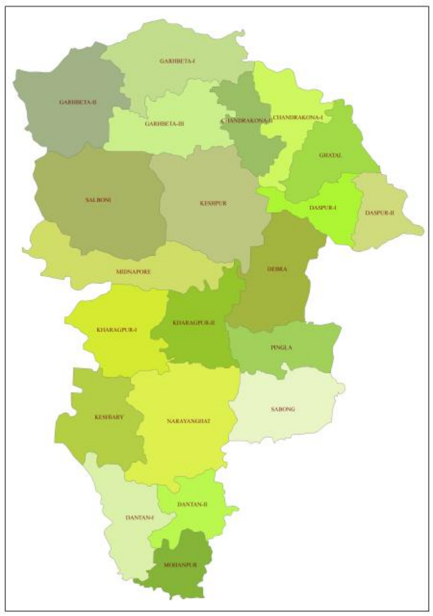
DISTRICT SURVEY REPORT
OF
PASCHIM MEDINIPUR DISTRICT
(Modified)

(For mining of minor minerals)
As per Notification No.S.O.141 (E) New Delhi Dated 15th of January 2016, S.O.3611 (E) New Delhi Dated 25th of July 2018 and Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) January 2020, Issued by Ministry of Environment, Forest and Climate Change (MoEF&CC)



SEIAA Approval Date:

10th October 2025

(As published in the Minutes of 83rd Meeting of SEIAA under Miscellaneous Section, Point No.1)

1st Modification: 1st April 2024

1st Approval: 8th September 2022

PREPARED BY
Department of Industry, Commerce & Enterprises
Government of West Bengal

Version-2

Version No	DSR Status	Date	Remarks
Version-1	1st Approved DSR	08/09/22	DSR prepared as per guidelines.
Version-2	1st Modification	01/04/23	DSR modified to incorporate district boundary modification and modification of potential sandbars of the district.

GOVERNMENT OF WEST BENGAL
DIRECTORATE OF MINES & MINERALS
4, ABANINDRANATH TAGORE SARANI (CAMAC STREET), 2ND FLOOR,
KOLKATA – 700016
e-mail: dir.dmm-wb@nic.in

No. 430 MD/2C-668/22 Kolkata, the 02nd September, 2025

To
The Chairman,
State Expert Appraisal Committee (SEAC),
West Bengal.

Sub: Approval of Modified District Survey Report of Paschim Medinipur district reg.

Sir,

Enclosed please find the soft copy of the Modified District Survey Report (DSR) of Paschim Medinipur district in West Bengal.

This is for your kind information and necessary action for approval as per norms.

Enclo: As stated above.

Yours faithfully,

Sd/-

DIRECTOR OF MINES & MINERALS,
GOVERNMENT OF WEST BENGAL.

No. 430/1(3) MD/2C-668/22 Kolkata, the 02nd September, 2025

Copy forwarded for information to:

1) The Chairman & Managing Director, West Bengal Minerals Development & Trading Corporation Ltd., 3rd Floor, DJ-10, WBIIDC Building, DJ Block, Sector II, Salt Lake City, Kolkata – 700091.
2) The Member Secretary, SEIAA, West Bengal.
3) The Additional Secretary to the Government of West Bengal, Department of Industry, Commerce & Enterprises, Mines Branch, 4, Abanindranath Tagore Sarani (Formerly 4, Camac Street), Kolkata – 700016.

DIRECTOR OF MINES & MINERALS,
GOVERNMENT OF WEST BENGAL.

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No. 431 MD/2C-668/22

Kolkata, the 02nd September, 2025

TO WHOM IT MAY CONCERN

This is to certify that the Modified District Survey Report of Paschim Medinipur District in West Bengal has been prepared in accordance with the prevailing norms and guidelines applicable for the purpose. This Modified District Survey Report has been duly consulted through the District Authority concerned and the comments and observations as received from the District Authority has been duly incorporated in the report. Authorized officials of the Directorate of Mines & Minerals under the Deptt. of Industry, Commerce and Enterprises, Govt. of West Bengal has scrutinised the Modified District Survey Report of Paschim Medinipur District and found the same to be in order.

Now, this Modified District Survey Report of Paschim Medinipur district is forwarded to the State Level Environment Impact Assessment Authority (SEIAA), West Bengal for necessary approval.

DIRECTOR OF MINES & MINERALS,
GOVERNMENT OF WEST BENGAL.

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Abbreviations

% DEP – Departures

° C – Degree Centigrade

BGL – Below Ground Level

CD - Community Development

Cft- Cubic Feet

CGWB - Central Ground water Board

CRIS - Customized Rainfall Information System

Cum - Cubic meter

DGMS - Directorate General of Mines Safety

DGPS - Differential Global Positioning system.

DL&LRO - District Land & Land Reform officer

DSR - District Survey Report

EC – Environmental Clearance

EIA- Environment Impact Assessment

EMGSM - Enforcement and Monitoring Guideline for Sand Mining

ENVIS - Environmental Information System

ft – Feet

GIS - Geographical Information System

GMEC - Global Management and Engineering Consultant

GSI - Geological Survey of India

Ha – Hectare

hr - Hour

IMD – Indian Meteorological Department

ISRO - The Indian Space Research Organization

KM - Kilometer

LISS - Linear Imaging Self-Scanning Sensor

LOI - Letter of Intent

LULC - Land Use Land Cover

m^2 - Square meter

MBT - Main Boundary Thrust

MCT - Main Central Thrust

MFT - Main Frontal Thrust

Mcum – Million Cubic Meters

MMDR - Mines & Minerals (Development and Regulation) Act

MMR - Metalliferous Mines Regulation

MOEF & CC - Ministry of Environment, forest & Climate Change

Mph- miles per hour

M-Sand - Mineral Sand

MSME - Micro, Small & Medium Enterprises

Mt - Metric Ton

MT – Million Tons

NGT - National Green Tribunal

NH – National Highway

NIC - National Informatics Centre

OC - Officer In Charge

OGL - Original Ground level

PSU - Public Sector Unit

R/F – Rain Fall

SSMG - Sustainable Sand Mining Guidelines

WBMDTCL- West Bengal Mineral Development and Trading Corporation Limited

The WBMMCR 2016 – The West Bengal Minor Mineral Concession Rules, 2016

The West Bengal Sand Mining Policy, 2021

EMGSM-2020- Enforcement & Monitoring Guidelines for Sand Mining

PR	PRE MONSOON
PO	POST MONSOON
KS	KESHIARY
DT1	DANTAN 1
MD	MIDNAPORE
GB1	GARHBETA 1
GB2	GARHBETA 2
DB	DEBRA
KP	KESHPUR
KG2	KHARAGPUR 2
SR	SUBARNAREKHA
KS	KANGSABATI
SB	SHILABATI

Key Definitions

Riverbed: A riverbed is the area between two banks of river where sediment deposited. During the normal flow period, river water is contained in and flows along the riverbed. However, during a flood, the river overflows the riverbed and flows onto the floodplain.

Sandbars: The sandbar is the ridge of sand or coarse sediment that is built over a period of time.

Pre monsoon Sandbars: Sandbars which are identified from satellite imagery of pre monsoon period.

Post monsoon Sandbars: Sandbars which are identified from satellite imagery of post monsoon period.

Restricted Area: Sandbars or part of sandbars which are falling within restricted area. As per the Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) 2020 the restricted zone for mining is a distance from the bank is ¼th of river width and not be less than 7.5 meters. Also, there is a no mining zone up to a distance of 1 kilometre (1 km) from major bridges and highways on both sides, or five times (5x) of the span (x) of a bridge/public civil structure (including water intake points) on up-stream side and ten times (10x) the span of such bridge on down-stream side, subjected to a minimum of 250 meters on the upstream side and 500 meters on the downstream side. No mining zone has been marked for an area up to a width of 100 meters from the active edge of embankments.

Potential Zone: Sandbars which are falling within the central $3/4^{th}$ part of the riverbed and which are not falling within the restricted area.

Potential Block: Each individual sand bars of potential zone is Potential Block.

River bed occurrence: River bed occurrence means sand, stone, boulder, pebbles, gravel accumulated in the river bed by natural phenomenon.

Replenishment: Quantum of sand deposited in a mined out void during monsoon period.

Aggradations: Aggradation (or alluviation) is the term used in geology for the increase in land elevation, typically in a river system, due to the deposition of sediment. Aggradation occurs in areas in which the supply of sediment is greater than the amount of material that the system is able to transport.

Act: It means the Mines and Minerals (Development and Regulation) Act, 1957(67 of 1957), as subsequently amended.

Mineral: It means minor minerals as defined in clause (e) of section 3 of the Act.

Sand: A natural resource, is a minor mineral as defined under S 3(e) of the Mines and Minerals (Development and Regulation) Act, 1957 (" MMDR Act").

Lease: It means a mining lease granted under West Bengal Minor Mineral Concession Rules, 2016.

Mining: Excavation of mineral by manual method or using machineries.

EXECUTIVE SUMMARY

Paschim Medinipur district is located in the south-western part of the state and bounded by Jhargram district in the West and by the Mayurbhanj and Balasore District of Orissa in the south. To its eastern side is the Purba Medinipore, while the district Bankura lies to its North.

Geomorphologically the district is characterized by hard rock uplands, lateritic covered area, flat alluvial and deltaic plains. Extremely rugged topography is seen in the western part of the district and rolling topography is experienced in the lateritic covered area. These rolling plains gradually merge into flat alluvial and deltaic plains to the East and the South-East of the District.

The maximum area of the district falls under Seismic Zone III and rest of the part fall under Zone II, indicating the district under safe earthquake–prone zone.

The drainage system of the district is mainly controlled by rivers like Shilabati, Kangsabati and Subarnarekha River along with their network of tributaries. The rivers of district Paschim Medinipur, owing to the typical physiographical condition of the district, emerge from the Chhotanagpur Plateau to the West, flows East or South-East ward direction according to the slope of the land and meets Bay of Bengal to the Southeast or tributaries of Hugli (Hooghly) to the East.

The district is generating considerable revenue from mining of minor minerals such as riverbed sand deposits. Revenue generated in the district of Paschim Medinipur from Minor minerals during the period of April 2017 to January 2020 is Rs. 34.45 crores.

Potential minor mineral blocks of sand have been identified based on satellite imagery study along with ground truthing and are listed in this District Survey Report. Restriction zones are defined as per the EMGSM guidelines 2020. In Paschim Medinipur district, total 30.77 Mcum potential riverbed deposits estimated.

The most part of the district consists of laterite and alluvium comprises eastern half of the district. The lateritic zones in the eastern part of Paschim Medinipur are forming one of the important minor mineral potential zones of the district. Presences of claystone are also holding minor mineral potential zones.

The District Survey Report (DSR) has been modified to incorporate district boundary revision based on Survey of India database. Modified DSR also includes potential zones with respect to sandbars and insitu mineral deposits of the district.

1 Preface

The need for District Survey Report (DSR) have been necessitated by Ministry of Environment, Forest and Climate Change (MoEF&CC) vide there Notification No. 125 (Extraordinary, Part II Section 3, Sub-section ii), S.O. 141 (E), dated 15th January 2016. The notification was addressed to bring certain amendments with respect to the EIA notification 2006 and in order to have a better control over the legislation. District level committee's have been introduced in the system. As a part of this notification, preparation of District Survey Reports has been introduced. Subsequently, MOEF& CC has published Notification No. 3611 (E), dt. 25thJuly, 2018 regarding inclusion of the "Minerals Other than Sand" and format for preparation of the DSR has been specified. Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) January 2020, Issued by MoEF& CC is prepared in consideration of various orders/directions issued by Hon'ble NGT in matters pertaining to illegal sand mining and also based on the reports submitted by expert committees and investigation teams. This DSR has been prepared in conformity with the S O 141 (E), S O 3611 (E) and other sand mining guidelines published by MOEF& CC time to time as well as the requirement specified in West Bengal Minor Mineral Concession Rule, 2016.

The purpose of DSR is to identify the mineral potential areas where mining can be allowed; and also to distinguish areas where mining will not be allowed due to proximity to infrastructural structures and installations, areas of erosion, areas of environmental sensitivities etc. The DSR would also help to estimate the annual rate of replenishment wherever applicable.

Preparation of this DSR involved both primary and secondary data generation. The primary data generation involved the site inspection, survey, ground truthing etc. while secondary data has been acquired through various authenticated sources and satellite imagery studies. The secondary data related to district profile, local geology, mineralization and other activities are available in rather a piecemeal fashion. The DSR of Paschim Medinipur district also describes the general geographical profile of the district, distribution of natural resources, livelihood, climatic condition, and sources of revenue generation.

Modification of the District Survey Report (DSR) is required because of the following:

- To include insitu minor mineral potential zones of the district into the DSR.
- To incorporate district boundary revision based on Survey of India database instead of district portal information.
- To include the potential sandbars based on 2022 Satellite Imagery study for quantification of potential sandbars.

The modified DSR Report has been presented in 3 parts. The 1st part contains the general information of the district. The 2nd part highlights the riverbed deposits that is sand and gravels. The 3rd part of the modified report contains the occurrences of institu minor mineral deposits of the district. The modifications of the DSR of Paschim Medinipur have been furnished in Annexure 7.

2 Introduction

The District Survey Report of Paschim Medinipur District has been prepared as per the guideline of Ministry of Environment, Forests and Climate Change (MoEF& CC), Government of India vide Notification S.O.-1533(E) dated 14th Sept, 2006 and subsequent MoEF& CC Notification S.O. 141(E) dated 15th Jan, 2016. This report shall guide systematic and scientific utilization of natural resources, so that present and future generation may be benefitted at large. Further, MoEF& CC published a notification S.O. 3611(E) Dated 25th July, 2018 and recommended the format for District Survey Report.

The main objective of DSR is identification of areas of aggradations or deposition where mining can be allowed; and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited and calculation of annual rate of replenishment and allowing time for replenishment after mining in that area. The DSR would also help to calculate the annual rate of replenishment wherever applicable and allow time for replenishment. Besides sand mining, the DSR also include the potential development scope of in-situ minor minerals.

The objectives of the District Survey Report are as follows:

1. To identify and quantify minor mineral resources for its optimal utilization.
2. To regulate sand and gravel mining, identification of site specific end-use consumers and reduction in demand and supply gaps.
3. To facilitate use information technology (IT) for surveillance of the sand mining at each step.
4. To enable environmental clearance for cluster of sand and gravel mines.
5. To restrict illegal mining.
6. To reduce occurrences of flood in the area.
7. To maintain the aquatic habitats.
8. To protect ground water in the area by limiting extraction of material in riverbeds to an elevation above the base flow.
9. To maintain data records viz. details of mineral resource, potential area, lease, approved mining plan, co-ordinates of lease hold areas, and revenue generation.
10. To design a scientific mining plan and estimate ultimate pit limit.
11. To frame a comprehensive guideline for mining of sand and other minor minerals.

The District Survey Report (DSR) comprises secondary data on geology, mineral resources, climate, topography, land form, forest, rivers, soil, agriculture, road, transportation, irrigation etc of the district collected from various published and un-published literatures and reports as well as various websites. Data on lease and mining activities in the district, revenue etc. have been collected from the DL&LRO office of the district and from West Bengal Mineral Development Corporation Limited.

2.1 Statutory Framework

The Ministry of Environment, Forest and Climate Change (MoEF& CC) has published several notifications time to time to formulate and implement the District Survey Report (DSR) for every district. The statutory Framework and its legal aspect with respect to DSR is tabulated in Table 2.1.

Table 2.1: Statutory Framework and guidelines on DSR with time scale

Year	Particulars
1994	The Ministry of Environment, Forest & Climate Change (MoEF&CC) published Environmental Impact Assessment Notification 1994 which is only applicable for the Major Minerals more than 5 ha.
2006	In order to cover the minor minerals also into the purview of EIA, the MoEF&CC has issued EIA Notification SO 1533 (E), dated 14th September 2006, made mandatory to obtain environmental clearance for both Major & Minor Mineral more than 5 Ha.
2012	Further, Hon'ble Supreme Court wide order dated the 27th February, 2012 in I.A. No.12-13 of 2011 in Special Leave Petition (C) No.19628-19629 of 2009, in the matter of Deepak Kumar etc. Vs. State of Haryana and Others etc., ordered that "leases of minor minerals including their renewal for an area of less than five hectares be granted by the States/Union Territories only after getting environmental clearance from MoEF"; and Hon'ble National Green Tribunal, order dated the 13th January, 2015 in the matter regarding sand mining has directed for making a policy on environmental clearance for mining leases in cluster for minor Minerals.
2016	The MoEF&CC in compliance of above Hon'ble Supreme Court's and NGT'S order has prepared "Sustainable Sand Mining Guidelines (SSMG), 2016" in consultation with State governments, detailing the provisions on environmental clearance (EC) for cluster, creation of District Environment Impact Assessment Authority, preparation of District survey report and proper monitoring of minor mineral. There by issued Notification dated 15.01.2016 for making certain amendments in the EIA Notification, 2006, and made mandatory to obtain EC for all minor minerals. Provisions have been made for the preparation of District survey report (DSR) for River bed mining and other minor minerals.
2016	West Bengal Minor Minerals Concession Rules,2016 amended the Mines and Minerals (Development and Regulation) Act, 1957 (Act 67 of 1957), to make the rules regulating the grant of mining licenses, prospecting license-cum-mining leases and mining leases in respect of minor minerals by auction process. The rule also incorporates EIA 2016 also includes SSMG2016 for minor mineral mining.
2018	MoEF& CC published a notification S.O. 3611(E) Dated 25th July, 2018 and recommended the format for District Survey Report .The notification stated about the objective of DSR i.e "Identification of areas of aggradations or deposition where mining can be allowed; and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited and calculation of annual

Year	Particulars
	rate of replenishment and allowing time for replenishment after mining in that area".
2020	Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) 2020 has been published modifying Sustainable sand Mining Guidelines, 2016 by MoEF& CC for effective enforcement of regulatory provisions and their monitoring. The EMGSM 2020 directed the states to carry out river audits, put detailed survey reports of all mining areas online and in the public domain, conduct replenishment studies of river beds, constantly monitor mining with drones, aerial surveys, ground surveys and set up dedicated task forces at district levels. The guidelines also push for online sales and purchase of sand and other riverbed materials to make the process transparent. They propose night surveillance of mining activity through night-vision drones.
2021	The West Bengal Sand Mining Policy, 2021- The State Government through this policy intends to govern the excavation, transportation, storage, sale and consumption of sand. The State Government intends to appoint the West Bengal Mineral Development and Trading Corporation Ltd. ("WBMDTCL") as the designated agency, in order to effectively address the issues of indiscriminate mining of sand, black-marketing, artificial supply shortage through hoarding and to ensure compliance with environmental regulations and affordable pricing for the end consumers.
2022	The Policy of Mining of Minor Minerals in Private/Raiyati land-The state government in November 2022 introduced a new 'Raiyati' policy 2022 for the mining of minor minerals on private land. The interested Raiyat/Group of Raiyats/Company as Raiyat shall apply for grant of Letter of Intent (LoI) to the state nodal agency (WBMDTCL) for an area of minimum 1 Ha on their own land(s) along with land details for all minor minerals except morrum.

Important statutory Guidelines for sand or gravel mining:

- **The West Bengal Minor Minerals Concession Rules (WBMMCR), 2016**

1) (a) No person shall undertake mining operation in any area prohibited by the 'State Government in the public interest by notification in the *Official Gazette*.
Provided that nothing in the sub-rule shall affect any mining operation undertaken in any area in accordance with the terms and conditions of a mining lease or mineral concession already granted.
(b) No person shall transport or store or cause to be transported or stored any mineral otherwise than in accordance with the provisions of these rules and the West Bengal Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules, 2002.

(2) No minor mineral coming out in course of digging of wells or excavation of tanks shall be disposed of by the person digging or excavating without informing the District Authority as well as the Executive Officer of the *Panchayat Samiti* or the Executive Officer of the Municipality concerned, as the case may be, about such occurrence.
Provided that disposal of such minor mineral may be allowed on pre-payment of prices of such minor mineral at the prevailing market rate as determined on the basis of the rates

published by the Public Works Department / concerned department of the State Government for the concerned area from time to time.

(3) No mining of river bed occurrences shall be allowed within 300 meters, upstream and downstream, measured from the centre line of any bridge, regulator or similar hydraulic structure and from the end point of bank protection works.

(4) No river bed mining shall be allowed beneath 3 meters of the river bed or ground water Ievel, whichever is less.

(5) No mining operation in case of river bed occurrence shall be done within a distance of three (3) kilometers of a barrage axis or dam on a river unless otherwise permitted by the concerned Executive Engineer or Revenue Officer or authorized officer and such distance shall be reckoned across an imaginary line parallel to the 'barrage, or dam axis, as the case maybe.

(6) No extraction of river bed occurrence shall 'be allowed beyond the central one third of the river bed, or keeping a distance of 100 meter from the existing bank line whichever is less, unless otherwise permitted by the concerned Executive Engineer or Revenue Officer.

(7) No extraction of minerals other than river bed occurrence shall be allowed within fifty (50) meters from any road, public structure, embankment, railway line, bridge canal, road and other public works or buildings.

(8) No mining lease shall be granted without proof of existence of mineral contents in the area for which the application for a mining lease has been made in accordance with such parameters as may be prescribed by the Government from time to time.

N.B- The aforesaid application for mining lease shall succeed the competitive bidding for mining lease for a specified mineral(s).

- **Sustainable Sand Mining Management Guidelines (SSMMG), 2016 by MoEF& CC.**

  The sustainable sand Mining Management Guidelines 2016 has been prepared after extensive consultation with the States and Stakeholders over a period of one year. The main objective of the Guideline is to ensure sustainable sand mining and environment friendly management practices in order to restore and maintain the ecology of river and other sand sources.

a) Parts of the river reach that experience deposition or aggradation shall be identified first. The Lease holder/ Environmental Clearance holder may be allowed to extract the sand and gravel deposit in these locations to manage aggradation problem.

b) The distance between sites for sand and gravel mining shall depend on the replenishment rate of the river. Sediment rating curve for the potential sites shall be developed and checked against the extracted volumes of sand and gravel.

c) Sand and gravel may be extracted across the entire active channel during the dry season.

d) Abandoned stream channels on terrace and inactive flood plains be preferred rather than active channels and their deltas and flood plains. Stream should not be diverted to form inactive channel.

e) Layers of sand and gravel which could be removed from the river bed shall depend on the width of the river and replenishment rate of the river.

f) Sand and gravel shall not be allowed to be extracted where erosion may occur, such as at the concave bank.

g) Segments of braided river system should be used preferably falling within the lateral migration area of the river regime that enhances the feasibility of sediment replenishment.

h) Sand and gravel shall not be extracted within 200 to 500 meter from any crucial hydraulic structure such as pumping station, water intakes, and bridges. The exact distance should be ascertained by the local authorities based on local situation. The cross-section survey should cover a minimum distance of 1.0 km upstream and 1.0 km downstream of the potential reach for extraction. The sediment sampling should include the bed material and bed material load before, during and after extraction period. Develop a sediment rating curve at the upstream end of the potential reach using the surveyed cross- section. Using the historical or gauged flow rating curve, determine the suitable period of high flow that can replenish the extracted volume. Calculate the extraction volume based on the sediment rating curve and high flow period after determining the allowable mining depth.

h) Sand and gravel could be extracted from the downstream of the sand bar at river bends. Retaining the upstream one to two thirds of the bar and riparian vegetation is accepted as a method to promote channel stability.

Flood discharge capacity of the river could be maintained in areas where there are significant flood hazard to existing structures or infrastructure. Sand and gravel mining may be allowed to maintain the natural flow capacity based on surveyed cross- section history.

i) Alternatively, off-channel or floodplain extraction is recommended to allow rivers to replenish the quantity taken out during mining.

j) The Piedmont Zone (Bhabhar area) particularly in the Himalayan foothills, where riverbed material is mined, this sandy-gravelly track constitutes excellent conduits and holds the greater potential for ground water recharge. Mining in such areas should be preferred in locations selected away from the channel bank stretches.

k) Mining depth should be restricted to 3 meter and distance from the bank should be 3 meter or 10 percent of the river width whichever less.

The borrow area should preferably be located on the river side of the proposed embankment, because they get silted up in course of time. For low embankment less than 6 m in height, borrow area should not be selected within 25 m from the toe/heel of the embankment. In case of higher embankment the distance should not be less than 50 m. In order to obviate development of flow parallel to embankment, cross bars of width eight times the depth of borrow pits spaced 50 to 60 meters centre-to-centre should be left in the borrow pits.

l) Demarcation of mining area with pillars and geo-referencing should be done prior to start of mining.

- **Enforcement & Monitoring Guidelines for sand Mining, 2020 (MoEF& CC)**

The Ministry of Environment Forest & Climate Change formulated the Sustainable Sand Management Guidelines 2016 which focuses on the Management of Sand Mining in the Country. But in the recent past, it has been observed that apart from management and systematic mining practices there is an urgent need to have a guideline for effective enforcement of regulatory provision and their monitoring. Section 23 C of MMDR, Act 1957 empowered the State Government to make rules for preventing illegal mining, transportation and storage of minerals. But in the recent past, it has been observed that there was large number of illegal mining cases in the Country and in some cases, many of the officers lost their lives while executing their duties for curbing illegal mining incidence. The illegal and uncontrolled illegal mining leads to loss of revenue to the State and degradation of the environment.

a) Parts of the river reach that experience deposition or aggradation shall be identified. The Leaseholder/ Environmental Clearance holder may be allowed to extract the sand and gravel deposit in these locations to manage aggradation problem.
b) The distance between sites for sand and gravel mining shall depend on the replenishment rate of the river. Sediment rating curve for the potential sites shall be developed and checked against the extracted volumes of sand and gravel.
c) Sand and gravel may be extracted across the entire active channel during the dry season.
d) Abandoned stream channels on the terrace and inactive floodplains be preferred rather than active channels and their deltas and flood plains. The stream should not be diverted to form the inactive channel.
e) Layers of sand and gravel which could be removed from the river bed shall depend on the width of the river and replenishment rate of the river.
f) Sand and gravel shall not be allowed to be extracted where erosion may occur, such as at the concave bank.
g) Segments of the braided river system should be used preferably falling within the lateral migration area of the river regime that enhances the feasibility of sediment replenishment.
h) Sand and gravel shall not be extracted up to a distance of 1 kilometre (1 km) from major bridges and highways on both sides, or five times (5x) of the span (x) of a bridge/public civil structure (including water intake points) on up-stream side and ten times (10x) the span of such bridge on down-stream side, subjected to a minimum of 250 meters on the upstream side and 500 meters on the downstream side.
i) The sediment sampling should include the bed material and bed material load before, during and after the extraction period. Develop a sediment rating curve at the upstream end of the potential reach using the surveyed cross-section. Using the historical or gauged flow rating curve, determine the suitable period of high flow that can replenish the extracted volume. Calculate the extraction volume based on the sediment rating curve and high flow period after determining the allowable mining depth.
j) Sand and gravel could be extracted from the downstream of the sand bar at river bends. Retaining the upstream one to two-thirds of the bar and riparian vegetation is accepted as a method to promote channel stability.
k) The flood discharge capacity of the river could be maintained in areas where there is a significant flood hazard to existing structures or infrastructure. Sand and gravel mining may be allowed to maintain the natural flow capacity based on surveyed cross-section history. Alternatively, off-channel or floodplain extraction is recommended to allow rivers to replenish the quantity taken out during mining.
l) The Piedmont Zone (Bhabhar area) particularly in the Himalayan foothills, where riverbed material is mined, this sandy-gravelly track constitutes excellent conduits and holds the

greater potential for groundwater recharge. Mining in such areas should be preferred in locations selected away from the channel bank stretches.

m) Mining depth should be restricted to 3 meters and distance from the bank should be ¼th or river width and should not be less than 7.5 meters.

n) The borrow area should preferably be located on the riverside of the proposed embankment because they get silted in the course of time. For low embankment, less than 6 m in height, borrow area should not be selected within 25 m from the toe/heel of the embankment. In the case of the higher embankment, the distance should not be less than 50 m. In order to obviate the development of flow parallels to the embankment, crossbars of width eight times the depth of borrow pits spaced 50 to 60 meter center-to-center should be left in the borrow pits.

o) Demarcation of mining area with pillars and geo-referencing should be done prior to the start of mining.

p) A buffer distance /un-mined block of 50 meters after every block of 1000 meters over which mining is undertaken or at such distance as may be the directed/prescribed by the regulatory authority shall be maintained.

q) A buffer distance /unmined block of 50 meters after every block of 1000 meters over which mining is undertaken or at such distance as may be the directed/prescribed by the regulatory authority shall be maintained.

r) River bed sand mining shall be restricted within the central 3/4th width of the river/rivulet or 7.5 meters (inward) from river banks but up to 10% of the width of the river, as the case may be and decided by regulatory authority while granting environmental clearance in consultation with irrigation department. Regulating authority while regulating the zone of river bed mining shall ensure that the objective to minimize the effects of riverbank erosion and consequential channel migration are achieved to the extent possible. In general, the area for removal of minerals shall not exceed 60% of the mine lease area, and any deviation or relaxation in this regard shall be adequately supported by the scientific report.

s) Mining Plan for the mining leases(non-government) on agricultural fields/Patta land shall only be approved if there is a possibility of replenishment of the mineral or when there is no riverbed mining possibility within 5 KM of the Patta land/Khatedari land. For government projects mining could be allowed on Patta land/Khatedari land but the mining should only be done by the Government agency and material should not be used for sale in the open market.

The minerals reserve for riverbed area is calculated on the basis of maximum depth of 3 meters and margins, width and other dimensions as mentioned in para (s) above. The area multiplied by depth gives the volume and volume multiplied with bulk density gives the quantity in Metric Ton. In case of riverbed, mineable material per hectare area available for actual mining shall not exceed the maximum quantity of 60,000 MT per annum.

Demand and Utilisation of Sand

Sand is a multi-purpose topographical material. It is known as one of the three fundamental ingredients in concrete. The composition of sand is diverse. Mostly sand is made of silica which is a common element. It can also come from another source of minerals like quartz, limestone, or gypsum.

From beds to flood plains to coastlines- we can find the sand at almost everywhere. The robustness of sand has played a significant role in everyday life. We use sand practically every other day.

Sand extraction from river beds and brick earth mining for making raw bricks are the main mining activities in the district. With a spurt in construction of real estate sectors and various govt. sponsored projects, the demand for both sand and bricks has increased manifold. The extraction of sand is carried out either manually or through semi- mechanized system. The depth of mining for both river bed sand and brick earth is restricted due to statutory provision in the regulations pertaining to conservation and development of minor minerals.

River sand mining is a common practice as habitation concentrates along the rivers and the mining locations are preferred near the markets or along the transportation route, for reducing the transportation cost. In the real world, there are a lot of situations where we can find uses of sand. Followings are the common sand uses.

1. While bunging metal, we can mix sand with clay binder for frameworks used in the foundries.
2. Sand can be used for cleaning up oil leak or any spill by dredging sand on that spill. The material will form clumps by soaking up, and we can quickly clean the mess.
3. Sand can be used as a road base which is a protective layer underneath all roads
4. Industrial sand is used to make glass, as foundry sand and as abrasive sand.
5. One creative usage of sand is serving as a candle holder. We can try putting some sand before pouring tea light or any candle in a glass. It holds the candle still and refrain the candle from rolling by giving it an excellent decoration.
6. Adds texture and aesthetic appeal to space.
7. Sand is mostly pure to handle, promptly available and economically wise.
8. We use sand in aquariums, fabricating artificial fringing reefs, and in human-made beaches
9. Sandy soils are ideal for growing crops, fruits and vegetables like watermelon, peaches, peanuts, etc.
10. Sand can light a path by filling mason jars with sand and tea light which is another inexpensive way to make a walkway glow.
11. Sand helps to improve resistance (and thus traffic safety) in icy or snowy conditions.
12. We need sand in the beaches where tides, storms or any form of preconceived changes to the shoreline crumble the first sand.
13. Sand containing silica is used for making glass in the automobile and food industry- even household products for the kitchen.
14. Sand is a strong strand which is used for plaster, mortar, concrete, and asphalt.
15. The usual bricks formulated of clay only are way weaker and lesser in weight than blocks made of clay mixed with sand.

2.2 Methodology of DSR Preparation

The steps followed during the preparation of District Survey Report are given in Figure 2.1. The individual steps are discussed in following paragraphs.

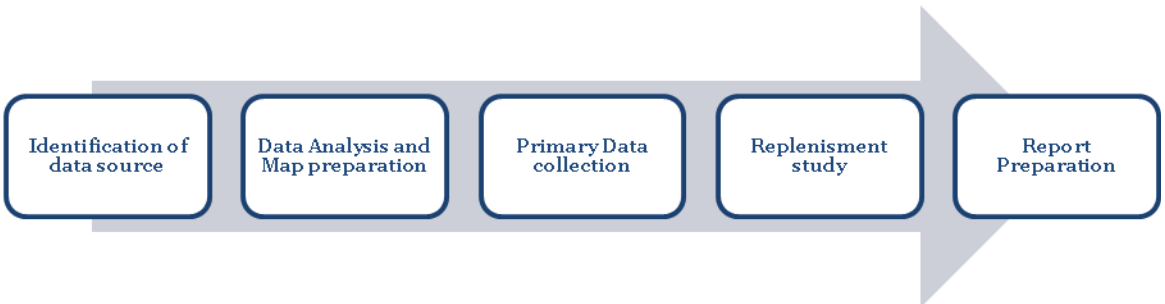


Figure 2.2.1: Steps followed in preparation of DSR

Data source Identification: District Survey Report has been prepared based on the Primary data base and secondary data base collected and collated from different sources. This is very critical to identify authentic data sources before compiling the data set. The secondary data sources which are used in this DSR are mostly taken from public domain and or from the published report in reputed journal. Information related to district profile has been taken from District Census report, 2011 and District Statistical Handbook published by the Govt. of West Bengal. Potential mineral resources of the district have been described based on the published report of Geological Survey of India (GSI) or any other govt. agencies like MECL etc. List of Mining lease, name of lease holder, lease/Block area, resource in already allotted mining lease, revenue from minor mineral sector etc. have been collected from the concern DL&LRO offices of the district. Satellite images have been used for map preparation related to physiography and land use/land cover of the district.

Data Analysis and Map preparation: Dataset which are captured during the report preparation, are gone through detail analysis work. District Survey Report involves the analytical implication of the captured dataset to prepare relevant maps.

Methodology adopted for preparation of relevant maps is explained below.

<u>Land Use and Land Cover Map:</u> Land Use and Land Cover classification is a complex process and requires consideration of many factors. The major steps of image classification may include determination of a suitable classification system via Visual Image Interpretation, selection of training samples, Satellite image (FCC-False Color Composite) pre-processing, selection of suitable classification approaches, post classification processing, and accuracy assessment.

Here LISS-III satellite Imagery has been taken for Supervised Classification as supervised classification can be much more accurate than unsupervised classification, but depends heavily on the training sites, the skill of the individual processing the image, and the spectral distinctness of the classes in broader scale.

According to the Visual Image Interpretation (Tone, Pattern, Texture, Shape, Color etc.) training set of the pixel has been taken. Pictorial descriptions of Land Use classification are explained in Figure 2.2.

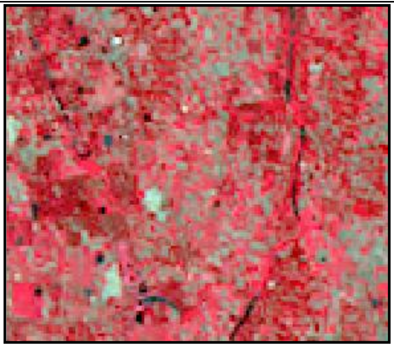
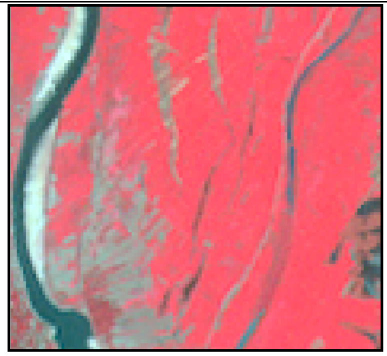
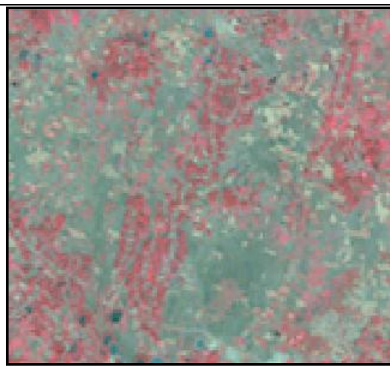
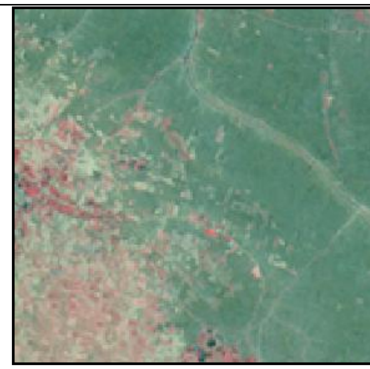
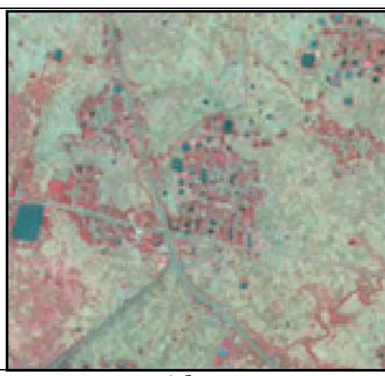
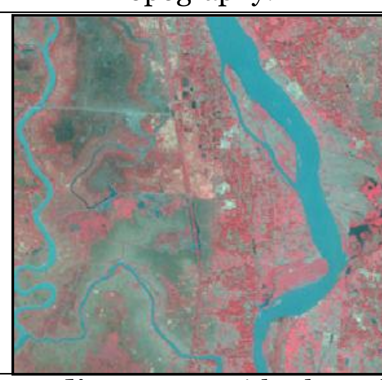
	
Agricultural Land - Based on their Geometrical shape, Red and Pink color tone, Agricultural Land has been identified.	**Vegetation Covered Area** - Area with continuous Red color tone, Vegetation Covered Area has been classified.
	
Agricultural Fallow Land - Based on their Geometrical shape, Yellowish green color tone, Agricultural Fallow Land has been identified.	**Badland Topography**- Area with Non geometrical shape and Yellowish green color tone has been identified as Bad Land Topography.
	
Settlement – Area with some geometrical shape in a Linear Pattern including Light Cyan Color has been recognized as Settlement Area.	**Water Bodies** – Area with Blue color has been classified as Water Bodies.

Figure 2.2.2: Pictorial description of Land Use Classification methods

Geomorphological Map: The major step of preparing Geomorphological Map is identifying features like – Alluvial Fan, Alluvial Plain, Hilly Region etc. from Satellite Imagery

(FCC-False Colour Composite) via Visual Image Interpretation and then digitisation has been taken into the consideration to prepare map including all the Geomorphological features according to their location. Pictorial descriptions of Geomorphological unit's classification are explained in Figure 2.3.

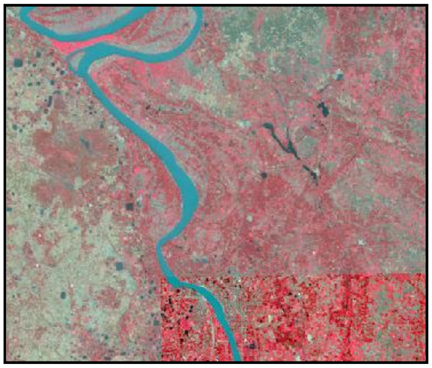
	
Flood plain-Floodplainis a generally flat area of land next to a river or stream. It stretches from the banks of the river to the outer edges of the valley. For Paschim Medinipur District, Whole region has been classified as Flood Plain Area.	**OX-BOW Lake-** An ox-bow lake starts out as a curve, or meander, in a river. This "U" shaped body of water identified as Ox-Box Lake from Satellite Imagery.

Figure 2.2.3: Pictorial description of Geomorphological Units Classification methods

Physiographical Map: The major step of preparing Physiographical Map is generating contour at a specific interval to show the elevation of the area using Cartosat DEM.

Block Map/Transportation Map/Drainage Map:

- Raw Data collected from **National Informatics Centre (NIC Website) during Sept 2020.**
- Data has been geo-referenced using GIS software.
- Digitization of block boundary, district boundary, state boundary, international boundary, and district headquarter, sub–district headquarter, places, road, railway, river, nala etc.
- Road name, River name, Railway name has been filled in attribute table of the Layers
- Final layout has been prepared by giving scale, legend, north arrow, etc.

Earthquake Map:

- Raw data collected from **Ministry of Earth Science.**
- Data has been geo-referenced using GIS software.
- Digitization of Earthquake zone and superimposed it over Block Boundary.
- Zone name has been filled in attribute table of the Layers
- Final layout has been prepared by giving scale, legend, north arrow, etc.

<u>Soil Map:</u>

- Raw data collected from **National Bureau of Soil Survey and Land Use Planning during Sept 2020.**
- Data has been geo-referenced using GIS software.
- Digitization of Soil classification zone and superimposed it over District Boundary.
- Soil classification has been filled in attribute table of the Layers.
- Final layout has been prepared by giving scale, legend, north arrow, etc.

<u>Wildlife Sanctuary and National Park location Map:</u>

- Raw data obtained from **ENVIS Centre on Wildlife & Protected Areas during August 2020.**
- Data has been geo-referenced using GIS software.
- Digitization of Wildlife Sanctuary and National Park and superimposed it over Block Boundary.
- Wildlife Sanctuary & National Park name has been filled in attribute table of the Layers

  Final layout has been prepared by giving scale, legend, north arrow, etc.

Primary Data Collection: To prepare DSR, primary data has been collected and field work has also been carried out for the district. Field study involves assessment of the mineral resources of the district by means of pitting / trenching in specific interval. This provides clear picture of mineral matters characterization and their distribution over the area.

Replenishment study: One of the principal causes of environmental impacts river bed mining is the removal of more sediment than the system can replenish. Therefore, there is a need for replenishment study for riverbed sand in order to nullify the adverse impacts arising due to excess sand extraction. The annual rate of replenishment carried out on every river of the district to have proper assessment of the potential sand reserve.

Four times physical survey has been carried out by GPS/DGPS/ Total Station to define the topography, contours and offsets of the riverbed. The surveys clearly depict the important attributes of the stretch of the river and its nearby important civil and other feature of importance. This information will provide the eligible spatial area for mining.

Report Preparation: The district survey report portrays general profile, geomorphology, land use pattern and geology of the district. The report then describes the availability and distribution of riverbed sands and other minor minerals in the district. Apart from delineation the potential mining blocks, the report also includes inventorization of the minerals, recent trends of production of minor minerals and revenue generation there from. Annual replenishment of the riverbed sand has been estimated using field observation, satellite imagery and empirical formula. The road network connecting arterial road to potential mining blocks has been identified. Potential environmental impacts of mining of these minerals, their mitigation measures along with risk assessment and disaster management plan have also been discussed. Finally the reclamation strategy for already mined out areas is also chalked out.

GENERAL PART

3 General Profile of the district

a) General Information

Paschim Medinipur (also known as Midnapore West), located in the south-western part of West Bengal, was created with the partition of the erstwhile Midnapore district, then the largest district of India, on 1 January 2002. On 4 April 2017, the Jhargram subdivision was converted into a district. Paschim Medinipur district ranks second in terms of geographical area amongst the districts of the state, next to South 24-Parganas. The district covers an area of 9368 sq.km (https://Paschim Medinipur.gov.in/).

It is bounded by Jhargram district in the West and by the Mayurbhanj and Balasore District of Orissa in the south. To its eastern side is the Purba Medinipore, while the district Bankura lies to its North. The district's Head quarter is at Medinipore (Figure 3.1).

The district comprises three subdivisions: Kharagpur, Medinipur Sadar and Ghatal. Kharagpur subdivision consists of Kharagpur municipality and ten community development blocks: Dantan–I, Dantan–II, Pingla, Kharagpur–I, Kharagpur–II, Sabang, Mohanpur, Narayangarh, Keshiari and Debra. Medinipur Sadar subdivision consists of Midnapore municipality and six community development blocks: Medinipur Sadar, Garhbeta–I, Garhbeta–II, Garhbeta–III, Keshpur and Shalboni. Ghatal subdivision consists of five municipalities (Ramjibanpur, Chandrakona, Khirpai, Kharar and Ghatal) and five community development blocks: Chandrakona–I, Chandrakona–II, Daspur–I, Daspur–II and Ghatal (https://en.wikipedia.org/wiki/Paschim_Medinipur_district) (Figure 3.2).

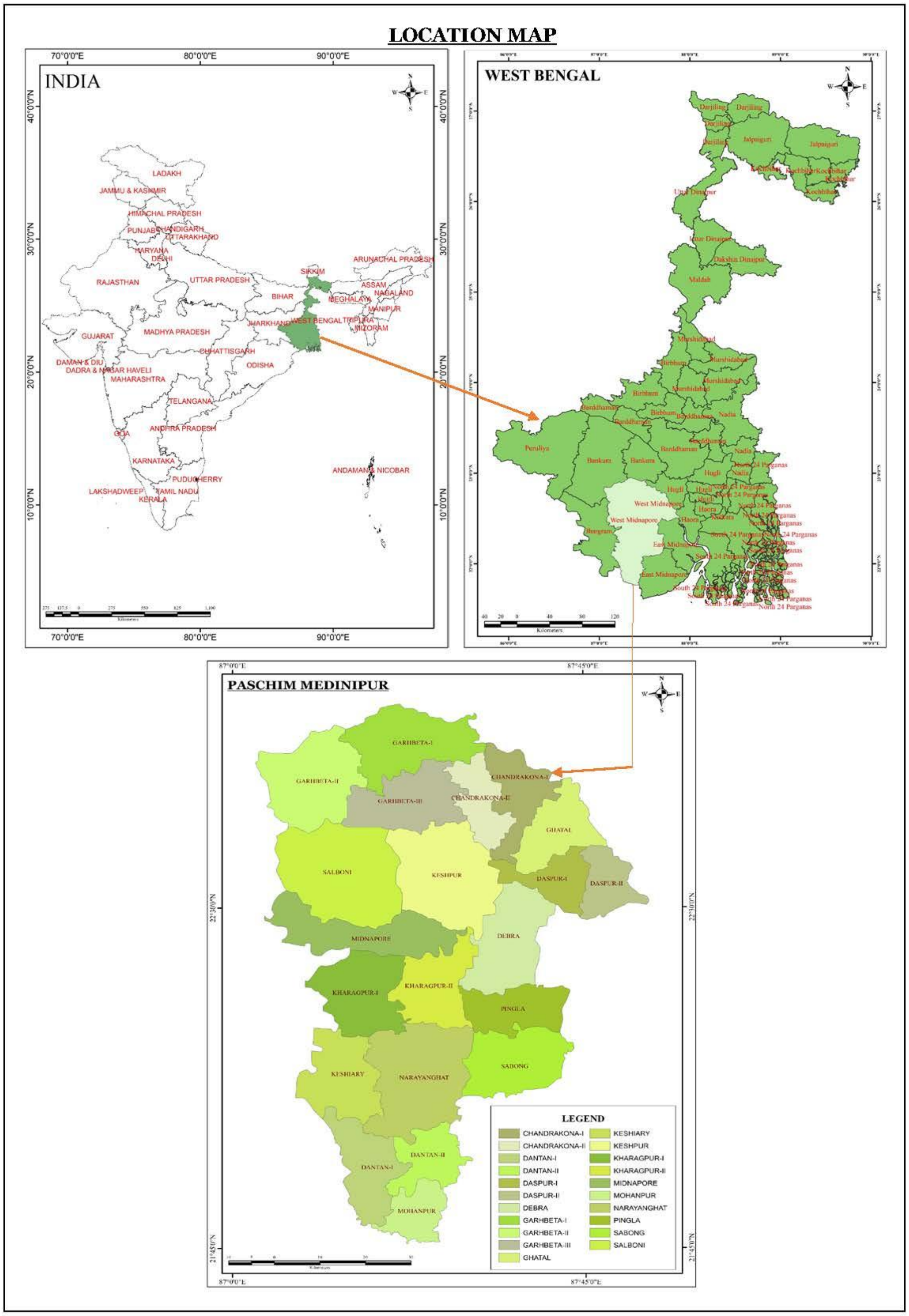


Figure 3.1: Location Map of Paschim Medinipur
(Source: National Informatics Centre and ESRI Base Map)

Table 3.3.1: Block distribution of Paschim Medinipur District

Sub-Division	Police Station	C.D.Block / M	Panchayat Samity	Panchayat Gram	Panchayat Gram Sansad
(1)	(2)	(3)	(4)	(5)	(6)
Sadar Sub-Div.	**6**	**6/1**	**6**	**64**	**880**
	Salboni	Salboni	1	10	134
	Keshpur Anandapur	Keshpur	1	15	230
	Garhbeta & Goaltore	Garhbeta-I	1	12	162
		Garhbeta-II	1	10	110
		Garhbeta-III	1	8	115
	Medinipur	Medinipur	1	9	129
		Medinipur(M)	-	-	-
Kharagpur Sub-Div.	**10**	**10/1**	**10**	**99**	**1451**
	Debra	Debra	1	14	214
	Pingla	Pingla	1	10	142
	Keshiary	Keshiary	1	9	110
	Dantan	Dantan-I	1	9	124
	Belda	Dantan-II	1	7	114
	Narayangarh	Narayangarh	1	16	224
	Mohanpur	Mohanpur	1	5	82
	Sabong	Sabong	1	13	200
	Kharagpur (Local)	Kharagpur-I	1	7	112
		Kharagpur-II	1	9	129
	Kharagpur (Town)	Kharagpur(M)	-	-	-
Ghatal Sub-Div.	**3**	**5/5**	**5**	**48**	**709**
	Chandrakona	Chandrakona-I	1	6	102
		Chandrakona-II	1	6	86
		Chandrakona(M)	-	-	-
		Khirpai(M)	-	-	-
		Ramjibanpur(M)	-	-	-
	Ghatal	Ghatal	1	12	166
		Kharar(M)	-	-	-
		Ghatal(M)	-	-	-
	Daspur	Daspur-I	1	10	161
		Daspur-II	1	14	194

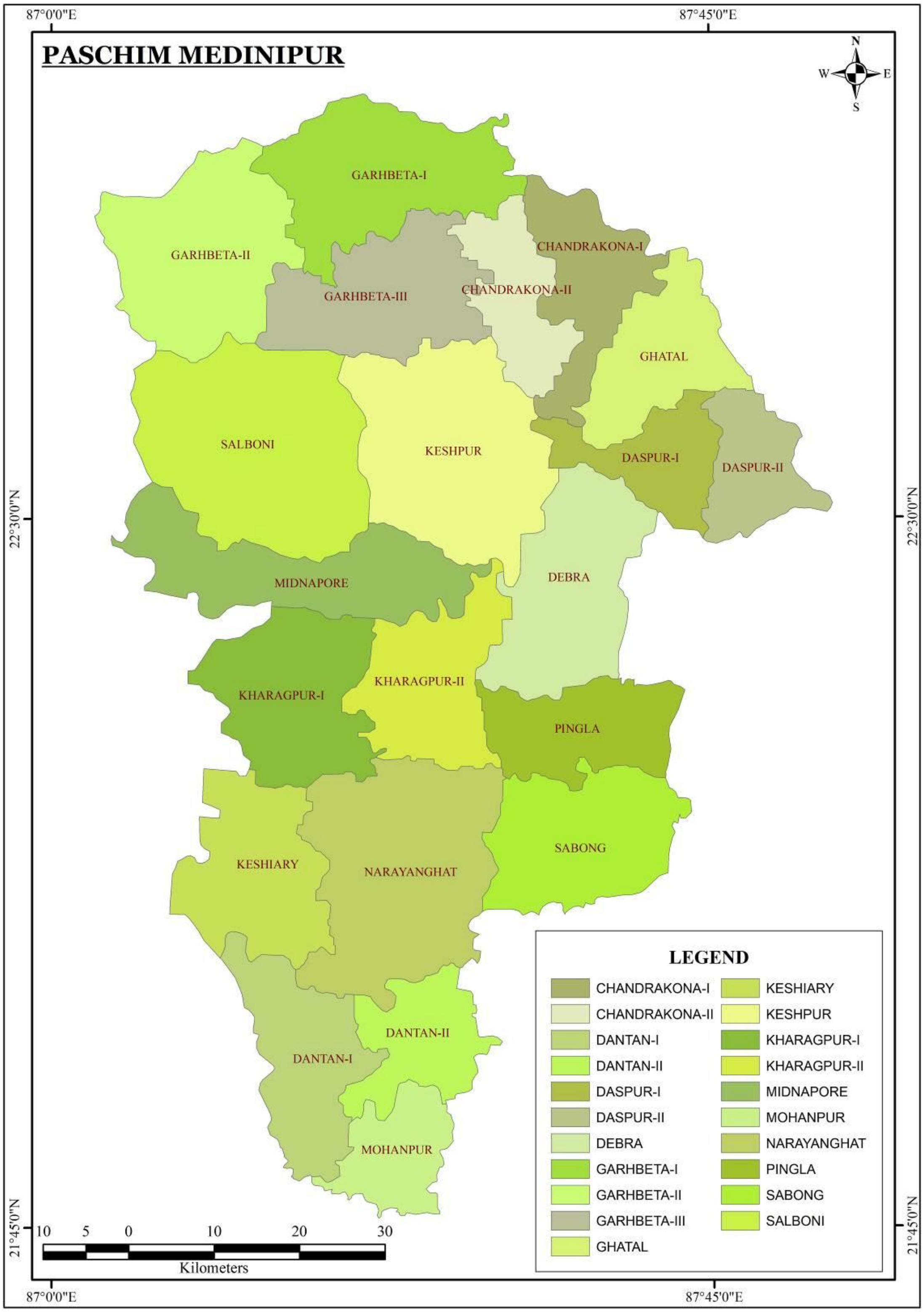


Figure 3.2: Block divisional map of Paschim Medinipur

(Source: National Informatics Centre)

b) Climate Condition

The district experiences a humid sub-tropical type of climate with minimum and maximum temperature varying from 7°C in the winter to 45°C in summer respectively. Humidity in this district is quite high particularly in the monsoon months and shows an upward trend from January onwards. Rainfall fluctuates widely over years and concentrates over a few months of a year under monsoon.

