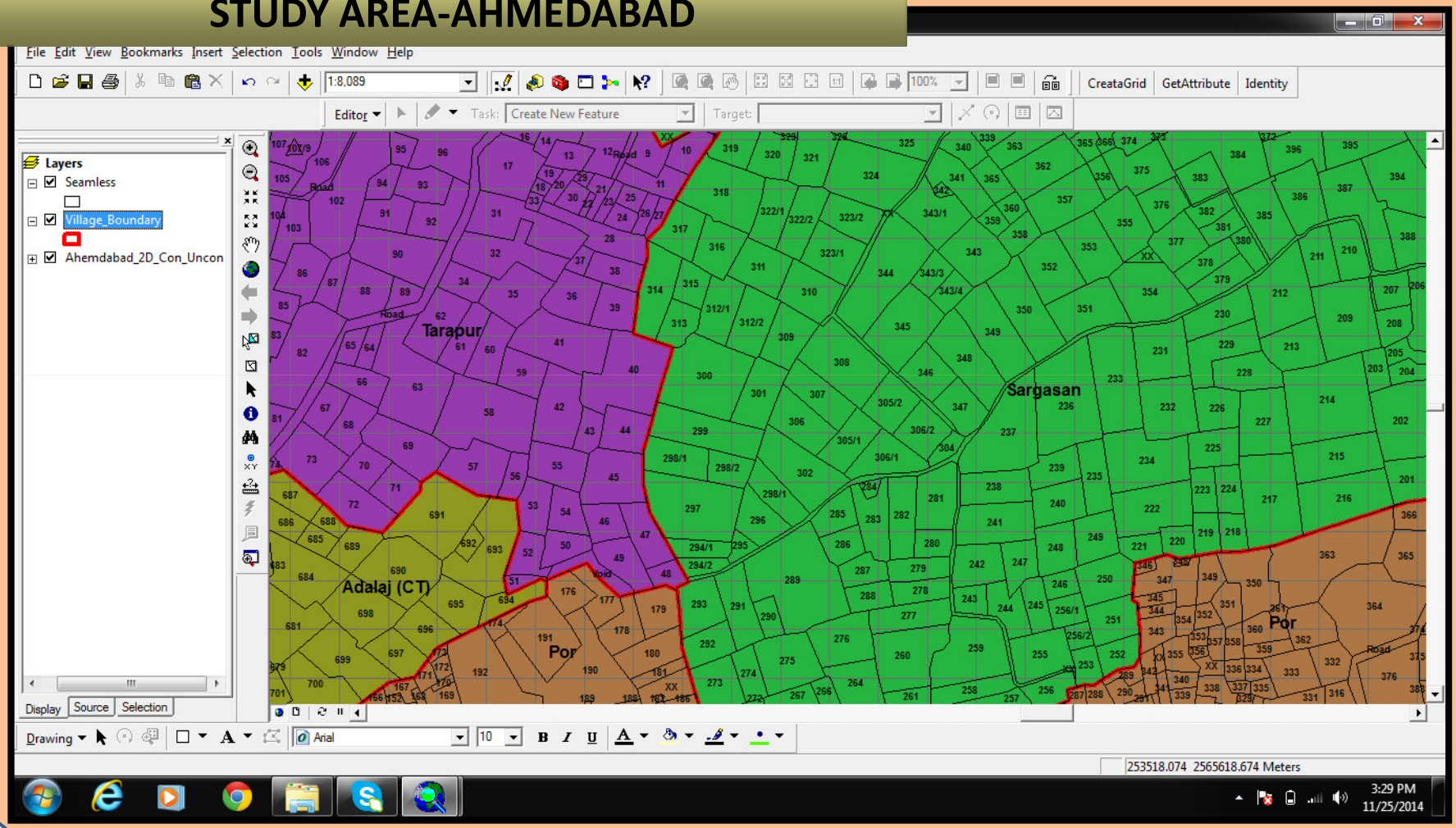


FINAL GRID MODEL

VILLAGE KHASARA INFORMATION

STUDY AREA-AHMEDABAD

IIC TECHNOLOGIES