The district of Paschim Medinipur experiences an extreme climate with high range of temperature. The climate of the district is characterized by oppressive heat and high humidity in summer with average daily maximum temperature varies between 25°C and 40°C. Winter is generally dry and cold with average winter temperature around 17° C. The year may be divided into four seasons. The cold season is from about the middle of November to the end of February. The period from March to May is the summer season. The south west monsoon season commences about the beginning of June and lasts till the end of September. October and the first half of November may be termed as post monsoon season. (https://www.imdpune.gov.in/library/public/Climate%20of%20WestBengal.pdf)

c) Rainfall

The average annual rainfall in the district is 1485mm. The variations in the annual rainfall within the district and from year to year are not large. The rainfall during the monsoon season – June to September – constitutes 74 percent of the annual rainfall; July and August are the rainiest months. The district receives a mean annual rainfall varying from 1295 mm to 1637 mm.
(https://hydro.imd.gov.in/hydrometweb/(S(c31xot2fu1lahs45tplr2vuh))/DistrictRaifall.aspx)

The information on annual rainfall for the five years from 2016 to 2020 for the district Paschim Medinipur is given in Table 3.2. Average rainfall of the district explained graphically in Figure 3.3.

Table 3.3.2: Annual rainfall (in milimeter) recorded in Paschim Medinipur District

Month	2016	2017	2018	2019	2020	Average
Jan	6	5	0	0	41.6	10.52
Feb	48	0	3.4	107.2	11.3	33.98
Mar	27.4	43.9	1.6	63.6	62.6	39.82
Apr	12	17.4	99.1	75.7	113.8	63.6
May	133.5	109.2	109.3	113	262.6	145.52
Jun	161.1	205.5	187.7	128	240.3	184.52
Jul	359.2	411.7	259.7	216.9	217.4	292.98
Aug	371.7	311.9	300.9	397.9	368.9	350.26

Sept	192.2	202.7	229.6	361.7	134.3	224.1
Oct	71.6	203.4	72.7	125.5	84	111.44
Nov	8.6	32.1	7.1	40	10.8	19.72
Dec	0	9.3	23.8	7.6	0	8.14
Yearly Total	1391.3	1552.1	1294.9	1637.1	1547.6	1484.6

Source: Website of Indian Meteorological Department, Govt. of India

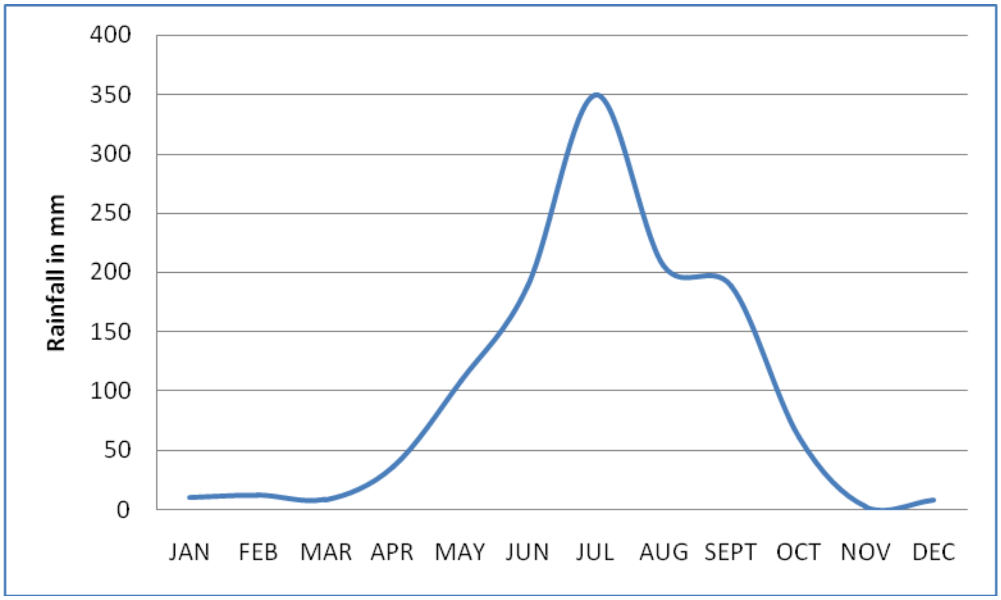


Figure 3.3: Graphical representation of Paschim Medinipur District rainfall

- **Temperature:**

Temperature along with other meteorological conditions of the district is more or less uniform. The cold season commences by about the middle of November when the temperature begins to decrease. January is the coldest month with the mean daily maximum and minimum temperature at 28 ^{o}C and 10^{o}C respectively. By about the end of February the temperature begins to increase and April is found as the hottest month, the mean maximum daily temperature is 39 ^{o}C and the mean minimum daily temperature is 25 ^{o}C. (https://en.climate-data.org/asia/india/west-bengal/Paschim Medinipur-55531)

The average maximum and minimum temperature recorded in Paschim Medinipur is given in Table 3.3.

Table 3.3.3: Monthly mean temperature (in °C) distribution of Paschim Medinipur District

Parameters	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Average Temperature (°C)	19.3	22.1	27.3	31.4	32.2	31.2	28.9	28.8	28.7	27	22.7	19.7
Minimum Temperature (°C)	12.5	15.2	20	24.3	26.4	26.4	25.7	25.7	25.3	22.7	16.7	13.1
Maximum	26.2	29	34.6	38.6	38	36	32.1	31.9	32.1	31.4	28.8	26.3

- **Relative Humidity, Wind speed & Wind direction**

Humidity is observed as high throughout the year, but in the summer months, March and April, the relative humidity is comparatively low, begins some 64 to 75 percent in the mornings and 30 to 40 percent in the afternoons. From May the humidity increases. Skies are moderately to heavily cloudy in May. In the south-west monsoon season; the cloudiness increases and skies are mostly heavily clouded or overcast. From October the cloudiness decreases and in the next six months skies are clear or lightly clouded. Winds are generally light or moderate, with a slight increase in force in the summer seasons.

d) Topography & Terrain

The district presents a gradually sloping topography. The highest altitude is 132 m above M.S.L. near Daspur in the east and 18.06 m above M.S.L. near Sansankha in the South East (Figure 3.4).

Geographically, the north and north-west regions of Paschim Medinipur district are a part of Chhota Nagpur Plateau in its eastern end and covered with hard laterite stone. Geographically the district may be divided into three sub-micro regions:

- Plain of Silai: This plain land is found in the northern part of the district bordering Bankura district and is a portion of East Chhotanagpur plateau. Most part of the region comprises recent alluvium and laterite. The Garhbeta-I and Garhbeta-II C.D. Blocks are included in this region.
- Lower Kasai Plain: Lower Kasai plain is located either sides of the Kasai River. Navigability of this river is negligible due to alluvial deposition. Huge depression is formed in the west and north-west area on the Kasai and Kaleghai Rivers confluence and causes flood. This region is also known as 'Mayana Basin'.
- Upland of Medinipur: This region is found in the north-western part of the Paschim Medinipur district and lies close to Odisha and Jharkhand. This upland is 2,029 sq. km. with sloping is from north-west to south-east. This is part of Chhotanagpur Plateau which is formed with laterite. Some hills which are found in the extreme north are 82 meters to 223 meters in height. The Subarnarekha is the controlling river in this upland

region. This river flows from the state of Jharkhand and flows towards south-east and empties at Bay of Bengal in Odisha (Census, 2011).

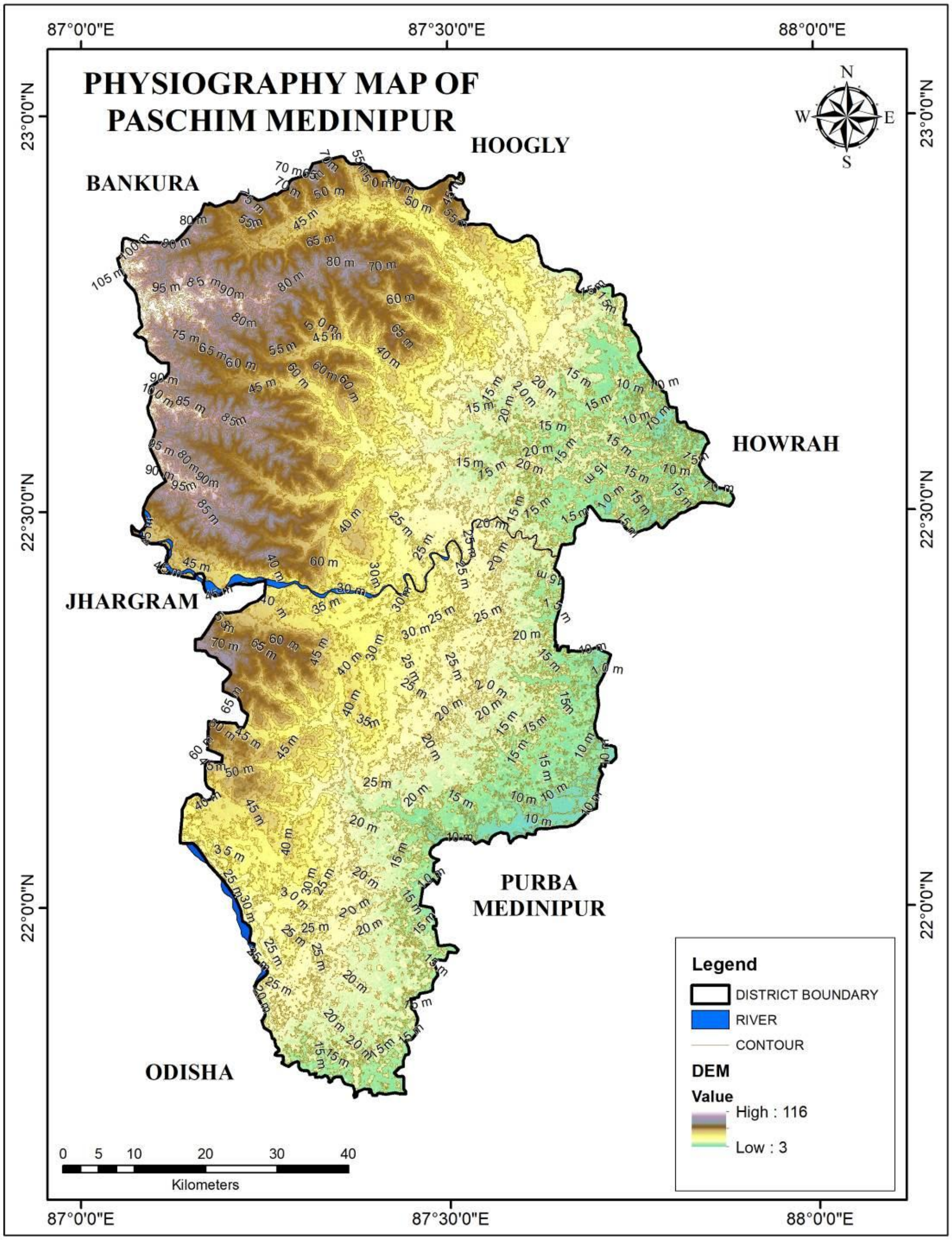


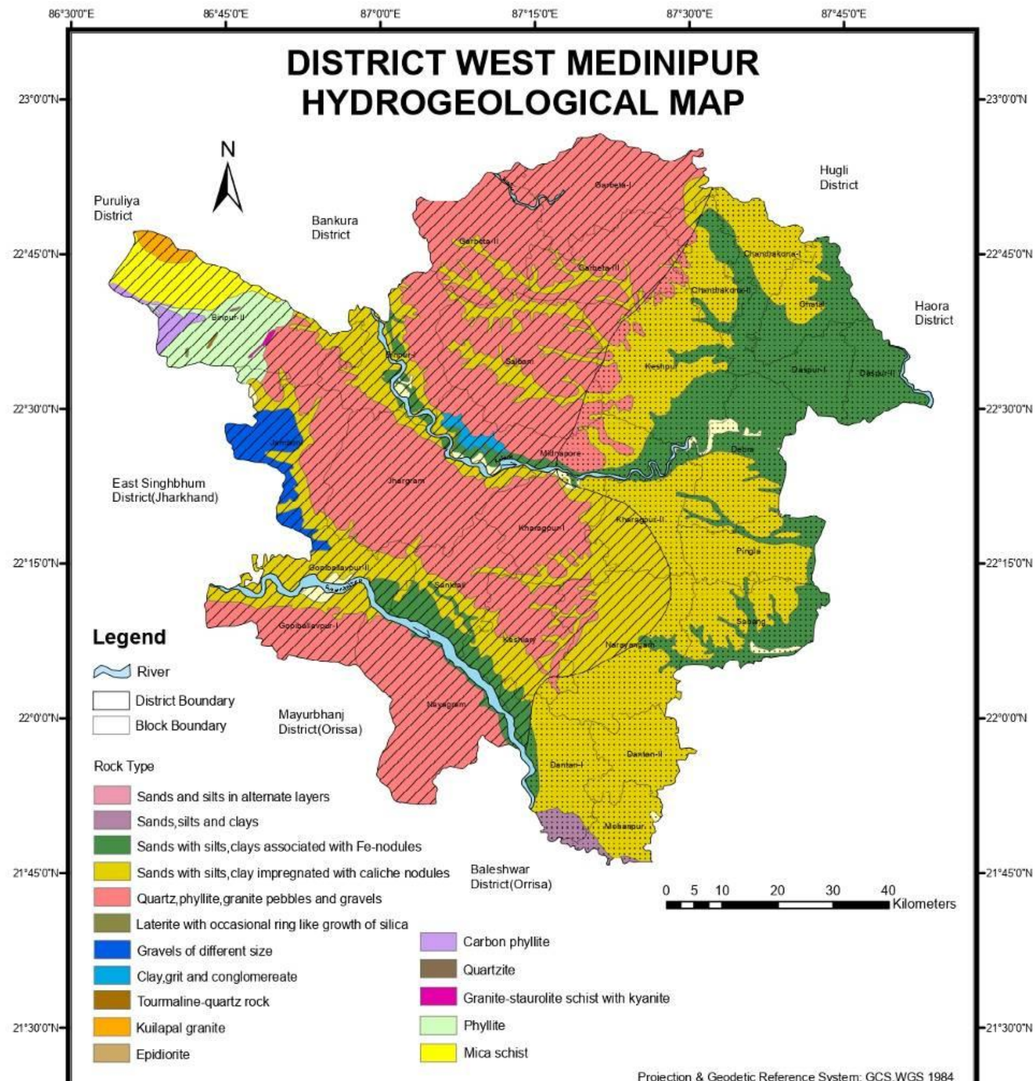
Figure 3.4: Physiographic map of Paschim Medinipur District

(Source: Cartosat-1, Bhuvan India)

e) Water Course & Hydrology

Hydrological condition of the district is guided by topography, geology, and rainfall of the region. Central Ground Water Board (CGWB) has carried out detail hydrogeological investigation of the district. Figure 3.5 represents hydrogeological map showing the hydrogeological scenario of the district.

As per the CGWB report, the district Paschim Medinipur displays diversified hydrogeological characters that do not have resemblance with the planes. Based on geology and mode of occurrence of groundwater the underline area of the district has been divided into two sectors (i) western sector covered by crystalline rocks of Paleo-Proterozoic age and (ii) Eastern sector covered by Recent Alluvium of Upper Pleistocene to Holocene age. Groundwater occurs in the district both unconfined condition and confined condition. The water table generally declines with the varying gradients from west, north-west to east and south-east directions. In the western part of the district ground water occurs under confined condition. Depth to water ranges from 3-18m b.g.l. In the eastern part, groundwater occurs under confined condition. Near surface aquifers lie within 6-20m b.g.l. (http://wbwridd.gov.in/swid/mapimages/WEST%20MIDNAPORE.pdf).



Symbol	Rock Type	Age	Lithology	Aquifer Description	Hydrogeology
(hatched)	Mica schist,phyllite,garnet-staurolite schist with kyanite, quartzite,epidiorite,hornblende schist,granite,tourmaline,grit, conglomereate and grey clay wiyh caliche nodules	Paleo-Proterozoic to Upper Pleistocene	Low permeadility,faults, fiassure and foliation at pre Quarternary group	Groundwater under confined condition. Depyh to water ranges from 3-18m b.g.l.	Groundwater yield prospect in hardrock areas 5-7 lit/sec, in the marginal alluvial tract 7-10 lit/sec and in the Quaternary formation 30-50 lit/sec
(dotted)	Sand,silt and clays with caliche and ferrous nodules	Upper Pleistocene to Holocene	Very high permeadility, durickcrusts	Groundwater under confined condition. Near surface aquifers lie within 6-20m b.g.l.	Groundwater yield prospect 20-44 lit/sec

Reference:CGWB & GSI

Figure 3.5: Hydrogeological map of Un-divided Medinipur district

f) Ground Water Development

Central Groundwater Board (CGWB) has carried out hydrogeological investigation in the Paschim Medinipur district. The present report incorporates data published by CGWB. Water level data has been collected from both dug-wells and tube-wells.

The hydrogeological condition of the district can be divided into two broad divisions as

- Fissured/ Fractured Formation
- Porous Formation

Hard crystalline rocks occurs around Birpur –II in the extreme north western part of the district where ground water occurs under water table condition in weathered residuam of the hard rocks and the interconnected fractures, fissures, joints etc. The thickness of the weathered residuam of the hard rocks and the interconnected fractures, fissures, joints etc. The thickness of the weathered zone varying from a very thin to as much as 15-20m. Depth to water level in the zone of weathered and fractured rocks, vary from 2 mbgl to 13 mbgl during pre-monoon period. Ground water in this unit forms limited ground water development scope and is mainly tapped by dug wells, dug cum bore wells and bore wells. However, the deeper fractures are also potential for ground water development and are mainly developed by bore well. Ground Water exploration carried by CGWB in this unit reveals that existence of fractures within depth 85 mbgl with the yield of the well ranges from 5 to 7 lps.

The porous formations are very extensive both laterally and vertically and can be sub divided into two categories:

a) Older Allurium and Upper- Teriastics in the platform Region: The upland region in the north western, northern and south western part of the district is characterized by the occurrence of laterite soils at the top underlain by a thick sequence of clay, silt, sand and grud down to the depth of 250 mbgl. In the shallow phreatic aquifers ground water occurs under table condition in this upland tract whose pre-monsoon depth to water level ranges from 4 mbgl to 10 mbgl during pre-monsoon period. The deeper aquifers occur under confined to semi-confined conditions and the piezometric surface in pre-monsoon period ranges from 5 mbgl to 9 mbgl. Auto flowing tubewells in Narayngarh, Salboni and Garhbeta areas are quite common.

b) Alluvial Plains in the Eastern part: The block areas of Ghatal, Daspur, Keshpur, Debra, Pingla, Subang are mainly covered by recent alluvium deposits. Very significant and promising water bearing formations occur in Daspur- Dobra. Block within the depth range of 130-164 m. Ground water here occurs both in water table and confined conditions.

Figure 3.6 represents water level fluctuation graph. Depth to water level in dug wells measured by CGWB varied from 5.23 m to 10.57 m bgl during pre-monsoon period with an average depth of 8.67 m. During post-monsoon period, water level varies from 5.23 m to 9.57 m bgl with an average of 7.47 m in the year 2011 to 2021.

(https://indiawris.gov.in/wris/#/groundWater%20(CGWB%20website%20for%20Ground%20 water%20data)

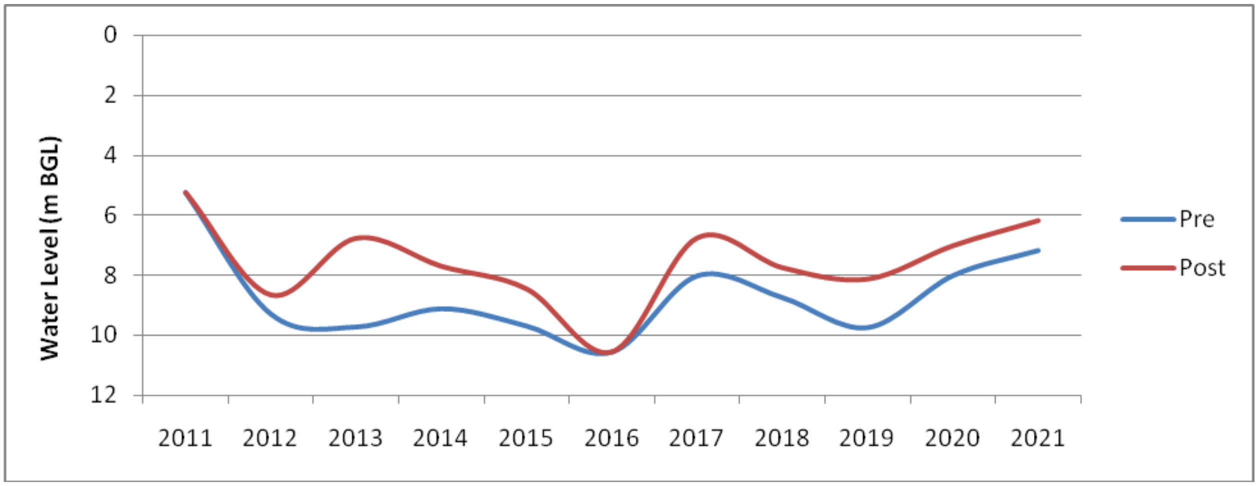
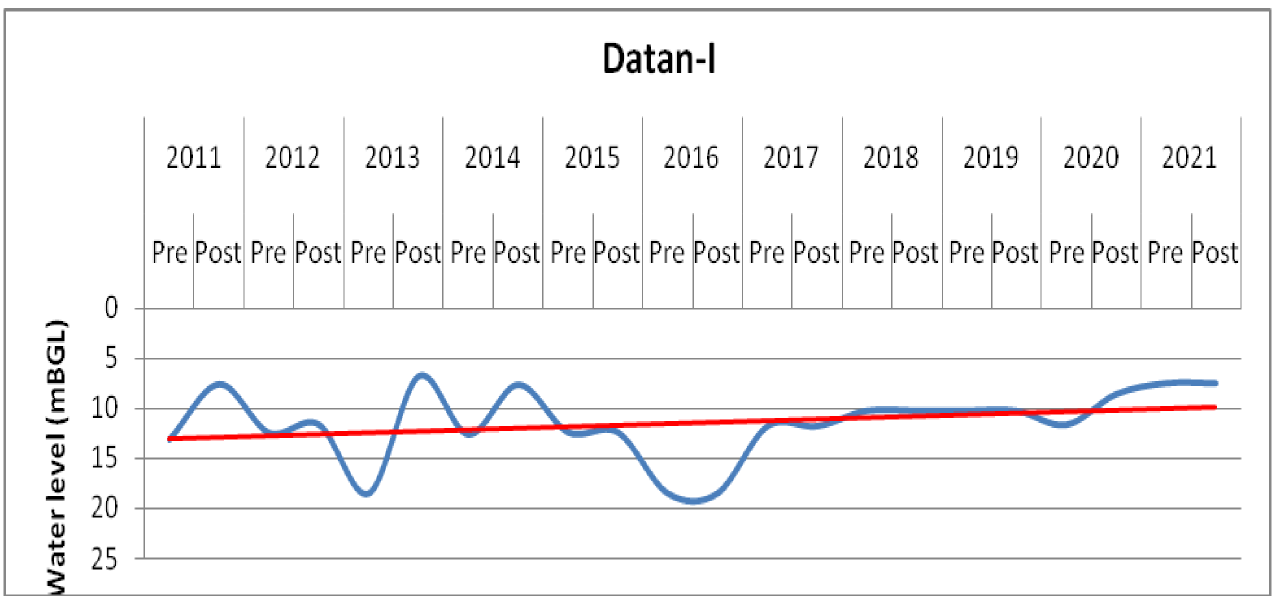
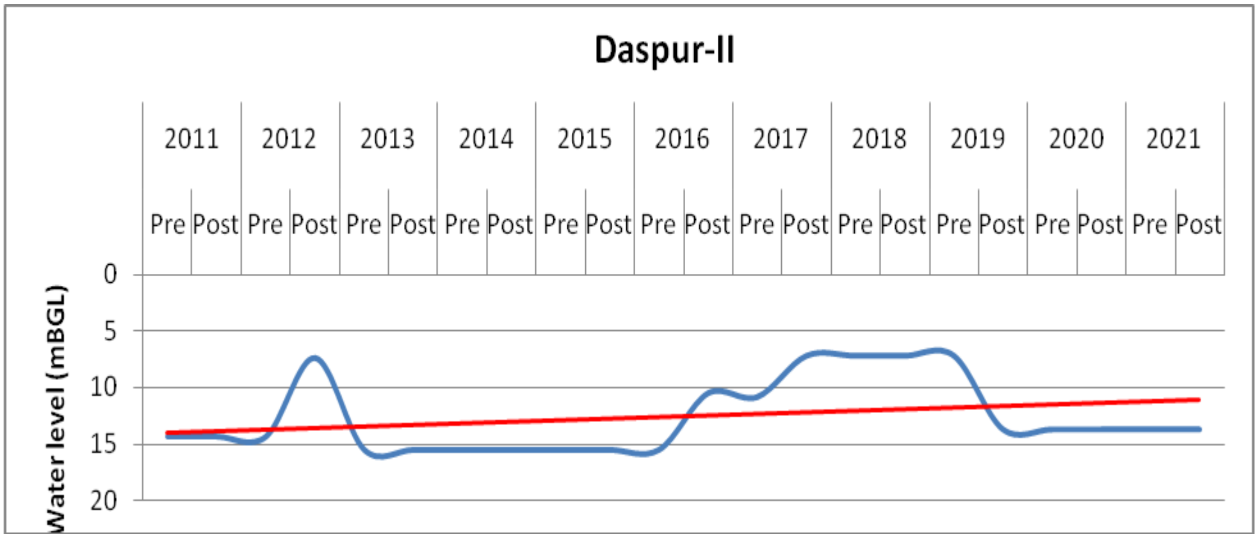
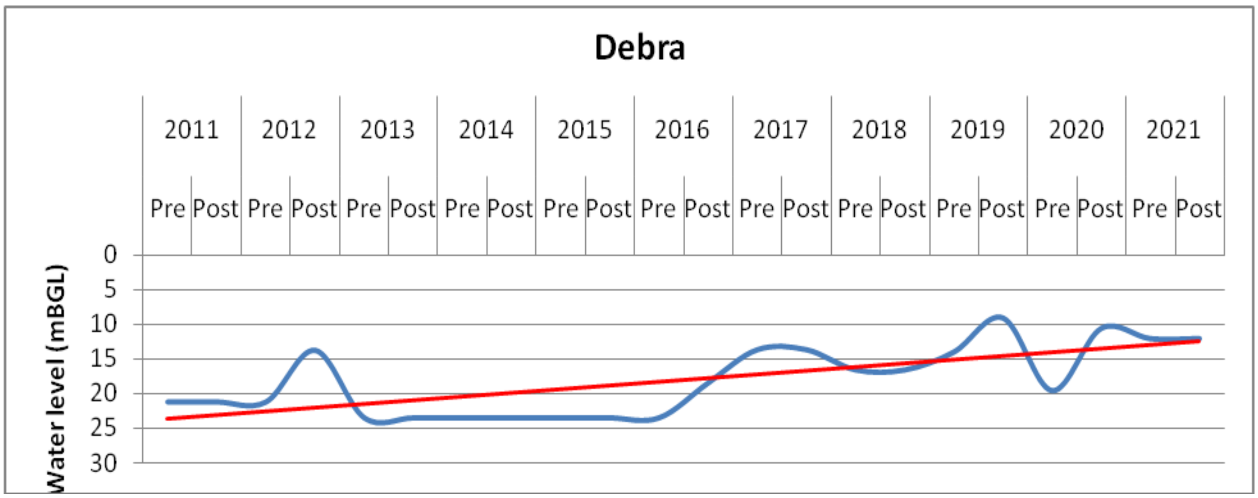


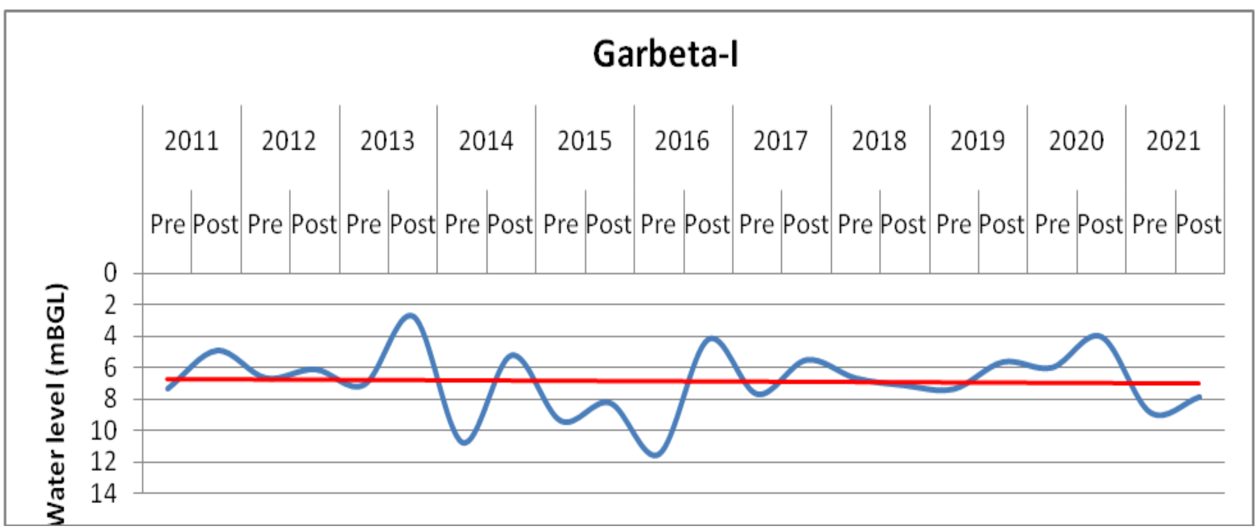
Figure 3.6: Graphical representation of pre-monsoon and post-monsoon water level data of Kharagpur, Paschim Medinipur

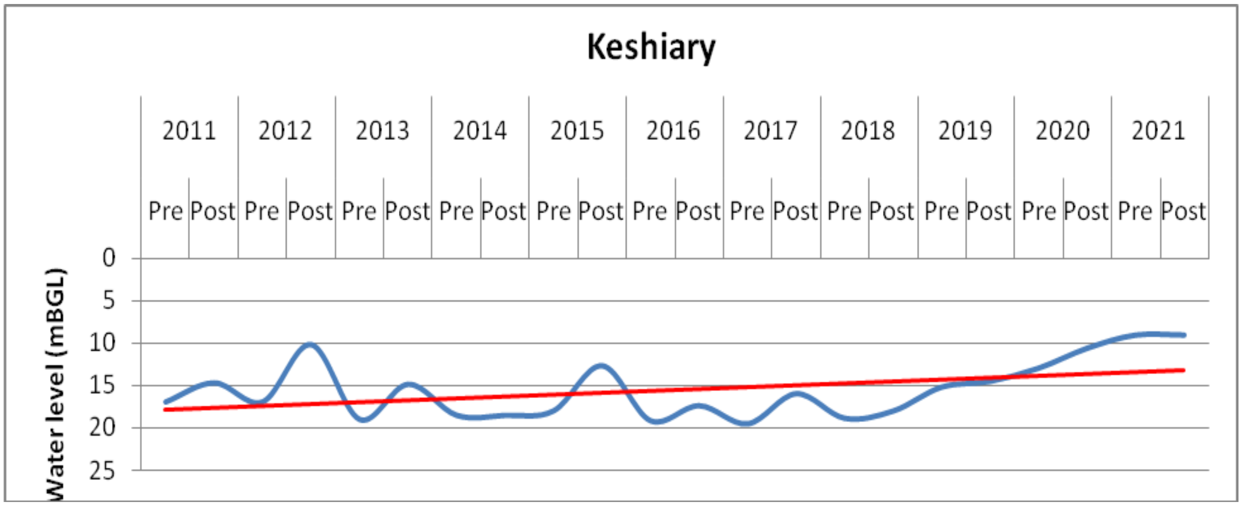
Hydrographs showing variation in water level observed in between 2011 to 2021 in the district is given in Figure 3.7.

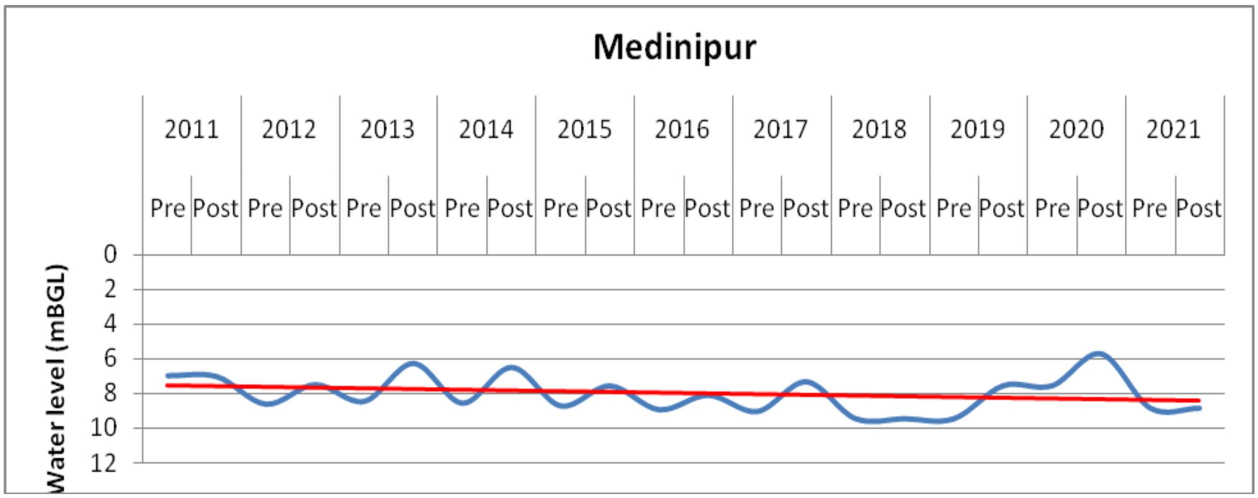



Daspur-II
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post
0
5
10
15
20
Water level (mBGL)


Debra
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post
0
5
10
15
20
25
30
Water level (mBGL)


Garbeta-I
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post Pre Post
0
2
4
6
8
10
12
14
Water level (mBGL)





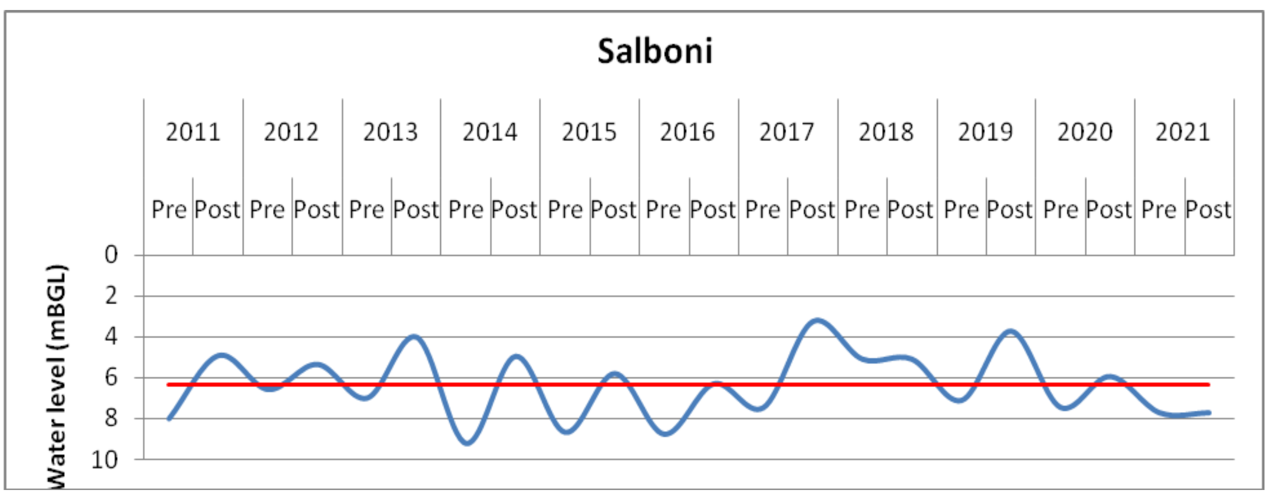


Figure 3.7: Block wise Hydrograph showing variation of water level during 2011 to 2021

g) Drainage System

The rivers of district Paschim Medinipur, owing to the typical physiographical condition of the district, emerge from the Chhotanagpur Plateau to the West, flows East or South-East ward direction according to the slope of the land and meets Bay of Bengal to the South East or tributaries of Hugli (Hooghly) to the East. All the rivers in this region are rain-fed and flows to the fullest during Monsoon.

The river system of district Paschim Medinipur primarily consists of Shilabati, Kangsabati and Subarnarekha and their tributaries.

Drainage map of Paschim Medinipur district is furnished as Figure 3.8 and in Plate 1A.

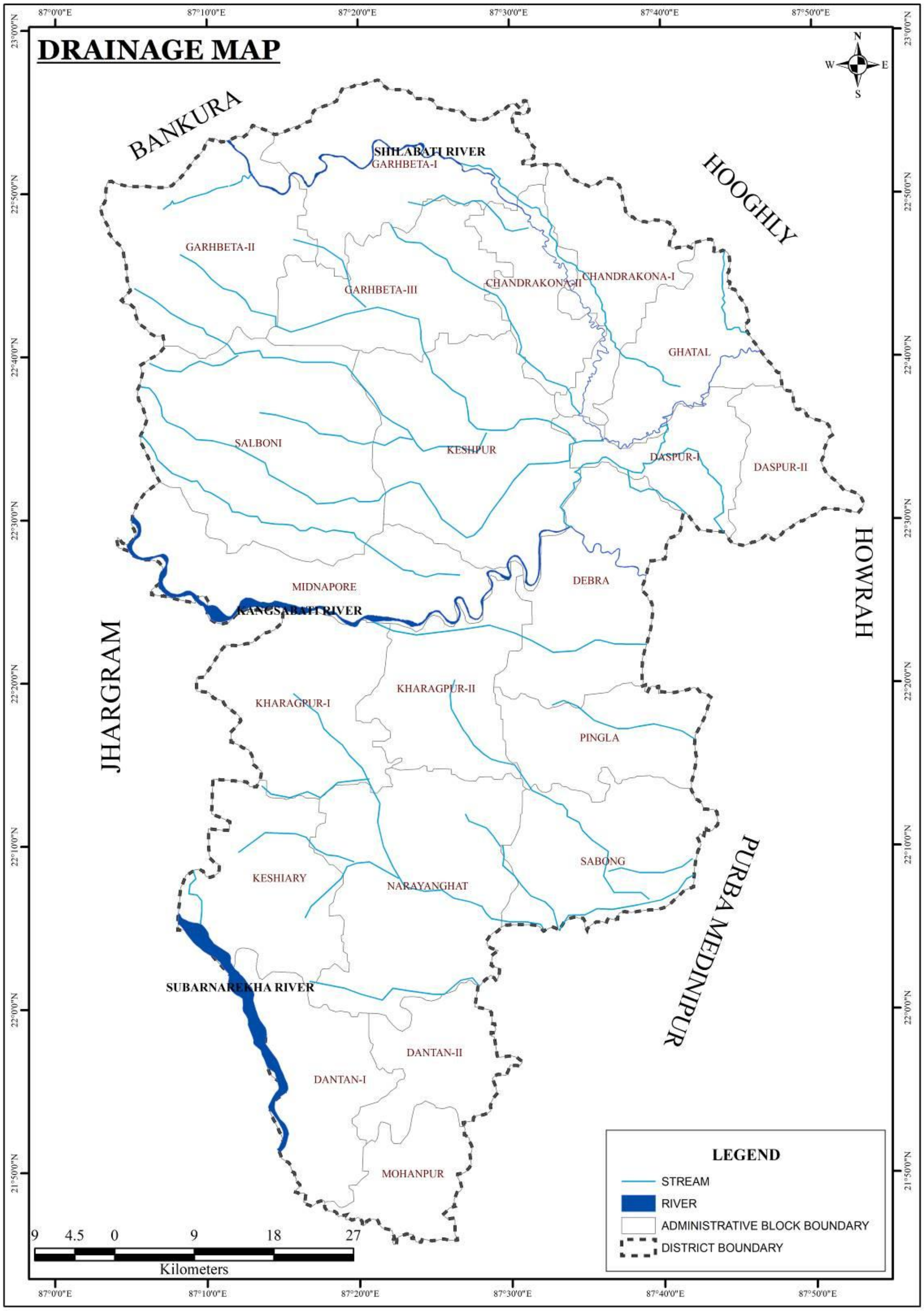


Figure 3.8: Drainage map of Paschim Medinipur District

(Source: National Informatics Centre)

h) Demography

Paschim Medinipur is one of districts of West Bengal in India, Paschim Medinipur population in 2022 is 6,297,653 (estimates as per aadhar uidai.gov.in Dec 2020 data). As per 2011 census of India, Paschim Medinipur has a population of 5,913,457 in 2011 out of which 3,007,885 are male and 2,905,572 are female. Literate people are 4,078,412 out of 2,266,913 are male and 1,811,499 are female. People living in Paschim Medinipur depend on multiple skills, total workers are 2,509,159 out of which men are 1,757,358 and women are 751,801. Total 436,384 Cultivators are depended on agriculture farming out of 403,904 are cultivated by men and 32,480 are women. 489,199 people works in agricultural land as labor, men are 363,115 and 126,084 are women (https://www.indiagrowing.com/West_Bengal/Paschim_Medinipur).

Table 3.4 shows the district demographic profile based on Census 2011. Block-wise literacy rate of the population is described as the percentage of literates. Figures 3.9 and 3.10 representing block wise population distribution and literacy rate respectively.

Table 3.3.4: Demographic distribution of Paschim Medinipur District

Sub-Division / C.D.Block / M	Area (Sq. Km.) (2001)	Male	Female	Total	Literacy Rate
Sadar Sub-Div.	**2441.50**	**634174**	**604636**	**1238810**	**76.23243**
Salboni	553.39	84253	80995	165248	74.87
Keshpur	483.15	147720	140769	288489	77.88
Garhbeta-I	361.87	102815	97587	200402	72.21
Garhbeta-II	392.55	66940	64163	131103	75.87
Garhbeta-III	312.12	74900	70954	145854	73.42
Medinipur	323.64	81043	76902	157945	70.48
Medinipur(M)	14.78	76503	73266	149769	88.99
Kharagpur Sub-Div.	**2913.17**	**1041081**	**992503**	**2033584**	**80.51395**
Debra	342.41	129224	125996	255220	82.03
Pingla	224.48	88433	82633	171066	83.57
Keshiary	292.09	67427	64634	132061	76.78
Dantan-I	257.07	77203	74173	151376	73.57
Dantan-II	185.56	68823	65537	134360	82.45
Narayangarh	499.48	136169	130506	266675	78.18
Mohanpur	137.49	49147	47176	96323	80.51
Sabong	305.00	122867	115819	238686	86.84
Kharagpur-I	313.31	121717	115511	237228	77.06
Kharagpur-II	265.63	82350	79478	161828	76.08
Kharagpur(M)	90.65	97721	91040	188761	85.76
Ghatal Sub-Div.	**953.09**	**459256**	**453731**	**912987**	**82.55271**
Chandrakona-I	193.54	60299	57786	118085	78.93

Sub-Division / C.D.Block / M	Area (Sq. Km.) (2001)	Male	Female	Total	Literacy Rate
Chandrakona-II	150.44	54686	52145	106831	76.96
Ghatal	216.05	96678	94060	190738	81.08
Daspur-I	168.30	87167	88607	175774	83.99
Daspur-II	165.45	100853	105234	206087	85.62
Chandrakona(M)	16.58	10464	9934	20398	83.23
Khirpai(M)	11.65	7439	7109	14548	82.39
Ramjibanpur(M)	10.36	8924	8440	17364	84.19
Kharar(M)	10.36	5894	5686	11580	85.51
Ghatal(M)	10.36	26852	24730	51582	89.48

(Source: Census, 2011)

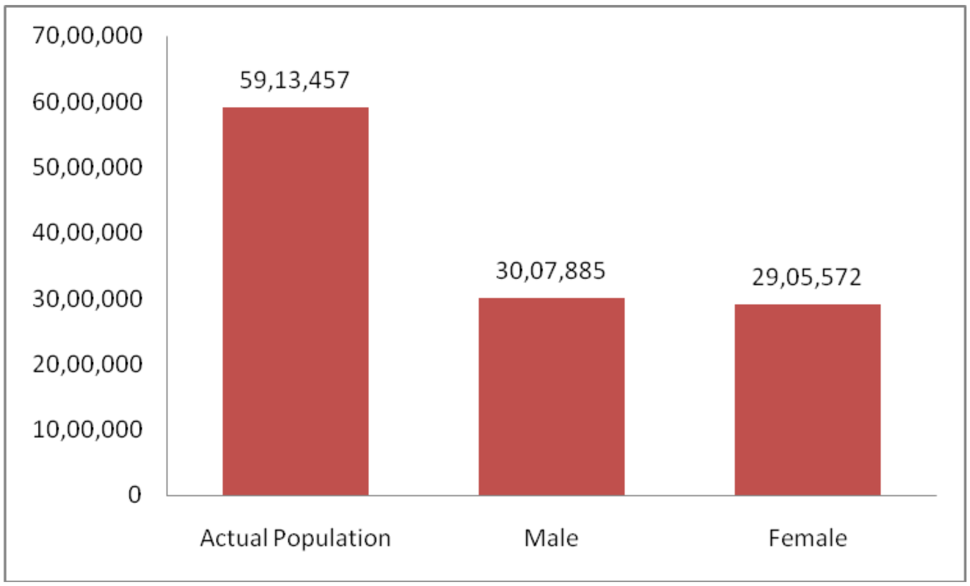


Figure 3.9: Population distribution of the District

(Source: Census, 2011)

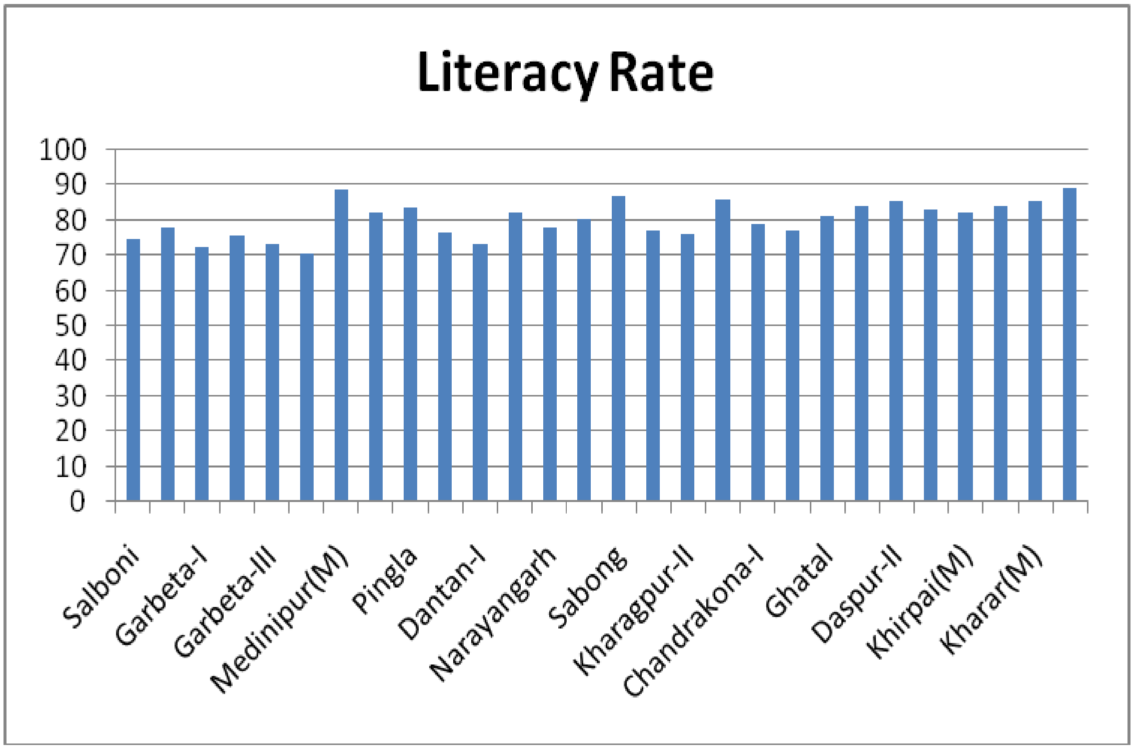


Figure 3.10: Block-wise Literacy rate of the District

(Source: Census, 2011)

i) Cropping pattern

Geographically Paschim Medinipur district is divided into several sub-micro regions viz. Silai Plain, Lower Kasai Plain, and Upland Medinipur. Deferent types of soils are found in the district. Alluvial soils and brown soils are found in the southern part while brown and red sandy soils are found in the northern part of Paschim Medinipur district. This soil is good for the cultivation of oil seeds, millets and maize. In low land plain region paddy is being cultivated.

In the lower Kasai Plain region alluvial soil is found which is highly suited for paddy cultivation. Besides, the river Kasai is flowing through this region which makes the soil more fertile and suitable for crop cultivation. Laterite rocks are also found in the north western part of this region.

The Upland Medinipur region is found in the north-west part of this district. This region is not ideal for cultivation. The Sandy soil found in the upper part of the district which is unproductive and therefore Sal trees and other jungle scrubs are found growing in this region. However, in the southern part of this region, oil seeds and barley are rarely grown.

As per a recent report published by Agriculture Directorate, Govt. of West Bengal, 616.7 thousand hectares of land is under paddy cultivation followed by 4.7 thousand hectares of land is being under wheat cultivation during 2010-11. The total reported area in the district is 928580 hectares. Net sown area is 60.34 per cent of total reporting area (Census, 2011).

j) Land Form and Seismicity

The land surface of the district is characterized by hard rock uplands, lateritic covered area, flat alluvial and deltaic plains. Extremely rugged topography is seen in the western part of the district and rolling topography is experienced in the lateritic covered area. These rolling plains gradually merge into flat alluvial and deltaic plains to the East and the South-East of the District. Seismologically, the district comes under seismic Zone –III.

The seismic hazard map of India was updated in 2000 (Figure 3.11) by the Bureau of Indian Standards (BIS). There are no major changes in the zones in West Bengal with the exception of the merging of Zones I and II of the 1984 BIS map. Western sections of the northern districts of Jalpaiguri and Coochbehar lie in Zone V. The remaining parts of these two districts, along with the districts of Darjeeling, Uttar Dinajpur, Dakshin Dinajpur, Maldah, 24 North Parganas and 24 South Parganas lie in Zone IV. The rest of the state along with the city of Kolkata lies in Zone III.

The maximum area of the district falls under the Seismic Zone III and rest of the part fall under Zone II, indicating the district under safe earthquake–prone zone.

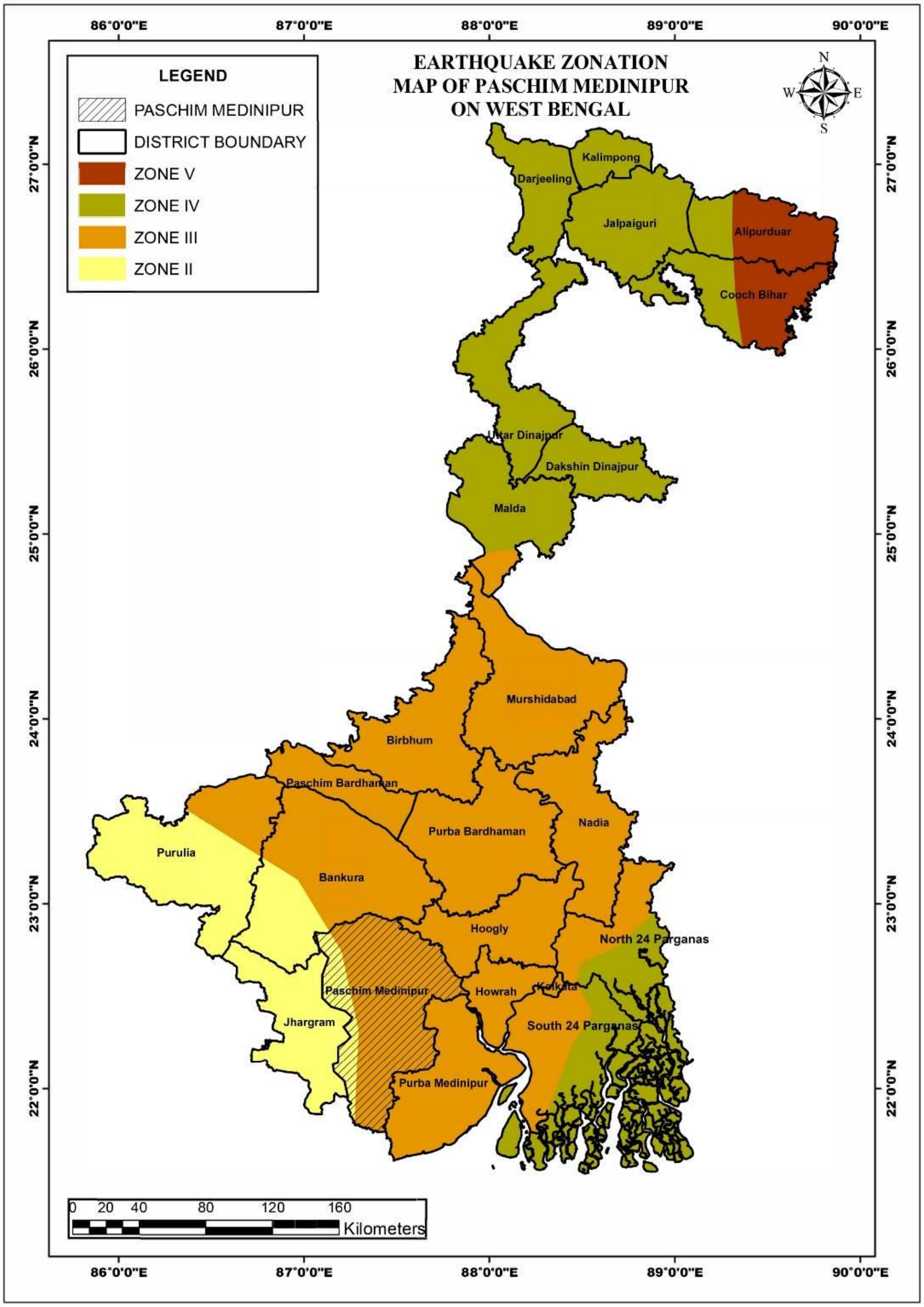


Figure 3.11: Earthquake zonation map of West Bengal highlighting the Paschim Medinipur district position

(Source: https://pib.gov.in/PressReleasePage.aspx?PRID=1740656)

- **Floods:**

The experience of drought and flood is common in the District. Entire Ghatal Sub Division and part of Kharagpur Sub Division are flood prone (about 142647 ha.) whereas Jhargram Sub Division and part of Kharagpur and Medinipur Sadar Sub Divisions are drought prone (about 335248 ha) (https://www.wbkvib.org.in/index.php/homepage/about-us/districts-profiles/114-paschim-medinipur).

The experiences of drought and flood are common in the district. Ghatal and the Southern parts of Kharagpur sub-divisions are affected by water logging during the rainy season. As a result, there is frequent loss of crop. Sabang, Pingla, Dantan-I and Narayangarh block in Kharagpur sub-division often suffer from such losses. Drought affects the population here frequently and causes damage to the limited agriculture in the area, affecting food security of the people living here. Though the district does not have a coastline, it is affected frequently by the cyclones during the months of October and November and untimely rains during April and May (http://wbdmd.gov.in/writereaddata/uploaded/DP/DPPaschim%20Midnapore34517.pdf).

A large portion of Paschim Medinipur district is a drought-prone area. This is due to undulating topography, laterite and porous soil having a little water holding capacity. Almost the whole western side of the district faces drought every year. The district had to face a severe drought in 2002 and it affected 24 blocks. As a result, cultivation of Aman paddy hampered tremendously and cattle lives were also affected. People of those affected blocks suffered a lot due to prevailing drought situation.

The major cause of flood in Kangsabati basin is not the local rainfall, but the spill way discharge of water from Kangsabati Dam. If the release of water from Kangsabati Dam can be regulated in a proper way, intensity of flood can be reduced.

The other reasons for flood in the district is the dam at the confluence of river Kangsabati and river Kumari at Ambikanagar in the district of Bankura which was constructed for providing irrigation as well as insurance against drought and moderate floods in the area. Before construction of Dam, there was free flow through the river and the river was capable to carry adequate floodwater. After construction of Dam, water carrying capacity of the river has been reduced gradually due to siltation of the river bed and non-release of flushing dose from the dam time to time.

k) Flora

The flora of district Paschim Medinipur comprises of lush green forests and plantation, shrub jungles and bushes. The deeper forests of this district fall under Northern Tropical Dry Forests and Tropical Deciduous Forests category. The trees mostly found in this area are Sal (Shorearobusta), Peasal (Pterocarpus marsupium), Kend (Diospyrosmelanoxylon), Mahul (Madhukalatifolia), Kusum (Schleicheratrijuga), Karam (Adina cordifolia), Asan (Terminalia tomentosa), Bahera (Terminalia belerica), Rahara (Soyamidafebrifuga), Dhaw (Anogeissuslatifolia) etc. The lesser forests include Eucalyptus, Akashmoni, Bamboo groves, Cashew nut trees etc (Census, 2011).

l) Fauna

The availability of wild fauna has reduced considerably in the forests during in the last Century. However, consequent upon implementation of wildlife protection schemes by the Government as well as different international organisations, the condition of the forests is gradually improving and is becoming favourable for wildlife habitat. In recent years, jungle cats, baboons, pythons, wild boar, dears, chitals and many variants of avifauna are increasingly being reported. Birds like ducks, storks, teals etc. are found in plenty. Jungle fowls are not many in numbers. Beside many non-venomous varieties, venomous snakes like Cobra, Kraits, Banded Kraits, Russel Vipers etc. are common habitants of the jungles. Wild elephants from forests in Jhargram, Garhbeta or Jamboni often visit to the nearby human habitations in search of crops and other foods. However, human-animal conflicts are rare due to scattered location of the jungles. (Census, 2011).

Location of Wild Life Sanctuary and National Parks are shown in the Map of West Bengal (Figure 3.12). As per the map of ENVIS Centre on Wildlife and Protected Areas, there is no National Park or Sanctuary situated within the Paschim Medinipur district. Hence, mining of river bed can be promoted in the district.

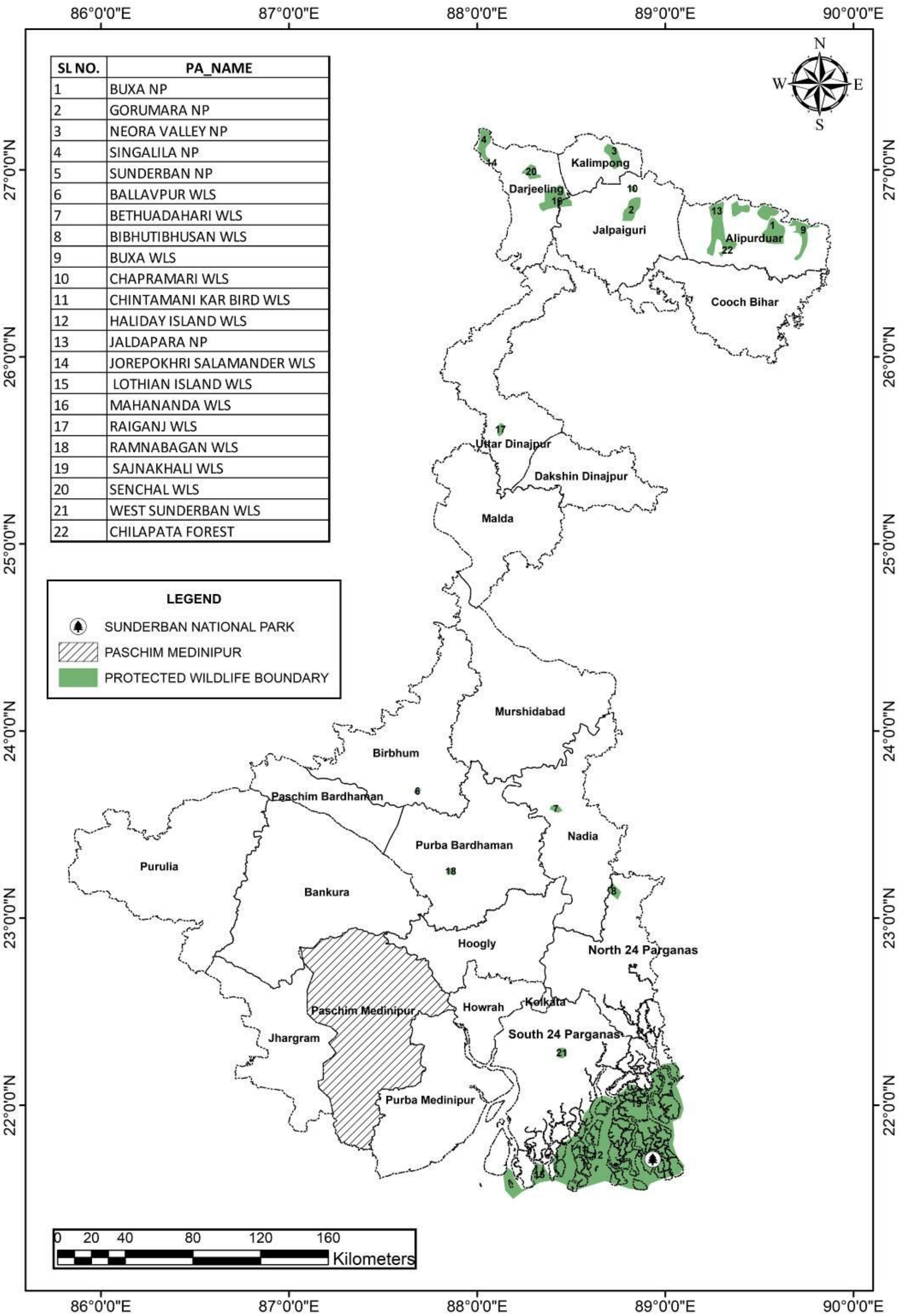


Figure 3.12: District location with respect to Wild Life Sanctuary of West Bengal

(Source: http://wiienvis.nic.in/)

4 Geomorphology

4.1 General Landforms

Geographically, the north and north-west regions of Paschim Medinipur district are a part of Chhotanagpur Plateau in its eastern end and covered with hard laterite stone. Geographically the district may be divided into three sub-micro regions:

Plain of Silai: This plain land is found in the northern part of the district bordering Bankura district and is a portion of East Chhotanagpur plateau. Most part of the region recent alluvium and laterite. Due to irregular alluvial deposition, the river bed causes floods in this area. Alluvial and brown soil is found in southern parts of this plain area. The Garhbeta-I and Garhbeta-II C.D. Blocks are included in this region.

Lower Kasai Plain: Lower Kasai plain is located either side of the Kasai River. Navigability of this river is negligible due to alluvial deposition. Huge depression is formed in the west and north-west area on the Kasai and Kaleghai rivers confluence and causes flood. This region is also known as 'Mayana Basin'.

Upland of Medinipur: This region is found in the north-western part of the Paschim Medinipur district and lies close to Odisha and Jharkhand. This upland is 2,029 sq. km. with sloping is from north-west to south-east. This is part of Chhotanagpur Plateau which is formed with laterite. Some hills which are found in the extreme north are 82 to 223 m in height. The Subarnarekha is the controlling river in this upland region. The land This river flows from the state of Jharkhand and flows towards south-east and empties at Bay of Bengal in Odisha.

The most characteristic geological feature of the district is the area of laterite and associated rocks of sand and gravel. At some places one finds hard beds of laterite. At other places it is decomposed and reorganized. Locally, the ferruginous rock is called kankar.

The area has an undulating micro-relief with highs and lows. The maximum elevation is found to be 319 m above mean sea level (msl) (figure 6). Generally, the elevation declines from north-west to eastern and south eastern direction. The slope amounts have shown that elevation is low in south-eastern and eastern part.

4.2 Soil and rock pattern

Soil type of Paschim Medinipur district can be divided into sixteen categories, represented as coarse loamy typic haplustalfs, coarse loamy typic ustifluvents, fine aeric ochraqualfs, fine loamy aeric ochraqualfs, fine loamy typic paleustalfs, fine loamy typic ustifluvents, fine loamy typic ustochreptas, fine loamy ulti paleustalfs, fine vertic haplaquaepts, fine vertic ochraqualfs, loamy lithic ustochrepts, loamy skeletal lithic ustochreprs, residential area, rocky outcrops, and very fine vertic haplaquepts (Table 4.1) (Bhunia et al. 2012).

Table 4.1: Soil characteristics of the Paschim Medinipur district and their percent of area covered

Soil Code	Description	Taxonomic name
W036	Very deep, poorly drained, fine cracking soils occuring on level to nearly level low lying alluvial plains with clayey surface associated with very deep, imperfectly drained, fine soils	Fine, Vertic Ochraqualfs
		Fine, Typic Ustochrepts
W038	Very deep, very poorly drained, fine cracking soils occuring on level to nearly level low lying alluvial plains with clayey surface associated with very deep, poorly drained, fine soils	Very Fine, Vertic Haplaquepts
		Fine, Typic Haplaquepts
W044	Very deep, poorly drained, fine cracking soils occuring on level to nearly level low lying alluvial plains with loamy surface associated with very deep, poorly drained, fine soils	Fine, Vertic Haplaquepts
		Fine, Aeric Haplaquepts
W047	Very deep, poorly drained, fine soils occuring on level to nearly level low lying alluvial plain with clayey surface and severely flooding associated with very deep, moderately well drained, fine loamy soils	Very Fine, Aeric Haplaquepts
		Fine loamy, Typic Ustochrepts
W064	Very deep, moderately well drained, coarse loamy soils occuring on very gently sloping flood plain with loamy surface,moderate erosion and moderate flooding associated with very deep, moderately well drained, fine loamy soils	Coarse loamy, Typic Ustifluvents
		Fine loamy, Typic Ustifluvents
W065	Very deep, moderately well drained, fine loamy soils occuring on very gently sloping flood plain with loamy surface,moderate erosion and moderate flooding associated with very deep, well drained, sandy soils	Fine loamy, Typic Ustifluvents
		Typic Ustifluvents
W066	Very deep, imperfectly drained, fine loamy soils occuring on level to nearly level flood clayey with loamy surface and moderate flooding associated with very deep, poorly drained, fine soils	Fine loamy, Typic Ustochrepts
		Fine, Aeric Haplaquepts
W067	Very deep, imperfectly drained, coarse loamy soils occuring on very gently sloping to undulating dissected upland with loamy surface and moderate erosion associated with very deep, moderately well drained, fine loamy soils	Coarse loamy, Typic Haplaquepts
		Fine loamy, Typic Haplaquepts
W068	Very deep, imperfectly drained, fine loamy soils occuring on very gently sloping to undulating dissected upland with loamy surface and moderate erosion associated with very deep, moderately well drained, fine loamy soils	Fine loamy, Ultic Paleaustalfs
		Fine loamy, Rhodic Paleaustalfs
W069	Very deep, poorly drained, fine loamy soils developed on old alluviam occuring on gently sloping to undulating	Fine loamy, Aeric Ochraqualfs

Soil Code	Description	Taxonomic name
	disected upland with loamy surface and slight erosion associated with very deep, poorly drained, fine soils	Fine, Aquic Haplaquepts
W076	Very deep, poorly/imperfectly drained, fine soils occuring on level to nearly level marshes in coastal plain with clayey surface moderate flooding and salinity associated with deep, well drained, sandy soils	Fine, Aeric Haplaquepts
		Typic Ustipsamments
W085	Very deep, poorly drained, fine soils occuring on level to nearly level marshes with clayey surface subject to severe flooding associated with deep, imperfectly drained, fine soils with severe flooding	Fine, Aeric Haplaquepts
		Fine, Typic Ustochrepts

The district broadly characterized by five types of soil viz., lateritic, older alluvial, red gravelly, red sandy, younger alluvial. Among them, older alluvial soil covers maximum area with 4065.36 km^2 (43.40%) followed by lateritic covering 3056.76 km^2 (32.63%) and red sandy soil type cover a minimum area with 402.98 km^2 (4.30%).

Figure 4.1 is showing soil pattern of the Paschim Medinipur district.

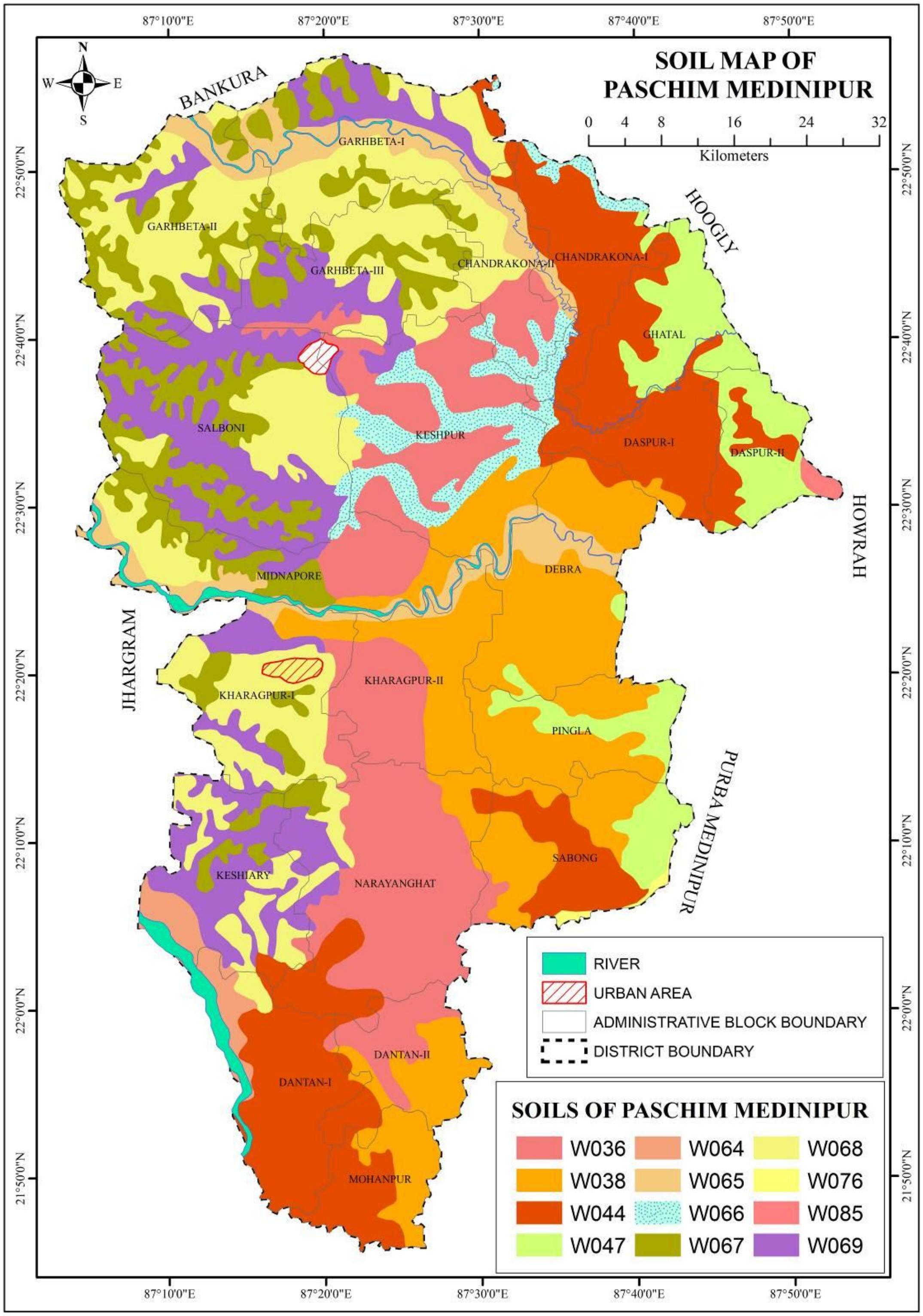


Figure 4.1: Soil Map of Paschim Medinipur District
(Source: https://esdac.jrc.ec.europa.eu/content/west-bengal-soils-sheet-2)

4.3 Different geomorphologic units

The geomorphology the district has been classified into alluvial plain older, dissected lateritic upland, alluvial plain younger, point bar, food plain, lateritic plain, channel bar, structural hill, bajada shallow, hilltop weathered, denudation hill, buried pediplain hill, weathered pediplain hill, buried pediplain shallow and valley fill shallow. Among the geomorphology classes, the lateritic plain covers the highest area of 2538.66 km2 (27.10%) followed by older alluvial plain covering 2369.92 km2 (25.29%).

According to genesis and evolution of landforms, the district can broadly be divided into two landforms. In the east, the soil is fertile alluvial and the area is flat. To the west, the Chhotanagpur Plateau gradually slopes down creating an undulating area with infertile laterite rocks and soil. The landscape changes from dense dry deciduous forests in the west to marshy wetlands in the east.

The alluvial portion may be further subdivided into two divisions. First, it is a strip of purely deltaic country intersected by numerous rivers and watercourses subject to tidal influences. Second, it is rest of the eastern half of the district. It is monotonous rice plain with numerous waterways and tidal creeks intersecting it. The tidal creeks are lined with embankments to prevent flooding of the fields. Much of the area is water-logged.

Geomorphological setting of Paschim Medinipur district can be divided into following units:-

i. Laterite covered platform sedimentary areas underlain by deposits of older alluvium bearing rolling plains.
ii. More or less Flat Alluviul Plain of Recent Age to the East and South-East.

Figure 4.2 shows the geomorphological variation of Paschim Medinipur district.

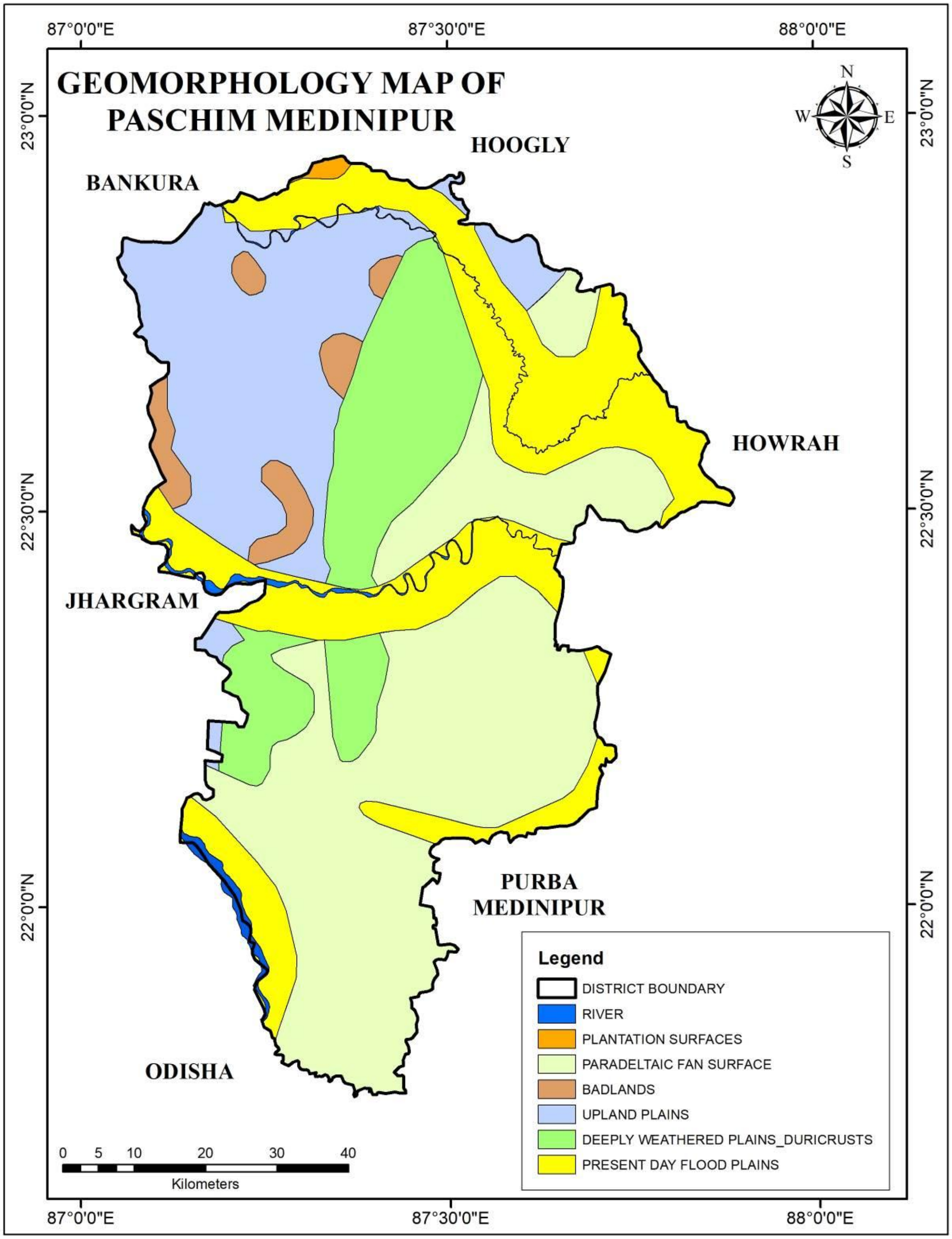


Figure 4.2: Geomorphological map of Paschim Medinipur District

(Source: Resourcesat-1&2 – Liss-3, Bhuvan India)

5 Land use pattern of the district

Paschim Medinipur is characterized by hard rock uplands, lateritic covered area, flat alluvial and deltaic plains. Extremely rugged topography is seen in the western part of the district and rolling topography is experienced in the lateritic covered area.

Census (2011), shows that the total forest land of the district is 171930 ha. Total land for agricultural use was 486200 ha in 2010-11. Table 5.1 gives land utilization status of Paschim Medinipur district. Figure 5.1 is the pie diagram representing broad land use pattern of the district.

Table 5.1: Classification of Land Utilisation Statistics in the district

(In thousand hectares)

Year	2006-07	2007-08	2008-09	2009-10	2010-11
Reporting Area (In Thousand Hectares)	928.58	928.58	928.58	928.59	928.58
Forest Area	171.93	171.93	171.94	171.93	171.93
Area under Non-agricultural use	156.93	157.55	158.9	159.37	156.59
Barren & unculturable land	1.74	1.7	1.95	2.45	2.48
Permanent pastures & other grazing land	0.89	1.13	0.97	0.83	0.58
Land under Misc. tree groves not included in Net area sown	9.49	9.27	9.37	10.04	10.02
Culturable waste land	6.32	5.46	5.43	4.06	3.99
Fallow land other than Current fallow	4.26	4.1	3.25	2.82	2.97
Current fallow	21.4	18.74	16.41	12.7	93.82
Net area sown	555.62	558.7	560.36	564.39	486.2

Source: Census, 2011

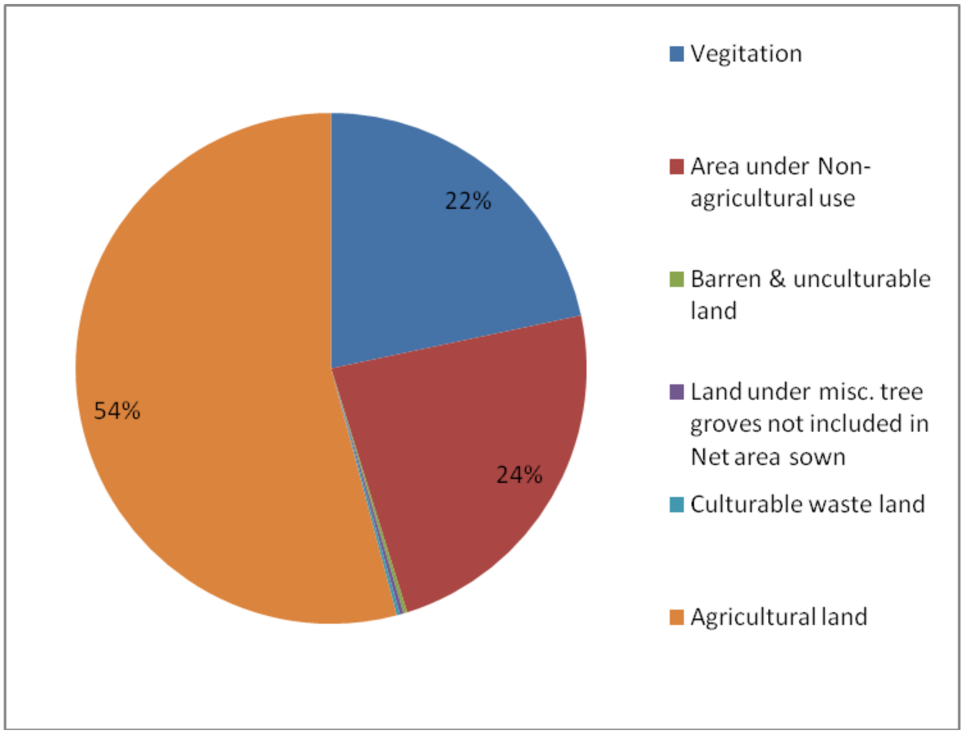


Figure 5.1: Land use pattern of Paschim Medinipur District

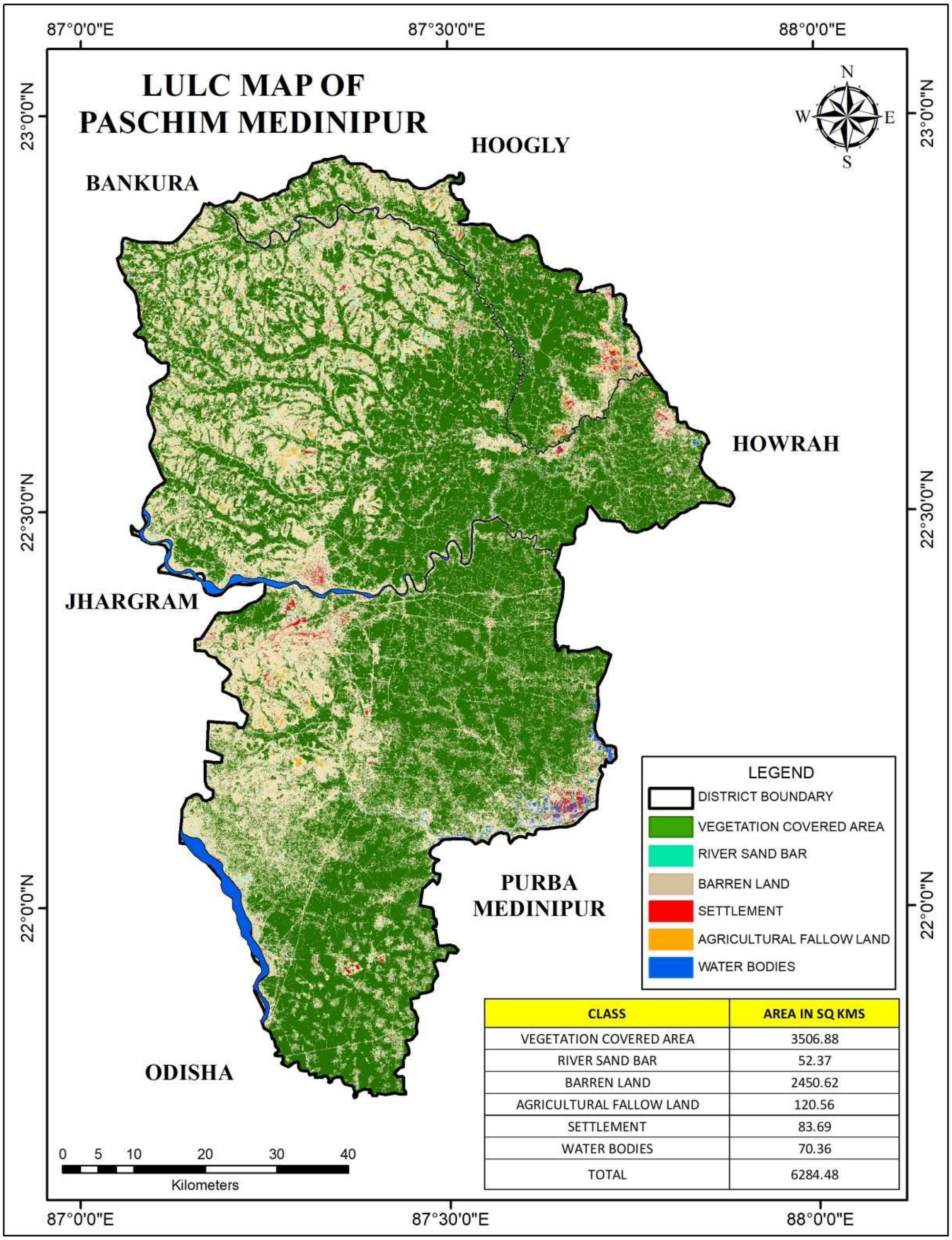
Table 5.2: Distribution of Villages according to Agricultural Land Use, 2011

Name of C.D. Block	Total area (in Hectares)	Percentage of cultivable area to total area	Percentage of irrigated area to cultivable area
Garhbeta-II	35571.52	58.85	86.82
Garhbeta-I	33516	67.3	78.21
Garhbeta-III	28640.61	55.03	74.9
Chandrakona-I	19125.37	80.54	76.26
Chandrakona-II	14497.54	80.94	87.41
Ghatal	21154.07	68.18	65.35
Daspur-I	16490.09	69.05	70.74
Daspur-II	16545.52	77.5	75.01
Keshpur	45645.88	74.49	56.62
Salbani	48568.25	51.74	71.38
Midnapore	28875.47	59.25	50.14
Kharagpur-I	26120.19	62.5	55.97
Kharagpur-II	25986.9	72.78	72.53
Debra	33258	84.11	90.31
Pingla	22168	79.52	86.08
Sabang	30205	79.54	81.82
Narayangarh	47976	71.24	47.55
Keshiary	28537	70.65	29.34

Name of C.D. Block	Total area (in Hectares)	Percentage of cultivable area to total area	Percentage of irrigated area to cultivable area
Dantan-I	24334	78.27	39.91
Dantan-II	18271	82.1	52.86
Mohanpur	13702	70.94	70.23

Table 5.2 shows the distribution of agricultural land, both irrigated and non-irrigated land in different blocks of Paschim Medinipur district. In the district around 71% land area is available for cultivation. Irrigation is considered as an important factor for cultivation. As per the Census 2011 dataset, 67% of the cultivable land is under irrigation. The proportions of cultivable area in Salboni block with respect to its total area are lowest. Keshiary and Datan-I blocks have less proportion of irrigated area.

Figure 5.2 is the Land Use Land Cover map of the district.



CLASS	AREA IN SQ KMS
VEGETATION COVERED AREA	3506.88
RIVER SAND BAR	52.37
BARREN LAND	2450.62
AGRICULTURAL FALLOW LAND	120.56
SETTLEMENT	83.69
WATER BODIES	70.36
TOTAL	6284.48

Figure 5.2: Land Use Land Cover map of Paschim Medinipur District
(Source: Resourcesat-1&2 – Liss-3, Bhuvan India)

5.1 Forest -detail of the district

The forest area of district Paschim Medinipur (Un-divided) is spread over 1,71,935 hectares of which protected area occupies 1,60,179.30 hectares and reserved area covers 6,182.34 hectares. The main vegetation of the forest are Sal, Teak, Babble, Maher, Amla etc. A large part of the district is surrounded by dense forest and the main areas are spread over C.D. Blocks Jhargram, Garhbeta, Midnapore, Kharagpur, Jamboni and Narayangarh (Census, 2011).

Table 5.3: Classification of Forest Area, Out-turn of Forest Produce, Revenue and Expenditure of Forest Department

Item	Unit	2009-10	2010-11	2011-12	2012-13	2013-14
1. Area by class of forest						
Reserved forest	Hectare	6182.00	6192.17	6192.17	6192.17	6192.17
Protected forest	"	160150.15	159487.53	159487.53	160173.48	160185.05
Unclassed state forest	"	8774.36	8647.04	8647.04	8774.37	8774.37
Khas forest	"	-	-	-	-	-
Vested waste land	"	-	3733.43	3733.43	3733.43	3733.43
Forest owned by corporate bodies	"	-	1577.75	1577.75	1577.75	1577.75
Forest owned by private individuals	"	-	-	-	-	576.10
Total		-	-	-	-	-
2. Forest Produce	-	**175106.51**	**179637.92**	**179637.92**	**180451.20**	**181038.87**
Timber	Thousand cu.metre	-	-	-	-	-
Fuel	"	1.69	2.32	3.79	2.01	3.91
Pole	Number	26.02	12.17	10.03	31.72	11.18
3. Revenue & Expenditure	-	-	-	-	-	-
Revenue	Rs. in thousand	144102	268365	173253	144102	489689
Expenditure	"	-	-	-	-	450

Source: http://wbpspm.gov.in/publications/District%20Statistical%20Handbook

5.2 Agriculture and Irrigation

Agricultural land of the district is of three types- Sali, Suna and Tara or Danga. 'Sali' is suitable for growing of aman rice, 'Suna' for various crops like 'aus' kharif, sugarcane, cotton, tobacco, mustard etc. 'Suna' is also used for production of fine kind of rice.

Agriculture is the most important occupation of the people of Paschim Medinipur district. The economy of the district is based on agriculture. The principal crop of the district is paddy though other crops like pulses, oilseeds, potatoes and sugarcane also grows in the district.

Production figures for the year 2010-11 show the production of rice at 1,718.6 thousand tons of which aman was 1,002.2 thousand tons, boro 629.6 thousand tones. Among others, total pulses produced was 4.1 thousand tons, total oil seeds was 94.7 thousand tons, total fibers (98.0 per cent jute) was 42.6 thousand bales (of 180 kg. each), potato was 2,482.4 thousand tones, dry chilies was 6,000 tones and ginger 2,500 tons (Census, 2011).

Medinipur Canal is the most important source of irrigation in the district. The water supply is derived from the river Kangsabati at Mohanpur where there is a regulating weir with head works and the Canal extends to Uluberia on the river Hugli. Besides Medinipur Canal, number of Deep Tube Wells, River Lift Irrigation and Shallow Tube wells are also used for irrigation.

Table 5.4 shows the crop production capacity of the Paschim Medinipur district.

Table 5.4: Production of Principal Crops in the Paschim Medinipur District

(In Thousand tonnes)

Crops	2009-10	2010-11	2011-12	2012-13	2013-14
Foodgrains :					
1. **Rice**	**1756.5**	**1718.6**	**1774.0**	**1880.2**	**1742.6**
Aus	61.6	86.8	75.7	85.8	87.3
Aman	1195.0	1002.2	1245.6	1315.9	1053.4
Boro	499.9	629.6	452.7	478.5	601.9
2. Wheat	12.5	11.3	9.4	11.0	10.9
3. Barley	-	-	-	-	-
4. Maize	2.9	2.4	2.4	3.0	6.4
5. Other Cereals	-	-	-	-	-
Total Cereals	**1771.9**	**1732.3**	**1785.8**	**1894.2**	**1759.9**
6. Gram	(b)	(b)	(b)	-	(b)
7. Tur	(b)	0.2	(b)	0.2	0.3
8. Other Pulses	4.1	3.9	3.0	3.5	4.2
Total Pulses	**4.1**	**4.1**	**3.0**	**3.7**	**4.5**
Total Foodgrains	**1776.0**	**1736.4**	**1788.8**	**1897.9**	**1764.4**
Oil Seeds :					
1. Rapeseed & Mustard	10.2	11.7	11.7	13.5	15.8
2. Linseed	-	-	-	(b)	(b)

Crops	2009-10	2010-11	2011-12	2012-13	2013-14
3. Other Oil seeds	83.7	83.0	67.2	82.2	88.4
Total Oil seeds	**93.9**	**94.7**	**78.9**	**95.7**	**104.2**
Fibres : *					
1. Jute	42.7	41.6	37.8	42.7	64.7
2. Mesta	-	-	-	4.6	-
3. Other Fibres	0.9	1.0	0.9	0.9	1.0
Total Fibres	**43.6**	**42.6**	**38.7**	**48.2**	**65.7**
Miscellaneous crops :					
1. Sugarcane	134.4	89.7	524.3	503.6	708.2
2. Potato	2448.1	2482.4	1148.6	1463.6	1224.1
3. Tobacco	-	-	-	-	-
4. Tea	-	-	-	-	-
5. Chillies (dry)	6.0	6.0	6.0	6.1	6.2
6. Ginger	2.5	2.5	2.5	2.5	2.6
Total Miscellaneous crops	**2591.0**	**2580.6**	**1681.4**	**1975.8**	**1941.1**

(Source: http://wbpspm.gov.in/publications/District%20Statistical%20Handbook)

5.3 Horticulture

The district has a suitable agro-climatic condition for cultivation of mulberry and horticulture crops such as mango, banana, guava, lemon, mousambi, papaya, cashew and jackfruit. The major agricultural fruit crops grown in the district are given in Table 5.5.

Table 5.5: Production of Fruits and Vegetables in the district

Name of Fruits / Vegetables	Production (Thousand tonnes)				
	2009-10	2010-11	2011-12	2012-13	2013-14
A. Fruits :					
Mango	12.49	14.49	16.43	16.58	10.50
Banana	37.18	38.00	39.08	40.27	39.38
Pineapple	1.26	1.26	1.25	1.20	0.90
Papaya	10.34	10.41	10.50	10.97	11.50
Guava	14.91	14.91	14.66	15.19	15.34
Jackfruit	9.76	9.76	9.80	9.94	9.85
Litchi	0.62	0.62	0.68	0.69	0.70
Mandarin Orange	-	-	-	-	-

Name of Fruits / Vegetables	Production (Thousand tonnes)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Other Citrus	5.92	5.92	6.21	6.38	6.11
Sapota	2.81	2.81	2.82	2.51	2.62
Others	3.28	3.32	2.78	2.50	2.55
Total	**49.17**	**98.57**	**101.50**	**104.21**	**106.23**
B. Vegetables :					
Tomato	69.80	70.71	71.09	74.93	72.73
Cabbage	148.31	150.39	150.69	151.28	138.30
Cauliflower	109.91	111.36	111.66	111.30	101.50
Peas	2.89	2.98	1.98	1.99	2.16
Brinjal	178.80	162.72	186.90	186.75	174.50
Onion	43.23	44.41	44.42	45.03	44.20
Cucurbits	115.00	119.11	119.22	120.50	120.88
Ladies Finger	45.03	46.39	45.79	46.66	51.48
Radish	23.02	4.03	24.13	25.34	27.70
Others	111.42	155.23	114.95	117.37	116.84
Total	**838.47**	**847.41**	**867.33**	**870.83**	**881.15**

(Source: http://wbpspm.gov.in/publications/District%20Statistical%20Handbook)

The floriculture of the district consists of various types of orchids, decorative plants, temperate and tropical flowers, etc. Flowers like Tuberose, Marigold, Rose and seasonal flowers are main of Paschim Medinipur district (Table 5.6). In this district the most popular flower is marigold.

Table 5.6: Production of Flowers in the district

Name of Flowers	Production					
	Unit	2009-10	2010-11	2011-12	2012-13	2013-14
Rose	Crore Cut Flower	20.980	21.300	21.841	24.360	26.150
Chrysanthemum	"	1.818	1.818	1.880	1.790	2.000
Gladiolus	"	1.970	2.100	2.150	2.162	2.230
Tuberose	"	20.800	22.000	24.000	25.920	26.700
Marigold	' 000 MT	5.532	5.532	6.201	6.239	6.598
Jasmine	"	0.092	0.092	0.093	0.091	0.091
Seasonal Flower	"	1.383	1.393	1.440	1.450	1.300
Misc.Flower	"	0.395	0.397	0.398	0.354	0.247

(Source: http://wbpspm.gov.in/publications/District%20Statistical%20Handbook)

5.4 Mining

Paschim Medinipur district does not hold huge minerals deposits. The district is having riverbed deposits which are generating revenue for the district mainly. In-situ deposits, such as Lateritic rocks are found in many parts of the district. The extracted laterite is used for various purposes. In Paschim Medinipur district, claystone are also noted. It is mainly used in the manufacture of household utensils.

6 Geology

The district is underlain unconsolidated alluvium of recent age. The Paschim Medinipur district is covered by the Quarternary un-consolidated formations which are mainly divisible into two units:

i. Platforms sediments mainly covered by Laterite forming upland area
ii. Recent sediments forming plain area

The Laterite upland area are underlain by a thick sequence of Clay, Silt, Sand and various grades and gravel down to the depth of 350 m. The quarternary formation comprises newer alluvium of recent age and older alluvium of Pleistocene age. The older alluvium is restricted to the fringe area of the platform terrain towards west and Northwest and is overlain by newer alluvium towards east, south and south east. The older alluvium comprises predominantly of yellow to reddish brown clays with Kankar and ferruginous gravel and sand, fine to medium.

The newer alluvium consists of predominantly of clay with occasional intercalation of silt and fine sand and is light grey in colour. The Quaternary sediments are underlain by semi-consolidated Tertiary sediments of Mio-Pilocene age. The Tertiary sediments comprise of alternations of graded sand-silt clay sequence cyclic sedimentation. In consist of Quaternaries, the Tertiary are grey in colour with deeper lithofacis being steel grey.

The top of the Tertiary sediment is generally represented by Grey clay. This Grey Clay bed is persistent throughout the area and is considered as marker bed which separates the Upper Litho system and Lower Litho System.

The quartzo-feldspathic unconsolidated Quarternary sediments vary considerably in thickness from 120 m in the west to over 150 m in the east and from 150 m in the NW direction to over 180 m in SE direction. It is predominantly arenaceous in the north and northeast to most argillaceous in the south and southeast. The thickness of the newer alluvium varies between 10 to 60 m in the NW-SE direction. The newer alluvium is devoid of any significance granular zones.

Figure 6.1 is the geological map of un-divided Medinipur district.