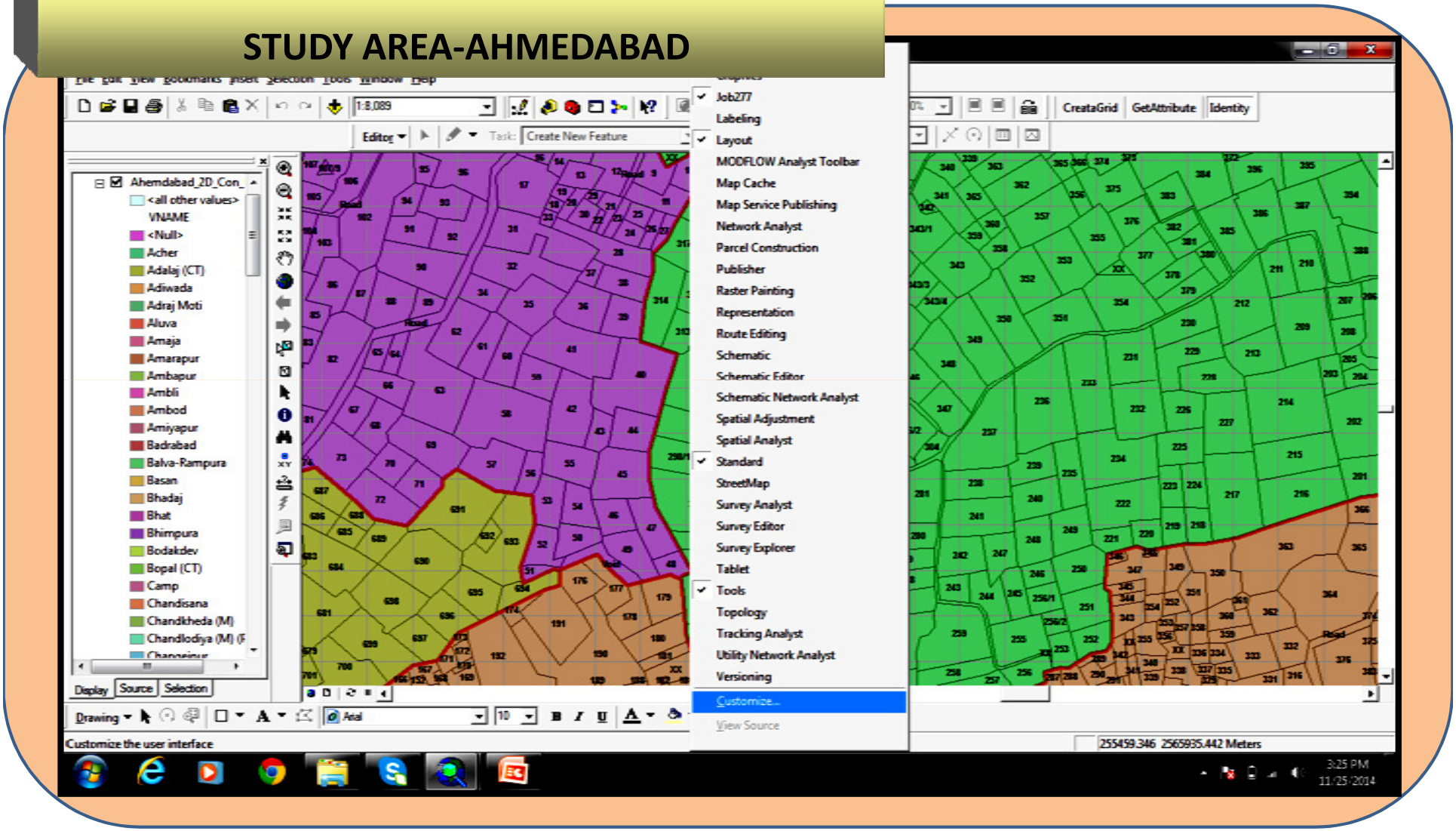


FINAL GRID MODEL

DISPLAY TOOL ADDING

STUDY AREA-AHMEDABAD

IIC TECHNOLOGIES

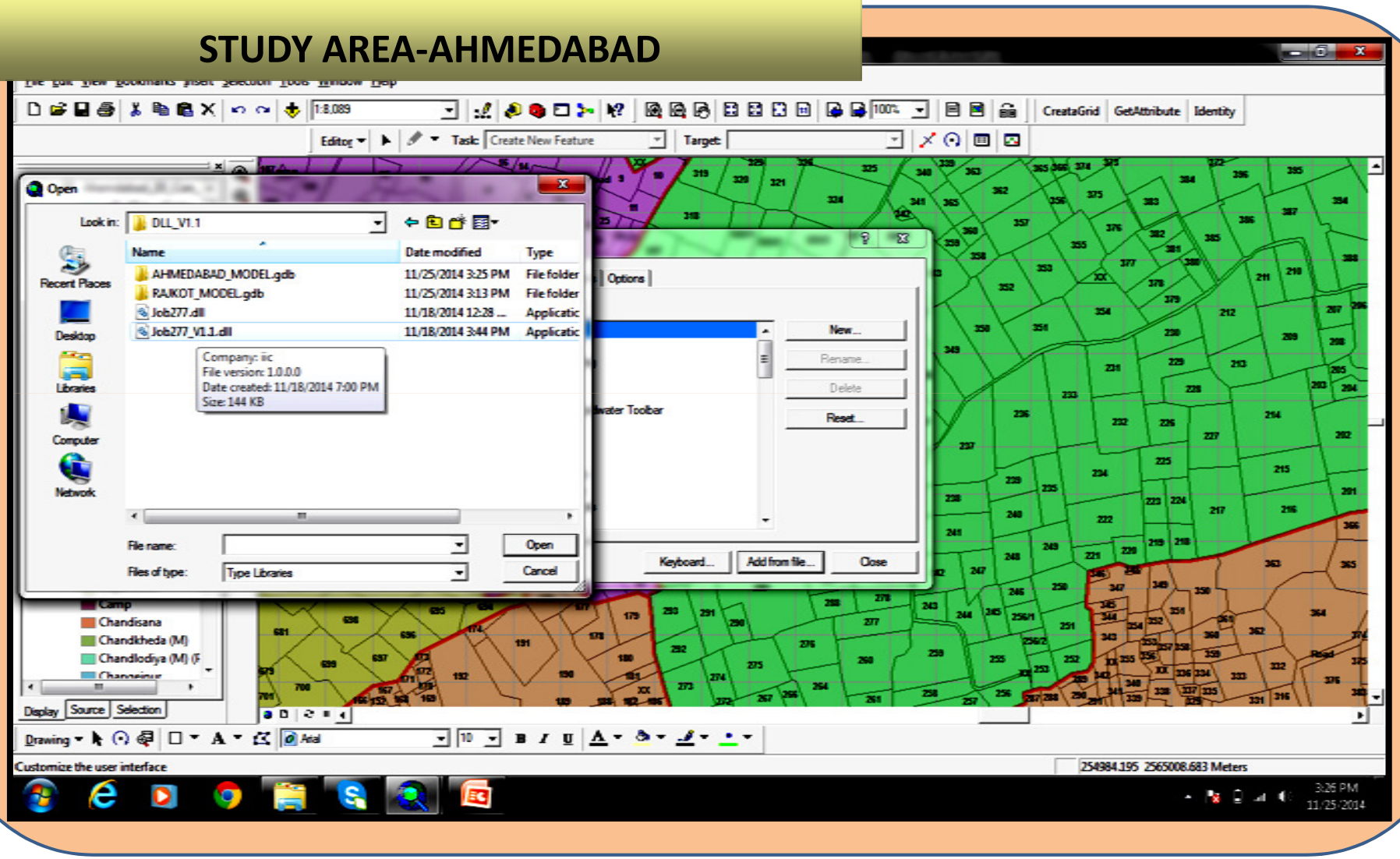