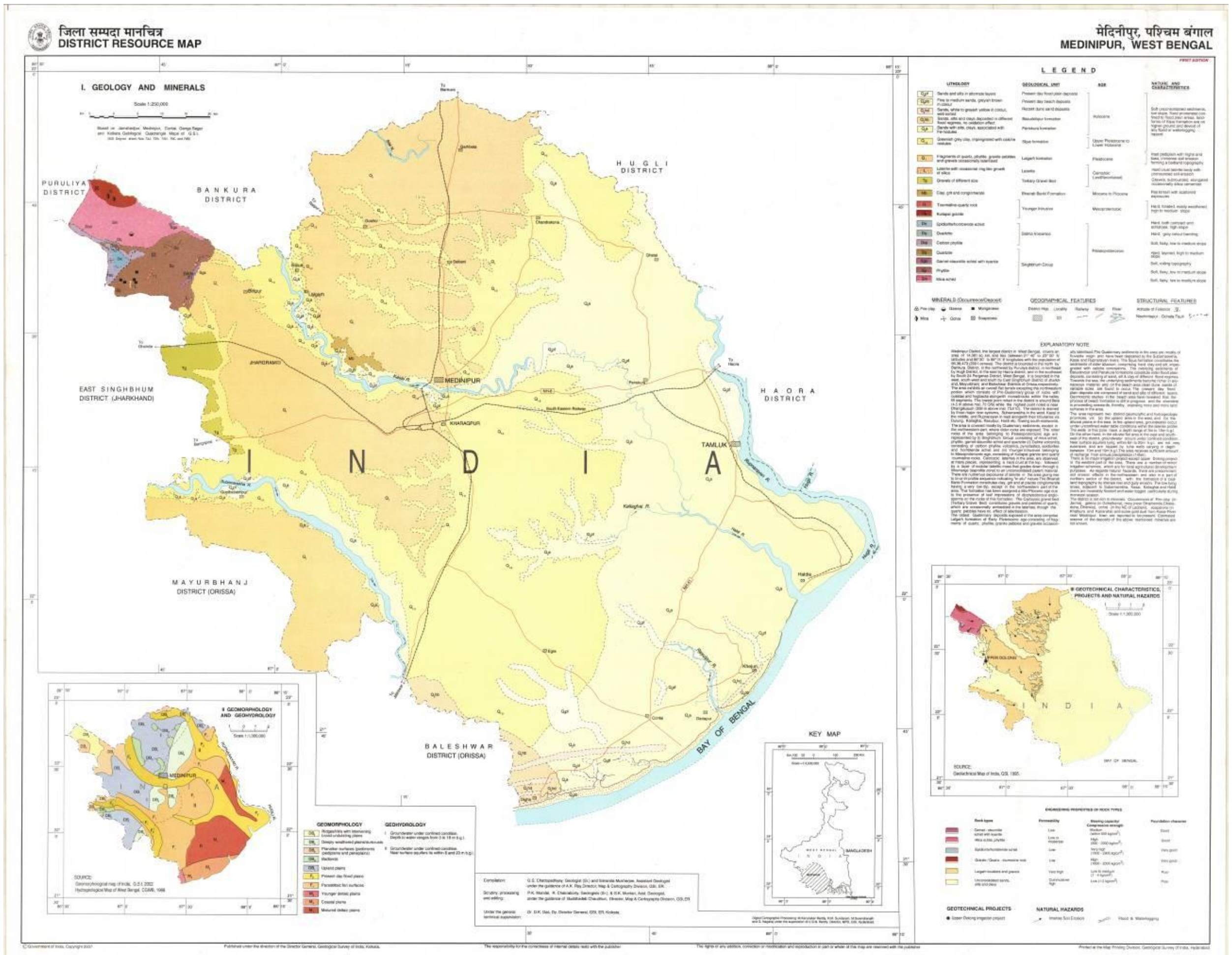


Figure 6.1: Geological map of Medinipur district

(Source: GSI, 2007)

Table 6.1: Geological succession of Paschim Medinipur

AGE	GEOLOGICAL UNIT	LITHOLOGY
Holocene	Present day flood plain deposits	Alternating layers of sand and silt
	Present day beach deposits	Fine medium greyish brown sands
	Recent dune sand	Well sorted white to greyish yellow sands
	Basudebpur Formation	Sand, silt and clay (un-oxidized or occasionally oxidized)
	Panskura Formation	Laterite
Upper Pleistocene to Holocene	Sijua Formation	Clay and grit
Pleistocene	Lalgarh Formation	Fragments of quartz, phyllite, granite occasionally laterite
Carboniferous to Triassic	Laterite	Laterite with occasional ring like growth of silica
	Tertiary Gravel bed	Gravels of different size
	Bhairab Banki	Clay, grit and conglomerate
Meso-proterozoic	Younger Volcanics	Tourmaline-quartz rock
		Kuilapal granite
Paleo-Proterozoic	Dalma Volcanics	Quartzite
		Epidote/ hornblende schist
	Singhbhum Group	Quartzite
		Mica schist, occasionally garnetiferous
		Calc-gneiss and granulite
		Garnet-staurolite schist with kayanite
		Garnetiferous phyllite

(Source: GSI, 2007)

PART A: RIVERBED DEPOSITS

7 Mineral wealth

7.1 Overview of mineral resources:

The occurrence of major minerals in the district of Paschim Medinipur is not well established. Main mineable mineral of the district is sand the riverbed.

7.2 Details of Sand and other riverbed minerals Resources:

The mineral resources of the district whose categorization and estimation have been done are furnished in this section.

I. Drainage

The rivers of district Paschim Medinipur, owing to the typical physiographical condition of the district, emerge from the Chhotanagpur Plateau to the West, flows East or South-East ward direction according to the slope of the land and meets Bay of Bengal to the Southeast or tributaries of Hugli (Hooghly) to the East. All the rivers in this region are rain-fed and flow to the fullest during Monsoon. A brief description the few major rivers (Table 7.1 and Table 7.2) of district Paschim Medinipur are given in the subsequent paragraphs.

Subarnarekha River: River Subarnarekha is a transboundary river flowing through the states of Jharkhand, West Bengal and Odisha. Being originated near Nagri Village in Jharkhand in the Chhotanagpur Plateau region, Subarnarekha enters district Paschim Medinipur near Bhatandiha in C. D. Block Gopiballavpur I, creating the borders of C. D. Blocks Gopiballavpur II with Gopiballavpur I; C. D. Block Sankrail and Keshiyari with C. D. Block Nayagram and Dantan and then exits the district to enter State of Odisha. Floods are common in the course of Subarnarekha and causes havoc during Monsoon.

Shilabati River: River Shilabati is the largest tributary of river Rupnarayan and as the main contributor in formation of the river Rupnarayan. River Shilabati emerges from the confluence of several smaller river streams generated from the Chhota Nagpur Plateau like Purandar, Shalad, Joy-Ponda, Parang, Betai, Donai, Amlagura etc. Shilabati has a comparatively broader drainage basin with substantial agricultural activities. The main course of Shilabati is originated in district Puruliya, passes through district Bankura and enters district Paschim Medinipur after meeting river Joy-ponda at village Kenja in C. D. Block Garhbeta II. It then flows in West – South-West direction and passes through C.D. Blocks Garhbeta I, Chandrakona II, Chandrakona I and Keshpur. From Keshpur, river Shilabati moves in North- North-East direction through C.D. Blocks Debra and Dantan.

Kangshabati River: River Kangshabati is one of the most important rivers of district Paschim Medinipur. Like other important rivers in the district, it’s origin is in the Chhotanagpur Plateau in near Muruguma in Jhalda II C. D. Block of district Purulia. It then passes through district Bankura and enters district Paschim Medinipur near village Basantapur in Binpur I C.D.

Block. Several important towns of district Paschim Medinipur like district Head Quarter Medinipur, Kharagpur are located near or on the banks of river Kangshabati. Kangshabati Irrigation Project and Kangshabati reservoir is built in the upper course of the river to utilise the river water for irrigation purpose across the Western districts of West Bengal.

a) Drainage System with description of main rivers

Table 7.1: Drainage system with description of main rivers

Sl.No.	Name of the River	Area drained (Sq.km)	% Area drained in the district
1	Shilabati	8.03	0.12%
2	Kansabati	42.972	0.68%
3	Subarnarekha	98.254	1.55%

b) Salient Features of important rivers and streams

Table.7.2: Salient Features of important rivers and streams

S.No.	Name of the River or Stream	Total Length in District (in Km)	Place of origin	Altitude at Origin
1	Shilabati	71.62	Chak Gopalpur village of Hura Block, Purulia	440m
2	Kangsabati	68.95	Jabarban peak of Ghoramarapahar	600m
3	Subarnarekha	67.353	Piska/Nagri, Ranchi, Jharkhand	689m

II. Annual deposition of riverbed minerals

Annual deposition of riverbed minerals is dependent on various factors which are explained below.

A) Geomorphological studies

Geomorphological characteristic of a river is foremost factor for annual deposition of sedimentary load. The study includes following parameter:

i) Place of Origin

Details of origin of rivers of Paschim Medinipur District are furnished in Table 7.3.

Table 7.3: Place of Origin of important rivers and streams

S.No.	Name of the River or	Place of origin

	Stream	
1	Shilabati	Chak Gopalpur village of Hura Block, Purulia
2	Kangsabati	Jabarban peak of Ghoramarapahar
3	Subarnarekha	Piska/Nagri, Ranchi, Jharkhand

ii) Catchment Area

The Paschim Medinipur district is mainly drained by the Shilabati, Kangsabati and Subarnarekha. These rivers and its tributary rivers are forming the main catchment area.

iii) General profile of river stream

River profile has been studied along the cross-section lines which was chosen based on the drastic variation of the river widths, proximity of the operating sand 'ghats' and the position of the sand bars.

Relative disposition of rivers in Paschim Medinipur district along with the distribution of the section lines are shown in Figure 7.1. River profile section and cross section views are presented in Figures 7.2 and 7.3.

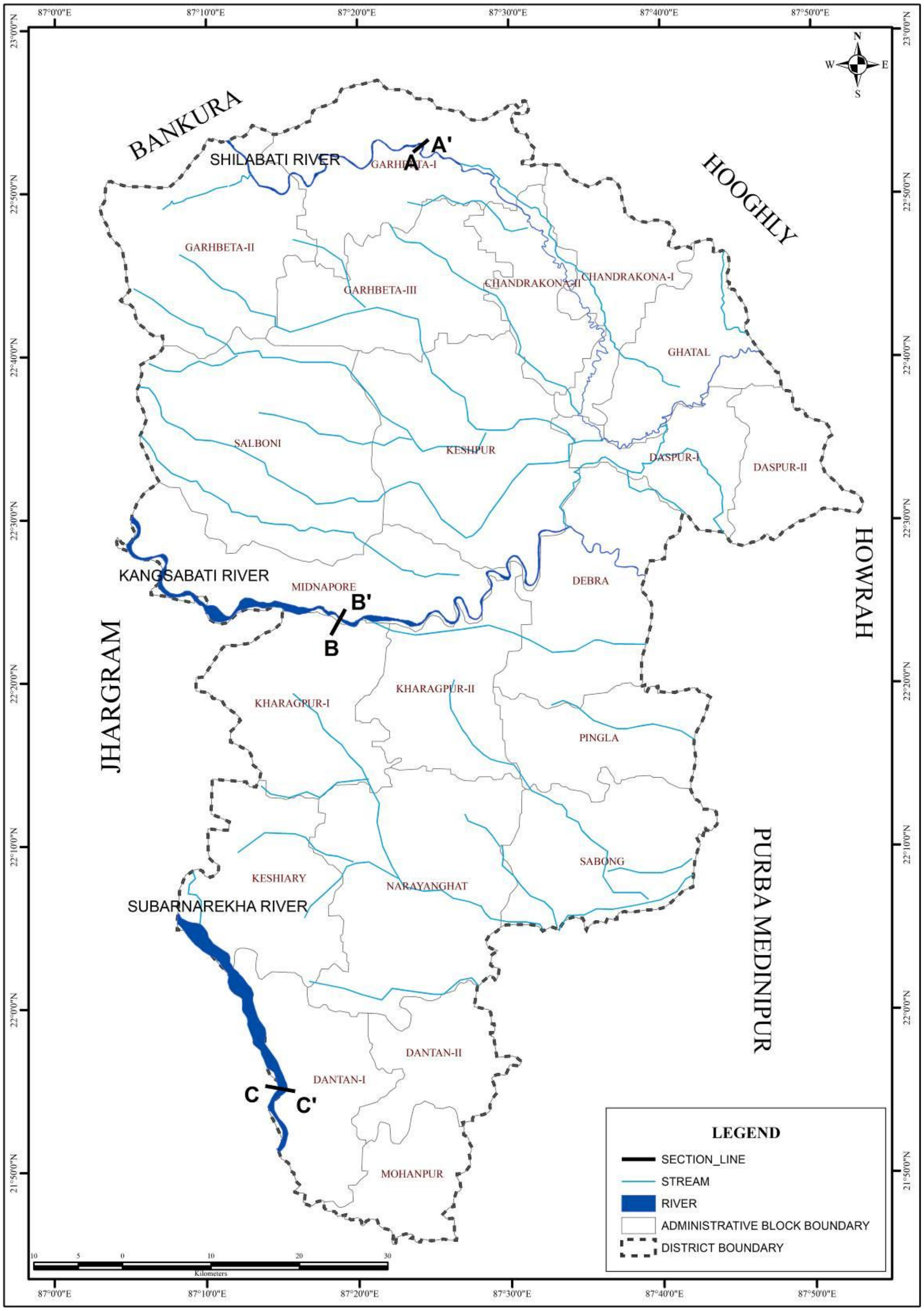


Figure 7.1: Map showing the major rivers along which profile section drawn

Figure 7.2A: Profile section of Shilabati River

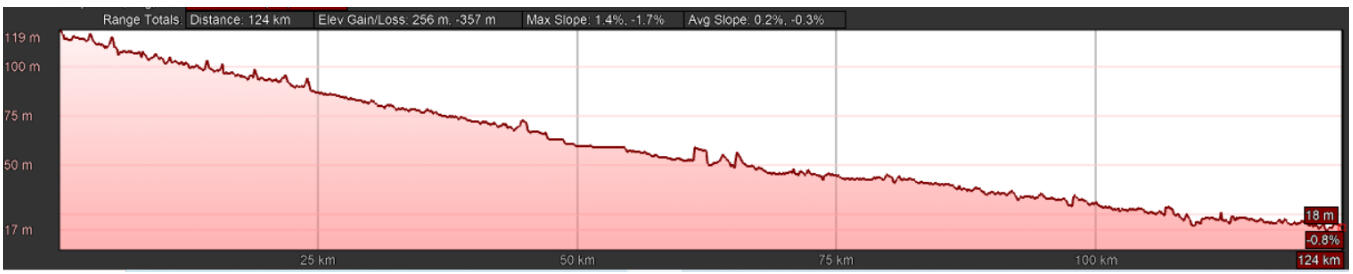


Figure 7.2B: Profile section of Kangsabati River

Figure 7.2C: Profile section of Subarnarekha River

Figure 7.3A: Cross section view of Shilabati River

Figure 7.3B: Cross section view of Kangsabati River

Figure 7.3C: Cross section view of Subarnarekha River

iv) Annual deposition factor

Annual deposition of riverbed materials depends on various factors, such as process of deposition, mode of sediment transport, sediment transport rate, and sediment yield of the river.

1. Process of deposition

Deposition is the processes where material being transported by a river is deposited. Deposition occurs when the forces responsible for sediment transportation are no longer sufficient to overcome the forces of gravity and friction, creating a resistance to motion; this is known as the null-point hypothesis. This can be when a river enters a shallow area or towards its mouth where it meets another body of water.

The principle underlying the null point theory is due to the gravitational force; finer sediments remain in the water column for longer durations allowing transportation outside the surf zone to deposit under calmer conditions. The gravitational effect or settling velocity determines the location of deposition for finer sediments, whereas a grain's internal angle of friction determines the deposition of larger grains on a shore profile.

Deposition of non-cohesive sediments: Large-grain sediments transported by either bedload or suspended load. In case of bedload, when there is insufficient bed shear stress and fluid turbulence are insufficient to keep the sediment moving, the grain cease horizontal movement and rapidly come to rest. In case of suspended load the grain settle longer distance vertically through the fluid before coming to rest.

Deposition of cohesive sediments: The cohesion of sediment occurs with the small grain sizes associated with silts and clays, or particles smaller than 4Φ or 62.5 μm. If these fine particles remain dispersed in the water column, Stokes law applies to the settling velocity of the individual grains. The face of a clay platelet has a slight negative charge where the edge has a slight positive charge when two platelets come into close proximity with each other the face of one particle and the edge of the other are electrostatically attracted, and then have a higher combined mass which leads to quicker deposition through a higher fall velocity.

2. Mode of sediment transport in rivers

Sediment transport in rivers provides a dynamic linkage between flow and channel form. Mainly there are three processes by which sediment load is transported and these are (i) rolling or traction, in which the particle moves along a sedimentary bed but is too heavy to be lifted from it; (ii) saltation; and (iii) suspension, in which particles remain permanently above the bed, sustained there by the turbulent flow of the water.

Another name for sediment transport is sediment load. The total load includes all particles moving as bedload, suspended load, and wash load.

Bed load: Bedload is the portion of sediment transport that rolls, slides or bounces along the bottom of a waterway. This sediment is not truly suspended, as it sustains intermittent contact with the streambed, and the movement is neither uniform nor continuous. Bedload occurs when the force of the water flow is strong enough to overcome the weight and cohesion of the sediment. While the particles are pushed along, they typically do not move as fast as the water around them, as the flow rate is not great enough to fully suspend them. Bedload transport can occur during low flows (smaller particles) or at high flows (for larger particles). Approximately 5-20% of total sediment transport is bedload. In situations where the flow rate is strong enough, some of the smaller bedload particles can be pushed up into the water column and become suspended.

Suspended load: While there is often overlap, the suspended load and suspended sediment are not the same thing. Suspended sediment are any particles found in the water column, whether the water is flowing or not. The suspended load, on the other hand, is the amount of sediment carried downstream within the water column by the water flow. Suspended loads require moving water, as the water flow creates small upward currents (turbulence) that keep the particles above the bed. The size of the particles that can be carried as suspended load is dependent on the flow rate. Larger particles are more likely to fall through the upward currents to the bottom, unless the flow rate increases, increasing the turbulence at the streambed. In addition, suspended sediment will not necessarily remain suspended if the flow rate slows.

Wash load: The wash load is a subset of the suspended load. This load is comprised of the finest suspended sediment (typically less than 0.00195 mm in diameter). The wash load is differentiated from the suspended load because it will not settle to the bottom of a waterway during a low or no flow period. Instead, these particles remain in permanent suspension as they are small enough to bounce off water molecules and stay afloat. However, during flow periods, the wash load and suspended load are indistinguishable.

3. Sediment Transport Rate

The rate at which sediment is moved past a cross section of the flow is called either the sediment transport rate or the sediment discharge. It‘s related to the sediment load, but it‘s different, just because different fractions of the sediment load are transported at different rates.

It can be measured in mass per unit time, or in weight per unit time, or in volume per unit time. The sediment transport rate is commonly denoted by Qs.

4. Estimation of Sedimentation

There are two approaches to obtaining values describing sediment loads in streams. One is based on direct measurement of the quantities of interest, and the other on relations developed between hydraulic parameters and sedimenttransport potential.

The total bed material load is equal to the sum of the bedload and the bed material part of the suspended load; in terms of volume transport per unit width, qt = qb + qs. Here wash load, i.e. that part of the suspended load that is too fine to be contained in measurable quantities in the river bed, is excluded from qs.

There are number of equations to compute the total sediment load. Most of these equations have some theoretical and empirical bases.

In 1973, Ackers and White developed a general theory for sediment transport which was calibrated against the flume-transport data then available. Their functions have been widely accepted as one of the best available procedures for estimating the total bed over the full width of the flow section.

Dendy Bolton formula is often used to calculate the sedimentation yield. But use of these equations to predict sediment yield for a specific location would be unwise because of the wide variability caused by local factors not considered in the equations development. However, they may provide a quick, rough approximation of mean sediment yields on a regional basis. Computed sediment yields normally would be low for highly erosive areas and high for well stabilized drainage basins with high plant density because the equations are derived from average values. The equations express the general relationships between sediment yield, runoff, and drainage area.

5. Sediment Yield

The water that reaches a stream and its tributaries carries sediment eroded from the entire area drained by it. The total amount of erosional debris exported from such a drainage basin is its sediment load or sediment discharge and the sediment yield is the sediment discharge divided by the total drainage area of the river upstream of the cross section at which the sediment discharge is measured or estimated. Sediment yield is generally expressed as a volume or weight per unit area of drainage basin—e.g., as tons per square kilometre. Further, sediment yield is usually measured during a period of years, and the results are thus expressed as an annual average.

v) Replenishment Study (As per EMGSM guidelines, 2020):

Replenishment study for a river solely depends on estimation of sediment load for any river system and the estimation is a time consuming and should be done over a period. The process in general is very slow and hardly measurable on season-to-season basis except otherwise the effect of flood is induced which is again a cyclic phenomenon. Usually, replenishment or sediment deposition quantities can be estimated in the following ways as given below:

A. Replenishment study based on satellite imagery involves demarcation of sand bars potential for riverbed mining. Both pre and post monsoon images need to be analysed to established potential sand bars. Volume estimation of sand is done by multiplying Depth and Area of the sand bar. The sand bars are interpreted with the help of satellite imagery. Ground truthing has been done for 100% of the total identified sand bars. During ground truthing, width and length of each segment were physically measured. It has also been observed that in few cases, sand bars have attained more than 3 meters height from the average top level of the river beds. Considerations of sand resources have been restricted within 3 meters from the average top surface of the river bed.
B. Direct field measurement of the existing leases involving estimation of the volume diference of sand during pre and post-monsoon period. With systematic data acquisition, a model has developed for calculation of sediment yield and annual replenishment with variable components.
C. The replenishment estimation based on a theoretical empirical formula with the estimation of bed-load transport comprising of analytical models to calculate the replenishment estimation.

A. Replenishment estimation based on satellite imagery study

Sedimentation in any river is dependent on sediment yield which depends on soil erosion in river's catchment area. Catchment yield is computed using Strange's Monsoon runoff tables for runoff coefficient against rainfall return period. Peak flood discharge is calculated by using Dickens, Jarvis and Rational formula at 25, 50 and 100 years return period. The estimation of bed load transport is done using Ackers and White Equation.

Methodology Adopted: To delineate replenishment percentage in the river bed of the district, below mentioned steps have been followed.

- **Field data collation:**

Field data collations were done during June 2020 for pre monsoon period and during December 2020 for post monsoon period for the river ghats on continuous basis. Figure 7.4 shows the site view of Subarnarekha River. However, the non-operational areas were covered through traverses. In both the cases, relative elevation levels were captured through GPS/DGPS/ Electronic Total Station. Thickness of the sand bars was measured through sectional profiles. In few instances, sieve analysis of the sands was carried out to assess their particle size distribution.

Figure 7.4: Site View of River Subarnarekha

- **Selection of Study profiles:**

  Study profiles are selected based on the occurrence of the sand bars in the channel profiles. Aerial extents of each of the profiles are mapped from satellite imagery.

- **Data Compilation:**

  Following data were compiled for generation of the annual replenishment report:

  - Elevation levels of the different sand ghats and sand bars as measured at site.
  - Extents of the sand bars are measured from the pre monsoon satellite imagery.
  - Sand production data of the district.

- **Assessment of sediment load in the river:**

  Assessment of sediment load in a river is subjective to study of the whole catchment area, weathering index of the various rock types which acts as a source of sediments in the specific river bed, rainfall data over a period not less than 20 years, and finally the detail monitoring of the river bed upliftment with time axis. Again, the sediment load estimation is not a dependent variable of the district boundary, but it largely depends upon the aerial extent of the catchment areas, which crosses the district and state boundaries.

- **Estimation of annual sand deposition:**

The major sand producing rivers of Paschim Medinipur district are Shilabati Rivers, Kangsabati and Subarnarekha River. Planning has been done for systematic sand mining in the rivers.

While calculation of the areas of sand bar, a classification system has been adopted with three categories of land identified within the channel areas which is as follows:

a. The untapped sand bars.
b. The sand bars worked in the pre-monsoon period.
c. Main channel course within the channel.

A summary of sediment load comparison between pre- and post-monsoon periods for different rivers Paschim Medinipur district is given in Table 7.4 and details of each sand bars along with their sand resources in pre monsoon and post monsoon period are provided in Annexure-2. Maps showing distribution of sand bars on rivers of the Paschim Medinipur district during pre- and post-monsoon periods are depicted in Plate-2A and 2B respectively.

Table 7.4: Sediment Load comparison between Pre- and Post-monsoon periods for different rivers

River Name	Pre-Monsoon no of ghats	Post-Monsoon no of ghats	Pre-Monsoon Sediment Load (Mcum)	Post Monsoon Sediment Load (Mcum)	Difference (Mcum)	Difference (%)
Kangsabati River	52	49	23.65	34.51	10.86	46%
Shilabati River	51	66	5.26	9.53	4.28	81%
Subarnarekha River	19	19	27.63	35.28	7.65	28%
Total	122	134	56.53	79.32	22.78	40%

Thus, in Paschim Medinipur district, about 22.78 million cum of sand has been found as an incremental volume increase when compared between pre- and post-monsoon sand reserve data. The percentage difference is about 140% which is replenishment and aggradation rate for the year.

Long-term satellite imagery study has also been carried out for sand producing rivers of Paschim Medinipur district to analyse the changes in river course. A representative map, showing long-term (from 2001 to 2021) erosion-accretion areas on both the banks of Kangsabati River, Paschim Medinipur has been prepared and furnished in Plate No. 5. Map shows changes in river channel through erosion and accretion of riverbank and in the process the river shows widening of width of the river course by almost 762m to 1204m from 2001 to 2021.

B. Replenishment estimation based on field investigation

The study was carried out on existing mining leases. In order to assess the annual replenishment rate, an approach of direct measurement methodology has been adopted. The depth and area of the mining leases are measured through DGPS/Total station just before the closure of the mines in pre-monsoon period and the same areas are resurveyed in the post-monsoon period. The differences between the depths of the surveyed areas are accounted for the volumetric measurement of the replenished sand.

Table 7.5 represents field measurement of replenishment rate estimated for major rivers.

Table 7.5: Replenishment rate of the district

River Name	Location (Mauza)	Area	Surface RL	Thickness	Volume	After mining floor RL	Surface RL after Replenishment	Thickness Replenished	Volume Replenished	Difference in RL	Replenishment Rate
		m2	m	m	cum	m	m	m	cum	m	%
Shilabati	Kantore	19800.00	45.00	2.90	57420.00	42.10	44.91	2.81	55697.40	0.09	97.00%
Shilabati	Manikkundu	31500.00	15.00	2.90	91350.00	12.10	14.94	2.84	89340.30	0.06	97.80%
Shilabati	Kuldaha	3100.00	10.00	2.85	8835.00	7.15	9.94	2.79	8658.30	0.06	98.00%
Kangsabati	Ghanesharpur	50000.00	33.00	2.88	144000.00	30.12	32.93	2.81	140256.00	0.07	97.40%
Kangsabati	Kanjageriya	23000.00	13.00	2.90	66700.00	10.10	12.94	2.84	65366.00	0.06	98.00%
Kangsabati	Gokulnagar	6300.00	10.00	2.94	18522.00	7.06	9.96	2.90	18244.17	0.04	98.50%
Subarnarekha	Belmula	50000.00	23.00	2.90	145000.00	20.10	22.94	2.84	142100.00	0.06	98.00%
Subarnarekha	Hasimpur	36000.00	11.00	2.84	102240.00	8.16	10.96	2.80	100706.40	0.04	98.50%

Based on field investigation, the average replenishment rate for the year 2020 is about 97.9%.

C. Replenishment estimation based on a empirical formula:

The river reaches with sand provide the resource and thus it is necessary to ascertain the rate of replenishment of the mineral. Regular replenishment study needs to be carried out to keep a balance between deposition and extraction.

Sediment load deposition in a river is dependent on catchment area, weathering index of the various rock types of the catchment area, land-use pattern of the area, rainfall data and grain size distribution of the sediments. Again, the sediment load estimation is not a dependent variable of the district boundary, but it largely depends upon the aerial extents of the catchment areas, which crosses the district and state boundaries.

i. Methodology of the study:

The replenishment estimation is based on a theoretical empirical formula with the estimation of bedload transport comprising of analytical models to calculate the replenishment estimation. Sedimentation in riverbed depends on catchment yield, peak flood discharge due to rainfall, bed load transport rates and sediment yield characteristic of the river. Some of the common methods used for replenishment study are explained below.

a. Catchment Yield Calculation:

The total quantity of surface water that can be expected in a given period from a stream at the outlet of its catchment is known as yield of the catchment in that period. The annual yield from a catchment is the end product of various processes such as precipitation, infiltration and evapotranspiration operating on the catchment.

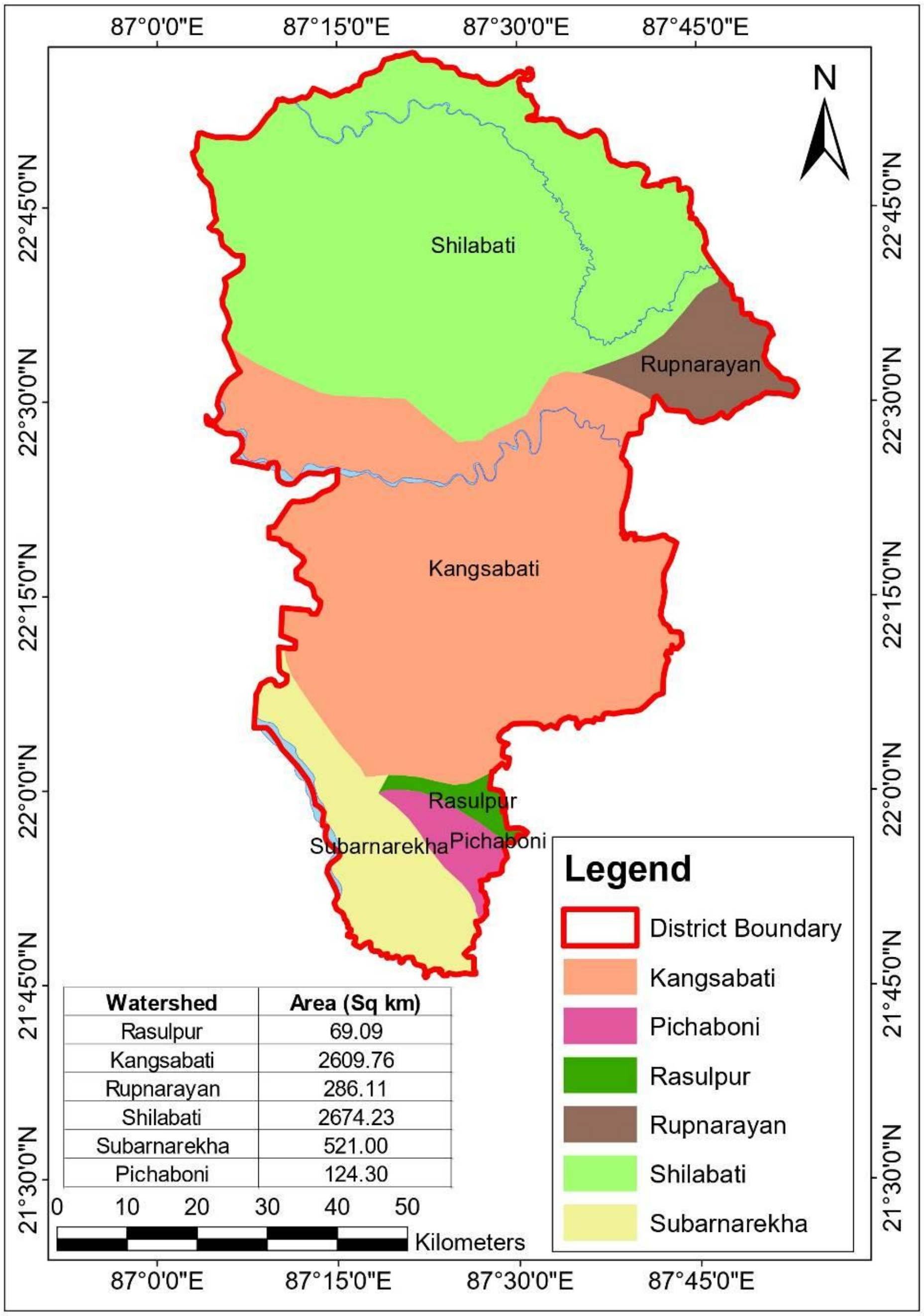


Figure 7.5: Watershed map of Paschim Medinipur district

Catchment Yield can be estimated using following formula:

Catchment Yield (m³) =Catchment area (m²) × Runoff coefficient (%) × Rainfall (m)

The runoff generated from the watershed is analyzed using Strange's Table to get the reliable yield results. Runoff from a catchment is dependent upon annual rainfall as well as catchment characteristics such as soil types and the type of groundcover / land usage. Remote sensing was used for demarcation of catchment area relevant to the drainage system. Runoff coefficient of the catchment has been established based on Strange's Table.

Strange (1892) studied the available rainfall and runoff and obtained yield ratios as functions of indicators representing catchment characteristics (Subramanya, 2008). Catchments are classified as good, average and bad according to the relative magnitudes of yield of sediment. For example, catchment with good forest cover and having soils of high permeability would be classified as bad, while catchment having soils of low permeability and having little or no vegetal cover is termed good. Based on the study Strange established runoff coefficient table as given in Table 7.6.

Table 7.6: Runoff coefficient of the catchment based on Strange's table

Total monsoon rainfall (mm)	Runoff coefficient (%)			Total monsoon rainfall (mm)	Runoff coefficient (%)		
	Good catchment	Average catchment	Bad catchment		Good catchment	Average catchment	Bad catchment
25.4	0.1	0.1	0.1	787.4	27.4	20.5	13.7
50.8	0.2	0.2	0.1	812.8	28.5	21.3	14.2
76.2	0.4	0.3	0.2	838.2	29.6	22.2	14.8
101.6	0.7	0.5	0.3	863.6	30.8	23.1	15.4
127	1	0.7	0.5	889	31.9	23.9	15.9
152.4	1.5	1.1	0.7	914.4	33	24.7	16.5
177.8	2.1	1.5	1	939.8	34.1	25.5	17
203.2	2.8	2.1	1.4	965.2	35.3	26.4	17.6
228.6	3.5	2.6	1.7	990.6	36.4	27.3	18.2
254	4.3	3.2	2.1	1016	37.5	28.1	18.7
279.4	5.2	3.9	2.6	1041.4	38.6	28.9	19.3
304.8	6.2	4.6	3.1	1066.8	39.8	29.8	19.9
330.2	7.2	5.4	3.6	1092.2	40.9	30.6	20.4
355.6	8.3	6.2	4.1	1117.6	42	31.5	21
381	9.4	7	4.7	1143	43.1	32.3	21.5
406.4	10.5	7.8	5.2	1168.4	44.3	33.2	22.1
431.8	11.6	8.7	5.8	1193.8	45.4	34	22.7
457.2	12.8	9.6	6.4	1219.2	46.5	34.8	23.2
482.6	13.9	10.4	6.9	1244.6	47.6	35.7	23.8
508	15	11.3	7.5	1270	48.8	36.6	24.4
533.4	16.1	12	8	1295.4	49.9	37.4	24.9

Total monsoon rainfall (mm)	Runoff coefficient (%)			Total monsoon rainfall (mm)	Runoff coefficient (%)		
	Good catchment	Average catchment	Bad catchment		Good catchment	Average catchment	Bad catchment
558.8	17.3	12.9	8.6	1320.8	51	38.2	25.5
584.2	18.4	13.8	9.2	1346.2	52.1	39	26
609.6	19.5	14.6	9.7	1371.6	53.3	39.9	26.6
635	20.6	15.4	10.3	1397	54.4	40.8	27.2
660.4	21.8	16.3	10.9	1422.4	55.5	41.6	27.7
685.8	22.9	17.1	11.4	1447.8	56.6	42.4	28.3
711.2	24	18	12	1473.2	57.8	43.3	28.9
736.6	25.1	18.8	12.5	1498.6	58.9	44.4	29.4
762	26.3	19.7	13.1	1524	60	45	30

Rainfalls return period for 25, 50 and 100 years calculated as below:

As per Weibull's Formula (Subramanya, 2008)**,**

Return period/Recurrence interval = (n+1)/m

Where: n number of years on record;
m is the rank of observed occurrences when arranged in descending order.

b. Peak Flood Discharge Calculation:

The term "peak discharge" stands for the highest concentration of runoff from the basin area. The accurate estimation of flood discharge remains one of the major challenges as it depends upon physical characteristic of the catchment area and the flood intensity, duration and distribution pattern. There have been many different approaches for determining the peak runoff from an area. As a result, many different models (equations) for peak discharge estimation have been developed. Formulas used for Peak Discharge calculation areas below:

As per Dicken's formula (Subramanya, 2008)**,**

$$\mathbf{Q = CA^{3/4}}$$

Where: Q is Maximum flood discharge (m^3/sec) in a river
A is Area of catchment in Sq. Km
C is Constant whose value varies widely between 2.8 to 5.6 for catchments in plains and 14 to 28 for catchments in hills

As per Jarvis formula (Subramanya, 2008)**,**

$$\mathbf{Q = CA^{1/2}}$$

Where: Q is Maximum flood discharge (m^3/sec) in a river
A is Area of catchment in Sq. Km
C is Constant whose value varies between 1.77 as minimum and 177 as maximum. Limiting or 100 percent chance floods are given by the value of C of 177

As per Rational formula ((Subramanya, 2008)**,**

Q = CIA

Where: Q is Maximum flood discharge (m^3/sec) in a river

A is Area of catchment in Sq. Km

C is Runoff coefficient which depends on the characteristics of the catchment area. It is a ratio of runoff: rainfall

I is Intensity of rainfall (in m/sec)

c. Bed Load Transport Calculation:

The most important problems in river engineering are to predict bed load transport rates in torrential floods flowing from mountainous streams. Three modes of transport namely; rolling, sliding and saltation may occur simultaneously in bed load transport. The different modes of transportation are closely related and it is difficult, if not impossible, to separate them completely. There are number of equations to compute the total sediment load. Most of these equations have some theoretical and empirical bases.

Ackers and White Equation:

Ackers and White (1973) used dimensional analysis based on flow power concept and their proposed formula is as follows.

$$C_t = C_s G_s (d_{50}/h) (V/U_*)^{n'} [(F_{gr}/A_1) - 1]^m$$

The dimensionless particle d_{gr} is calculated by:

$$d_{gr} = d_{50} (g(G_s-1)/v^2)^{1/3}$$

The particle mobility factor F_{gr} is calculated by:

$$F_{gr} = (U \times n'/(Gs-1)g\, d_{50})^{1/2} \times (V/(5.66\log(10h/d_{50}))^{1-n'}$$

Where,

A_1 = Critical particle mobility factor
C_s = Concentration coefficient in the sediment transport function
C_t = Total sediment concentration
d_{50} = Median grain size
d_{gr} = Dimensionless particle diameter
F_{gr} = Particle mobility parameter
g = Acceleration ofgravity
D_s, S_g = Specific gravity
h = Water depth
m = Exponent in the sediment transport function
n' = Manning roughness coefficient
U_* = Shear velocity
V = Mean flow velocity
v = Kinematic viscosity

Meyer – Peter's equation (Source: Hydrologic Engineering Center):

Meyer-Peter's equation (Ponce, 1989) is based on experimental work carried out at the Federal Institute of Technology, Zurich. Mayer-Peter gave a dimensionless equation based on rational laws. Mayer- Peter equation gave an empirical formula of bed load transport rates in flumes and natural rivers. The simplified Meyer-Peter's equation is given below:

$$g_b = 0.417[\tau 0 \, (\eta'/\eta)^{1.5} - \tau c]^{1.5}$$

Where,
gb = Rate of bed load transport (by weight) in N per m width of channel per second.

η' = Manning's coefficient pertaining to grain size on an unrippled bed and Strickler formula i.e. η' = (1/24) x d1/6 where d is the median size (d_{50}) of the bed sediment in m.

η = The actual observed value of the rugosity coefficient on rippled channels. Its value is generally taken as 0.020 for discharges of more than 11cumecs, and 0.0225 for lower discharges.

τc = Critical shear stress required to move the grain in N/m2 and given by equation τc = 0.687da, where da is mean or average size of the sediment in mm. This arithmetic average size is usually found to vary between d_{50} and d_{60}.

τ0= Unit tractive force produced by flowing water i.e.γwRS. Truly speaking, its value should be taken as the unit tractive force produced by the flowing water on bed = 0.97γwRS. R is the hydraulic mean depth of the channel (depth of flow for wider channel) and S is the bed slope.

d. Sediment Yield Estimation:

Sedimentation occurs as the velocity decreases along with its ability to carry sediment. Coarse sediments deposit first, then interfere with the channel conveyance, and may cause additional river meanders and distributaries. The area of the flowing water expands, the depth decreases, the velocity is reduced, and eventually even fine sediments begin to deposit. As a result, deltas may be formed in the upper portion of reservoirs. The deposited material may later be moved to deeper portions of the reservoir by hydraulic processes within the water body.

There are many sediment transport equations which are suitable for use in the prediction of the rate of replenishment of river. Some of the famous sediment transport equations are:

1. Dendy – Bolton Equation
2. Yang Equations
3. Engelund-Hansen Equation
4. Modified Universal Soil Loss Equation (MUSLE) developed by Williams and Berndt (1977)

Dendy – Bolton Equation:

Dendy – Bolton formula (Dendy and Bolton 1976) is often used to calculate the sedimentation yield because:-

- The formula uses catchment area and mean annual runoff as key determinants.
- It does not differentiate in basin wide smaller streams and their characteristics.
- Dendy and Bolton equation calculates all types of sediment yield i.e. sheet and rill erosion sediments, gully erosion sediments, channel bed and bank erosion sediments and mass movement etc.

Dendy-Bolton determined the combined influence of runoff and drainage area on sediment yield to compute the sediment yield. They developed two equations i.e. for run off less than 2 inch and for run off more than 2 inch, which are given below:

For run off less than 2 inch:

$$(Q<2in)\ S=1289 \times (Q)^{0.46} \times [1.43-0.26 \operatorname{Log}(A)]$$

For run off more than 2 inches:

$$(Q > 2\ in):\ S= 1958\times (e^{-0.055\times Q}) \times [1.43-0.26 \operatorname{Log}(A)]$$

Where: S = Sediment yield (tons/sq miles/yr)

Q = Mean Annual runoff (inch)

A = Net drainage are in sq mile

Dendy-Bolton formula is often used to calculate the sediment yield. But use of these equations to predict sediment yield for a specific location would be unwise because of the wide variability caused by local factors not considered in the equations development. However, they may provide a quick, rough approximation of mean sediment yields on a regional basis for preliminary watershed planning. Computed sediment yields normally would be low for highly erosive areas and high for well stabilized drainage basins with high vegitation density because the equations are derived from average values. The equations express the general relationships between sediment yield, runoff, and drainage area. Many variables influence sediment yield from a drainage basin. They include climate, drainage area, soils, geology, topography, vegetation and land use. The effect of any of these variables may vary greatly from one geographic location to another, and the relative importance of controlling factors often varies within a given land resource area. Studies revealed that sediment yield per unit area generally decreases as drainage area increases. As drainage area increases, average land slope usually decreases; and there is less probability of an intense rainstorm over the entire basin. Both phenomena tend to decrease sediment yield per unit area.

Modified Universal Soil Loss Equation (MUSLE):

Modified universal soil loss equation (MUSLE) for estimation of sediment yield is also widely used. MUSLE is a modification of the Universal Soil Loss Equation (USLE). USLE is an estimate of sheet and rill soil movement down a uniform slope using rainfall energy as the erosive force acting on the soil (Wischmeier and Smith 1978). Depending on soil characteristics (texture, structure, organic matter, and permeability) some soils erode easily while others are inherently more resistant to the erosive action of rainfall.

MUSLE is similar to USLE except for the energy component. USLE depends strictly upon rainfall as the source of erosive energy. MUSLE uses storm-based runoff volumes and runoff peak flows to simulate erosion and sediment yield (Williams 1995). The use ofrunoff variables rather than rainfall erosivity as the driving force enables MUSLE to estimate sediment yields for individual storm events. The generalized formula of MUSLE is as below:

$$\mathbf{Y=11.8\times (Q \times qP).56 \times K \times Ls \times C \times P}$$

Where,

Y = sediment yield of stream (t/yr/km2),
Q = average annual runoff (m3),
K = soil erodibility factor,
qP = Highest discharge recorded (m3/s),
Ls = gradient/slope length,
C = cover management factor,
P = erosion control practice

ii. Estimation of Replenishment:

Paschim Medinipur district is mainly drained by the Shilabati, Kangsabati and Subarnarekha Rivers. These rivers and its tributary rivers are forming the main catchment area.

For replenishment study, following assumption/calculation are taken in to consideration:

- Catchment area (Watershed area) against each river has been calculated based on remote sensing data.
- Rainfall runoff coefficient as per Strange's table for the catchment area is consider 45%, as the rainfall in the district is more than 1485mm and the characteristic of the catchment of the district is average in nature.
- Peak flood discharge of the river of the district calculated based on Dicken's formula which is more applicable to north Indian and central Indian catchment. Here Dicken constant C is taken as 12 in present study as per published literature by Saha (2002).
- Bed load transport has not been computed in the regional aspect of the district, as the values are highly dependent on local factors such as particle mobility factor, roughness coefficient, Shear velocity, Mean flow velocity, Kinematic viscosity etc.
- Sedimentation yield calculated as per Dendy and Bolton formula as the equations express the general relationships between sediment yield, runoff, and drainage area.
- Computed sediment yields by Dendy Bolton formula normally would be low for highly erosive areas and high for well stabilized drainage basins with high plant density because the equations are derived from average values.
- Dendy and Boltan formula also say that actual sediment yield from individual drainage basin may vary 10-fold or even 100-fold from computed yields. Since the district river basins comprise sedimentary rocks with good average rainfall therefore the estimated replenishment is considered as 50-fold of computed results sediment yield.

The data estimated for each river in the district are given in Table 7.7.

Table 7.7: Replenishment parameter estimated for each river in the district

Estimation parameter	Shilabati	Kangsabati	Subarnarekha
Catchment Area (m^2)	2674230000	2609760000	521000000
Annual Rainfall (m) (in 2020)	1.55	1.55	1.55
Strange Runoff coefficient (%)	45%	45%	45%
Annual Run-off (m) (in 2020)	0.341	0.341	0.341
Catchment Yield (m^3)	1865275425	1820307600	363397500
Peak Flood Discharge (m^3/sec)	141117317.84	138558021.66	41381815.35
Flow depth d (m)	0.5	0.5	0.5
Channel width b (m)	200	180	150

Estimation parameter	Shilabati	Kangsabati	Subarnarekha
Mean velocity v (m/s)	0.06	0.05	0.05
Channel slope S_o (m/m)	0.001	0.001	0.001
Sediment Yield (Tons/year)	41671.52	40846.29	10439
Estimated Annual Replenishment (in million m3)	0.78037	0.76491	0.19549

Sedimentation rate of a river is dependent on the annual rainfall of the district. Sedimentation rate for the period 2016-2020 of each river is presented in Table 7.8 and Figure 7.6.

Table 7.8: Year-wise sedimentation rate for last 5 years of each river

Year	Shilabati	Kangsabati	Subarnarekha	Annual Rainfall
2016	21.89	21.99	28.15	**1391.3**
2017	15.45	15.51	19.86	**1552.1**
2018	26.95	27.07	34.65	**1294.9**
2019	12.85	12.91	16.52	**1637.1**
2020	15.58	15.65	20.04	**1547.6**

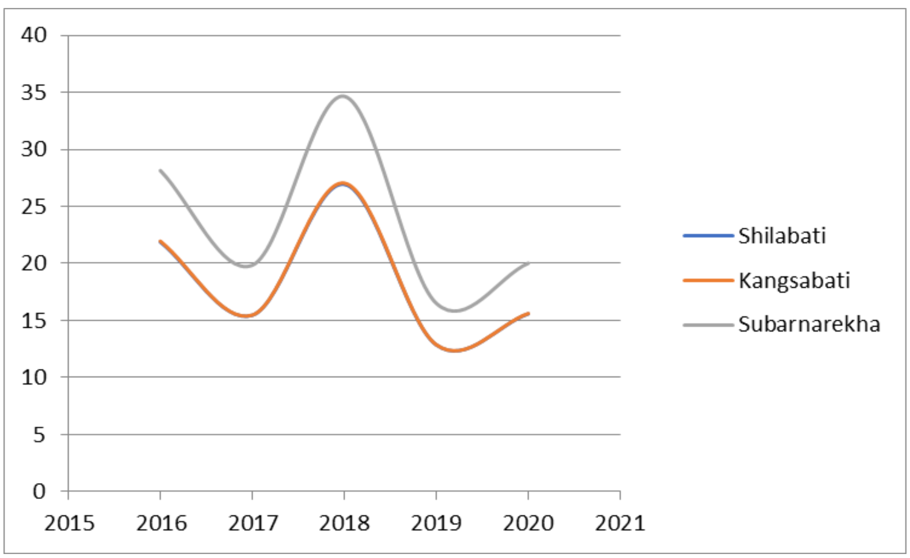


Figure 7.6: Graphical representation of year-wise sedimentation rate

The estimation of sedimentation rate based on empirical formula need critical analysis of different factors related to the LULC property of the catchment area, slope geometry, sediment erosion factor of catchment litho-type. This will help to assess replenishment rate more precisely.

Replenishment studies based on empirical formula for existing mining leases have also been conducted and are given in Table 7.9.

Table 7.9: River wise replenishment rate estimation based on empirical formula

River Name	Location	Lease Area	Surface RL Before mining	Mine out Thickness	Mine out Volume	Annual Rainfall-2020	Estimated Replenished Volume as per Dandy-Bolton	Replenishment Rate
		m2	m	m	cum	m	cum	%
Shilabati	Kantore	19800.00	45.00	2.90	57420.00	1.48	40194.00	70.00%
Shilabati	Manikkundu	31500.00	15.00	2.90	91350.00		66228.75	72.50%
Shilabati	Kuldaha	3100.00	10.00	2.85	8835.00		6449.55	73.00%
Kangsabati	Ghanesharpur	50000.00	33.00	2.88	144000.00		107280.00	74.50%
Kangsabati	Kanjageriya	23000.00	13.00	2.90	66700.00		50358.50	75.50%
Kangsabati	Gokulnagar	6300.00	10.00	2.94	18522.00		14076.72	76.00%
Subarnarekha	Belmula	50000.00	23.00	2.90	145000.00		107300.00	74.00%
Subarnarekha	Hasimpur	36000.00	11.00	2.84	102240.00		75146.40	73.50%

Illustration of Replenishment Estimation is given in Table 7.10.

Table 7.10: Illustration of replenishment rate calculation based on 3 methods

Based on Satellite imageries		Based on field investigation		Based on empirical formula	
Particulars	Estimation	Particulars	Estimation	Particulars	Estimation
		River Name	Kangsabati	River Name	Kangsabati
River	Kangsabati	Location	Ghanesharpur	Location	Ghanesharpur
Total Premonsoon Sand Bar Area	8023005 (sq.m)	Mining Area	50000 (Sq.m)	Lease Area	50000 (Sq.m)
Average Pre monsoon Thickness	2.0 (m)	Pre monsoon RL	33 (m)	Surface RL Before mining	33 (m)
Total Volume	16.05 (Mcum)	Sand Thickness	2.88 (m)	Mine out Thickness	2.88 (m)
Total Postmonsoon Sand Bar Area	6660897 (sq.m)	Volume excavated (Cum)	144000.00 (Cum)	Mine out Volume (Cum)	144000.00 (Cum)
Average Postmonsoon Thickness	2.5 (m)	Post monsoon RL	30.12 (m)	Drainage area for lease block	0.067 (Sq.km)
Total Volume	16.65 (M.cum)	Thickness	2.81 (m)	Monsoon Rainfall-2020	1.48 (m)
Total Pre and Post monsoon Volume Difference	0.61 (M.cum)	Volume deposited (Cum)	140256.00 (Cum)	Estimated Volume as per Dendy- Bolton (S = 1280 Q0.46[1.43 - 0.26 log(A)]) Where, Q is runoff, A is drainage area)	107280.00 (Cum)
Replenishment and Agrredation %	104%	Replenishment Rate	97.4%	Replenishment Rate	90.5%

Replenishment studies have been carried out in the district based on three different methodologies as illustrated in Table 7.10. Table 7.11 explained comparison of the outcome of these three methodologies adopted for the district.

Table 7.11: Comparison of replenishment study

Replenishment Study Method	Shilabati	Kangsabati	Subarnarekha
Estimated Annual Replenishment based on Sattelite imegaries **(*)**	118%	146%	128%
Estimated Annual Replenishment based on field investigation	97.6%	97.97%	98.25%
Estimated Annual Replenishment based on empirical formula	91.83%	90.33%	91.75%

(*) Replenishment study based on satellite imagery involves estimation of replenish volume along with aggredation volume.

vi) Total potential of minor mineral in the riverbed

The major sand producing rivers of the Paschim Medinipur district are Shilabati, Kangsabati and Subarnarekha Rivers. The total mineable potential sand resources are 30.77 Mcum.

B. Geological studies

i) Lithology of the catchment area

The major portion of the district consists of a rolling country covered by laterite and alluvium. While metamorphic or gneissose rocks are found in the extreme west, in the east there is a wide plain of Recent alluvium. The most characteristic geological feature of the district is the area of laterite and associated rocks of sand and gravel. At some places one finds hard beds of laterite. At other places it is decomposed and reorganised. Locally, the ferruginous rock is called kankar.

ii) Tectonics and structural behavior of rocks

The most characteristic geological feature of the district is the area of laterite and associated rocks of sand and gravel. At some places one finds hard beds of laterite. At other places it is decomposed and reorganized. Locally, the ferruginous rock is called kankar.

The area has an undulating micro-relief with highs and lows. The maximum elevation is found to be 319 m above mean sea level (msl). Generally, the elevation declines from north-west to eastern and south eastern direction. The slope amounts have shown that elevation is low in south-eastern and eastern part.

C. Climate Factors

i) Intensity of rainfall

The average annual rainfall in the district is 1485mm. The variations in the annual rainfall within the district and from year to year are not large. The rainfall during the monsoon season – June to September – constitutes 70 percent of the annual rainfall; July and August are the rainiest months. The district receives a mean annual rainfall varying from 1295 mm to 1637mm.

ii) Climate zone

Paschim Medinipur district belongs to humid tropical monsoon climatic region. According to District Meteorological Department, there is very minor variation of temperature, rainfall and relative humidity in the district.

The climate of this district is characterized by an oppressive hot summer, high humidity nearly all the year round and a well distributed rainfall in the south west monsoon season. The year may be divided into four seasons. The cold season is from about the middle of November to the end of February. The period from March to May is the summer season. The south west monsoon season commences about the beginning of June and lasts till the end of September. October and the first half of November may be termed as post-monsoon season.

iii) Temperature variation

Temperature along with other meteorological conditions of the district is more or less uniform. The cold season commences by about the middle of November when the temperature begins to decrease. January is the coldest month with the mean daily maximum and minimum temperature at 28^{o}C and 10^{o}C respectively. By about the end of February the temperature begins to increase and April is s the hottest month, the mean maximum daily temperature is 39 ^{o}C and the mean minimum daily temperature is 25 ^{o}C.

Annual Deposition:

Annual deposition of riverbed minerals has been calculated on post-monsoon sand volume. The pre-monsoon sand volume of the river is the depleted resources and is replenished by the monsoon rainfall. For the purpose of estimating mineable mineral potential, the thickness of the sand bar considered extractable based on base flow level is given in Table 7.12.

Table 7.12: River wise Thickness of sand bar considered mineable

River Name	Considered Mining Thickness (m)
Shilabati River	2.50
Kangsabati River	3.0
Subarnarekha River	3.0

Based on geomorphology, geology, climate and mineable thickness of sand bar the annual deposition of riverbed minerals has been estimated. Sand bar area recommended for mineral concession in the table is calculated as per the Enforcement and Monitoring Guidelines for Sand Mining (EMGSM) 2020. As per guidelines, mining depth restricted to 3 meters depth and distance from the bank is ¼th of river width and not less than 7.5 meters. Also mining is prohibitated up to a distance of 1 kilometre (1 km) from major bridges and highways on both sides, or five times (5x) of the span (x) of a bridge/public civil structure (including water intake points) on up-stream side and ten times (10x) the span of such bridge on down-stream side, subjected to a minimum of 250 meters on the upstream side and 500 meters on the downstream side. The annual minable mineral potential is given in Table 7.13.

Table 7.13: Annual mineable mineral potential

Sl. No.	River or Stream	Portion of the river stream recommended for mineral concession	Length of area recommended for mineral concession (in meter)	Average width of area recommended for mineral concession (in meters)	Area recommended for mineral concession (in Sqm)	Mineable mineral potential (in Mcum) (60% of total mineral potential
1	Kangsabati River	33%	57856.25	1483.683333	7382514.442	13.29
2	Shilabati River	26%	41935.01	947.144	2528824.08	3.79
3	Subarnarekha River	50%	28344.13	2359.645	7603966.3	13.69

III. Riverbed Mineral Potential

Process of disposition etc:

Sand: Huge quantities of quality sands are found to occur in part of rivers. Smaller patches are also available locally in the other smaller rivers as well. Table 7.14 summarizes the potential riverbed mineral deposits of the district.

Table 7.14: Resources of Potential Riverbed Mineral

Boulder (Mcum)	Pebbles/Gravel (Mcum)	Sand/White sand (Mcum)	Total Mineable, Mineral Potential (Mcum)
-	-	30.77	30.77

Based on satellite imagery study and field investigation, potential zones for riverbed deposits for each river of the district have been identified and the details of the zones are provided in Table 7.15.

Table 7.15: Potential Zone of Riverbed Mineral

Sl.No	Rivers or Streams	Location of potential zones			
		Administrative Block	Zone	Co-ordinates	
				Latitude	Longitude
1	KANGSABATI RIVER	MIDNAPORE	KS_ZONE 1	22° 30' 0.723" N	87° 5' 18.989" E
				22° 29' 51.438" N	87° 5' 29.245" E
		MIDNAPORE	KS_ZONE 2	22° 28' 49.291" N	87° 5' 12.019" E
				22° 25' 34.118" N	87° 7' 19.677" E
		MIDNAPORE	KS_ZONE 3	22° 25' 27.257" N	87° 8' 26.832" E
				22° 24' 3.950" N	87° 11' 34.461" E
		MIDNAPORE	KS_ZONE 4	22° 24' 47.907" N	87° 12' 28.448" E
				22° 24' 27.639" N	87° 17' 1.065" E
		MIDNAPORE, KESHPUR	KS_ZONE 5	22° 23' 56.351" N	87° 21' 47.870" E
				22° 27' 6.805" N	87° 37' 10.798" E
		DEBRA	KS_ZONE 6	22° 27' 1.318" N	87° 38' 20.511" E
				22° 26' 30.627" N	87° 39' 3.590" E
2	SHILABATI RIVER	GARBETA-I	SB_ZONE 1	22° 53' 24.345" N	87° 10' 16.227" E
				22° 51' 18.933" N	87° 17' 29.797" E
		GARBETA-II	SB_ZONE 2	22° 52' 9.625" N	87° 17' 30.988" E
				22° 52' 18.661" N	87° 18' 47.570" E
		GARBETA-II	SB_ZONE 3	22° 51' 46.593" N	87° 19' 48.554" E
				22° 53' 10.287" N	87° 21' 5.454" E
		GARBETA-II	SB_ZONE 4	22° 52' 48.261" N	87° 22' 9.309" E
				22° 51' 55.745" N	87° 26' 31.042" E
		CHANDRAKONA-II	SB_ZONE 5	22° 51' 12.800" N	87° 28' 38.175" E
				22° 47' 7.263" N	87° 32' 35.030" E
3	SUBARNAREKHA RIVER	KESHIARY	SR_ZONE 1	22° 5' 27.004" N	87° 8' 9.810" E
				22° 3' 42.745" N	87° 10' 50.047" E
		DEBRA	SR_ZONE 2	22° 2' 40.177" N	87° 11' 23.463" E
				21° 51' 29.514" N	87° 14' 54.271" E

NO MINING ZONE:

As per the Enforcement and Monitoring Guidelines for Sand Mining (EMGSM) 2020 the restricted zone for mining is a distance from the bank is ¼th of river width and not be less than 7.5 meters. Also there is a no mining zone up to a distance of 1 kilometre (1 km) from major bridges and highways on both sides, or five times (5x) of the span (x) of a bridge/public civil structure (including water intake points) on up-stream side and ten times (10x) the span of such bridge on down-stream side, subjected to a minimum of 250 meters on the upstream side and 500 meters on the downstream side.

No mining zone has been marked for an area up to a width of 100 meters from the active edge of embankments. Also the concave side of the river is marked as no mining zone, as mining is this area will affect the course of river in future and will erode the river bank. A representative map of no mining zone shown on River Shilabati of Paschim Medinipur district is given in Figure 7.7. Table 7.16 summarized the area of no mining zones demarcated for each river of the district.

Table 7.16: No mining zone in the district

Sl.No	Rivers or Streams	Location of potential zones	Area within prohibited zone as per rule 3 of WBMMC Rules, 2016 (in sq.m)
		Administrative Block	
1	KANGSABATI RIVER	MIDNAPORE	78304.36254
		MIDNAPORE	589453.6
		MIDNAPORE	1030589.13
		MIDNAPORE	821356.54
		MIDNAPORE, KESHPUR	536493.12
		DEBRA	54355.37
2	SHILABATI RIVER	GARBETA-I	498613.1
		GARBETA-II	112531.6
		GARBETA-II	145243.25
		GARBETA-II	168903.04
		CHANDRAKONA-II	32239.44
3	SUBARNAREKHA RIVER	KESHIARY	2521164.34
		DATAN-I	1413206.98

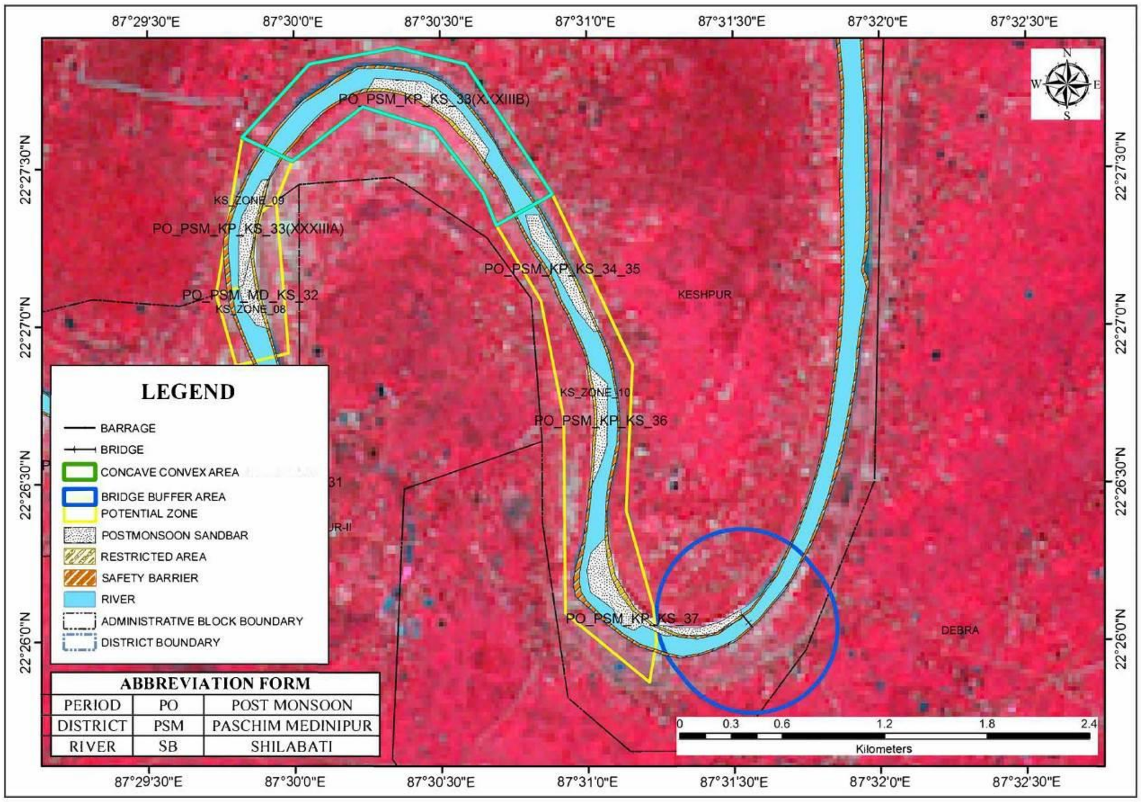


Figure 7.7: A representative map showing no-mining zone demarcated on Shilabati River

8 Overview of mining activity in the district

8.1 General overview

The district is not very rich in mineral resources and there are no large mines in the district. However, collection of sand, Bricks, from the river-bed is the minor mineral sources. These materials are primarily utilized for construction purpose.

8.2 List of existing mining leases of the districts

Details of List of existing mining leases of the districts are furnished in Table 8.1.

Table 8.1: Details of Sand mining leases of the districts

Sl No.	Name of H1 bidder	Sand ghat ID	Sand Block No.	River Name	Block Name	Mouza	JL no.	Plot	1 Latitude	1 Longitude	2 Latitude	2 Longitude	3 Latitude	3 Longitude	4 Latitude	4 Longitude	Mineable researve as per LOI (in CuM)	LOI reissued date / Remarks
UNREGISTERED SAND BLOCKS																		
1	Mijanuddin Khan	654/SB/221	MCH B-12	Silaboti	CK-II	Shirsa	73	1(P)	22°48'28.17"N	87°31'41.56"E	22°48'28.07"N	87°31'41.68"E	22°48'26.27"N	87°31'40.41"E	22°48'25.56"N	87°31'39.51"E	1300	18-11-2022
2	Ujjwal Samanta	240/SB2021	MDA SB-10	Kangasaboti	Daspur-I	Kunjapur	70	98(P)	22°33'33.00"N	87°42'33.21"E	22°33'30.43"N	87°42'38.20"E	22°33'29.81"N	87°42'37.76"E	22°33'32.54"N	87°42'32.87"E	4608	16-12-2022
3	Anubha Poria	241/SB2021	MDA SB-11	Kangasaboti		Maheshpur	100	318(P)	22°32'50.57"N	87°43'04.19"E	22°32'45.47"N	87°43'07.11"E	22°32'45.09"N	87°43'06.19"E	22°32'50.24"N	87°43'03.38"E	6912	18-11-2022
4	Dilip Maity on behalf of Joy Guru Construction	239/SB2021	MDA SB-5	Kangasaboti		Poshtanka	121	1(P)	22°33'27.48"N	87°38'49.13"E	22°33'28.38"N	87°38'50.34"E	22°33'29.09"N	87°38'52.20"E	22°33'29.12"N	87°38'53.65"E	1164	18-11-2022
5	Supriya Singh	1395/SB2021	MDA SB-4	Kangasaboti		Kismatnarajol	16	1238(P)	22°33'50.827"N	87°36'10.457"E							9648	18-11-2022
6	Arijit Dey on behalf of Maa Manjushree Enterprise	569/SB2021	MDB-9	Kangasaboti	Debra	Paikpari	261	127(P), 148(P) & 537(P)	22°28'25.63"N	87°34'50.85"E	22°28'25.81"N	87°34'51.88"E	22°28'21.86"N	87°34'55.07"E	22°28'15.47"N	87°34'59.68"E	15120	18-11-2022
7	Kinkar Maity	588/SB2021	MDB-6	Kangasaboti		Mokarimpur	28	816(P)	22°28'53.85"N	87°34'50.22"E	22°28'53.91"N	87°34'51.03"E	22°28'49.64"N	87°34'49.57"E	22°28'49.81"N	87°34'48.63"E	5115.3	18-11-2022
8	Rakesh Singh	1406/SB2021	MDB-18	Kangasaboti		Bishnupur	45	317(P)	22°28'11.58"N	87°37'02.73"E	22°28'12.28"N	87°37'4.53"E	22°28'12.35"N	87°37'08.15"E	22°28'11.56"N	87°37'08.26"E	6912	18-11-2022
9	Somen Kumar Bose	590/SB2021	MDB-7	Kangasaboti		Mokarimpur	28	816(P)	22°28'41.82"N	87°34'45.44"E	22°28'42.05"N	87°34'46.49"E	22°28'37.63"N	87°34'45.86"E	22°28'36.69"N	87°34'45.98"E	6928.4	18-11-2022
10	Tarun Barik	1167/SB2021	MGA RB-3	Silaboti	Garhbeta-I	Kalikapur	900	1288(P)	22°49'15.03"N	87°30'33.95"E	22°49'14.07"N	87°30'33.52"E	22°49'23.76"N	87°30'8.33"E	22°49'24.46"N	87°30'9.02"E	14800	16-12-2022
11	Ataur Rahaman Mandal	597/SB2021	MGA RB-30	Silaboti		Malbagicha	411	48(P), 56, 57(P), 58(P), 59, 60, 61(P) & 62(P)	22°50'30.38"N	87°16'46.69"E	22°50'29.42"N	87°16'46.30"E	22°50'28.08"N	87°16'41.62"E	22°50'29.13"N	87°16'39.79"E	5700	18-11-2022
12	Bablu Sarkar	600/SB2021	MGA RB-25	Silaboti		Bhattagram	399	680(P)	22°51'13.92"N	87°17'25.79"E	22°51'13.29"N	87°17'26.16"E	22°51'10.33"N	87°17'21.37"E	22°51'12.31"N	87°17'20.09"E	4000	18-11-2022
13	Prasanta Karak	1331/SB2021	MGA RB-36	Silaboti		Bhalukmura	795	16(P), 63(P) & 77(P)	22°52'15.19"N	87°25'35.44"E	22°52'13.70"N	87°25'34.65"E	22°52'14.87"N	87°25'28.97"E	22°52'18.39"N	87°25'27.21"E	10100	18-11-2022

Sl	Name of H1	Sand	Sand	River	Block	Mouza	JL	Plot	1		2		3		4		Mineable	LOI reissued date /
14	Prabhas Ghosh	592/SB2021	MGA RB-29	Silaboti	Garhbeta-II	Suniakon	406	1255(P), 1256(P), 1257(P), 1258(P), 1259(P), 1261(P), 1263(P) & 1416(P)	22°50'36.34"N	87°16'36.61"E	22°50'31.83"N	87°16'39.20"E	22°50'29.23"N	87°16'39.33"E	22°50'36.05"N	87°16'34.49"E	4800	16-12-2022
15	Kamala Kanta Sau on behalf of Radha Rani Bali Khadan	121/SB2021	MKS HB-1	Subarnarekha	Keshiary	Amilasai	141	346(P) & 347(P)	22°02'28.84"N	87°11'39.07"E	22°02'25.93"N	87°11'42.21"E	22°02'17.65"N	87°11'35.14"E	22°02'21.05"N	87°11'31.44"E	80432	18-11-2022
16	Pawan Arora on behalf of Variety Vyapaar (Pvt.) Ltd.	124/SB2021	MKS HB-2	Subarnarekha		Amilasai	141	346(P) & 347(P)	22°02'32.50"N	87°11'35.01"E	22°02'29.32"N	87°11'38.55"E	22°02'21.60"N	87°11'30.94"E	22°02'24.99"N	87°11'26.99"E	85008	18-11-2022
17	Gautam Patra	126/SB2021	MKS HB-3	Subarnarekha		Amilasai	141	346(P) & 347(P)	22°02'35.73"N	87°11'30.97"E	22°02'32.91"N	87°11'34.03"E	22°02'25.65"N	87°11'26.04"E	22°02'29.23"N	87°11'21.86"E	83248	18-11-2022
18	Prashanta Mandal	127/SB2021	MKS HB-4	Subarnarekha		Amilasai	141	346(P)	22°02'37.08"N	87°11'12.67"E	22°02'35.71"N	87°11'29.64"E	22°02'29.82"N	87°11'21.09"E			86416	18-11-2022
19	Sk Najrul Islam	128/SB2021	MKS HB-5	Subarnarekha		Amilasai	141	346(P)	22°02'45.57"N	87°11'25.53"E	22°02'46.26"N	87°11'31.74"E	22°02'39.84"N	87°11'34.79"E	22°02'40.05"N	87°11'32.05"E	43824	16-12-2022
20	Shiba Prosad Ghosh	129/SB2021	MKS HB-6	Subarnarekha		Nekramara	129	230(P), 232(P), 229(P), 228(P), 176(P), 175(P), 183(P), 185(P), 187(P), 218, 182, 181(P), 178(P), 179(P), 180(P), 184(P), 174(P) & 177(P)	22°03'49.08"N	87°10'15.46"E	22°03'51.99"N	87°10'31.15"E	22°03'50.80"N	87°10'32.03"E	22°03'45.87"N	87°10'27.51"E	87824	18-11-2022
21	Uttam Kesh on behalf of Deal Construction	130/SB2021	MKS HB-7	Subarnarekha		Nekramara	129	230(P), 232(P), 229(P), 228(P), 164(P), 165, 166, 163(P), 168(P),	22°03'53.78"N	87°10'14.47"E	22°03'55.94"N	87°10'27.92"E	22°03'52.70"N	87°10'30.51"E	22°03'49.89"N	87°10'15.34"E	87296	18-11-2022

Sl	Name of H1	Sand	Sand	River	Block	Mouza	JL	Plot	1		2		3		4		Mineable	LOI reissued date /
								169(P), 171(P), 172(P), 174(P), 173(P), 186(P), 185(P), 187(P) & 167(P)										
22	Uttam Kumar Barik	132/SB2 021	MKS HB-8	Subarna rekha	Keshia ry	Nekramara	129	230(P), 232(P), 229(P), 159(P), 160(P), 158(P), 164(P), 161(P), 162(P), 168(P) & 169(P)	22°03'58. 73"N	87°10'13. 22"E	22°04'00. 91"N	87°10'23. 52"E	22°03'56. 63"N	87°10'27. 25"E	22°03'54. 51"N	87°10'14. 24"E	86240	16-12-2022
23	Durga Prasad Agarwala on behalf of Blueberry Nirman Pvt. Ltd.	654/SB2 021	MKS HB-11	Subarna rekha		Nekramara	129	230(P) & 231(P)	22°04'16. 17"N	87°09'55. 18"E	22°04'16. 16"N	87°10'04. 60"E	22°04'09. 48"N	87°10'05. 13"E	22°04'09. 02"N	87°9'59.4 5"E	36000	16-12-2022
24	Pradyot Ghosh	198/SB2 021	MKB -4	Kangasa boti		Kapashtikr i	530	795(P)	22°29'17. 16"N	87°33'12. 43"E	22°29'17. 24"N	87°33'13. 72"E	22°29'18. 07"N	87°33'18. 44"E	22°29'18. 57"N	87°33'20. 31"E	13857	18-11-2022
25	Sheikh Mursed Ali	205/SB2 021	MKB -7	Kangasa boti		Chhotopas ha	535	266(P)	22°29'19. 13"N	87°32'10. 36"E	22°29'19. 99"N	87°32'12. 40"E	22°29'20. 71"N	87°32'15. 94"E	22°29'21. 10"N	87°32'18. 31"E	22720	18-11-2022
26	Sitesh Dhara	206/SB2 021	MKB -18	Kangasa boti		Malyan	625	68(P) & 69(P)	22°28'02. 10"N	87°31'53. 03"E	22°28'01. 69"N	87°31'55. 11"E	22°27'53. 49"N	87°31'54. 28"E	22°27'54. 00"N	87°31'52. 24"E	23560	18-11-2022
27	Rampada Rudra	230/SB2 021	MKB -20	Kangasa boti	Keshp ur	Bishwanat hpur Patna	570	363(P), 362(P), 361(P), 360(P), 373(P), 364(P), 372(P) & 334(P)	22°28'35. 28"N	87°31'56. 17"E	22°28'35. 21"N	87°31'58. 05"E	22°28'23. 49"N	87°31'56. 60"E	22°28'23. 09"N	87°31'54. 68"E	30704	18-11-2022
28	Sk Serajul Haque	231/SB2 021	MKB -21	Kangasa boti		Bishwanat hpur	569	478(P)	22°28'46. 88"N	87°31'55. 78"E	22°28'45. 83"N	87°31'58. 38"E	22°28'36. 45"N	87°31'59. 33"E	22°28'36. 71"N	87°31'56. 87"E	32072	16-12-2022
29	Swapan Das Bhowmik	232/SB2 021	MKB -25	Kangasa boti		Bhimbar	531	392(P) & 393(P)	22°29'16. 24"N	87°33'02. 90"E	22°29'17. 24"N	87°33'10. 07"E	22°29'15. 95"N	87°33'10. 15"E	22°29'14. 85"N	87°33'02. 95"E	13376	18-11-2022
30	Anindu Kumar De	667/SB2 021	MKH B-11	Kangasa boti	Kharag pur-I	Gumriyapa l	1	381(p)	22°24'34. 38" N	87°16'10. 81"E	22°24'33. 48" N	87°16'15. 43"E	22°24'23. 06" N	87°16'14. 17"E	22°24'23. 95" N	87°16'09. 40"E	36000	18-11-2022

Sl	Name of H1	Sand	Sand	River	Block	Mouza	JL	Plot	1		2		3		4		Mineable	LOI reissued date /
31	Anindu Kumar De	293/SB2 021	MSB-2	Kangasa boti		Lohatikri	136	695(P) & 697(P)	22°25'02.70"N	87°13'13.20"E	22°24'53.30"N	87°13'10.60"E	22°24'52.40"N	87°13'16.40"E	22°25'00.40"N	87°13'19.40"E	80000	18-11-2022
32	Sanjib Mandal	378/SB2 021	MSB-43	Kangasa boti		Rerapal	132	700(P)	22°24'42.69"N	87°12'08.16"E	22°24'43.62"N	87°12'12.31"E	22°24'36.75"N	87°12'12.08"E	22°24'34.25"N	87°12'02.65"E	67200	18-11-2022
33	Sk Rejabul	380/SB2 021	MSB-70	Kangasa boti		Raghunath pur	271	1041(P), 1003(P) & 1002(P)	22°26'39.24"N	87°29'21.08"E	22°26'31.13"N	87°29'41.42"E	22°26'31.05"N	87°29'32.59"E	22°26'33.24"N	87°29'25.05"E	34328	18-11-2022
34	Pranab Bhakta	376/SB2 021	MSB-33	Kangasa boti		Bhikanpur	36	133(P) & 135(P)	22°27'54.71"N	87°6'41.42"E	22°27'48.64"N	87°6'39.34"E	22°27'51.67"N	87°6'28.77"E	22°27'56.12"N	87°6'30.25"E	24862.8	16-12-2022
35	Subhrangsu Kumar Ghosh	369/SB2 021	MSB-65	Kangasa boti		Bhatpara	84	172(P) & 194(P)	22°25'30.7"N	87°09'10.4"E	22°25'29.2"N	87°09'07.7"E	22°25'22.3"N	87°09'08.1"E	22°25'22.2"N	87°09'12.0"E	33120	18-11-2022
36	Sabetun Mandal	385/SB2 021	MSB-55	Kangasa boti		Bankura	50	44(P) & 45(P)	22°26'09.30"N	87°06'55.44"E	22°26'10.38"N	87°06'59.89"E	22°26'00.57"N	87°07'03.21"E	22°25'58.78"N	87°06'57.34"E	80000	18-11-2022
37	Md Moshiur Rahaman Khan	388/SB2 021	MSB-44	Kangasa boti	Sadar	Rerapal	132	700(P)	22°24'43.67"N	87°12'12.77"E	22°24'45.62"N	87°12'19.73"E	22°24'39.86"N	87°12'20.15"E	22°24'37.01"N	87°12'12.71"E	64800	18-11-2022
38	Shankar Prasad Ghosh	443/SB2 021	MSB-56	Kangasa boti		Bankura	50	44(P), 45(P) & 65(P)	22°25'57.32"N	87°06'57.58"E	22°25'59.69"N	87°07'03.71"E	22°25'53.17"N	87°07'07.90"E	22°25'49.15"N	87°07'02.61"E	80000	16-12-2022
39	Deep Dutta	452/SB2 021	MSB-58	Kangasa boti		Nischintap ur	48	1(P) & 2(P)	22°26'51.2"N	87°07'17.6"E	22°26'51.8"N	87°07'11.3"E	22°26'47.7"N	87°07'10.6"E	22°26'45.6"N	87°07'17.0"E	40320	18-11-2022
40	Swapan Das Bhowmik	447/SB2 021	MSB-57	Kangasa boti		Nischintap ur	48	1(P), 2(P), 3(P), 19(P) & 20(P)	22°26'57.8"N	87°07'18.6"E	22°26'58.9"N	87°07'11.9"E	22°26'52.4"N	87°07'11.5"E	22°26'52.1"N	87°07'17.7"E	51840	18-11-2022
41	Sheikh Firozuddin	456/SB2 021	MSB-64	Kangasa boti		Naldumra	82	46(P)	22°25'28.2"N	87°08'08.9"E	22°25'23.0"N	87°08'09.2"E	22°25'21.6"N	87°08'18.0"E	22°25'29.3"N	87°08'17.3"E	72000	18-11-2022
42	Kishore Sing	561/SB2 021	MSB-68	Kangasa boti		Upardanga	83	706(P)	22°25'34.3"N	87°08'41.3"E	22°25'28.8"N	87°08'41.2"E	22°25'28.2"N	87°08'47.0"E	22°25'34.8"N	87°08'43.9"E	48960	18-11-2022
43	Jagadish Ghosh	549/SB2 021	MSB-41	Kangasa boti		Rrapal	132	552(P) & 700(P)	22°24'58.98"N	87°12'14.82"E	22°25'02.50"N	87°12'18.15"E	22°24'51.90"N	87°12'15.97"E	22°24'50.56"N	87°12'12.06"E	65280	16-12-2022
44	Kumarjit Giri on behalf of Kailash Construction	134/SB2 021	MKS HB-9	Subarna rekha	Kehiar y	Nekramara	129	230(P), 229(P), 140(P), 141(P) & 158(P)	22°04'09.06"N	87°10'12.96"E	22°04'09.74"N	87°10'15.51"E	22°04'01.45"N	87°10'21.77"E	22°04'00.01"N	87°10'14.24"E	74096	**LOI not issued as per NGT order. Instruction solicited from the ICE Deptt. vide memo 7397 dated 25/11/2022.**
45	Mritunjoy Pal	1125/SB 2021	MKH B-3	Kangasa boti	KGP-I	Kalyanpur	105	101(P)	22°24'37.8"N	87°16'19.7"E	22°24'36.2"N	87°16'31.5"E	22°24'33.6"N	87°16'31.3"E	22°24'35.2"N	87°16'19.3"E	24000	**LOI not reisued as Anicut dam submergence issue. Instruction solicited from the ICE Deptt**

Sl	Name of H1	Sand	Sand	River	Block	Mouza	JL	Plot	1		2		3		4		Mineable	LOI reissued date /
																		vide memo no 7238 dated 16/11/2022
46	Balaram Ghosh	671/SB2 021	MKH B-6	Kangasa boti		Gumriyapa l	1	381(P) & 382(P)	22°24'45. 9"N	87°15'11. 1"E	22°24'51. 3"N	87°15'14. 11"E	22°24'49. 2"N	87°15'21. 6"E	22°24'43. 3"N	87°15'18. 5"E	36000	**Co-ordinate mismatch with land schedule. Necessary guidance solicited from the ICE Deptt. vide memo no 2097 & 2098 dated 24/04/23**
47	Sima Mandal	273/SB2 021	MSB-1	Kangasa boti	Sadar	Lohatikri	136	695(P)	22°24'53. 55"N	87°14'07. 86"E	22°24'53. 35"N	87°13'53. 41"E	22°24'49. 69"N	87°14'07. 18"E	22°24'49. 43"N	87°14'05. 73"E	19737.84	
48	Tapas Samanta	463/SB2 021	MSB-40	Kangasa boti		Manidaha	110	1289(P)	22°24'1.5 9"N	87°11'10. 45"E	22°23'58. 11"N	87°11'3.1 1"E	22°24'6.7 6"N	87°10'58. 07"E	22°24'8.5 0"N	87°11'0.9 8"E	24862.82	**Recall petition being no CAN-1389/2019 has been filed by the State . Matter is sub-judice.**
49	Dipti Gope	734/SB2 021	MDT NB-4	Subarna rekha		Garadpur	94	1(P) & 485(P)	21.912802 °N	87.245909 °E	21.91139 2°N	87.24488 6°E	21.91102 1°N	87.24543 8°E	21.91271 9°N	87.24755 6°E	60000	**Mining remained suspended from 26/11/2018 as pre NGT Order. Necessary guidance has been solicited from the ICE Deptt. vide this office memo no 7296 dated 18/11/2022 and vide memo no 3267 dated 18/05/2023.** ***These are unregistered sand blocks of Dantan-I. Co-ordintes of Form-A is mentinioed.***
50	Rajkishore U Mahapatra	729/SB2 021	MDT NB-5	Subarna rekha		Lalitapur	95	973(P) & 1061(P)	21.910705 °N	87.245377 °E	21.91147 3°N	87.24444 5°E	21.90957 6°N	87.23250 8°E	21.90919 7°N	87.24323 7°E	48000	
51	Rajkishore Mahapatra on behalf of M/S Shiva Associates	702/SB2 021	MDT NB-6	Subarna rekha		Lalitapur	95	1060(P) & 1061(P)	21.903826 °N	87.239696 °E	21.90381 1°N	87.23966 7°E	21.89973 7°N	87.23986 7°E	21.90125 2°N	87.23962 7°E	60000	
52	Kumarjit Giri on behalf of Kailash Construction	709/SB2 021	MDT NB-7	Subarna rekha	Dantan -I	Palasia	96	1370(P) & 482(P)	21.899115 °N	87.236992 °E	21.89771 4°N	87.23762 8°E	21.89797 6°N	87.24007 1°E	21.89933 4°N	87.23973 8°E	60000	
53	Munajerul Hassan on behalf of Swastik Traders	692/SB2 021	MDT NB-8	Subarna rekha		Palasia	96	1370(P) & 482(P)	21.897348 °N	87.237917 °E	21.89567 8°N	87.23914 4°E	21.89598 4°N	87.24057 8°E	21.89760 1°N	87.24008 2°E	60000	
54	Sk Aftabuddin	725/SB2 021	MDT NB-10	Subarna rekha		Palasia	96	1370(P) & 482(P)	21.893154 °N	87.240985 °E	21.89169 2°N	87.24215 7°E	21.89234 2°N	87.24243 1°E	21.89379 9°N	87.24206 2°E	48000	
55	Sankar Das	719/SB2 021	MDT NB-16	Subarna rekha		Belmula	57	781(P)	21.951541 °N	87.238557 °E	21.95044 1°N	87.23541 2°E	21.95893 2°N	87.23622 0°E	21.94997 5°N	87.23989 9°E	60000	
56	Bina Singhania	723/SB2 021	MDT NB-25	Subarna rekha		Moyarui	97	2(P)	21.891784 °N	87.243476 °E	21.89101 5°N	87.24232 1°E	21.88874 8°N	87.24410 8°E	21.88935 0°N	87.24501 9°E	59520	
1	Abhiroop Chowdhury	1067/SB 2021	MDT NB-1	Subarna rekha	Dantan -I	Barasati	93	477 & 479	21o 54' 47.00"N	87o15' 03.90"E	21o 55' 23.10 N	87o14' 56.40"E	21o 55' 01.20 N	87o14' 48.90"E	21o 55' 01.60 N	87o14' 29.50"E	57600	Sand mining remained suspended from 26/11/2018 as pre NGT Order. ecessary guidance has been solicited from the ICE Deptt. vide this office
2	Mithu Singha	1073/SB 2021	MDT NB-3	Subarna rekha		Garadpur	94	1 & 485	21o 54' 50.70"N	87o14' 46.60"E	21o 54'46.90 "N	87o14' 46.10"E	21o 54' 46.30"N	87o14' 53.90"E	21o 54' 49.90"N	87o14' 55.00"E	60000	
3	Kalyani Mahapatra	1078/SB 2021	MDT NB-13	Subarna rekha		Hasimpur	99	56 & 435	21o 53' 11.20"N	87o14' 47.00"E	21o 53' 09.50"N	87o14' 46.10"E	21o 52' 56.20"N	87o15' 00.80"E	21o 52' 57.70"N	87o 15' 02.90"E	48000	

Sl	Name of H1	Sand	Sand	River	Block	Mouza	JL	Plot	1		2		3		4		Mineable	LOI reissued date /
4	Ankush Arora	1080/SB 2021	MDT NB-14	Subarna rekha		Hasimpur	99	56 & 435	21o 52' 53.2"N	87o15' 07.3"E	21o 52' 51.6"N	87o15' 04.5"E	21o 52' 40.9"N	87o15' 09.8"E	21o 52' 41.9"N	87o 15' 12.8"E	43200	memo no 7296 dated 18/11/2022 and vide memo no 3267 dated 18/05/2023. These are registered sand blocks of Dantan-I block. Lease period of these six (6) sand blocks is expired during suspension period. Co-ordintes of mine plan is mentioned.
5	Saroj Kumar Roy	1081/SB 2021	MDT NB-15	Subarna rekha		Belmula	57	781	21o 57' 13.50"N	87o14' 17.40"E	21o 57' 9.30"N	87o14' 00.40"E	21o 57' 5.50"N	87o14' 2.80E	21o 57' 9.60"N	87o 14' 18.90E	60000	
6	Pradip Mahapatra	1084/SB 2021	MDT NB-29	Subarna rekha		Sonakania	175	737	21o 51' 49.80"N	87o15' 10.00"E	21o 51' 50.70"N	87o15' 07.70"E	21o 51' 36.20"N	87o15' 00.30E	21o 51' 34.60"N	87o15' 02.60E	43200	

SHIFTED SAND BLOCKS (Unregtistered) WHICH ARE CANCELLED VIDE DCCB RESOLUTION DATED 14-12-2022)

Following sand blocks are shifted and cancelled.				Shifted land schedule and co-ordinates (Central Axis)							Original land scheduled of sand blocks					LOI re-issued date /Remarks
Sl No.	Name of H1 bidder	Sand ghat ID on centralized portal	Sand Block No.	River Name	Block Name	Mouza	JL no.	Plot	Latitude	Longitude	River Name	Block Name	Mouza	JL no.	Plot	
1	Ataur Rahaman Mandal	135/SB2021	MKSHB-10 (Shifted)	Subarna rekha	Keshiary	Bhasra	139	2667(P) ,	22° 03' 33.01 N	87° 10' 30.89"E	Subarna rekha	Keshiary	Nekramara	129	230(P) & 232(P)	These are **unregistered** sand blocks. Such sand blocks were shifted and later **cancelled vide DCCB resolution** dated 14.12.2022. LoI not re-issued accordingly.
2	Sek Barik	146/SB2021	MKSHB-31 (Shifted from MKB-10)	Subarna rekha	Keshiary	Atanga	140	213(P	22° 02' 50.21 N	87° 11' 21.04"E	Kangsa boti	Keshpur	Chakmansur	617	193(P)	
3	Sitesh Dhara	1415/SB2021	MKB-30 (Shifted from MKB-5)	Kangsa boti	Keshpur	Chakmansur	617	193(P)	22° 27' 34.27 N	87° 29' 56.86"E	Kangsa boti	Keshpur	Kapashtikri	530	787(P)	
4	Iyamin Mandal	545/SB2021	MSB-73 (Shifted from MKB-6)	Kangsa boti	Sadar	Chakdaulat	285	324(P)	22° 25' 54.991 N	87° 28' 46.241"E	Kangsa boti	Keshpur	Kapashtikri	530	787(P)	
5	Kartick Jana	242/SB2021	MSB-77 (Shifted from MDASB-12)	Kangsa boti	Sadar	Hhaneswar pur	109	84(P), 85(P), 86(P)	22° 24' 30.26 N	87° 10' 26.44"E	Kangsa boti	Daspur-I	Maheshpur	100	318(P)	
6	Aniruddha Shasmal	394/SB2021	MSB-76 (Shifted from MKHB-13)	Kangsa boti	Sadar	Monidaha	110	817(P), 1289(P),	22° 24' 16.34 N	87° 10' 56.12"E	Kangsa boti	KGP-I	Munibgarh	382	345(P), 346(P)	
7	Rajesh Chakraborty on behalf of Nexzen Projects &	401/SB2021	MSB-75 (Shifted from MKHB-5)	Kangsa boti	Sadar	Kankabati	142	548(P), 549(P)	22° 24' 45.725 N	87° 15' 16.444"E	Kangsa boti	KGP-I	Kalyanpur,	105	97(P), 98(P), 99(P)	

Following sand blocks are shifted and cancelled.				**Shifted land schedule and co-ordinates (Central Axis)**							**Original land scheduled of sand blocks**					**LOI re-issued date /Remarks**
Sl No.	**Name of H1 bidder**	**Sand ghat ID on centralized portal**	**Sand Block No.**	**River Name**	**Block Name**	**Mouza**	**JL no.**	**Plot**	**Latitude**	**Longitude**	**River Name**	**Block Name**	**Mouza**	**JL no.**	**Plot**	
	Dev. Pvt. Ltd.															
8	Rajesh Chakraborty on behalf of Nexzen Projects & Dev. Pvt. Ltd.	519/SB2021	MSB-53 (Shifted from MSB-63)	Kangsaboti	Sadar	Gurguripal	134	485(P)	22° 25' 04.42 N	87° 12' 47.12"E	Kangsaboti	Sadar	Gangadaharpur,	49	9 (P), 10(P)	
9	Kalu Majhi	1410/SB2021	MSB-74 (Shifted from MSB-26)	Kangsaboti	Sadar	Goaldanga	51	197(P) 198(P) & 427(P)	22° 25' 44.429 N	87° 07' 11.652"E	Kangsaboti	Sadar	Chaladan	47	2(P) 3(P), & 36(P)	
10	Md Enamul Haque on behalf of Hoque Mercantile Pvt. Ltd.	1159/SB2021	MSB-54 (Shifted from MSB-21)	Kangsaboti	Sadar	Gurguripal	134	483(P), 485	22° 25' 05.661 N	87° 12' 55.889"E	Kangsaboti	Sadar	Dherua,	28	924(P)	
11	Tanushree Ghosh	1412/SB2021	MSB-62 (Shifted from MKHB-12)	Kangsaboti	Sadar	Jamsole,	137	323(P)	22° 24' 56.08 N	87° 14' 27.87"E	Kangsaboti	KGP-I	Munibgarh,	382	345(P)	
1	Premi Arora	1253/SB2021	MDB-22 (Shifted from MCHB-2)	Kangsaboti	Debra	Jagannathpur	39	753(P)	22°28' 5.062"N	87°35' 6.217"E	Silaboti	CK-I	Manikkundu	151	1046(P)	These are **registered** sand blocks. Such sand blocks were shifted and later **cancelled vide DCCB**
2	Sk Makbul Hossain	1241/SB2021	MDB-10 (Shifted from MDB-1)	Kangsaboti	Debra	Jagannathpur	39	753(P)	22°28' 1.807"N	87°35' 10.278"E	Kangsaboti	Debra	Kamalpur	26	744(P)	
3	Prasanta Karak	1279/SB2021	MGARB-44 (Shifted from MCHB-15)	Silaboti	Garhbeta	Moldanga	575	473(P)	22° 52' 54.543"N	87°22' 0.125"E	Silaboti	CK-I	Dhaikhanda	132	1(P)	
4	Mohan Lal Singha	1275/SB2021	MGARB-23 (Shifted)	Silaboti	Garhbeta	Golahat	573	1(P)	22° 53' 9.53"N	87°21' 7.22"E	Silaboti	Garhbeta	Gangani	485	1(P)	
5	Ataur Rahaman Mandal	1327/SB2021	MGARB-28 (Shifted)	Silaboti	Garhbeta	Baranda	572	1(P)	22° 52' 40.22"N	87°20' 59.54"E	Silaboti	Garhbeta	Bhagardanga	366	72(P)	

Following sand blocks are shifted and cancelled.				Shifted land schedule and co-ordinates (Central Axis)							Original land scheduled of sand blocks					LOI re-issued date /Remarks
Sl No.	**Name of H1 bidder**	**Sand ghat ID on centralized portal**	**Sand Block No.**	**River Name**	**Block Name**	**Mouza**	**JL no.**	**Plot**	**Latitude**	**Longitude**	**River Name**	**Block Name**	**Mouza**	**JL no.**	**Plot**	
6	Bablu Sarkar	1268/SB2021	MGARB-17 (Shifted)	Silaboti	Garhbeta	Lodha	886	389(P)	22° 51' 30.28"N	87°27' 49.32"E	Silaboti	Garhbeta	Barai	905	999(P)	**resolution** dated 14.12.2022. LoI not re-issued accordingly.
7	Prasanta Karak	1285/SB2021	MKB-28 (Shifted from MCHB-14)	Kangsaboti	Keshpur	Gopinathpur	321	477(P), 478(P) & 585(P)	22° 32' 52.43"N	87° 4' 22.40"E	Silaboti	CK-I	Kuldaha	284	977(P)	
8	Tapas Ghosh	1302/SB2021	MSB-3 (Shifted from MSB-18)	Kangsaboti	Sadar	Lohatikri	136	695(P) & 697(P)	22° 24' 54.034"N	87°13' 24.694"E	Kangsaboti	Sadar	Dherua	28	922(P)	
9	Kalipada Bhunia	1316/SB2021	MSB-42 (Shifted from MSB-25)	Kangsaboti	Sadar	*Rerapal*	132	552(P), 700(P)	22° 24' 47.644"N	87°12' 15.150"E	Kangsaboti	Sadar	*Chaladan*	47	2(P),3(P) & 36(P)	

Based on DSR potential blocks, sand blocks are auctioned for the district which area given as Table 8.2 and map of these blocks are given as Figure 8.1.

Table 8.2: List of WBMDTCL Sand Auction Block of the district

SL. NO	NAME	River	Area (HA)	Potential	Block	Status
1	MIN_EMED_1	Shilabati	7.01	PSM_GB2_SB_01	Garhbeta-2	ACUTIONED
2	MIN_EMED_2	Kangsabati / Kansai	1.96	PSM_DB_KS_58	Debra	ACUTIONED
3	MIN_EMED_3	Shilabati	7.99	PSM_GB2_SB_08	Garhbeta-2	ACUTIONED
4	MIN_WMED_10	Shilabati	3.11	PSM_GB2_SB_01A	Garhbeta-2	ACUTIONED
5	MIN_WMED_12	Kangsabati / Kansai	3.39	PSM_MD_KS_30(XXXB)	MIDNAPORE	ACUTIONED
6	MIN_WMED_13	Kangsabati / Kansai	3.37	PSM_KP_KS_34_35	KESHPUR	ACUTIONED
7	MIN_WMED_14	Kangsabati / Kansai	4.25	PSM_KP_KS_37	KESHPUR	ACUTIONED
8	MIN_WMED_15	SUBARNAREKHA RIVER	49.60	PSM_DT1_SR_11	DANTAN-I	ACUTIONED
9	MIN_WMED_16	SUBARNAREKHA RIVER	19.31	PSM_DT1_SR_12(XIIA)	DANTAN-I	ACUTIONED
10	MIN_WMED_17	SUBARNAREKHA RIVER	7.47	PSM_DT1_SR_12(XIIA)	DANTAN-I	ACUTIONED
11	MIN_WMED_18	SUBARNAREKHA RIVER	26.77	PSM_DT1_SR_12(XIID)	DANTAN-I	ACUTIONED
12	MIN_WMED_19	SUBARNAREKHA RIVER	7.98	PSM_DT1_SR_20	DANTAN-I	ACUTIONED
13	MIN_WMED_30	Silabati	1.16	PSM_GB2_SB_05	GARHBETA - II	ACUTIONED
14	MIN_WMED_31	Silabati	2.20	PSM_GB2_SB_06	GARHBETA - II	ACUTIONED
15	MIN_WMED_36	Silabati	1.30	PSM_GB1_SB_15	GARHBETA - I	ACUTIONED
16	MIN_WMED_37	Silabati	1.20	PSM_GB1_SB_19	GARHBETA - I	ACUTIONED
17	MIN_WMED_38	Silabati	1.02	PSM_GB1_SB_25	GARHBETA - I	ACUTIONED
18	MIN_WMED_39	Silabati	1.30	PSM_GB1_SB_28A	GARHBETA - I	ACUTIONED
19	MIN_WMED_40	Silabati	1.71	PSM_GB1_SB_29A	GARHBETA - I	ACUTIONED
20	MIN_WMED_41	Silabati	1.21	PSM_GB1_SB_38_39	GARHBETA - I	ACUTIONED

8.3 Detail of production of sand and other minerals during last three years

Last 3 years production of minor mineral of Paschim Medinipur district is furnished in Table 8.2.

Table 8.3: Details of production of sand as per mine plan in Paschim Medinipur district

Sl. No.	Year	Name of mineral	Total Production (inCft.)	Total Production in cum
1	2017-2018	Sand	59,980,000	1698428.43
2	2018-2019	Sand	59,550,000	1686252.3
3	2019-2020	Sand	65,500,000	1854735.95

Conversion factor: 1cum=35.315 cft

9 Details of revenue generated from mineral sector during last three years

Revenue generated for last 3 years in Paschim Medinipur district is furnished in Table 9.1.

Table 9.1: District revenue generation from mineral sector

Year	Royalty amount
2017-18	111,608,841.00
2018-19	111,532,548.00
2019-20	121,331,797.00

10 Transport

The most common transport system in Paschim Medinipur district is road transport (Figure 10.1). The district is well networked with other part of the State through roadways. National Highway (NH-6) passes through the district and connects other districts like Purba Medinipur, Bankura, Birbhum and Murshidabad. Besides the National Highway, few other State Highways also passes through the district. State Highway (SH)-4 connects Sarenga, Goaltore, Chandrakona, Ghatal and Panskura. SH-5 connects Banspahan, Narayanpur, Silda, Lodhasuli, Kharagpur (via NH-6), Keshiary and Belda. SH-7connects Ram Jibanpur, Khirpai, Chandrakona, Keshpur and Medinipur. SH-9 connects Beragaria and Silda.

With regard to railways, Kharagpur is very important junction of the South-Eastern Railways. Kharagpur junction has the world's third longest railway platform with a length of 1,072.5 metres. From Kharagpur the railway lines are extended to many important cities of the country. Presently 5 important lines pass through Kharagpur which are Howrah-Nagpur-Mumbai line, Howrah-Chennai main line, Howrah-Kharagpur line, Asansol–Tatanagar–Kharagpur line and Kharagpur-Puri line.

A transportation map demarcating approach road to the potential sand blocks from the nearest National Highway/ Sate Highway has been prepared and presented in Figure 10.2.