FINAL GRID MODEL

DISPLAY TOOL ADDING

STUDY AREA-AHMEDABAD

IIC TECHNOLOGIES



NEW PATHS, NEW APPROACHES

FINAL GRID MODEL

DISPLAY TOOL ADDING

STUDY AREA-AHMEDABAD

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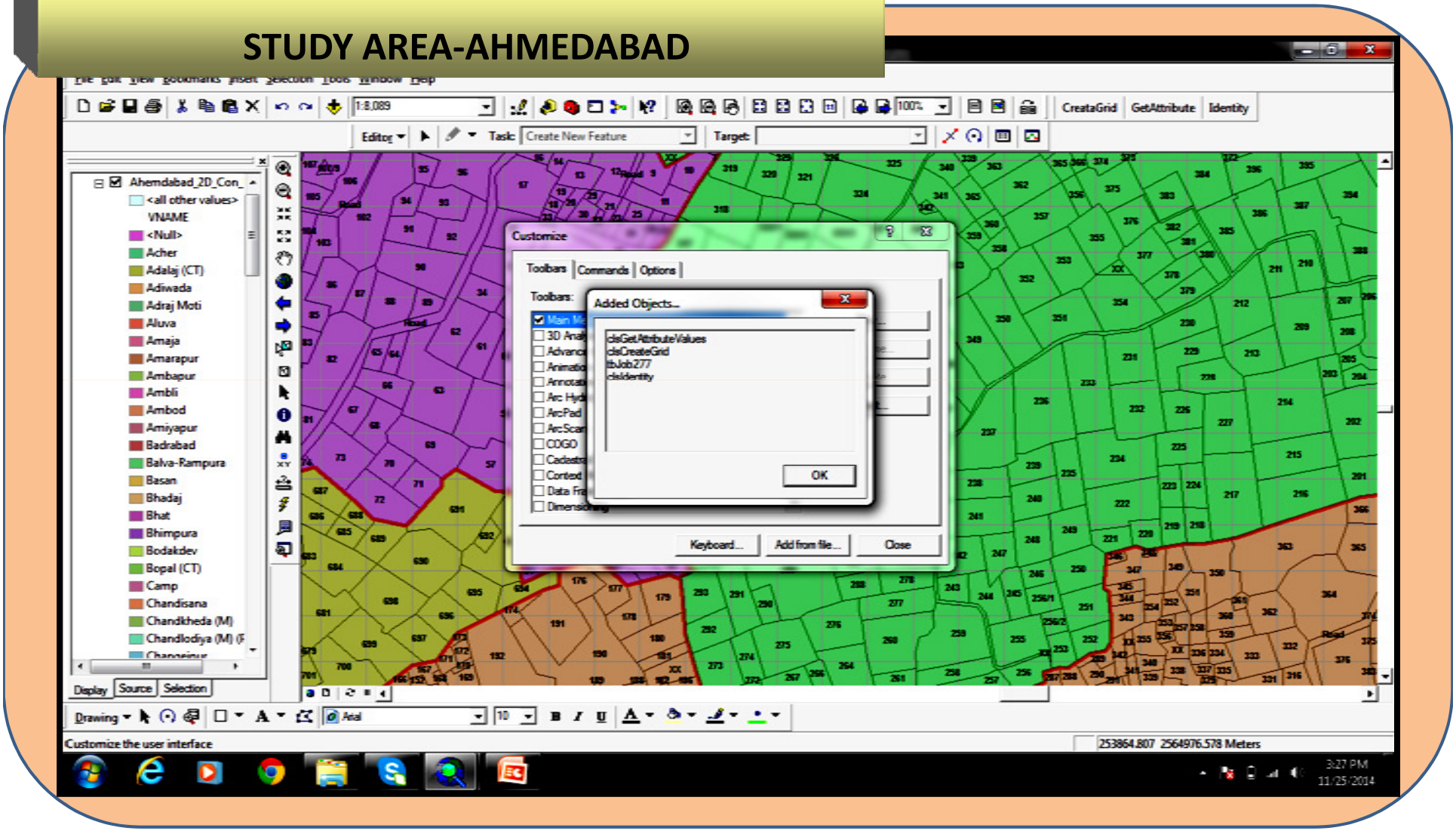