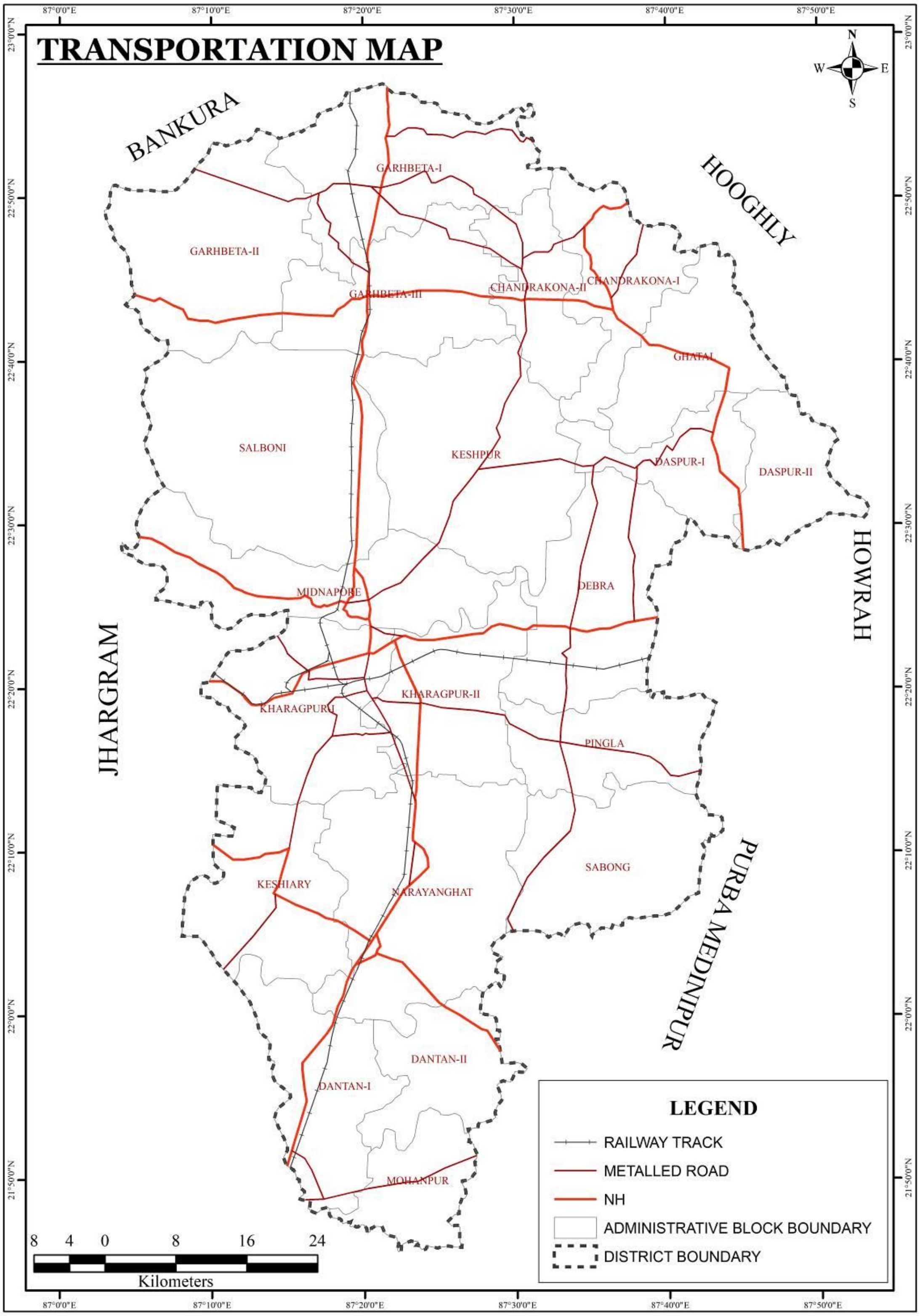


Figure 10.1: Transportation map of Paschim Medinipur District

(Source: National Informatics Centre)

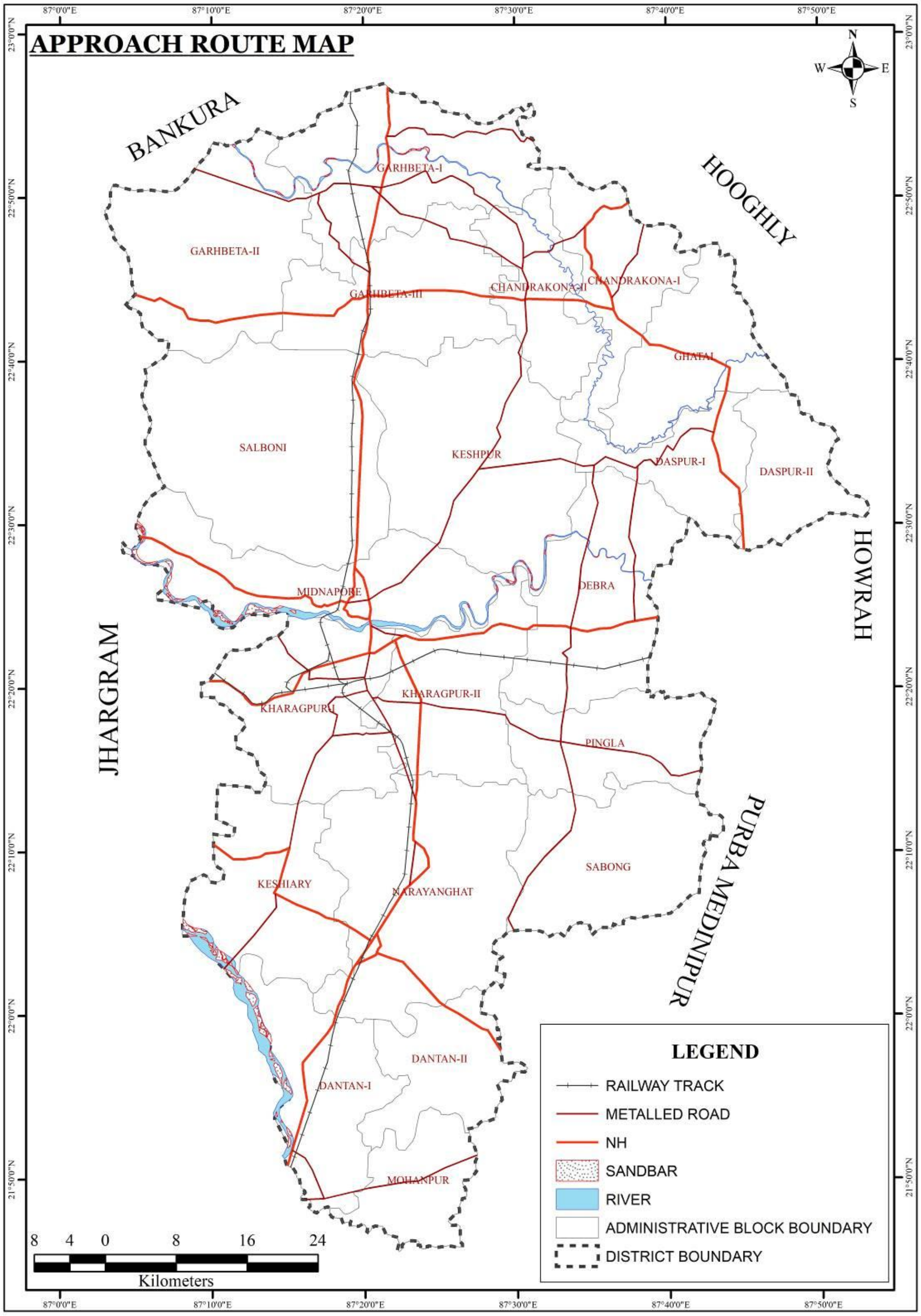


Figure 10.2: Map showing approach road to potential sand bars

(Source: National Informatics Centre)

PART B: INSITU MINOR MINERAL DEPOSITS

11 In-situ Minerals

11.1 Mineral Reserve

Mineral resources of the district are still not well established, the district does not have reserve of any major mineral deposits.

11.2 Mineral Potential

Sand: Sand is the important riverbed mineral found to be potential for mining. Considerable quantity of quality sands is found to occur in the riverbed of the district.

Morrum: The western part the district represents the extension of the eastern margin of the Chhotanagpur plateau with the dominance of red lateritic and ferralitic soils. Occurrences of laterictic deposits are furnished as Annexure-5.

Table 11.1: In-situ Minerals Occurrences

Name of mineral	Name of associated minerals, if any	Host rock of mineralization	Area of mineralization	Depth of mineralization	Whether virgin or partially excavated	Name of land (whether free for mining/forest/agricultural	Mineral reserve (approximate) mentioning grade	Location of potential mineralized zones				Area within prohibited zone as per rule 3(7) of WBMMC Rules, 2016	Infrastructure available near the mineralized zone
								Administrative Block	Mouza	Plot No.s	Co-ordinates		
Moorrum	Not Applicable	Not Applicable	Western part of district	20m	Yet to be excavated	Private, Revenue, Revenue Forest land	Yet to be explored	Garbeta, Salboni, Kharagpur, Keshiary				Not studied	Road connectivity present

11.3 Mineral development prospect of the district with respect to Minor Mineral

The district is not very rich in mineral resources and there are no mines in the district. However, collections of sand and stone from the riverbed of the river terrain are minor mineral sources. In this district some of big rivers are flowing like Shilabati, Kangsabati, Subarnarekha, so in this region it has been seen that the different geomorphic features like Alluvium Plain, Alluvial Fan etc, are created by river deposition activity. So, in this region there is huge deposition of sand, clay has found, so the sand mining or the sand industry should the very useful for this district.

11.4 Exploration requirement of the district

In the district the sand industry might be very useful. Therefore, there is a need for more scientific sand mining procedures. So, the scope of sand Exploration in this district is very high. Also, it is highly recommended to conduct detailed exploration with respect to lateritic deposits reported in the western part of the district to establish mineral resources of the district.

12 Remedial measure to mitigate the impact of mining

12.1. Environmental Sensitivity

Paschim Medinipur district represents a unique geo-environmental setup. As human population increases, forests are being depleted for the extension of agricultural lands, introduction of new settlements, roadways etc

Due to unprecedented growth of population during the last few decades, nature has started reacting sharply to the accumulated human guilt. Soil erosion and its conservation play an important role.

The land use practices play the most important role in determining the stability factors in respect of landslide hazards. Stone quarrying from the slope is another way of human intervention that causes occasional slope failure.

12.2. Sand mining Impact

Another serious environmental problem around the globe in recent years is of sand and gravel mining. Sand mining is a process of extraction of sand from an open pit, river bed, sea beaches, ocean floor, river banks, deltas and island dunes. The extracted sand could be utilised for various types of manufacturing, such as concrete used in the construction of building and other structures. The sand can also be used as an abrasive. The demand for sand will increase with population growth and urbanization. The high demand of sand has has led to unsustainable sand mining process resulting in illegal mining.

Although most jurisdictions have legal limit on the location and volume of sand that can be mined, illegal sand extraction is taking place in many parts of the country due to rapid urbanisation and industrialisation.

Removal or extraction of too much sand from rivers leads to erosion of river banks. Deltas can recede due to sand mining. These destructive effects of sand mining ultimately results in loss of fertile land and property. It also destabilizes the ground and causes failure of engineering structures.

In-stream mining directly alters the channel geometry and bed elevation. Removing sediment from the channel disrupts the pre-existing balance between sediment supply and transporting capacity, typically inducing incision upstream and downstream of the extraction site. The resultant incision alters the frequency of floodplain inundation along the river courses, lowers valley floor water table and frequently leads to destruction of bridges and channelization structures.

Sand Mining in beaches disturbs the ecosystem of different fauna of the beaches. The sand mining from natural barriers, made up of sand, causes flooding of the natural habitat. The sand mining activity destroys the aesthetic beauty of beaches and river bank and makes the ecosystem unstable. If there are popular tourist destination, tourism potential of such areas will decline.

It can be concluded that there has been little in depth research on the environmental, social and political effects of land use practices and calls for urgent attention by the competent authority.

12.3.Remedial measure

12.3.1. Sustainable Mining Practices:

- The depth of mining in riverbed shall not exceed 3 meter or base flow level whichever is less, provided that where the Joint Inspection Committee certifies about excessive deposit or over accumulation of mineral in certain reaches requiring channelization, it can go above 3 meters.
- Mining shall be done in layers of 1 meter depth to avoid ponding effect and after first layer is excavated, the process will be repeated for the next layers.
- No stream should be diverted for the purpose of sand mining. No natural water course and/ or water resources are obstructed due to mining operations.
- No blasting shall be resorted to in river mining and without permission at any other place.

12.3.2. Monitoring the Mining of Mineral and its Transportation:

- For each mining lease site the access should be controlled in a way that vehicles carrying mineral from that area are tracked and accounted for.
- There should be regular monitoring of the mining activities in the State to ensure effective compliance of stipulated EC conditions and of the provisions under the Minor Mineral Concessions Rules framed by the State Government.

12.3.3. Noise Management:

- Noise arising out of mining and processing shall be abated and controlled at source to keep within permissible limit.
- Restricted sand mining operation has to be carried out between 6 am to 7 pm.

12.3.4. Air Pollution and Dust Management:

- The pollution due to transportation load on the environment will be effectively controlled and water sprinkling will also be done regularly.
- Air pollution due to dust, exhaust emission or fumes during mining and processing phase should be controlled and kept in permissible limits specified under environmental laws.

- The mineral transportation shall be carried out through covered trucks only and the vehicles carrying the mineral shall not be overloaded. Wheel washing facility should be installed and used.

12.3.5. Bio-Diversity Protection:

- Restoration of flora affected by mining should be done immediately. Five times the number of trees destroyed by mining to be planted preferably of indigenous species. Each EC holder shall have to undertake plantation of trees over at least 20% of the total area of lease in the same plot or plots utilised for such working.
- No mining lease shall be granted in the forest area without forest clearance in accordance with the provisions of the Forest Conservation Act, 1980 and the rules made there under.
- Protection of natural home of any wild animal shall have to be ensured.
- No felling of tree near quarry is allowed. For mining lease within 10km of the National Park / Sanctuary or in Eco-Sensitive Zone of the Protected Area, recommendation of Standing Committee of National Board of Wild Life (NBWL) have to be obtained as per the Hon'ble Supreme Court order in I.A. No. 460 of 2004.
- Spring sources should not be affected due to mining activities. Necessary protection measures are to be incorporated.

12.3.6. Management of Instability and Erosion:

- Removal, stacking and utilization of top soil should be ensured during mining. Where top soil cannot be used concurrently, it shall be stored separately for future use keeping in view that the bacterial organism should not die and should be spread nearby area.
- The EC should stipulate conditions for adequate steps to check soil erosion and control debris flow etc. by constructing engineering structures
- Use of oversize material to control erosion and movement of sediments
- No overhangs shall be allowed to be formed due to mining and mining shall not be allowed in area where subsidence of rocks is likely to occur due to steep angle of slope.
- No extraction of stone / boulder / sand in landslide prone areas.
- Controlled clearance of riparian vegetation to be undertaken.

12.3.7. Waste Management:

- Site clearance and tidiness is very much needed to have less visual impact of mining.
- Dumping of waste shall be done in earmarked places as approved in Mining Plan.
- Rubbish burial shall not be done in the rivers.

12.3.8. Pollution Prevention:

- Take all possible precautions for the protection of environment and control of pollution.
- Effluent discharge should be kept to the minimum and it should meet the standards prescribed.

12.3.9. Protection of Infrastructure:

- Mining activities shall not be done for mine lease where mining can cause danger to site of flood protection works, places of cultural, religious, historical, and archeological importance.
- For carrying out mining in proximity to any bridge or embankment, appropriate safety zone should be worked out on case to case basis, taking into account the structural parameters, location aspects and flow rate, and no mining should be carried out in the safety zone so worked out.

Mining shall not be undertaken in a mining lease located in 300-500 meter of bridge, 300 meter upstream and downstream of water supply / irrigation scheme, 100 meters from the edge of National Highway and railway line, 50 meters from a reservoir, canal or building, 25 meter from the edge of State Highway and 10 meters from the edge of other roads except on special exemption by the Sub-Divisional level Joint Inspection Committee.

13 Suggested reclamation plan for already mined out areas

As per statute all mines/quarries are to be properly reclaimed before final closure of the mine. Reclamation plans should include:

a) A baseline survey of river cross section. The study of cross section is basis for delineating channel form. Cross-sections must be surveyed between two monumented endpoints set on the river banks, and elevations should be referenced based on benchmark set in the area;

b) The proposed mining cross-section data should be plotted over the baseline data to illustrate the vertical extent of the proposed excavation;

c) The cross-section of the replenished bar should be the same as the baseline data. This illustrates that the bar elevation after the bar is replenished will be the same as the bar before extraction;

d) A planimetric map showing the aerial extent of the excavation and extent of the riparian buffers;

e) A planting plan developed by a plant ecologist familiar with the flora of the river for any areas such as roads that need to be restored;

f) Each EC holder shall have to undertake plantation of trees over at least 20% of the total area of the plot or plots of land as subject to such working in accordance with a plan approved by the concerned Divisional Forest Officer holding jurisdiction, provided further the competent authority l.e, The Divisional Forest Officer may fix up norms for plantation of trees in a particular area regarding choice of species, spacing, nos of trees and maintenance etc.

f) A monitoring plan has to establish.

14 Risk assessment and disaster management plan

Risk analysis is the systematic study of risks encountered during various stages of mining operation. Risk analysis seek to identify the risks involved in mining operations, to understand how and when they arise, and estimate the impact (financial or otherwise) of adverse outcomes. The sand mining operation in the district is mainly done manually.

14.1. Identification of risk due to river sand mining

There is no land degradation due to mining activities as mining is done only on river bed dry surface. There will be no OB or waste generation as the sand is exposed in the river bed and is completely saleable. There will be neither any stacking of soil nor creation of OB dumps. The mining activity will be carried out upto a maximum depth of 3m below the surface level. So there is no chance of slope failure, bench failure in the mines. However there are some identified risks in the mining activity which are as follows:

1. Accident during sand loading and transportation
2. Inundation/ Flooding
3. Quick Sand Condition

14.2. Mitigation measures

14.2.1. Measures to prevent accidents during loading and transportation:

- During the loading, trucks should be brought to a lower level so that the loading operation suits the ergonomic condition of the workers.
- The workers will be provided with gloves and safety shoes during loading.
- Opening of the side covers of the truck should be done carefully and with warning to prevent injury to the loaders.
- Mining operations will be done during daylight only.
- The truck will be covered with tarpaulin and maintained to prevent any spillage.
- To avoid danger while reversing the trackless vehicles especially at the embankment and tipping points, all areas for reversing of lorries should be made man free as far as possible.
- All transportation within the main working will be carried out directly under the supervision and control of the management.
- Overloading should not be permitted and the maximum permissible speed limit should be ensured.
- There will be regular maintenance of the trucks and the drivers will have valid driving license.

14.2.2. Measures to prevent incidents during Inundation/ Flooding:

To minimize the risk of flooding/ inundation following measures should be under taken:

- Mining will be completely closed during the monsoon months.
- Proper weather information particularly on rain should be kept during the operational period of mines so that precautionary measures will be undertaken.

14.2.3. Measures for mitigation to quick sand condition:

- Quick sand zone and deep water zone will be clearly demarcated and all the mine workers will be made aware of the location.
- Mining will be done strictly as per the approved mining plan.

14.3. Disaster management plan

As the depth of mining will be maximum of 3m below the surface level considering local condition, the risk related to mining activity is much less. The mining operation will be carried out under the supervision of experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS. All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955 and other laws applicable to mine will strictly be complied. During heavy rainfall and during the monsoon season the mining activities will be closed. Proper coordination with Irrigation Department should be maintained so that at the time of releasing water, if any, from the dam suitable warning/information is given in advance. Special attention and requisite precautions shall be taken while working in areas of geological weakness like existence of slip, fault etc. The mining site will be supplied with first aid facilities and the entire mines worker will have access to that.

15 Conclusions and Recommendations

The District Survey Report has been prepared in conformity with the S O 141 (E), S O 3611 (E) and other sand mining guidelines published by MoEF&CC time to time as well as the requirement specified in WBMMCR, 2016.

Potential areas of economic mineralization and mineral deposition have been identified and list is furnished in the report. Estimation of annual sand deposition by replenishment study has been incorporated in the report.

The district survey report has been prepared by utilizing both primary and secondary data. The primary data generation involved the satellite imagery study, site inspection, survey, ground truthing etc. while secondary data has been acquired through various authenticated sources and satellite imagery studies.

The land surface of the district is characterized by hard rock uplands, lateritic covered area, flat alluvial and deltaic plains. Extremely rugged topography is seen in the western part of the district and rolling topography is experienced in the lateritic covered area. These rolling plains gradually merge into flat alluvial and deltaic plains to the East and the South-East of the District.

The district is characterized by humid tropical monsoon climate. The average annual rainfall in the district is 1485mm (2016-2020).

The maximum area of the district falls under the Seismic Zone III and rest of the part fall under Zone II, indicating the district is under safe earthquake–prone zone.

Paschim Medinipur district does not hold huge minerals deposits. Lateritic rocks are found in many parts of the district. The extracted laterite is used for various purposes. Claystone are also noted in the district. It is mainly used in the manufacture of household utensils.

The district is generating considerable revenue from mining of minor minerals such as riverbed sand deposits. Revenue generated in the district of Paschim Medinipur from Minor minerals during the period of April 2017 to January 2020 is Rs. 34.45 crores.

The district has an upside potential for development of riverbed sand. The occurrence has been reported by Directorate of Mines and Minerals, Government of West Bengal and others in previous instances. It requires further systematic and scientific approach to quantify the resource along with their grade assessment. The occurrences are mostly observed in the river Shilabati, Kangsabati and Subarnarekha River. This report also recommends undertaking detail exploration (G2 level) program to assess the mineral occurrences in the major rivers of the district and should have a proper development and production plan for the specified minerals.

15.1. Conclusion

I. The river beds of the district are enriched with sand which is highly potential for mining.

II. The replenishment study has been carried out during the preparation of this DSR. Both field-based surveys coupled with satellite imagery study and empirical studies were carried out to determine the rate of replenishment in each river of the district.

III. The determined values of various methods as adopted for replenishment study gives a comparable value and in all cases the values are found to be much more as compared to the capping limit (60%) as suggested in the Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) January 2020, Issued by Ministry of Environment, Forest and Climate Change (MoEF&CC) 2020.

IV. Field base study shows variation of replenishment from 97.0 to 98.5% in the district and for theoretical replenishment study based on mining lease shows variation from 70% to 76% with an average of 73.63% of replenishment rate in the district.

V. The total potential riverbed deposit for the district comes to about 30.77 Mcum.

15.2. Recommendation:

1. The mining lease distribution for the district must be carried out by involving a district level committee constituted with inter-disciplinary members of various department including irrigation and waterways, DL&LRO, forest, biodiversity, wetland management, SWID or any other relevant department which the district authority may find suitable to include.
2. While recommending for Mining Leases, the District Level Committee should ensure the protection of Biodiversity Zones as recorded by relevant Government Agenesis from time to time.
3. During finalization of mining leases for the district, strict adherence of Supreme Court orders No 1501 dated 03/06/2022 should be followed.
4. Efforts should be given to restrict distribution of mining leases along the confluence zone of the rivers where rich aquatic habitats are reported.
5. Since the state of West Bengal has royalty system in volumetric measurement, specific gravity for sand and gravel has not been determined during this study. However, during the finalization of mining lease if it is found necessary to conduct such test may be initiated by the state government on case-to-case basis.
6. It is recommended to have a periodical review along with primary data collection during pre - and post-monsoon periods to record the seasonal variance of the sedimentation rate on annual basis and update replenishment rate of the district.

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PLATE 1

DRAINAGE MAP OF THE DISTRICT

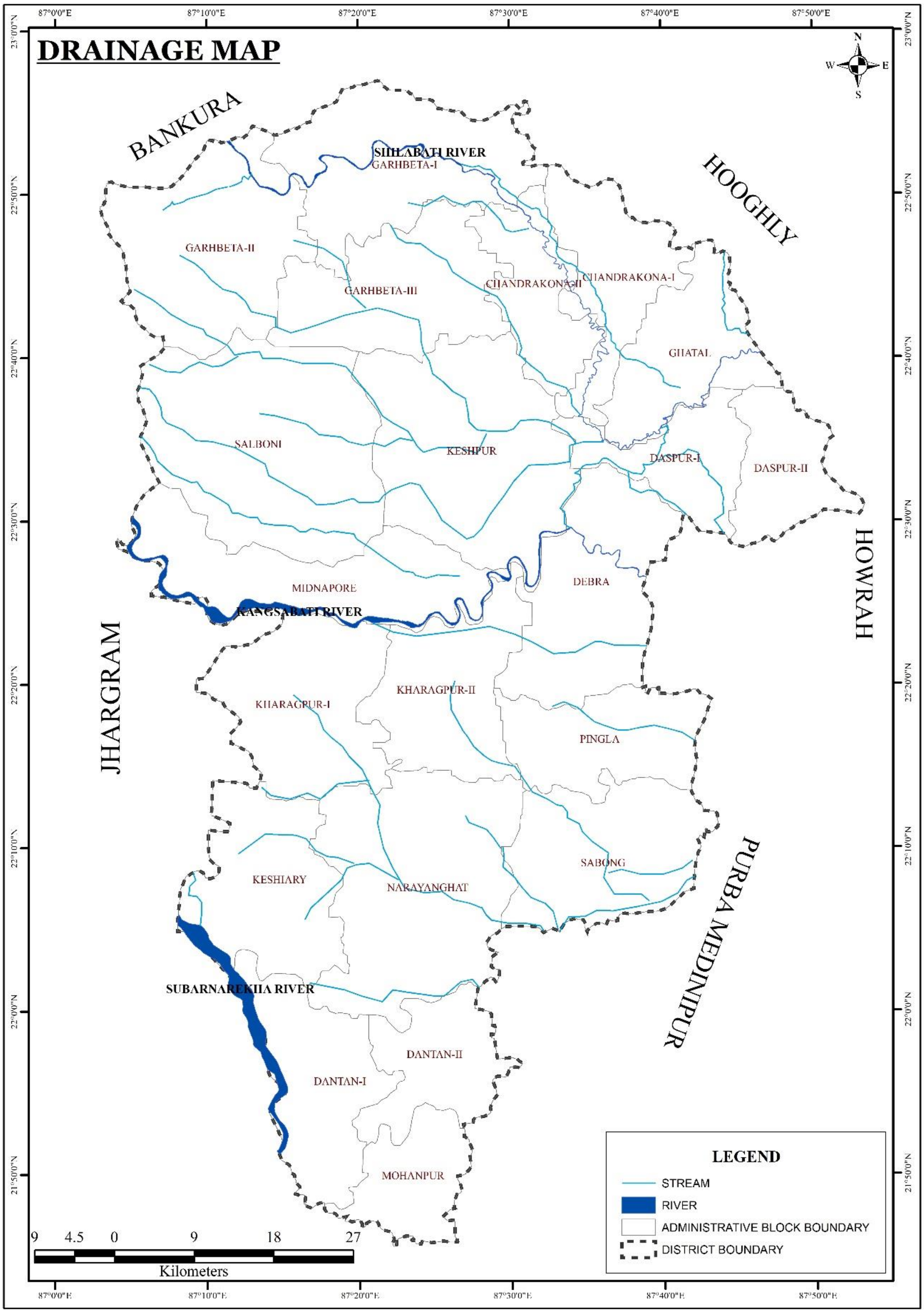
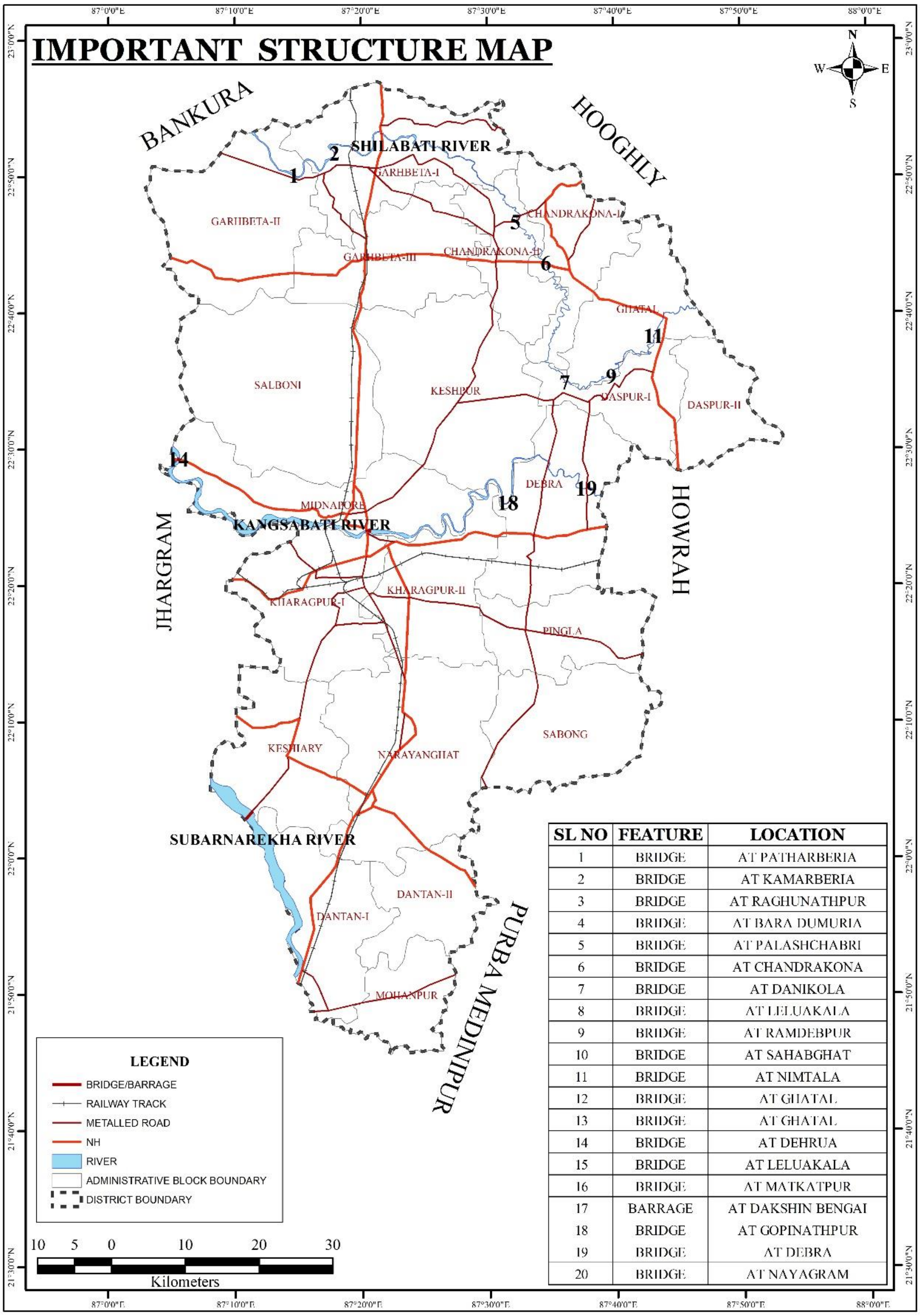


Plate 1A: Drainage Map of the District *(Source: National Informatics Centre -NIC Website, Sept 2020)*



SL NO	FEATURE	LOCATION
1	BRIDGE	AT PATHARBERIA
2	BRIDGE	AT KAMARBERIA
3	BRIDGE	AT RAGHUNATHPUR
4	BRIDGE	AT BARA DUMURIA
5	BRIDGE	AT PALASHCHABRI
6	BRIDGE	AT CHANDRAKONA
7	BRIDGE	AT DANIKOLA
8	BRIDGE	AT LELUAKALA
9	BRIDGE	AT RAMDEBPUR
10	BRIDGE	AT SAHABGHAT
11	BRIDGE	AT NIMTALA
12	BRIDGE	AT GHATAL
13	BRIDGE	AT GHATAL
14	BRIDGE	AT DEHRUA
15	BRIDGE	AT LELUAKALA
16	BRIDGE	AT MATKATPUR
17	BARRAGE	AT DAKSHIN BENGAI
18	BRIDGE	AT GOPINATHPUR
19	BRIDGE	AT DEBRA
20	BRIDGE	AT NAYAGRAM

Plate No 1B: Location Map of dams, barrages, bridge showing on drainage system of the district *(Source: National Informatics Centre -NIC Website, Sept 2020)*

PLATE 2A

DISTRIBUTION MAP OF SAND BARS ON RIVERS DURING PRE-MONSOON PERIOD

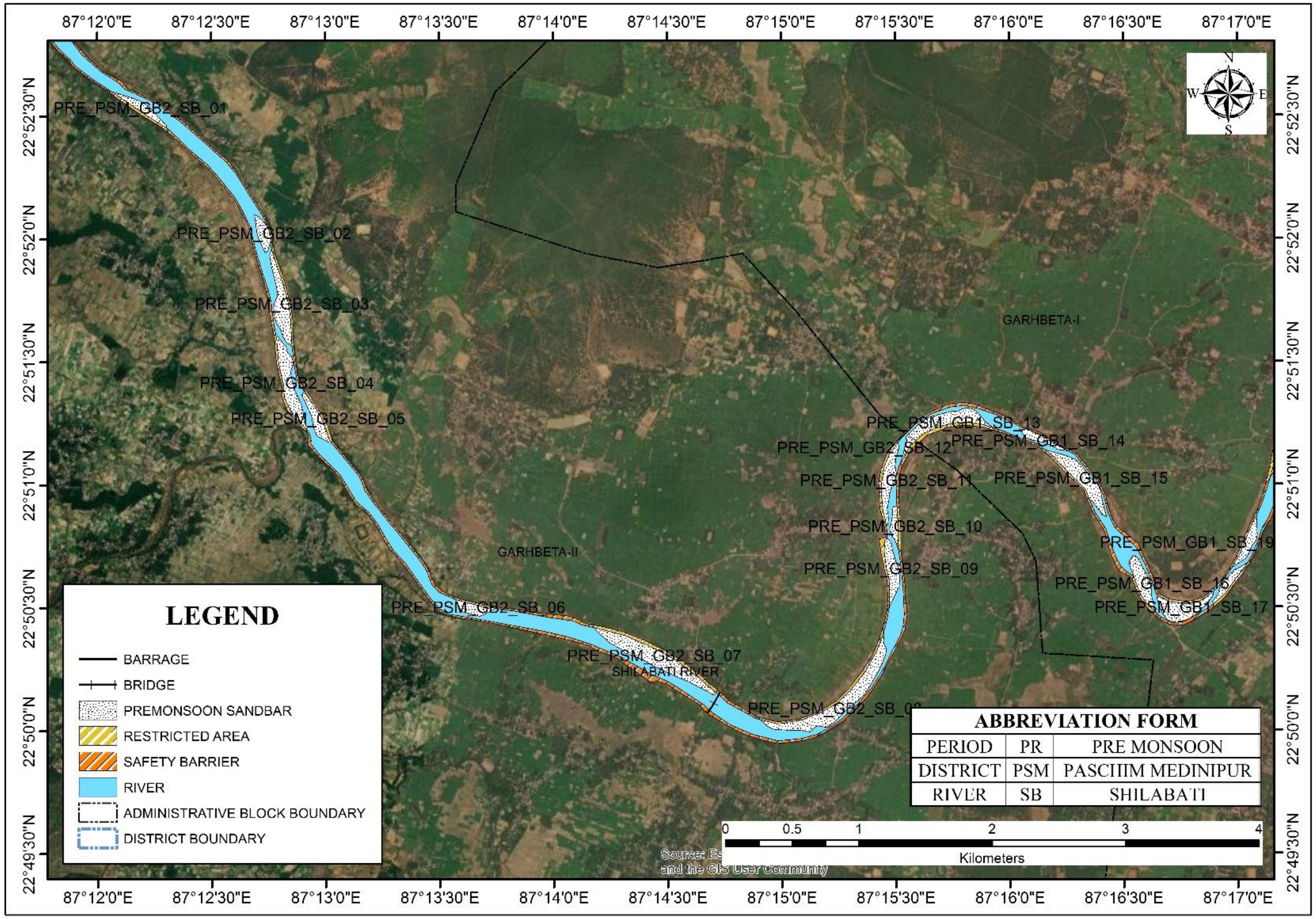


Plate 2A1: Distribution Map of Sand Bars on Rivers During Pre-Monsoon Period of Paschim Medinipur District

(Source: ISRO RESOURCE Sat 2 LISS III Sensor, March 2020)

Plate 2A2: Distribution Map of Sand Bars on Rivers During Pre-Monsoon Period of Paschim Medinipur District

(Source: ISRO RESOURCE Sat 2 LISS III Sensor, March 2020)

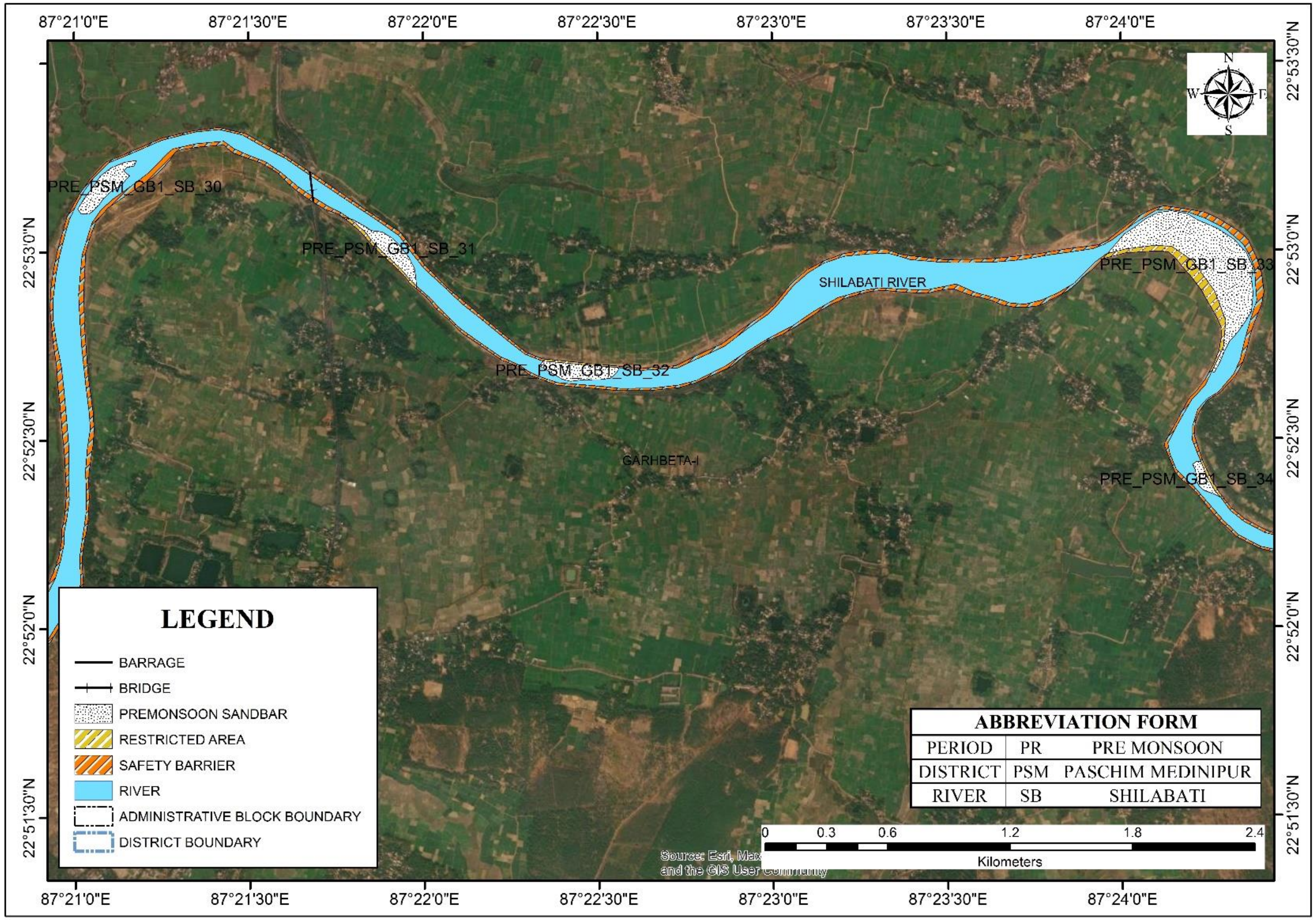


Plate 2A3: Distribution Map of Sand Bars on Rivers During Pre-Monsoon Period of Paschim Medinipur District
(Source: ISRO RESOURCE Sat 2 LISS III Sensor, March 2020)

Plate 2A4: Distribution Map of Sand Bars on Rivers During Pre-Monsoon Period of Paschim Medinipur District
(Source: ISRO RESOURCE Sat 2 LISS III Sensor, March 2020)

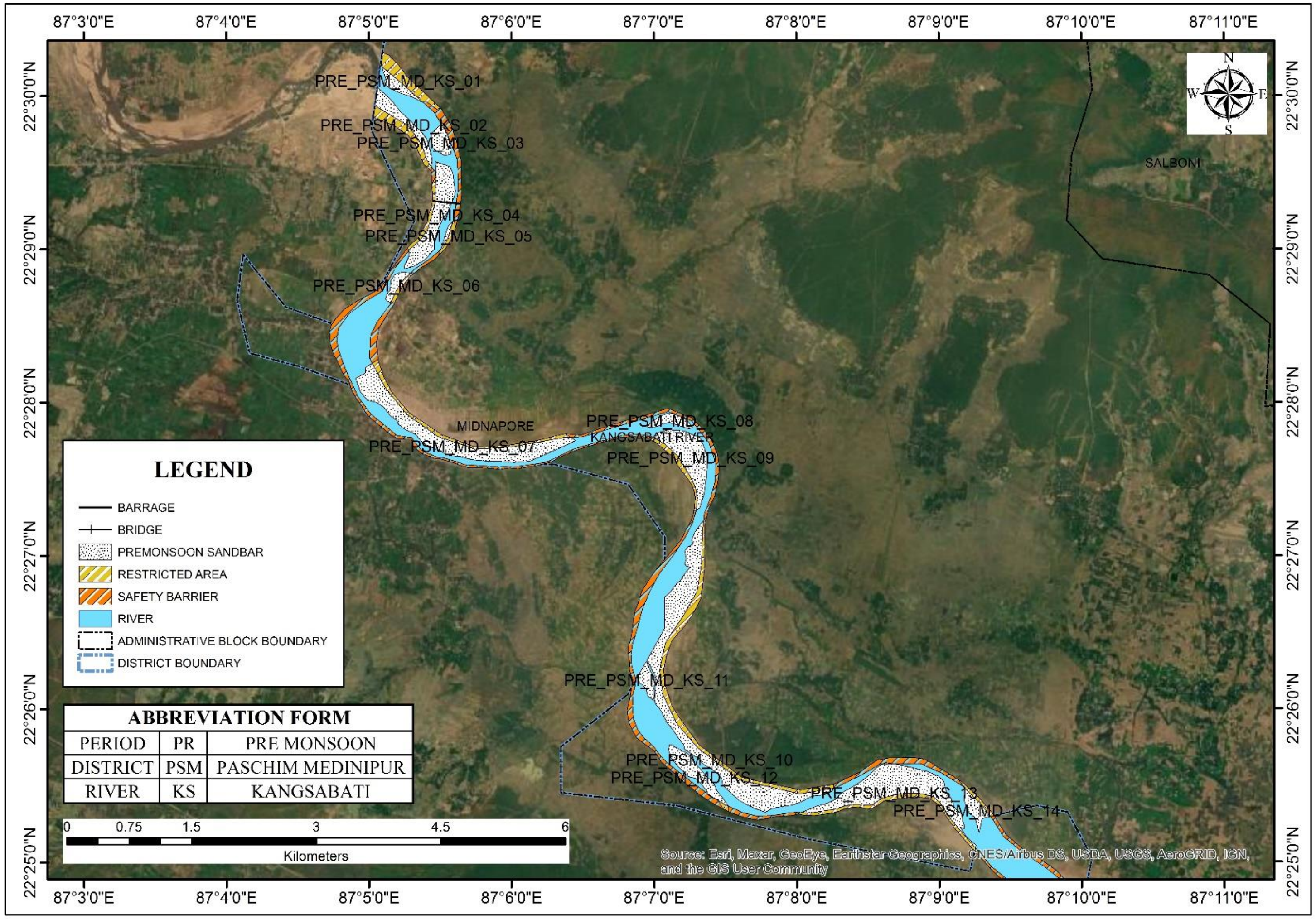


Plate 2A5: Distribution Map of Sand Bars on Rivers During Pre-Monsoon Period of Paschim Medinipur District
(Source: ISRO RESOURCE Sat 2 LISS III Sensor, March 2020)

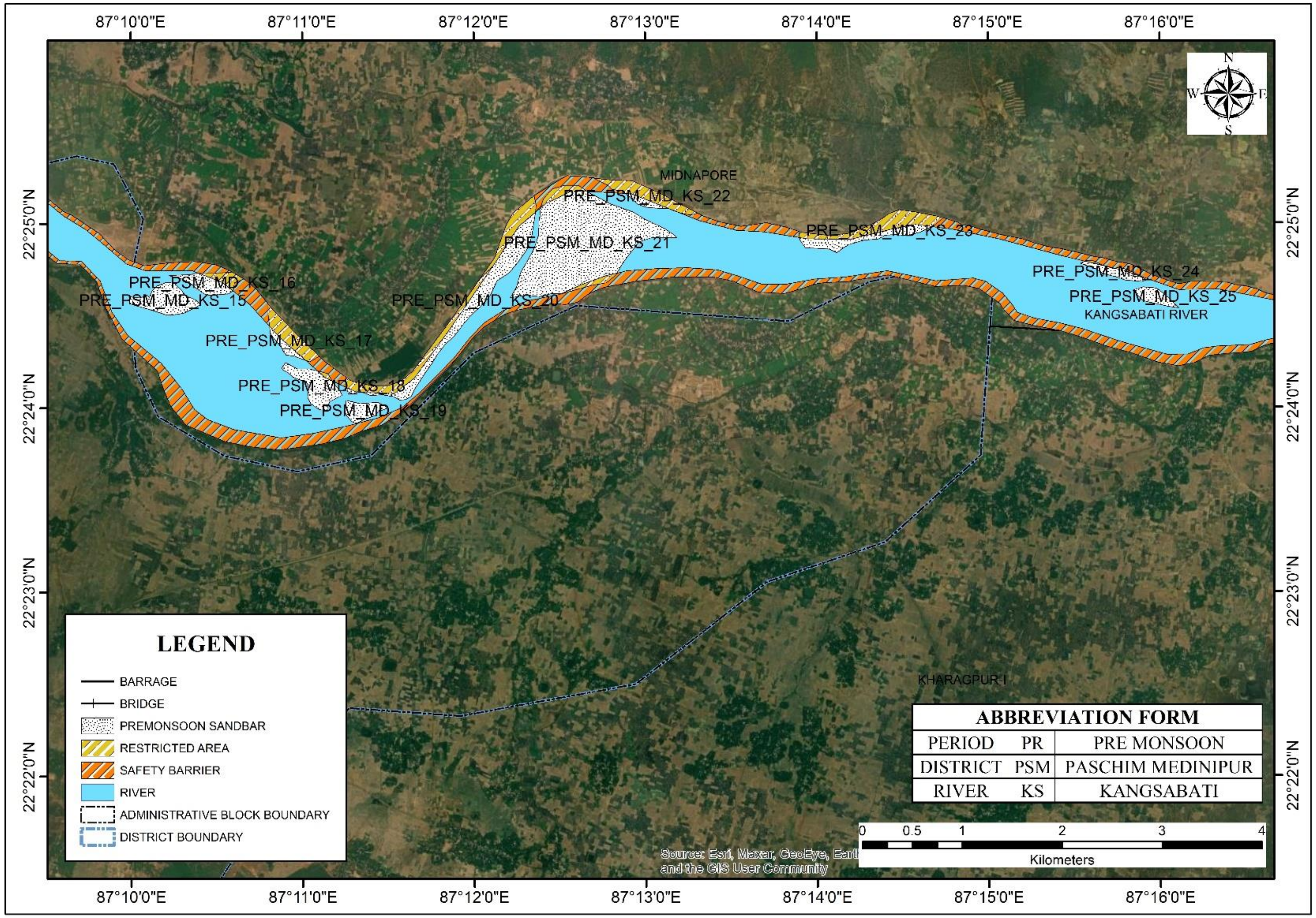


Plate 2A6: Distribution Map of Sand Bars on Rivers During Pre-Monsoon Period of Paschim Medinipur District

(Source: ISRO RESOURCE Sat 2 LISS III Sensor, March 2020)

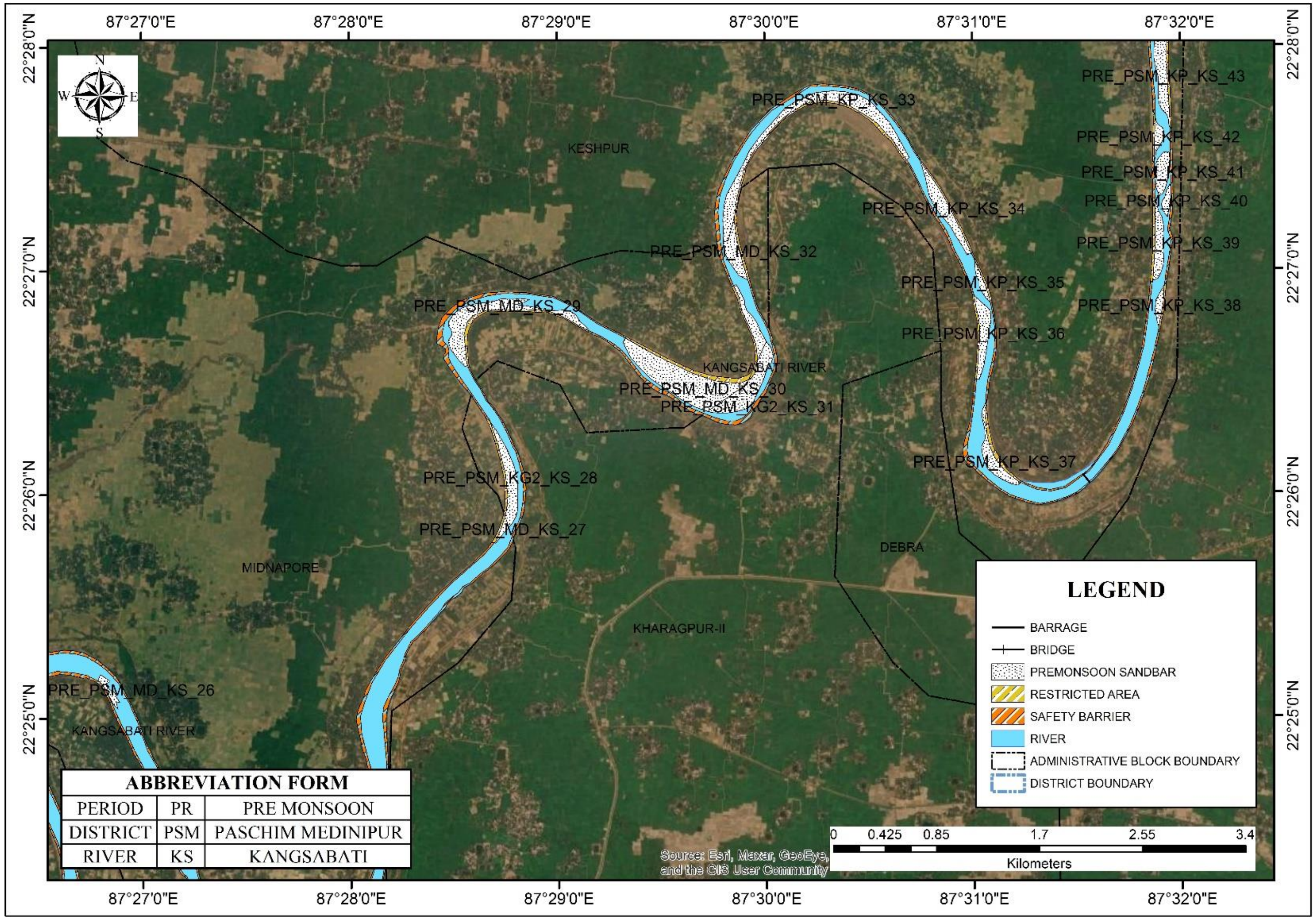


Plate 2A7: Distribution Map of Sand Bars on Rivers During Pre-Monsoon Period of Paschim Medinipur District

(Source: ISRO RESOURCE Sat 2 LISS III Sensor, March 2020)

Plate 2A8: Distribution Map of Sand Bars on Rivers During Pre-Monsoon Period of Paschim Medinipur District
(Source: ISRO RESOURCE Sat 2 LISS III Sensor, March 2020)

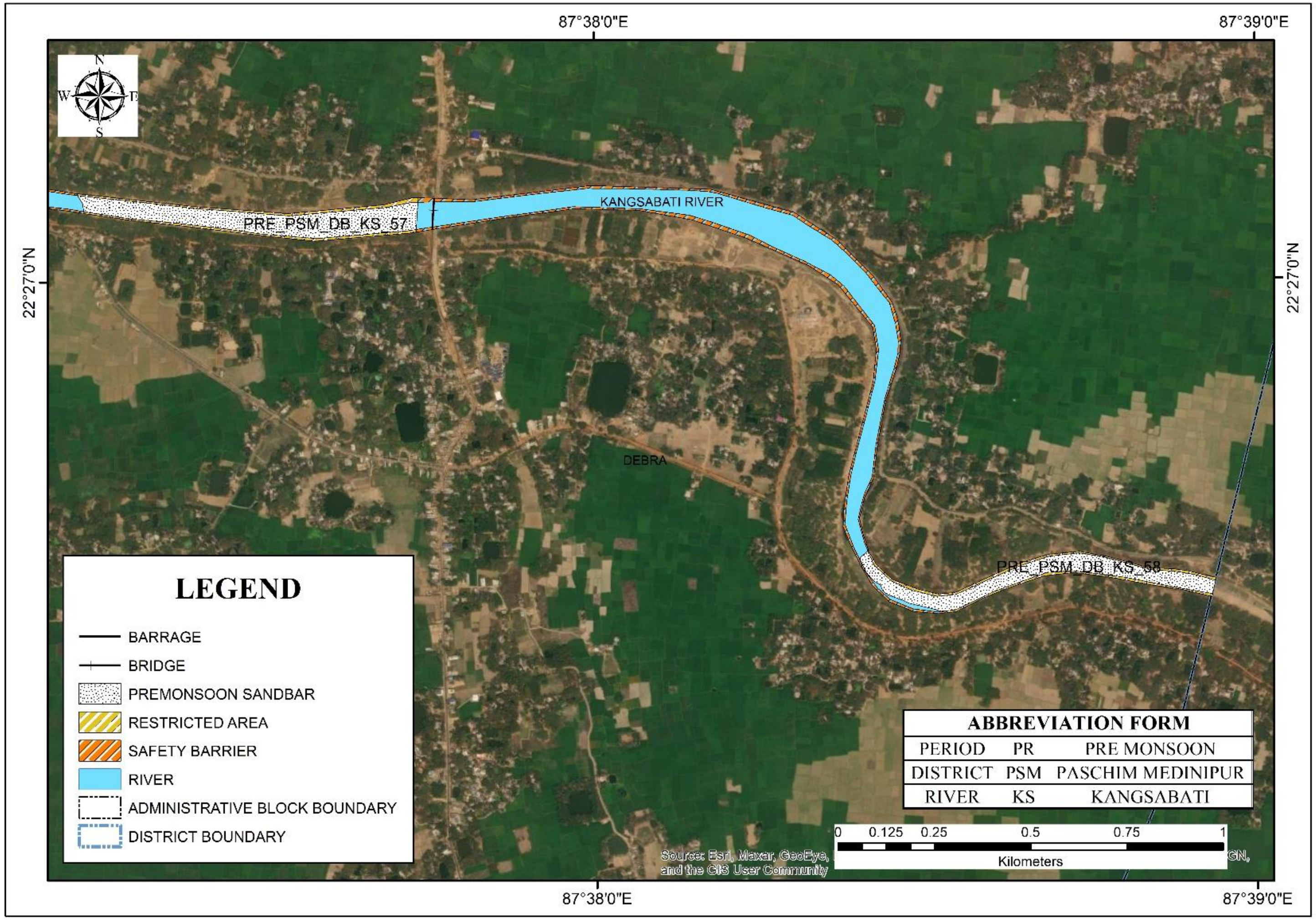


Plate 2A9: Distribution Map of Sand Bars on Rivers During Pre-Monsoon Period of Paschim Medinipur District

(Source: ISRO RESOURCE Sat 2 LISS III Sensor, March 2020)

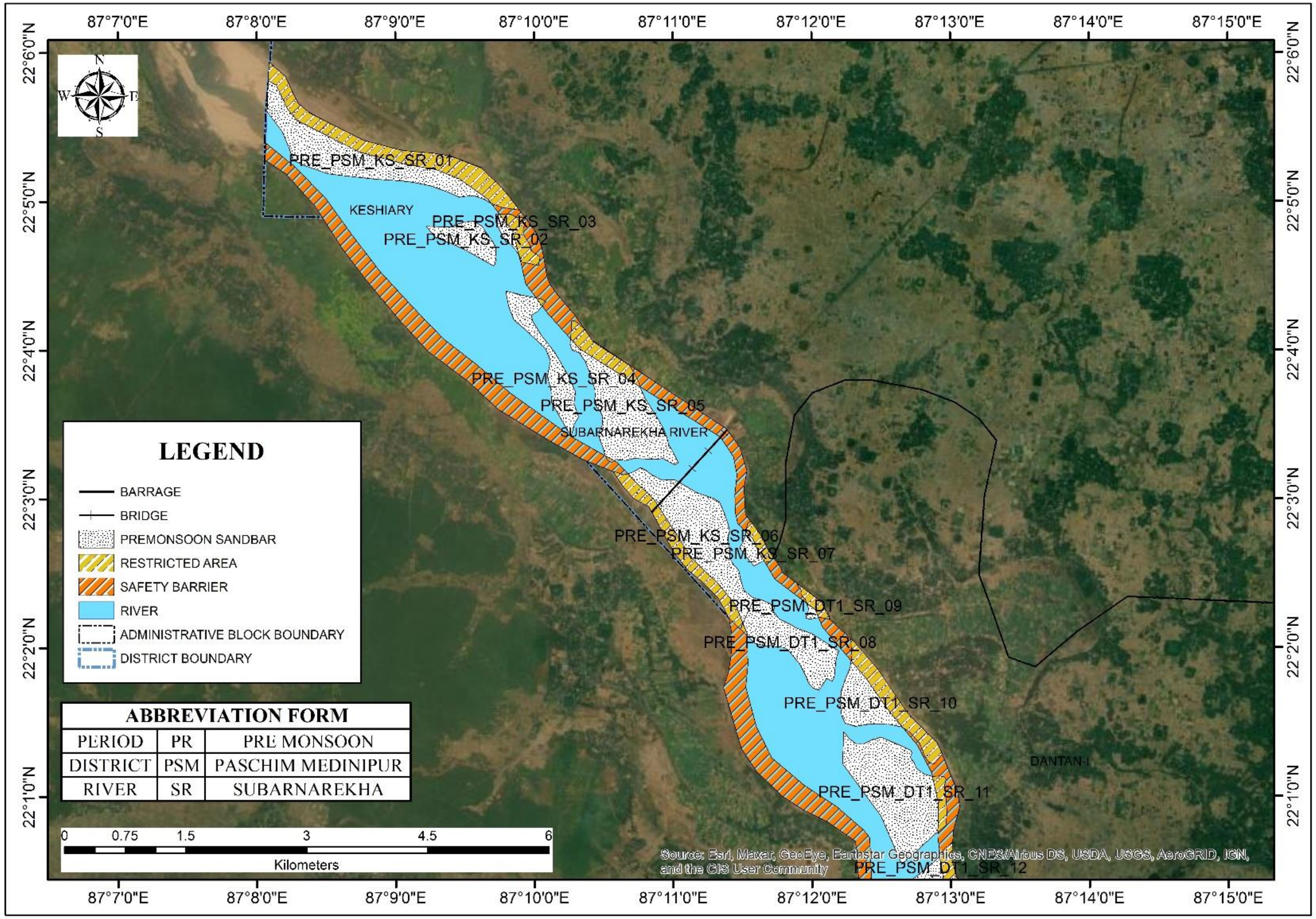


Plate 2A10: Distribution Map of Sand Bars on Rivers During Pre-Monsoon Period of Paschim Medinipur District

(Source: ISRO RESOURCE Sat 2 LISS III Sensor, March 2020)

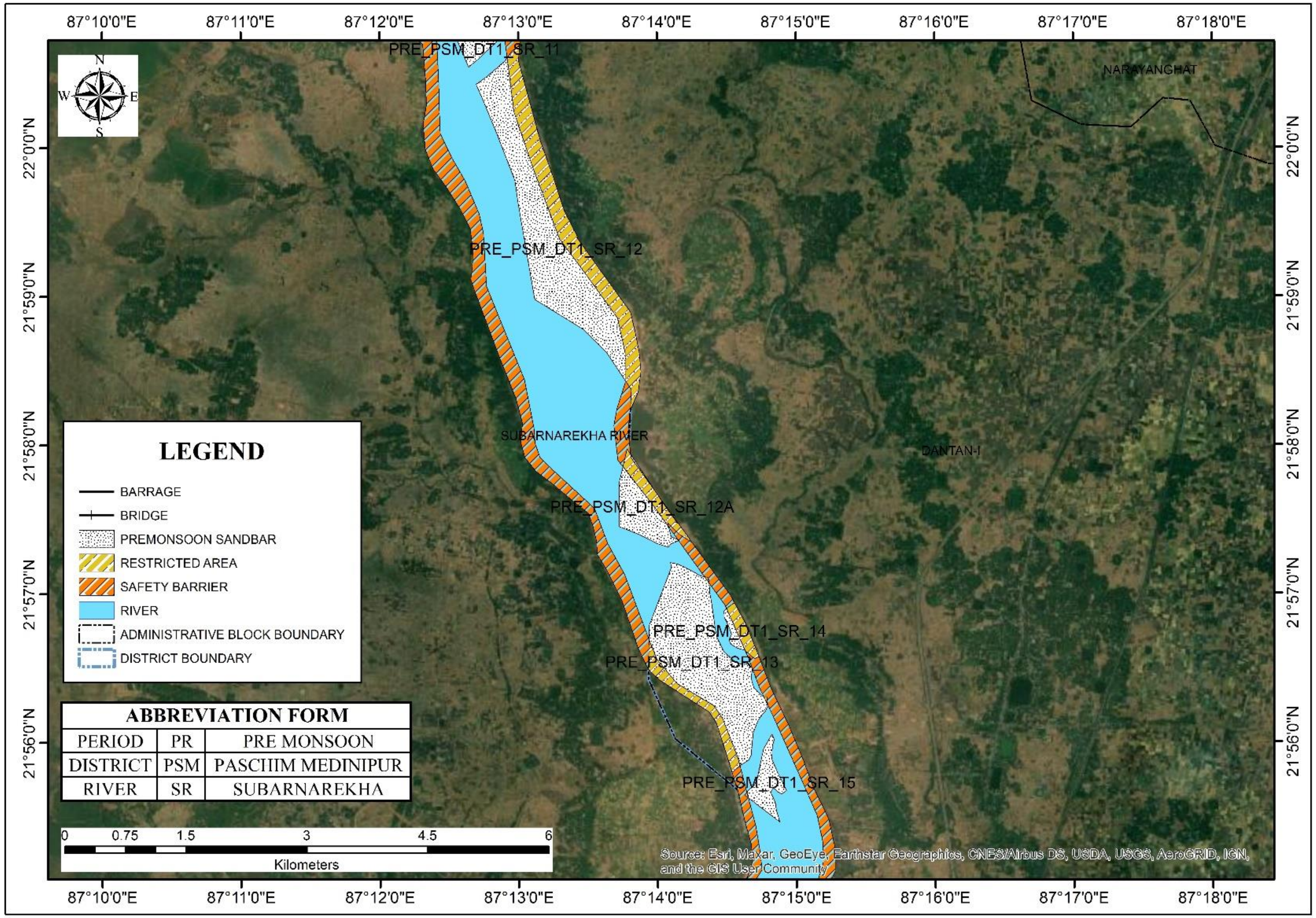


Plate 2A11: Distribution Map of Sand Bars on Rivers During Pre-Monsoon Period of Paschim Medinipur District

(Source: ISRO RESOURCE Sat 2 LISS III Sensor, March 2020)

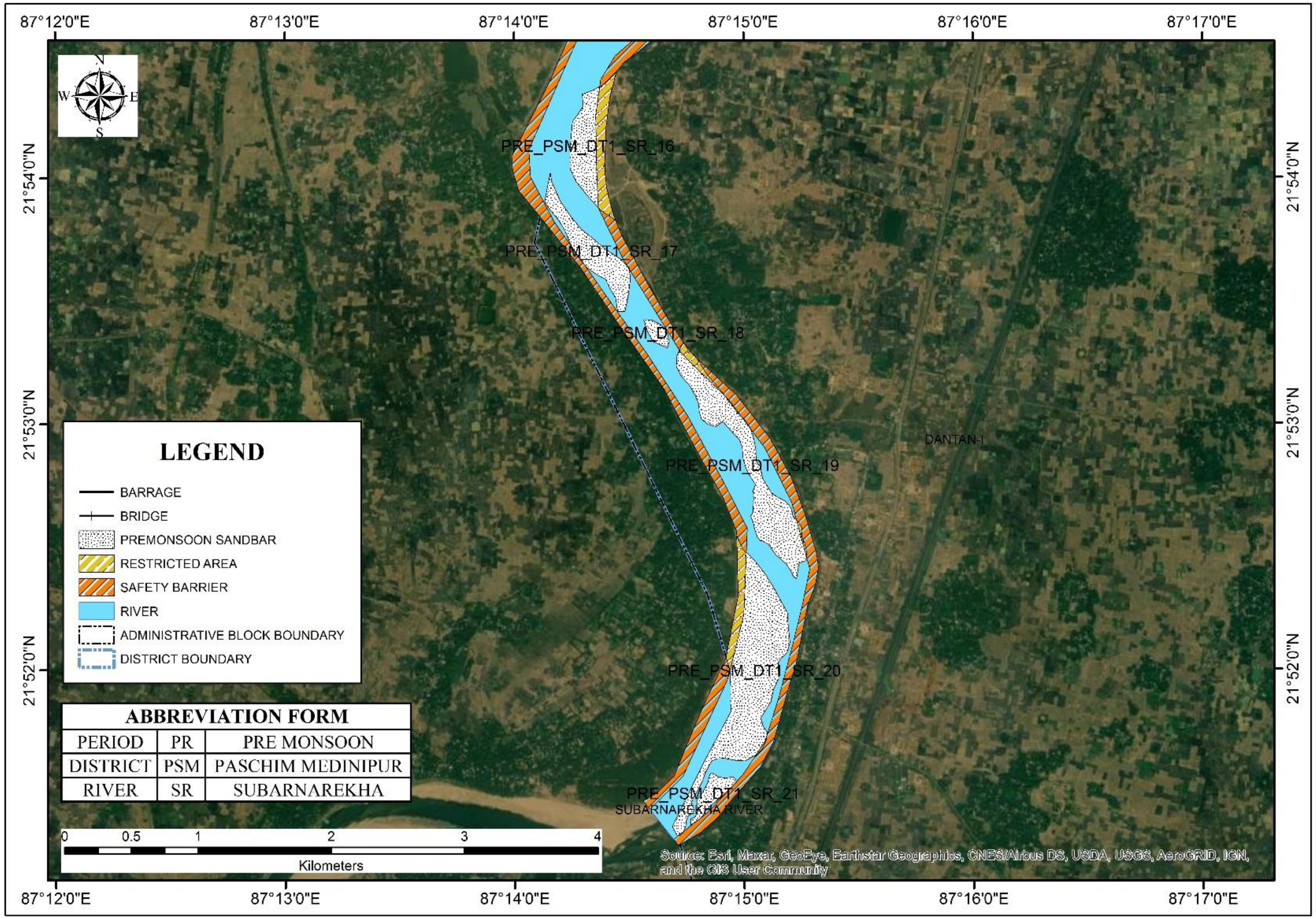


Plate 2A12: Distribution Map of Sand Bars on Rivers During Pre-Monsoon Period of Paschim Medinipur District
(Source: ISRO RESOURCE Sat 2 LISS III Sensor, March 2020)

PLATE 2B

DISTRIBUTION MAP OF SAND BARS ON RIVERS DURING POST-MONSOON PERIOD

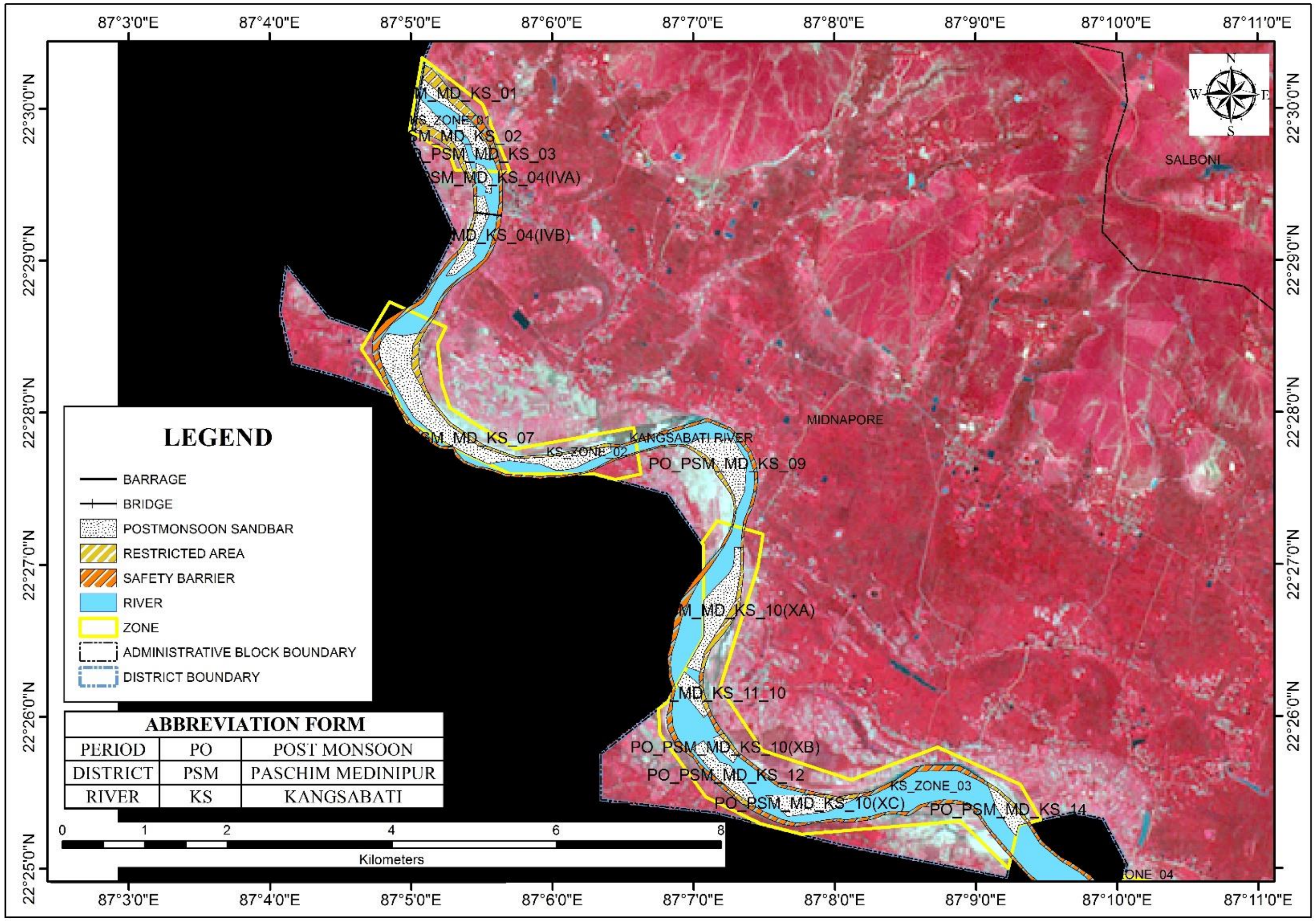


Plate 2B1: Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Paschim Medinipur District

(Source: ISRO RESOURCE Sat 2 LISS III Sensor, November 2020)

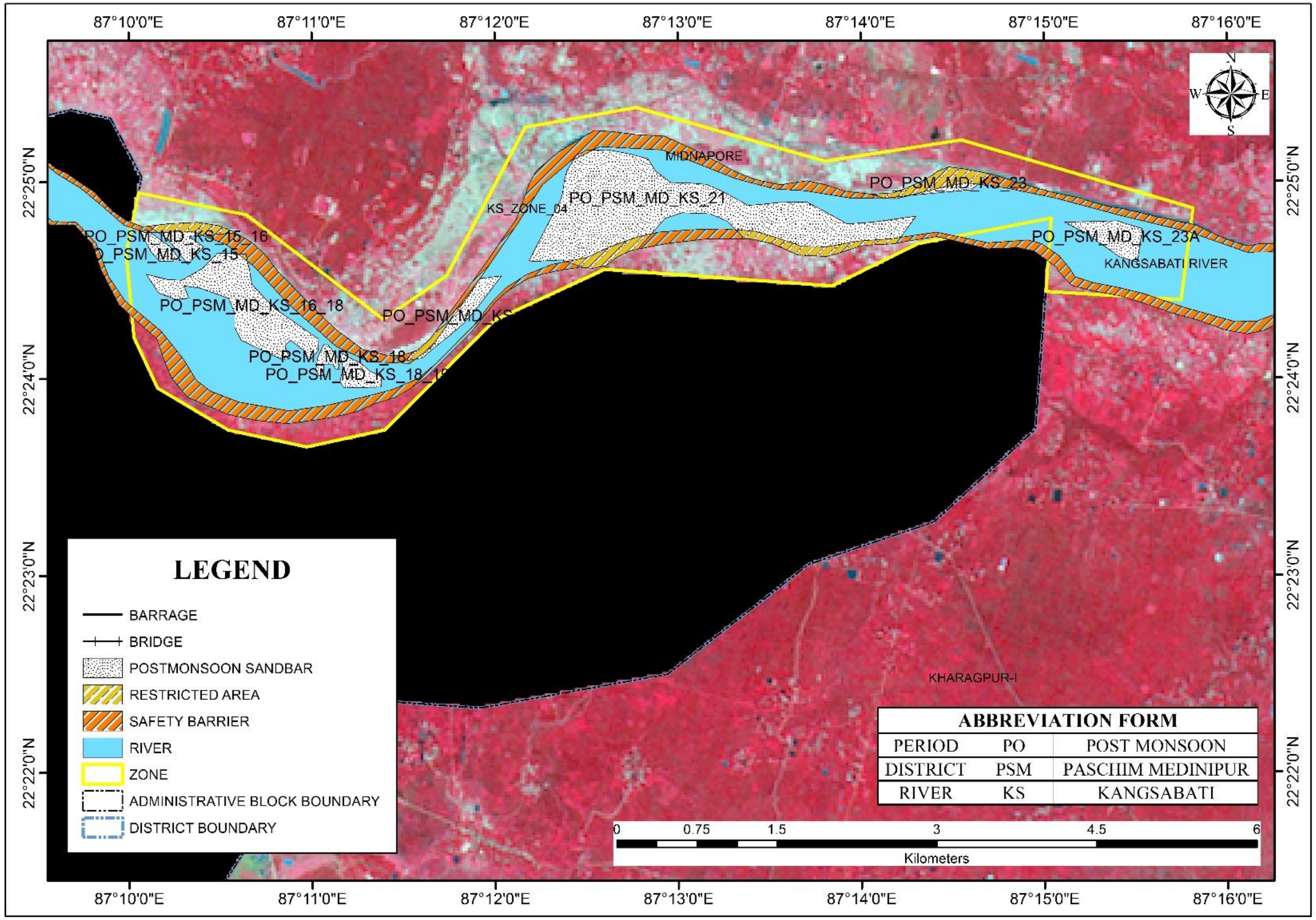
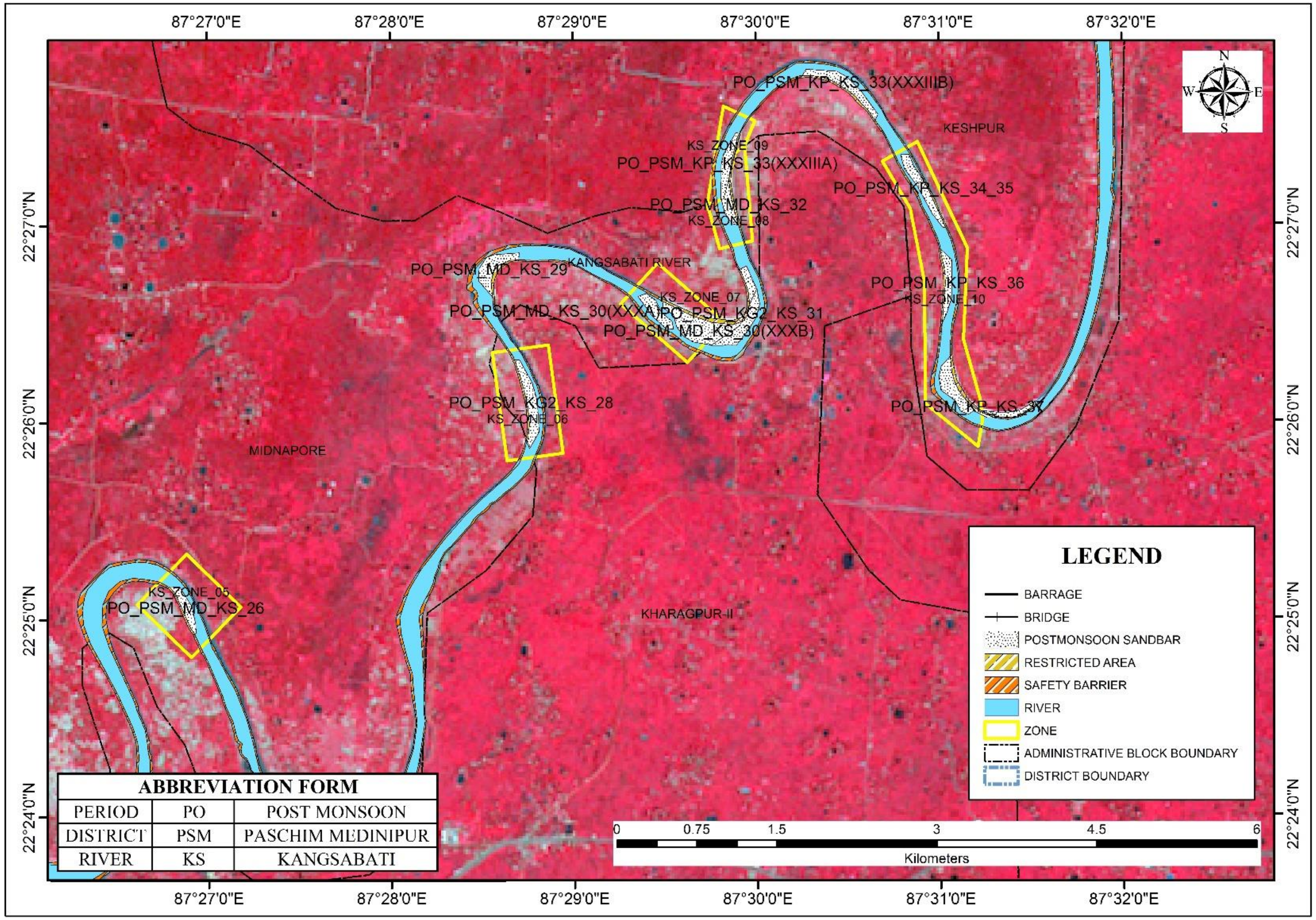


Plate 2B2: Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Paschim Medinipur District
(Source: ISRO RESOURCE Sat 2 LISS III Sensor, November 2020)



ABBREVIATION FORM		
PERIOD	PO	POST MONSOON
DISTRICT	PSM	PASCHIM MEDINIPUR
RIVER	KS	KANGSABATI

Plate 2B3: Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Paschim Medinipur District

(Source: ISRO RESOURCE Sat 2 LISS III Sensor, November 2020)

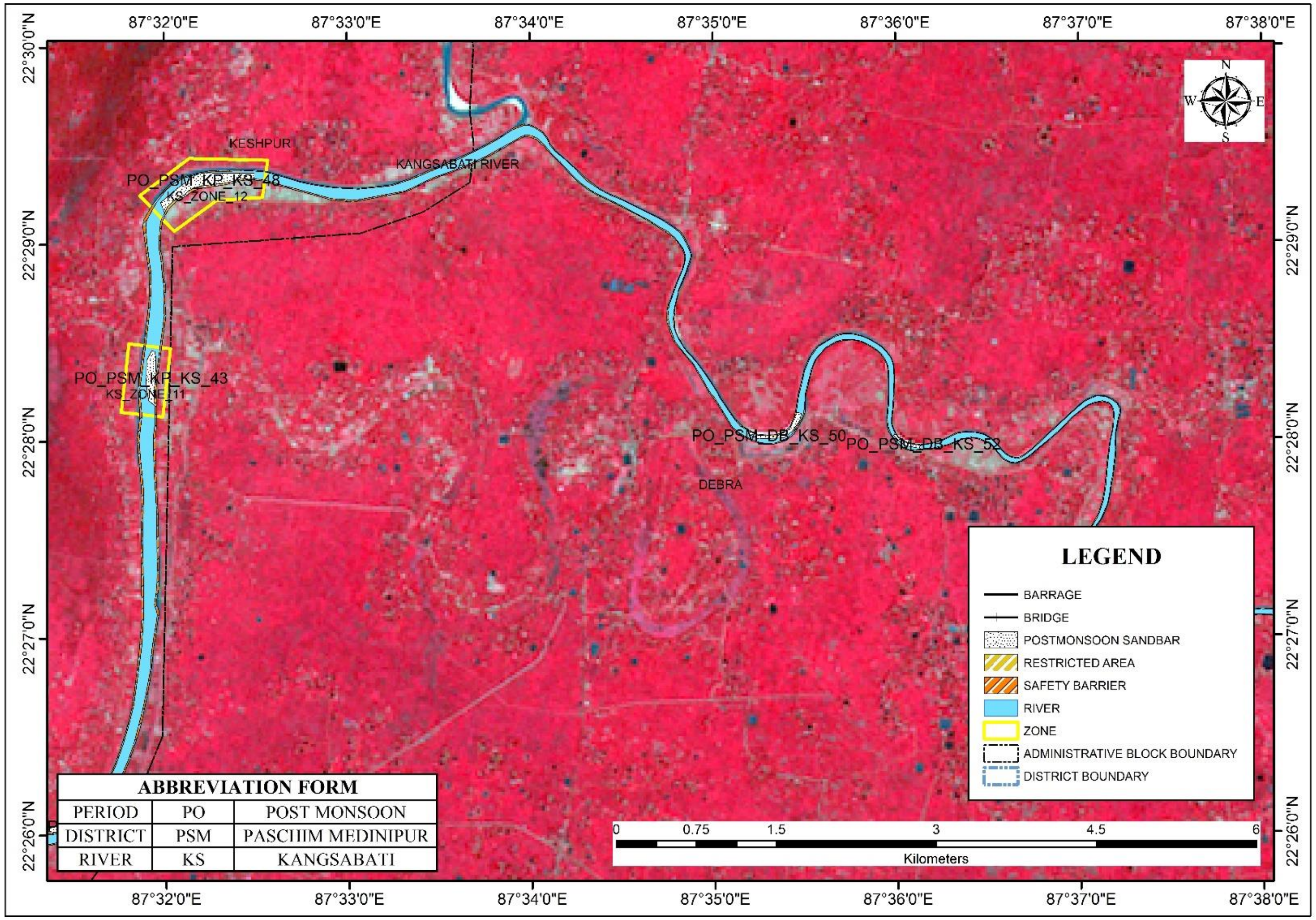


Plate 2B4: Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Paschim Medinipur District
(Source: ISRO RESOURCE Sat 2 LISS III Sensor, November 2020)

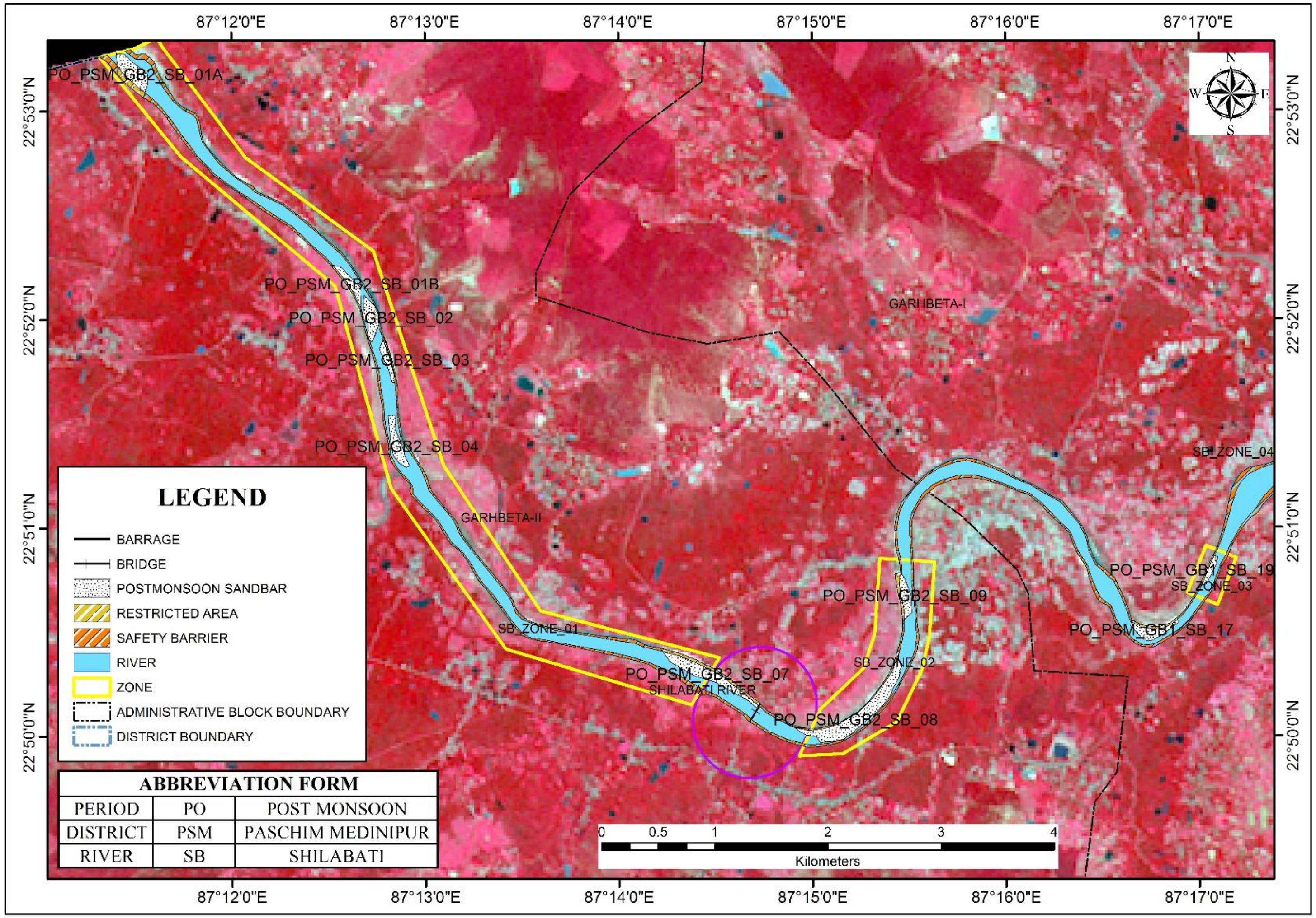


Plate 2B5: Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Paschim Medinipur District

(Source: ISRO RESOURCE Sat 2 LISS III Sensor, November 2020)

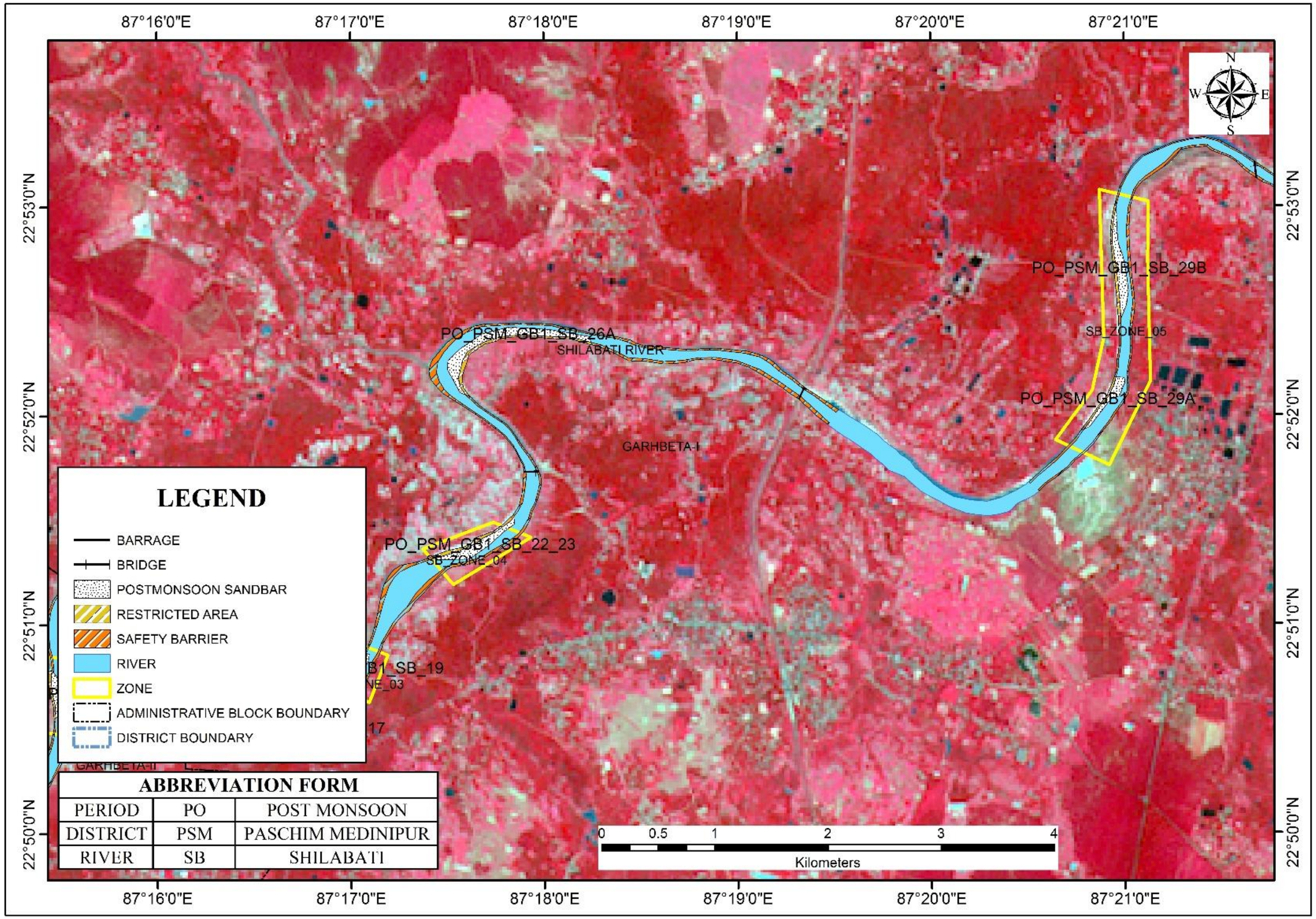


Plate 2B6: Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Paschim Medinipur District
(Source: ISRO RESOURCE Sat 2 LISS III Sensor, November 2020)

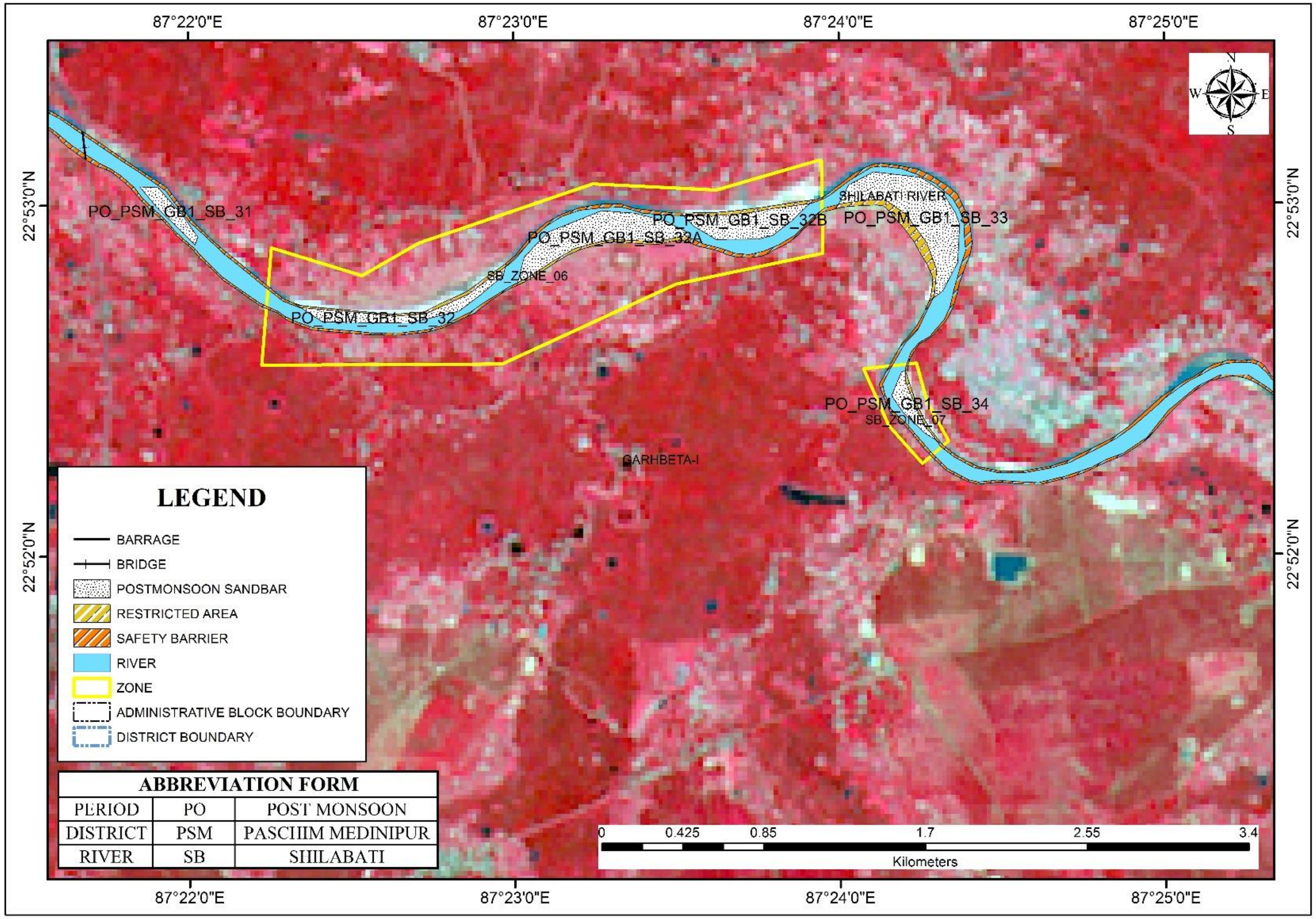


Plate 2B7: Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Paschim Medinipur District
(Source: ISRO RESOURCE Sat 2 LISS III Sensor, November 2020)

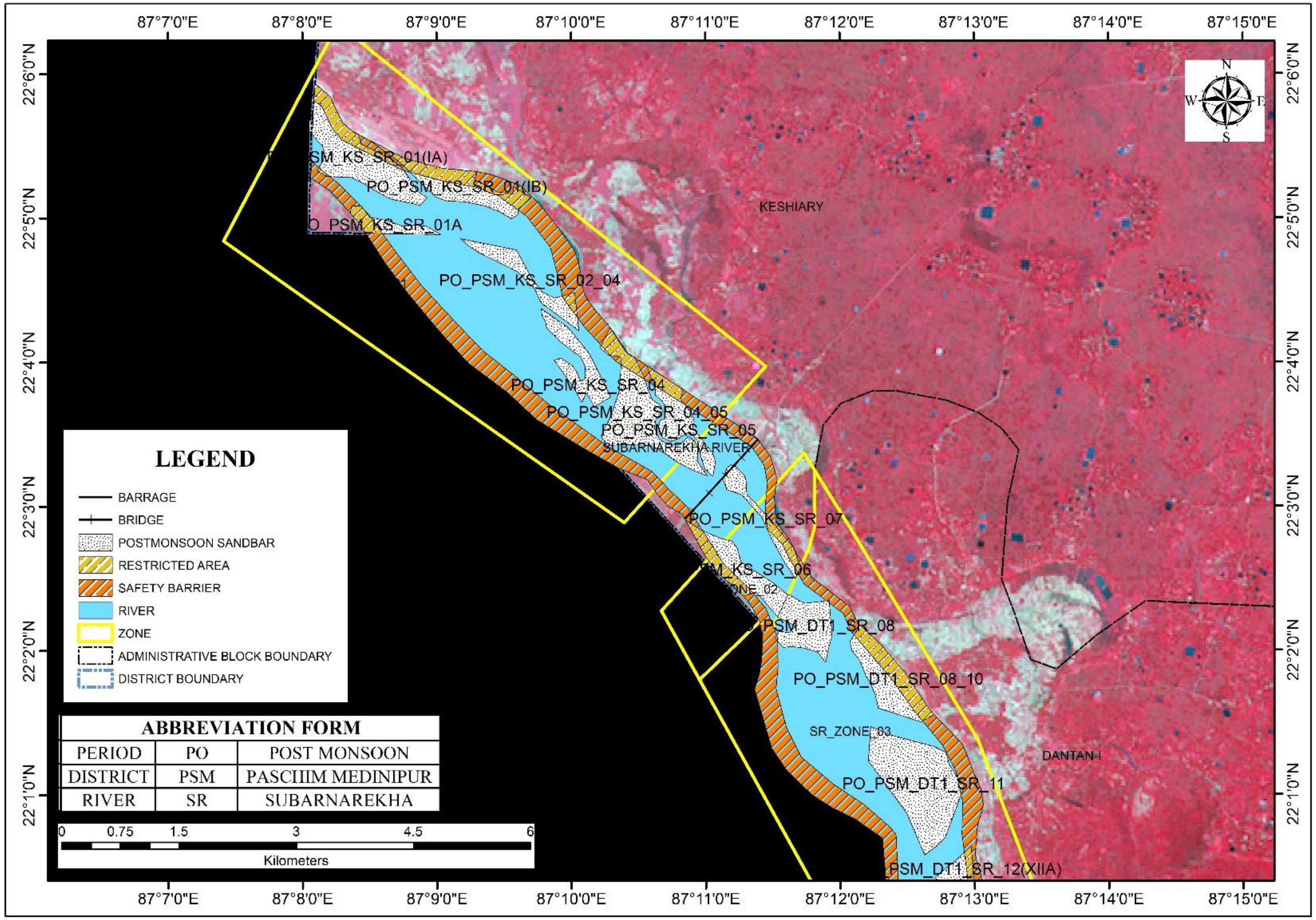


Plate 2B8: Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Paschim Medinipur District

(Source: ISRO RESOURCE Sat 2 LISS III Sensor, November 2020)

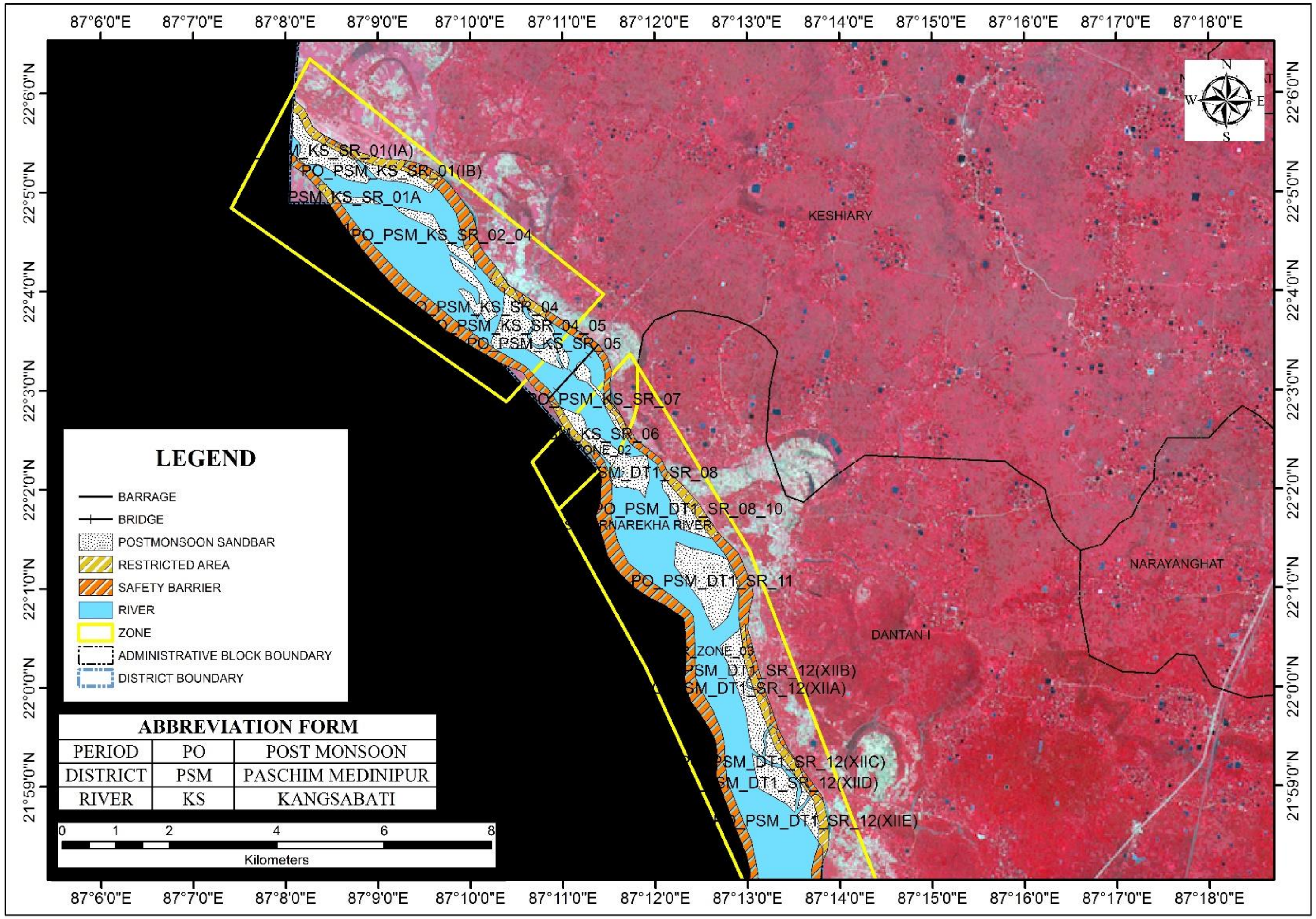


Plate 2B9: Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Paschim Medinipur District

(Source: ISRO RESOURCE Sat 2 LISS III Sensor, November 2020)

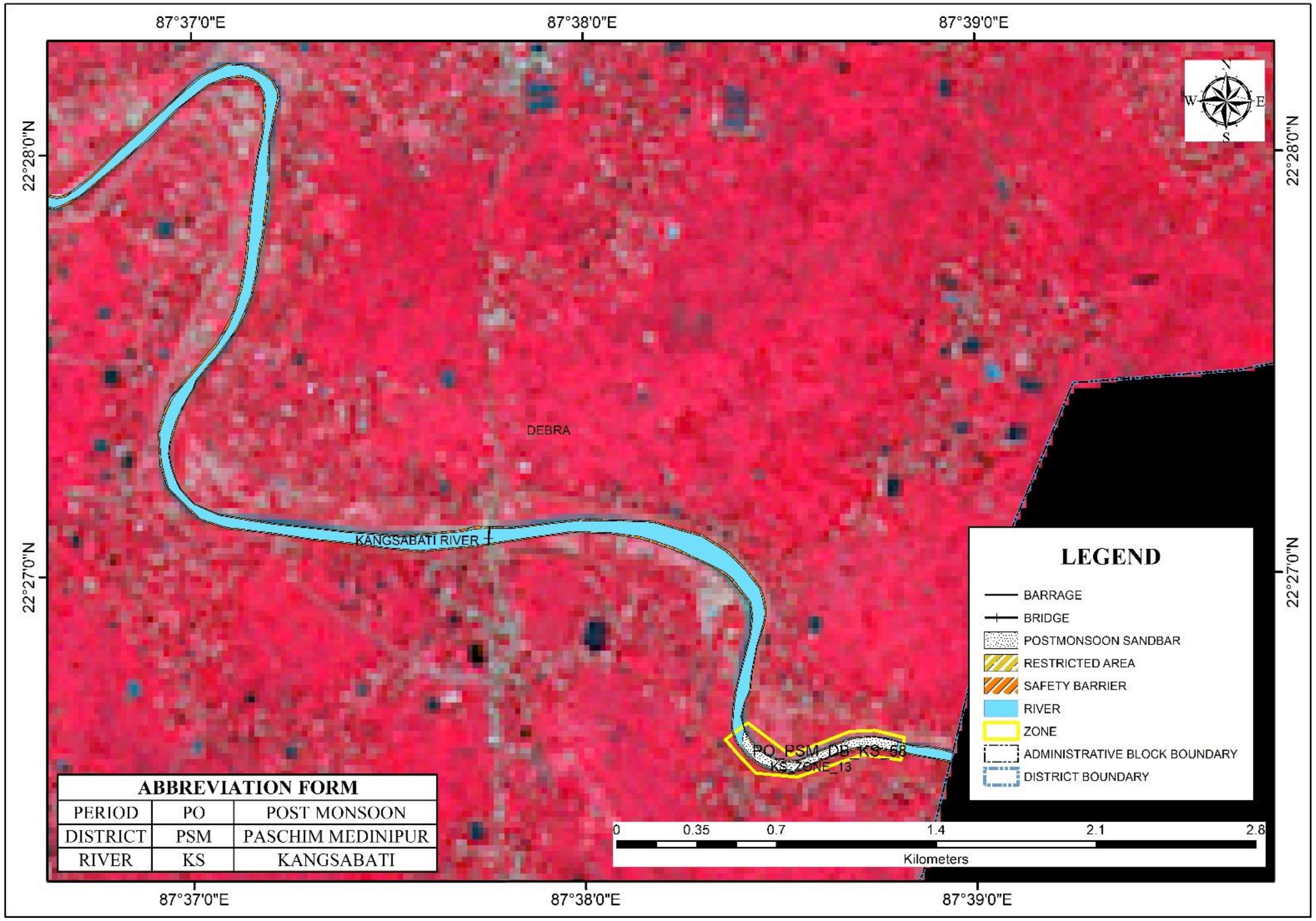


Plate 2B10: Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Paschim Medinipur District