NEW PATHS, NEW APPROACHES

FINAL GRID MODEL

USE OF DISPLAY TOOL

STUDY AREA-AHMEDABAD

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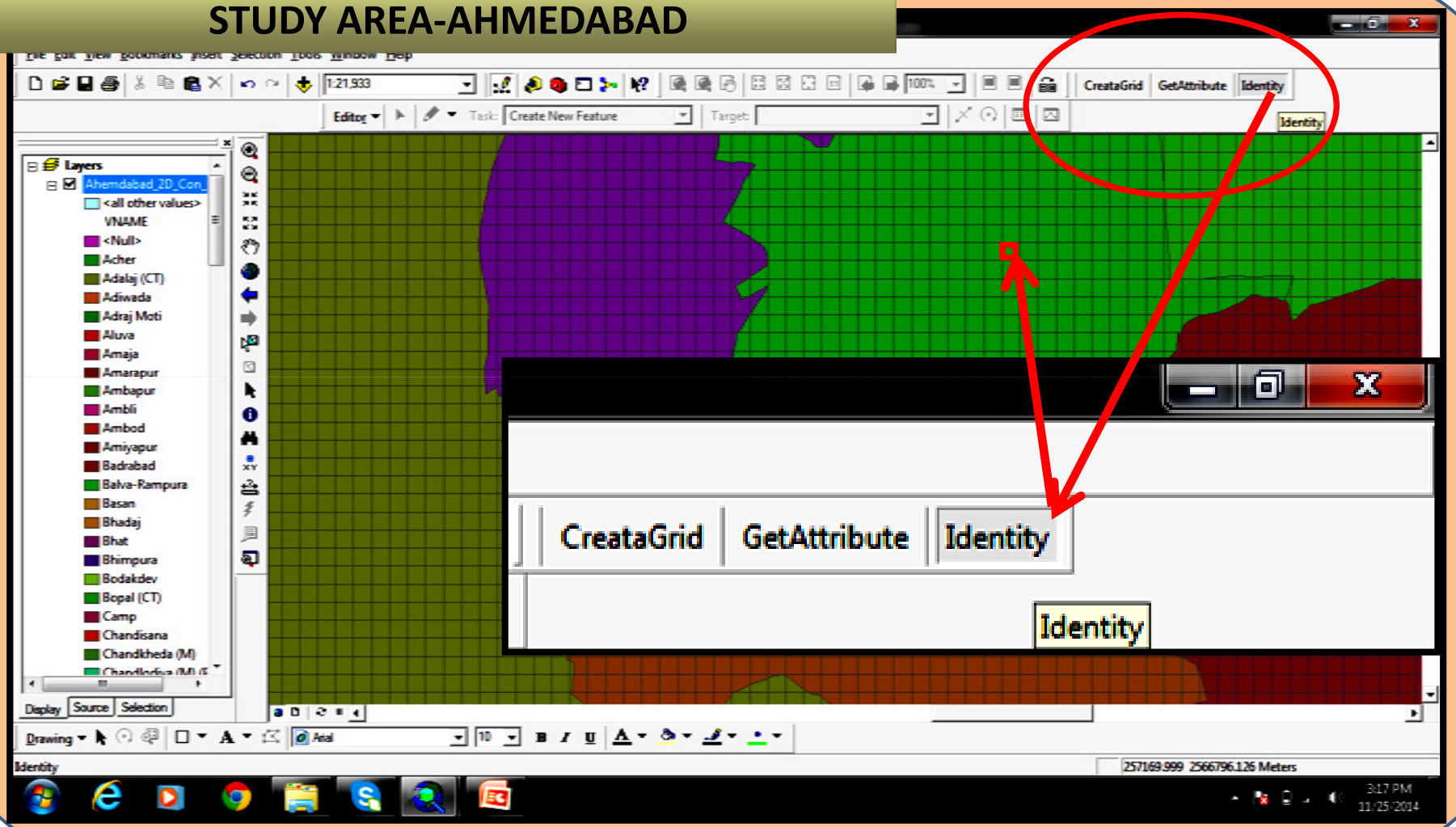

FINAL GRID MODEL

USE OF DISPLAY TOOL / AND DISPLAY INFORMATION

STUDY AREA-AHMEDABAD

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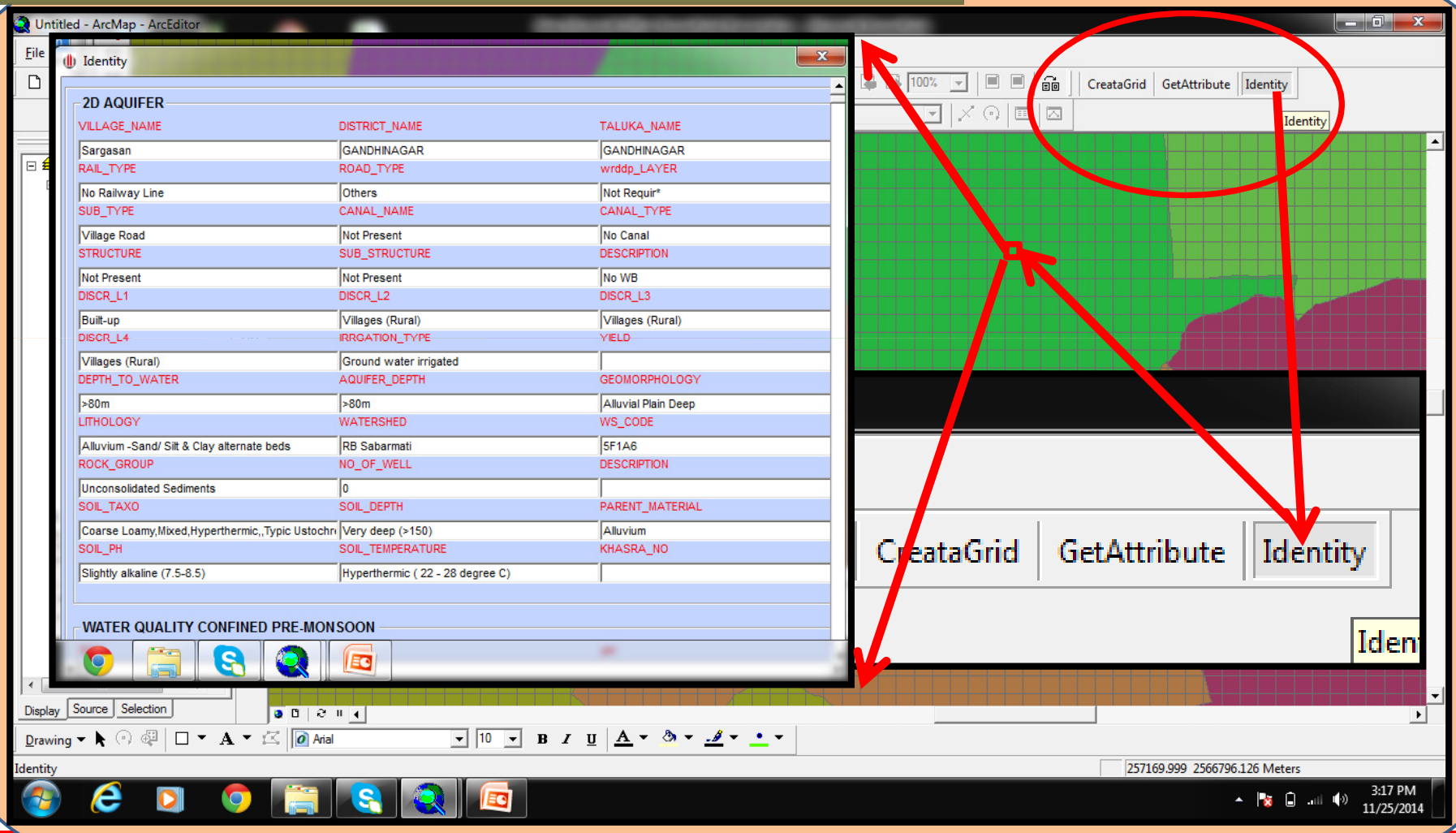

NEW PATHS, NEW APPROACHES

FINAL GRID MODEL

DISPLAY INFORMATION

IIC TECHNOLOGIES

ATTRIBUTE TABLE DISPLAY PAGE

2D AQUIFER			
display	CANAL_NAME	CANAL_TYPE	STRUCTURE
field			
display	SUB_STRUCTURE	RIVER CLASSIFICATION	MAJOR LU/LC CLASSIFICATION
field			
display	LU/LC TYPE	CROP CLASSIFICATION	IRRGATION_TYPE
field			
display	GEOMORPHOLOGY	LITHOLOGY	ROCK_GROUP
field			
display	NO_OF_WELLS	SOIL TEXTURE	SOIL_DEPTH
field			
display	PARENT_MATERIAL	SOIL_P^H	SOIL_TEMPERATURE
field			
display	AVG_ANNUAL_RAINFALL (mm)	AQUIFER_DEPTH	YIELD
field			
display	CONF_PRE_WL	CONF_POST_WL	UNCONF_PRE_WL
field			
display	UNCONF_POST_WL	STATIC WATER LEVEL (m)	DEPTH_TO_WATER
field			

FINAL GRID MODEL

DISPLAY INFORMATION

IIC TECHNOLOGIES

ATTRIBUTE TABLE DISPLAY PAGE

WATER QUALITY CONFINED PRE-MONSOON			
display	SO4	TDS	pH
field			
display	Na	Mg	EC
field			
display	Ca	Cl	Total_Hardness
field			

WATER QUALITY CONFINED POST-MONSOON			
display	SO4	TDS	pH
field			
display	Na	Mg	EC
field			
display	Ca	Cl	Total_Hardness
field			

WATER QUALITY UNCONFINED PRE-MONSOON			
display	SO4	TDS	pH
field			
display	Na	Mg	EC
field			
display	Ca	Cl	Total_Hardness
field			

WATER QUALITY UNCONFINED POST-MONSOON			
display	SO4	TDS	pH
field			
display	Na	Mg	EC
field			
display	Ca	Cl	Total_Hardness
field			

FINAL GRID MODEL

DISPLAY INFORMATION

IIC TECHNOLOGIES

ATTRIBUTE TABLE DISPLAY PAGE

STRAITIGRAPHY			
display	STRATIGRAPGHY	WATER LEVEL	DEPTH TO AQUIFER
field			
display	THICKNESS OF AQUIFER		
field			
3 D AQUIFER			
display	IN_CONSTANT HEAD	IN_WELLS	IN_RIVER LEAKAGE
field			
display	IN_HEAD DEP BOUNDS	IN_RECHARGE	Total IN (m3/d)
field			
display	OUT_CONSTANT HEAD	OUT_WELLS	OUT_RIVER LEAKAGE
field			
display	OUT_HEAD DEP BOUNDS	OUT_RECHARGE	Total OUT (m3/d)
field			
display	IN - OUT TOTAL (m3/d)	HORIZONTAL K	HORIZONTAL ANISOTROPHY
field			
display	POROSITY	TOP ELEVATION	HYDRAULIC CONDUCTIVITY
field			
display	VERTICAL ANISOTROPY	SPECIFIC YIELD	BOTTOM ELEVATION
field			
display	FLOW RATE	FLOW DIRECTION	CEMENTING DEPTH
field			
display	SNOUTING DEPTH	TRANSMISSITIVITY	
field			

FINAL GRID MODEL

DISPLAY INFORMATION

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ATTRIBUTE TABLE DISPLAY PAGE

BASE MAP INFORMATION			
display	VILLAGE_NAME	TALUKA_NAME	DISTRICT_NAME
field			
display	KHASRA_NO	WATERSHED	ROAD_TYPE
field			
display	RAIL_TYPE	WS_CODE	
field			

SUSTAINABILITY INFORMATION			
display	POINT RECHARGE STRUCTURE	LINE RECHARGE STRUCTURE	DUMPING SITE SELECTION
field			
display	AREA RECHARGE STRUCTURE	SUITABLE AQUIFER SELECTION	INDUSTRIAL WASTE MANAGEMENT
field			

THANK YOU

FROM

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