(Source: ISRO RESOURCE Sat 2 LISS III Sensor, November 2020)

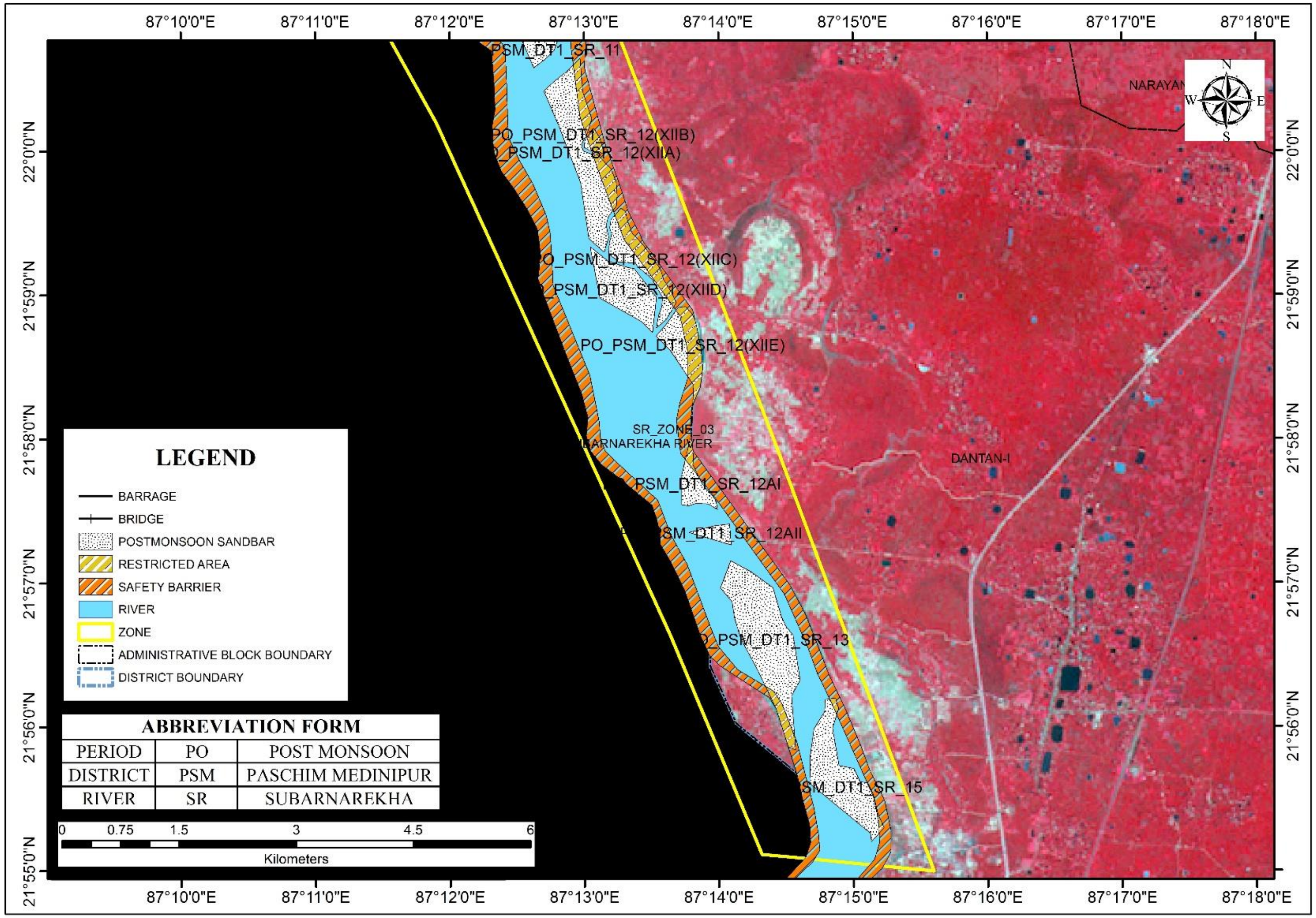


Plate 2B11: Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Paschim Medinipur District
(Source: ISRO RESOURCE Sat 2 LISS III Sensor, November 2020)

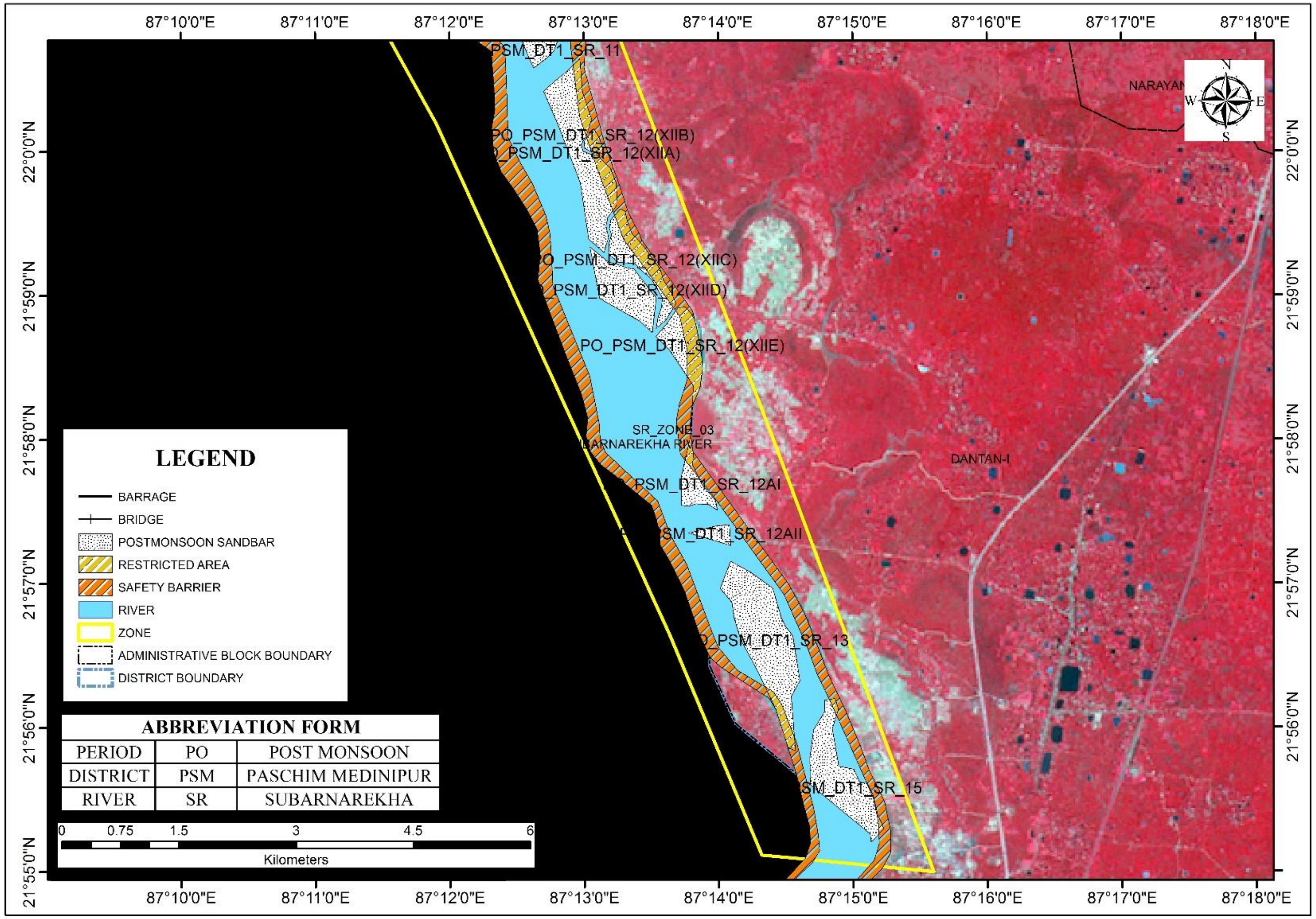
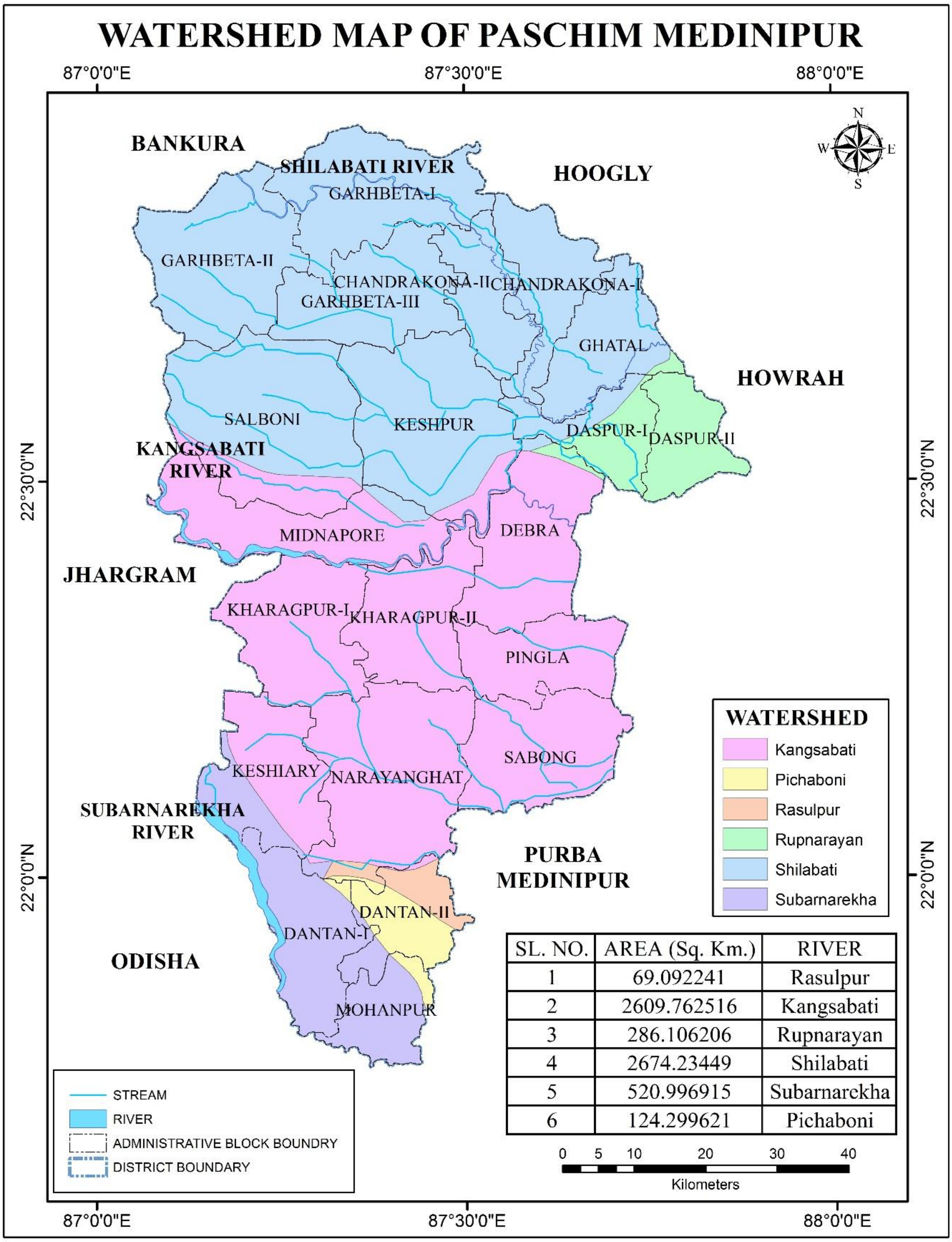


Plate 2B12: Distribution Map of Sand Bars on Rivers During Post-Monsoon Period of Paschim Medinipur District

(Source: ISRO RESOURCE Sat 2 LISS III Sensor, November 2020)

PLATE 3

WATERSHED MAP OF THE DISTRICT



SL. NO.	AREA (Sq. Km.)	RIVER
1	69.092241	Rasulpur
2	2609.762516	Kangsabati
3	286.106206	Rupnarayan
4	2674.23449	Shilabati
5	520.996915	Subarnarekha
6	124.299621	Pichaboni

Plate 3A: Watershed Map of Paschim Medinipur District *(Source: World Wild Fund for Nature, September 2020)*

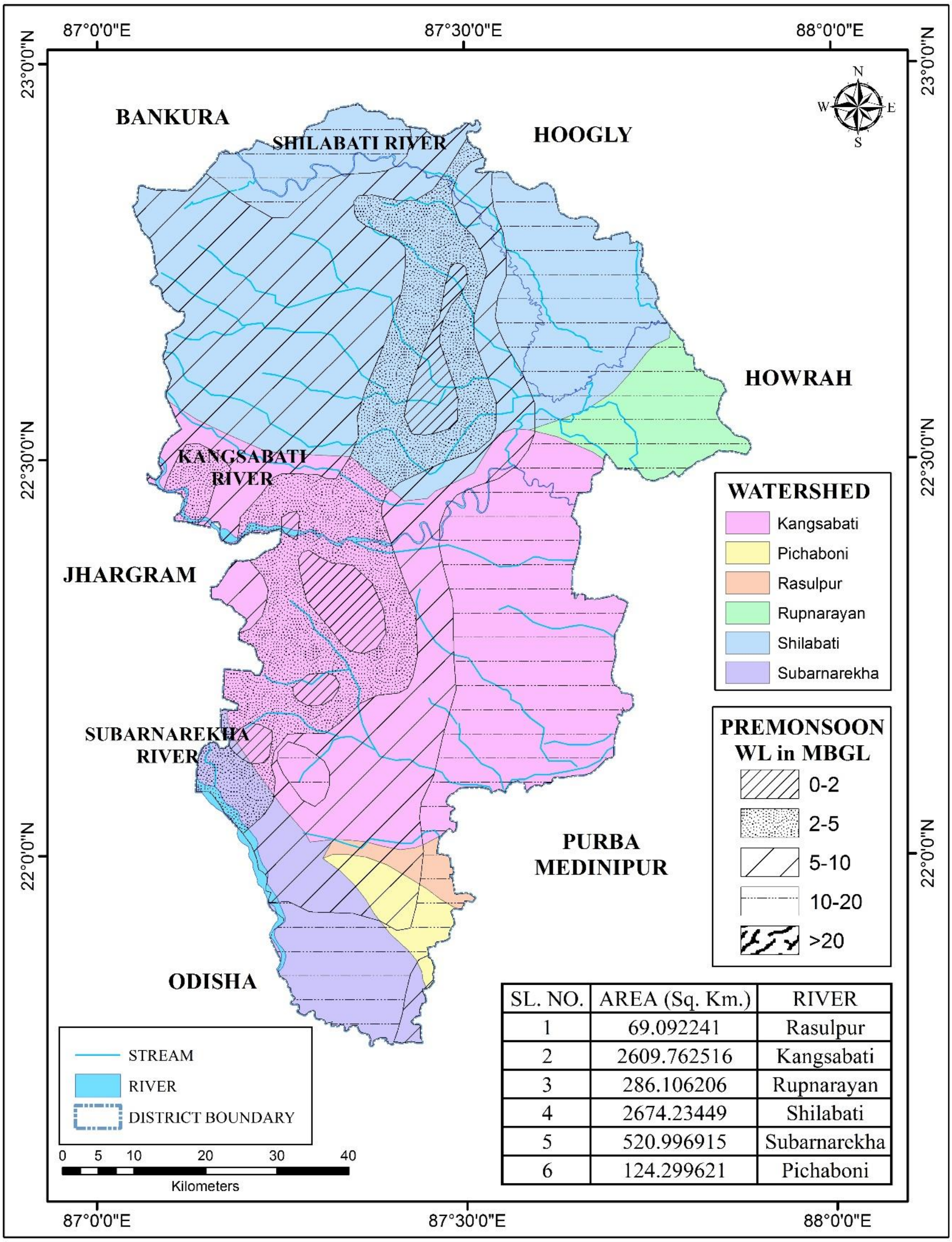
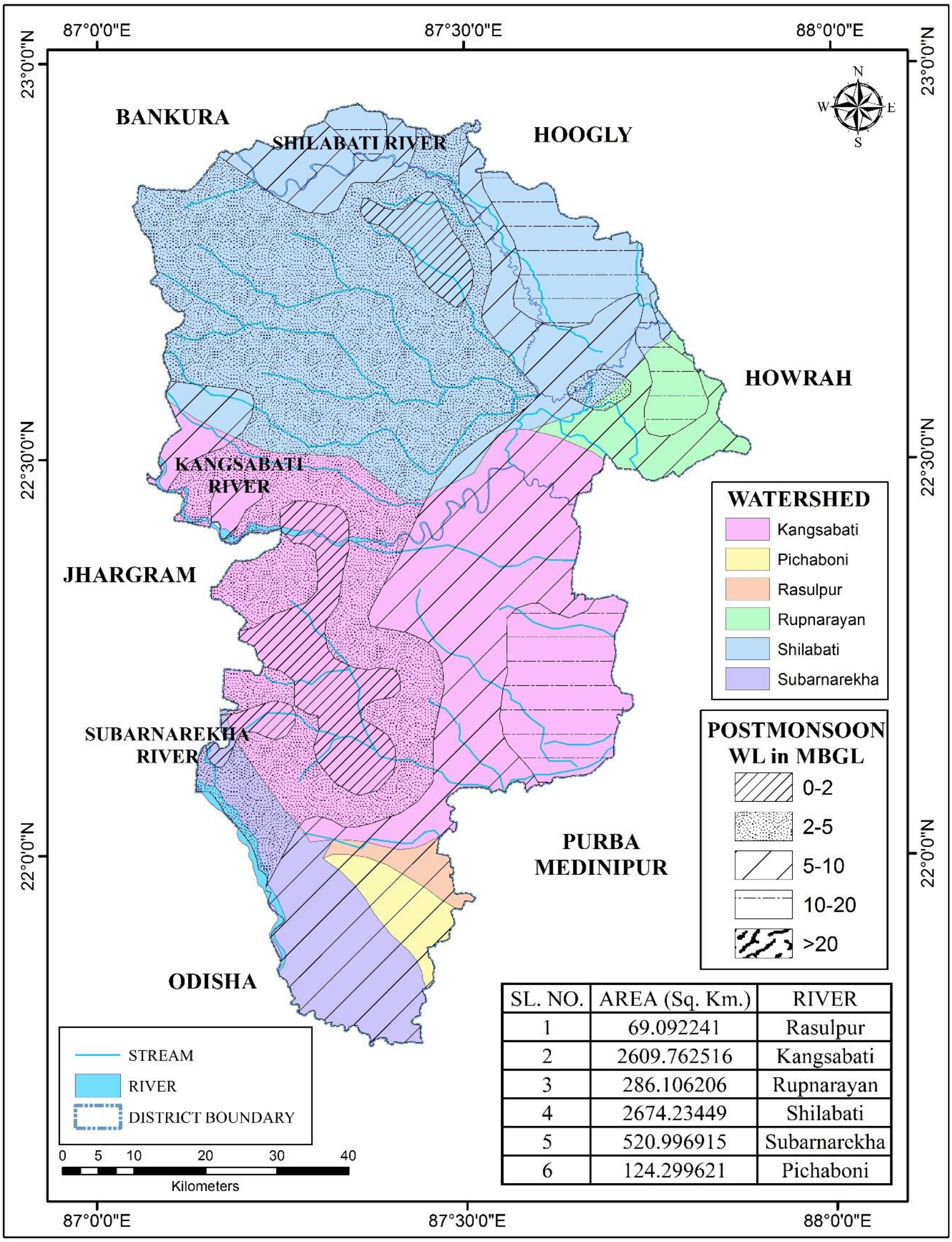


Plate 3B: District Watershed map showing ground water level during Post-monsoon period *(Source: World Wild Fund for Nature, September 2020)*



SL. NO.	AREA (Sq. Km.)	RIVER
1	69.092241	Rasulpur
2	2609.762516	Kangsabati
3	286.106206	Rupnarayan
4	2674.23449	Shilabati
5	520.996915	Subarnarekha
6	124.299621	Pichaboni

Plate 3C: District Watershed map showing ground water level during Post-monsoon period *(Source: World Wild Fund for Nature, September 2020)*

PLATE 4

FIELD SURVEY PHOTOGRAPHS

4A: Picture of Kangsabati Riverbed deposit (Date: 22-05-22, Lat: 22° 27' 42" N and Long: 87° 5' 59" E)

4B: Picture of Subarnarekha Riverbed deposit (Date: 22-05-22, Lat: 22° 2' 24" N and Long: 87° 11' 22" E)

PLATE 5

LONG TERM EROSION-ACCRETION MAP OF RIVER BANK

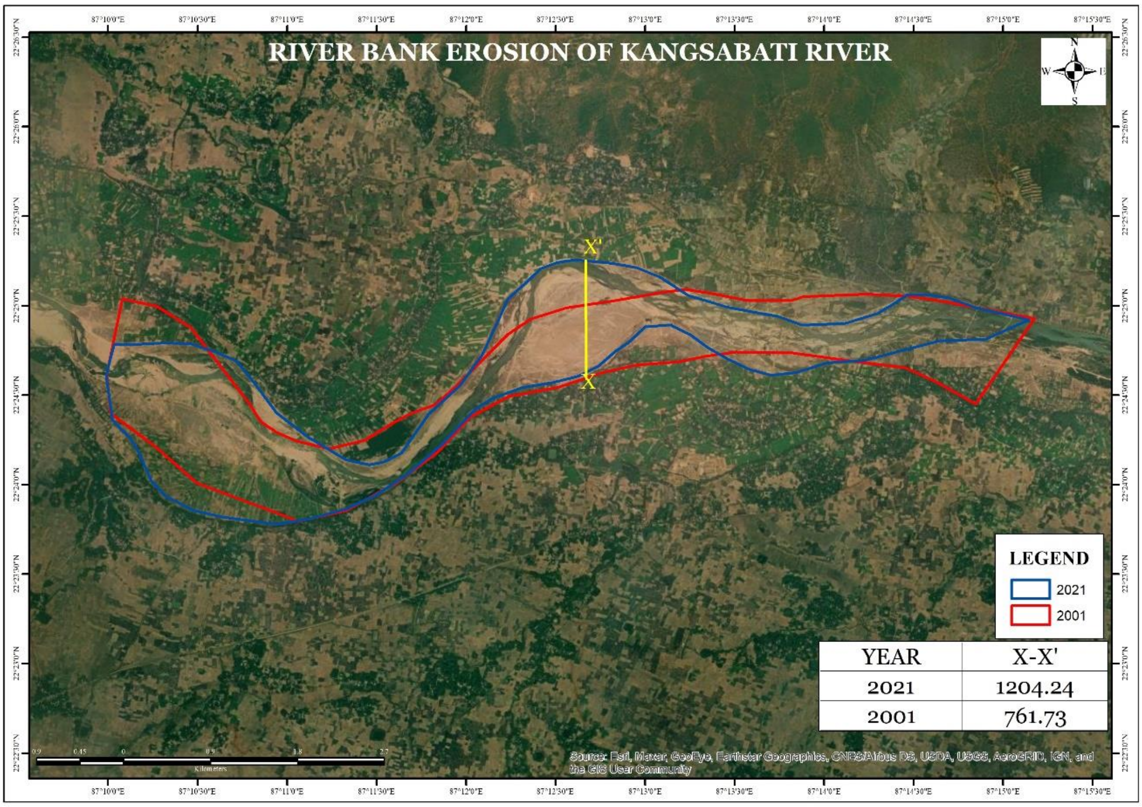


Plate 5: Map showing long-term (10-year or more) erosion-accretion areas on both the banks of Kangsabati River, Paschim Medinipur *(Source: ISRO RESOURCE Sat 2 LISS III Sensor)*

Annexure 1
Compliance as per Enforcement & Monitoring Guidelines for sand Mining, 2020 (MoEF& CC) for preparation of District Survey Report

Sl. No.	Particulars	Status
1	District Survey Report for sand mining shall be prepared before the auction/e-auction/grant of the mining lease/Letter of Intent (LoI) by Mining department or department dealing the mining activity in respective states.	Noted.
2	In order to make the inventory of River Bed Material, a detailed survey of the district needs to be carried out, to identify the source of River Bed Material and alternative source of sand (M-Sand). The source will include rivers, de-siltation of reservoir/dams, Patta lands/Khatedari Land, M-sand etc.	Complied with and explained in Chapter 7 pg no 58 to 85.
3	District Survey Report is to be prepared in such a way that it not only identifies the mineral-bearing area but also define the mining and no mining zones considering various environmental and social factors.	Complied with and furnished in pg no 83-84.
4	Identification of the source of Sand & M-Sand. The sources may be from Rivers, Lakes, Ponds, Dams, De-silting locations, Patta land/Khtedari lands. The details in case of Rivers such as [name, length of river, type (Perennial or Non-Perennial), Villages, Tehsil, District], in case of Lakes, Ponds, Dams, De-silting locations [Name, owned/maintained by (State Govt./PSU), area, Villages, Tehsil, District] in case of Patta land/Khtedari lands [Owner Name, Sy No, Area, Agricultural/Non-Agricultural, Villages, Tehsil, District], in case of M-Sand Plant [Owner Name, Sy No, Area, Quantity/Annum, Villages, Tehsil, District], needs to be recorded .	Complied with and given in table 7.4 pg 68.
5	Defining the sources of Sand/M-Sand in the district is the next step for identification of the potential area of deposition/aggradation wherein mining lease could be granted. Detailed survey needs to be carried out for quantification of minerals. The purpose of mining in the river bed is for channelization of rivers so as to avoid the possibility of flooding and to maintain the flow of the rivers. For this, the entire river stretch needs to be surveyed and original ground level (OGL) to be recorded and area of aggradation/deposition needs to be ascertained by comparing the level difference between the outside riverbed OGL and water level. Once the area of aggradation/deposition is identified, then the quantity of River Bed Material available needs to be calculated. The next step is channelization of the river bed and for this central ¾th part of the river, width needs to be identified on a map. Out of the ¾th part area, where there is a deposition/aggradation of the material needs to be identified. The remaining ¼th area needs to be kept as no mining zone for the protection of banks. The specific gravity of the material also needs to be ascertained by analyzing the sample from a NABL accredited lab. Thus, the quantity of material available in metric ton needs to be calculated for mining and no mining zone.	Complied with and given in table 7.15 pg 82 to 83.

Sl. No.	Particulars	Status
6	The permanent boundary pillars need to be erected after identification of an area of aggradation and deposition outside the bank of the river at a safe location for future surveying. The distance between boundary pillars on each side of the bank shall not be more than 100 meters.	Benchmark pillars are established in strategic locations while boundary pillars will be fixed while fixation of the mining lease boundary subsequent to district level verification.
7	Identifying the mining and no mining zone shall follow with defining the area of sensitivity by ascertaining the distance of the mining area from the protected area, forest, bridges, important structures, habitation etc. and based on the sensitivity the area needs to be defined in sensitive and non-sensitive area.	Complied with and furnished in pg no 83 to 84.
8	Demand and supply of the Riverbed Material through market survey needs to be carried out. In addition to this future demand for the next 5 years also needs to be considered.	Complied with and given in pg no 10-11.
9	It is suggested that as far as possible the sensitive areas should be avoided for mining, unless local safety condition arises. Such deviation shall be temporary & shall not be a permanent feature.	Complied with and furnished in pg no 82 to 83.
10	Sand and gravel could be extracted from the downstream of the sand bar at river bends. Retaining the upstream one to two-thirds of the bar and riparian vegetation is accepted as a method to promote channel stability.	Noted. The DSR is composing of all the potential sand zones for defining the resources. In a subsequent phase blocking of potential zones shall be done in due consultation with the district level committee. The areas mentioned in the observation points shall be excluded while blocking of sand mining leases which are part of these potential zones marked in this DSR.
11	The final area selected for the mining should be then divided into mining lease as per the requirement of State Government. It is suggested the mining lease area should be so selected as to cover the entire deposition area. Dividing a large area of deposition/aggradation into smaller mining leases should be avoided as it leads to loss of mineral and indirectly promote illegal mining.	Shall be Complied with.
12	Cluster situation shall be examined. A cluster is formed when one mining lease of homogenous mineral is within 500 meters of the other mining lease. In order to reduce the cluster formation mining lease size should be defined in such a way that distance between any two clusters preferably should not be less than 2.5 Km. Mining lease should be defined in such a way that the total area of the mining leases in a cluster should not be more than 10 Ha.	Noted. Due care will be taken while distribution of mining leases either to prevent cluster situation or keeping the prescribed distance in-between two mining clusters.
13	The number of a contiguous cluster needs to be ascertained. Contiguous cluster is formed when one cluster is at a distance of 2.5 Km from the other cluster.	Noted and shall be complied with.

Sl. No.	Particulars	Status
14	The mining outside the riverbed on Patta land/Khatedari land be granted when there is possibility of replenishment of material. In case, there is no replenishment then mining lease shall only be granted when there is no riverbed mining possibility within 5 KM of the Patta land/Khatedari land. For government projects, mining could be allowed on Patta land/Khatedari land but the mining should only be done by the Government agency and material should not be used for sale in the open market. Cluster situation as mentioned in para k above is also applicable for the mining in Patta land/Khatedari land.	Noted.
15	The State Government should define the transportation route from the mining lease considering the maximum production from the mines as at this stage the size of mining leases, their location, the quantity of mineral that can be mined safely etc. is available with the State Government. It is suggested that the transportation route should be selected in such a way that the movement of trucks/tippers/tractors from the villages having habitation should be avoided. The transportation route so selected should be verified by the State Government for its carrying capacity.	Noted and final transport route will be submitted during preparation of mine plan.
16	Potential site for mining having its impact on the forest, protected area, habitation, bridges etc, shall be avoided. For this, a sub-divisional committee may be formed which after the site visit shall decide its suitability for mining.	Shall be Complied with.
17	Public consultation-The Comments of the various stakeholders may be sought on the list of mining lease to be auctioned. The State Government shall give an advertisement in the local and national newspaper for seeking comments of the general public on the list of mining lease included in the DSR. The DSR should be placed in the public domain for at least one month from the date of publication of the advertisement for obtaining comments of the general public. The comments so received shall be placed before the sub-divisional committee for active consideration. The final list of sand mining areas [leases to be granted on riverbed &Patta land/Khatedari land, de-siltation location (ponds/lakes/dams), M-Sand Plants (alternate source of sand)] after the public hearing needs to be defined in the final DSR.	After publication of the West Bengal Sand Mining Policy, 2021, it is now eminent that State owned The West Bengal Mineral Development and Trading Corporation Limited (WBMDTCL) shall be responsible for mining of sand/ gravel/ river bed materials in whole state of West Bengal. However, the existing mining leases which were in effect before hand of this Gazzate notification July 2021 will be in operation till the year 2027-28. In order to have the rational distribution of mining leases as per the prevailing norms and guidelines grant of mining leases in the state of West Bengal shall be carried out in phases till all the blocks are under the ambit of WBMDTCL. This DSR thus consist of the identified potential sand deposite areas within which the existing and future mining leases shall occur. The details of the mining leases as and when granted shall follow the procedure described in EMGSM 2020 and prevailing norms.
18	The LOI should not be granted for mining area falling on both riverbed and outside riverbed. Therefore, in the same lease, both types of area should not be included.	Shall be Complied with.

Annexure 2

Estimation of Sand Resources based on sediment load comparison between Pre and Post Monsoon period

Abbreviation used in the table as below

ABBREVIATION FORM		
PERIOD	PR	PRE MONSOON
	PO	POST MONSOON
BLOCK	KS	KESHIARY
	DT1	DANTAN 1
	MD	MIDNAPORE
	GB1	GARHBETA 1
	GB2	GARHBETA 2
	DB	DEBRA
	KP	KESHPUR
	KG2	KHARAGPUR 2
RIVER	SR	SUBARNAREKHA
	KS	KANGSABATI
	SB	SHILABATI

Pre monsoon						Post monsoon					
S L No	**Sand Bar_Code**	**RL (m)**	**Area in sq.m.**	**Sand Thick ness in m.**	**Sand Volume in M. Cum**	**S L No**	**Sand Bar_Code**	**RL (m)**	**Area in sq.m.**	**Sand Thick ness in m.**	**Sand Volum e in M. Cum**
Estimation of Sand Resources in Pre monsoon period & Post monsoon period of Kangsabati River											
1	PR_PSM_DB_KS_48A	37	43693.21163	2.50	0.11	1	PO_PSM_DB_KS_48A	37	46156.03784	3.00	0.14
2	PR_PSM_DB_KS_48B	37	25997.51322	2.50	0.06	2	PO_PSM_DB_KS_48B	37	54722.53933	3.00	0.16
3	PR_PSM_DB_KS_49	39	8912.079142	2.50	0.02	3	PO_PSM_KP_KS_49	37	47217.50237	3.00	0.14
						4	PO_PSM_DB_KS_49A	32	16559.53769	3.00	0.05
						5	PO_PSM_DB_KS_49E	37	21179.06344	3.00	0.06
4	PR_PSM_DB_KS_50	34	83130.56658	2.50	0.21	6	PO_PSM_DB_KS_50	34	85053.49224	3.00	0.26
5	PR_PSM_DB_KS_51	35	16658.97887	2.50	0.04	7	PO_PSM_DB_KS_51	35	12452.62922	3.00	0.04
6	PR_PSM_DB_KS_51A	34	33696.99545	2.50	0.08	8	PO_PSM_DB_KS_51A	34	28588.08233	3.00	0.09
7	PR_PSM_DB_KS_52	35	18120.92137	2.50	0.05	9	PO_PSM_DB_KS_52_52 A	35	49483.74637	3.00	0.15
8	PR_PSM_DB_KS_52A	35	29320.23052	2.50	0.07						
9	PR_PSM_DB_KS_52B	36	22330.01588	2.50	0.06	10	PO_PSM_DB_KS_52B	36	18358.49383	3.00	0.06
10	PR_PSM_DB_KS_52C	36	18541.01053	2.50	0.05	11	PO_PSM_DB_KS_52C	36	15322.11158	3.00	0.05
11	PR_PSM_DB_KS_53	37	18417.73958	2.50	0.05	12	PO_PSM_DB_KS_53	37	21451.41874	3.00	0.06
12	PR_PSM_DB_KS_54	37	4958.88867	2.50	0.01	13	PO_PSM_DB_KS_54	37	24545.29729	3.00	0.07
13	PR_PSM_DB_KS_55	37	10360.65089	2.50	0.03						
14	PR_PSM_DB_KS_56	37	27254.10261	2.50	0.07	14	PO_PSM_DB_KS_56	37	40718.35098	3.00	0.12
15	PR_PSM_DB_KS_57	36	57066.64868	2.50	0.14	15	PO_PSM_DB_KS_57	36	57686.37672	3.00	0.17
16	PR_PSM_DB_KS_58	36	13592.66926	2.50	0.03	16	PO_PSM_DB_KS_58	36	35300.17268	3.00	0.11
17	PR_PSM_KP_KS_33A	37	55689.89264	2.50	0.14	17	PO_PSM_KP_KS_33A	37	58440.76128	3.00	0.18
18	PR_PSM_KP_KS_33B	35	137060.2006	2.50	0.34	18	PO_PSM_KP_KS_33B	35	198715.0952	3.00	0.60

Pre monsoon						Post monsoon					
S L No	**Sand Bar_Code**	**RL (m)**	**Area in sq.m.**	**Sand Thick**	**Sand Volume**	**S L No**	**Sand Bar_Code**	**RL (m)**	**Area in sq.m.**	**Sand Thick**	**Sand Volum**
19	PR_PSM_KP_KS_34_35	33	88951.77315	2.50	0.22	19	PO_PSM_KP_KS_34_35	33	88990.98567	3.00	0.27
20	PR_PSM_KP_KS_36	34	54915.15096	2.50	0.14	20	PO_PSM_KP_KS_36	34	107949.115	3.00	0.32
21	PR_PSM_KP_KS_37	35	35852.18588	2.50	0.09	21	PO_PSM_KP_KS_37	35	154857.7216	3.00	0.46
22	PR_PSM_KP_KS_38	35	55229.70243	2.50	0.14						
23	PR_PSM_KP_KS_39	35	44887.90749	2.50	0.11						
24	PR_PSM_KP_KS_40	36	32896.13679	2.50	0.08	22	PO_PSM_KP_KS_40	36	19164.2361	3.00	0.06
25	PR_PSM_KP_KS_41	39	81586.51091	2.50	0.20	23	PO_PSM_KP_KS_41	39	112452.3404	3.00	0.34
26	PR_PSM_KP_KS_43	33	41255.27368	2.50	0.10	24	PO_PSM_KP_KS_43	33	41189.86213	3.00	0.12
27	PR_PSM_KP_KS_44	35	48934.52297	2.50	0.12	25	PO_PSM_KP_KS_44	35	47250.08279	3.00	0.14
28	PR_PSM_KP_KS_45	34	68720.86882	2.50	0.17	26	PO_PSM_KP_KS_45	34	79299.78762	3.00	0.24
29	PR_PSM_KP_KS_48	33	120174.7328	2.50	0.30	27	PO_PSM_KP_KS_48	33	121820.2333	3.00	0.37
						28	PO_PSM_KP_KS_49	37	47217.50237	3.00	0.14
						29	PO_PSM_KG2_KS_28	36	94038.601	3.00	0.28
30	PR_PSM_KG2_KS_31	35	139049.9478	2.50	0.35	30	PO_PSM_KG2_KS_31	35	142404.6601	3.00	0.43
31	PR_PSM_MD_KS_01_03_04(IVA,B)	34	413624.8795	2.50	1.03	31	PO_PSM_MD_KS_01_03	34	106690.9688	3.00	0.32
						32	PO_PSM_MD_KS_03_04 (IVA)	36	288147.7128	3.00	0.86
						22	PO_PSM_MD_KS_04(IVC)	35	8428.010939	3.00	0.03
32	PR_PSM_MD_KS_05	62	20039.23115	2.50	0.05		PO_PSM_MD_KS_05	62	16616.16268	3.00	0.05
33	PR_PSM_MD_KS_07	60	76458.85613	2.50	0.19	23	PO_PSM_MD_KS_07	60	182689.1687	3.00	0.55
34	PR_PSM_MD_KS_08	56	123086.0713	2.50	0.31	24	PO_PSM_MD_KS_08	56	134155.0885	3.00	0.40
35	PR_PSM_MD_KS_09	64	631789.3898	2.50	1.58	25	PO_PSM_MD_KS_09	64	344862.1424	3.00	1.03
						26	PO_PSM_MD_KS_10	59	57070.93463	3.00	0.17
36	PR_PSM_MD_KS_10_11_12	62	1170908.164	2.50	2.93	27	PO_PSM_MD_KS_10_11_12	62	1084484.835	3.00	3.25
37	PR_PSM_MD_KS_13	57	639023.0502	2.50	1.60	28	PO_PSM_MD_KS_13	57	653857.1276	3.00	1.96
						29	PO_PSM_MD_KS_14	56	33220.40269	3.00	0.10
38	PR_PSM_MD_KS_18	59	1045115.025	2.50	2.61	30	PO_PSM_MD_KS_18	59	999163.2582	3.00	3.00
39	PR_PSM_MD_KS_18_19	58	229896.479	2.50	0.57	31	PO_PSM_MD_KS_18_I	58	153258.7106	3.00	0.46
						32	PO_PSM_MD_KS_18_II	59	314345.1845	3.00	0.94
40	PR_PSM_MD_KS_20	54	343207.3462	2.50	0.86	33	PO_PSM_MD_KS_20_20A	54	665932.9069	3.00	2.00
41	PR_PSM_MD_KS_20A	54	180390.6934	2.50	0.45						
42	PR_PSM_MD_KS_21	51	1592607.056	2.50	3.98	34	PO_PSM_MD_KS_21	51	1726949.746	3.00	5.18
43	PR_PSM_MD_KS_22	54	159235.6448	2.50	0.40	35	PO_PSM_MD_KS_22	54	177679.612	3.00	0.53
44	PR_PSM_MD_KS_23	55	340440.3134	2.50	0.85	36	PO_PSM_MD_KS_23	55	343372.7276	3.00	1.03
45	PR_PSM_MD_KS_23A	51	132864.5107	2.50	0.33	37	PO_PSM_MD_KS_23A	51	199082.0959	3.00	0.60
						38	PO_PSM_MD_KS_23B	46	163812.3556	3.00	0.49
46	PR_PSM_MD_KS_24	50	172726.3666	2.50	0.43	39	PO_PSM_MD_KS_24	50	315734.5463	3.00	0.95
						40	PO_PSM_MD_KS_24A	51	451368.9758	3.00	1.35

Pre monsoon						Post monsoon					
S L No	**Sand Bar_Code**	**RL (m)**	**Area in sq.m.**	**Sand Thick**	**Sand Volume**	**S L No**	**Sand Bar_Code**	**RL (m)**	**Area in sq.m.**	**Sand Thick**	**Sand Volum**
						41	PO_PSM_MD_KS_24B	40	172740.5252	3.00	0.52
47	PR_PSM_MD_KS_25	42	47393.47707	2.50	0.12	42	PO_PSM_MD_KS_25	42	47393.50463	3.00	0.14
						43	PO_PSM_MD_KS_25A	41	108705.2036	3.00	0.33
48	PR_PSM_MD_KS_26	40	124752.8691	2.50	0.31	44	PO_PSM_MD_KS_26	40	124752.862	3.00	0.37
49	PR_PSM_MD_KS_27	40	94038.60964	2.50	0.24	45	PO_PSM_MD_KS_26A	40	101656.0573	3.00	0.30
						46	PO_PSM_MD_KS_26B	35	135961.5923	3.00	0.41
50	PR_PSM_MD_KS_29	35	155583.3838	2.50	0.39	47	PO_PSM_MD_KS_29	35	155583.3774	3.00	0.47
51	PR_PSM_MD_KS_30A	38	273434.1115	2.50	0.68	48	PO_PSM_MD_KS_30A	38	280718.2159	3.00	0.84
52	PR_PSM_MD_KS_32	38	55464.48544	2.50	0.14	49	PO_PSM_MD_KS_32	38	65029.93577	3.00	0.20
Estimation of Sand Resources in Pre monsoon period & Post monsoon period of Shilabati River											
						1	PO_PSM_CKI_SB_43	38	3030.336164	2.50	0.01
						2	PO_PSM_CKI_SB_44	36	1326.917736	2.50	0.00
1	PR_PSM_CKII_SB_48	34	4593.222628	2.50	0.01	3	PO_PSM_CKI_SB_44A	34	316.540284	2.50	0.00
2	PR_PSM_CKII_SB_49	35	3251.544549	2.50	0.01	4	PO_PSM_CKI_SB_44B	35	874.358563	2.50	0.00
3	PR_PSM_CKII_SB_50	45	2671.925105	2.50	0.01	5	PO_PSM_CKII_SB_42	45	10121.14185	2.50	0.03
4	PR_PSM_CKII_SB_51	43	38771.54833	2.50	0.10	6	PO_PSM_CKII_SB_51	43	12756.18945	2.50	0.03
						7	PO_PSM_DPI_SB_45	34	2301.154087	2.50	0.01
						8	PO_PSM_DPI_SB_46	34	2407.001726	2.50	0.01
5	PR_PSM_GB1_SB_14	61	15913.02632	2.50	0.04	9	PO_PSM_GB1_SB_14	61	54105.66607	2.50	0.14
6	PR_PSM_GB1_SB_15	59	51958.75782	2.50	0.13	10	PO_PSM_GB1_SB_15	59	141873.7679	2.50	0.35
						11	PO_PSM_GB1_SB_16	61	29729.69659	2.50	0.07
7	PR_PSM_GB1_SB_17	59	93453.17819	2.50	0.23	12	PO_PSM_GB1_SB_17	59	32570.54789	2.50	0.08
8	PR_PSM_GB1_SB_18	61	17194.42879	2.50	0.04	13	PO_PSM_GB1_SB_18	61	17914.35212	2.50	0.04
9	PR_PSM_GB1_SB_19	54	17343.79514	2.50	0.04	14	PO_PSM_GB1_SB_19	54	27595.65803	2.50	0.07
10	PR_PSM_GB1_SB_20	53	139183.8018	2.50	0.35	15	PO_PSM_GB1_SB_20	53	152564.8263	2.50	0.38
						16	PO_PSM_GB1_SB_22	55	26676.94212	2.50	0.07
11	PR_PSM_GB1_SB_22_23	52	57072.97339	2.50	0.14	17	PO_PSM_GB1_SB_22_23	52	103392.2547	2.50	0.26
						18	PO_PSM_GB1_SB_22_23 (I)	53	29908.17443	2.50	0.07
						19	PO_PSM_GB1_SB_23	54	14674.00325	2.50	0.04
12	PR_PSM_GB1_SB_24	52	17058.80839	2.50	0.04	20	PO_PSM_GB1_SB_24		17309.62243	2.50	0.04
13	PR_PSM_GB1_SB_25	52	9908.930974	2.50	0.02						
						21	PO_PSM_GB1_SB_25(I)	55	11695.88506	2.50	0.03
						22	PO_PSM_GB1_SB_26	56	31448.36932	2.50	0.08
14	PR_PSM_GB1_SB_26A	53	96982.84198	2.50	0.24	23	PO_PSM_GB1_SB_26A	53	138726.1281	2.50	0.35
15	PR_PSM_GB1_SB_27	53	20955.3675	2.50	0.05	24	PO_PSM_GB1_SB_27	53	23092.18231	2.50	0.06
16	PR_PSM_GB1_SB_27A	55	47255.80886	2.50	0.12	25	PO_PSM_GB1_SB_27A	55	69216.1246	2.50	0.17
17	PR_PSM_GB1_SB_27B	56	13586.98583	2.50	0.03	26	PO_PSM_GB1_SB_27B	56	10584.86436	2.50	0.03
18	PR_PSM_GB1_SB_27C	55	12453.16115	2.50	0.03	27	PO_PSM_GB1_SB_28(I)	55	59451.45838	2.50	0.15

Pre monsoon						Post monsoon					
S L No	Sand Bar_Code	RL (m)	Area in sq.m.	Sand Thick	Sand Volume	S L No	Sand Bar_Code	RL (m)	Area in sq.m.	Sand Thick	Sand Volum
19	PR_PSM_GB1_SB_28	54	23783.45242	2.50	0.06	28	PO_PSM_GB1_SB_28	54	25696.21978	2.50	0.06
20	PR_PSM_GB1_SB_28A	50	10940.81635	2.50	0.03	29	PO_PSM_GB1_SB_28A	50	34508.01391	2.50	0.09
						30	PO_PSM_GB1_SB_29	52	27607.18222	2.50	0.07
21	PR_PSM_GB1_SB_29A	53	40002.13389	2.50	0.10	31	PO_PSM_GB1_SB_29A	53	60787.61082	2.50	0.15
22	PR_PSM_GB1_SB_29B	54	121512.6995	2.50	0.30	32	PO_PSM_GB1_SB_29B	54	129131.0923	2.50	0.32
						33	PO_PSM_GB1_SB_29C	52	12277.41031	2.50	0.03
23	PR_PSM_GB1_SB_30A	52	56210.1802	2.50	0.14	34	PO_PSM_GB1_SB_30A	52	11831.55088	2.50	0.03
						35	PO_PSM_GB1_SB_30A,B	53	83987.88022	2.50	0.21
24	PR_PSM_GB1_SB_30B	54	34855.97773	2.50	0.09	36	PO_PSM_GB1_SB_30B	54	20497.0648	2.50	0.05
25	PR_PSM_GB1_SB_30C	54	13458.80584	2.50	0.03	37	PO_PSM_GB1_SB_30C	54	29010.32931	2.50	0.07
26	PR_PSM_GB1_SB_31	54	18548.69825	2.50	0.05	38	PO_PSM_GB1_SB_31	54	28011.81515	2.50	0.07
						39	PO_PSM_GB1_SB_31B	52	21648.18555	2.50	0.05
						40	PO_PSM_GB1_SB_32	50	30487.27226	2.50	0.08
27	PR_PSM_GB1_SB_32A	51	104956.8128	2.50	0.26	41	PO_PSM_GB1_SB_32A	51	116469.9087	2.50	0.29
28	PR_PSM_GB1_SB_32B	53	97432.69786	2.50	0.24	42	PO_PSM_GB1_SB_32B	53	100824.8521	2.50	0.25
29	PR_PSM_GB1_SB_33	53	152075.8352	2.50	0.38	43	PO_PSM_GB1_SB_33	53	140333.9238	2.50	0.35
30	PR_PSM_GB1_SB_34	46	22429.00001	2.50	0.06	44	PO_PSM_GB1_SB_34	46	27273.36703	2.50	0.07
31	PR_PSM_GB1_SB_35	47	18374.55196	2.50	0.05	45	PO_PSM_GB1_SB_35	47	20351.8844	2.50	0.05
32	PR_PSM_GB1_SB_36	46	69972.18533	2.50	0.17	46	PO_PSM_GB1_SB_36	46	74221.34605	2.50	0.19
33	PR_PSM_GB1_SB_37	47	34478.53278	2.50	0.09	47	PO_PSM_GB1_SB_37_38	47	87455.90214	2.50	0.22
34	PR_PSM_GB1_SB_38	48	48631.22812	2.50	0.12						
35	PR_PSM_GB1_SB_39	48	12623.33496	2.50	0.03	48	PO_PSM_GB1_SB_39		6290.75214	2.50	0.02
36	PR_PSM_GB1_SB_40	48	22266.87313	2.50	0.06						
37	PR_PSM_GB1_SB_41	48	29877.26983	2.50	0.07	49	PO_PSM_GB1_SB_41	48	39128.20326	2.50	0.10
38	PR_PSM_GB1_SB_42	72	12858.58049	2.50	0.03	50	PO_PSM_GB2_SB_01	72	115530.345	2.50	0.29
39	PR_PSM_GB1_SB_43	68	3540.248391	2.50	0.01	51	PO_PSM_GB2_SB_01A	68	267533.0765	2.50	0.67
40	PR_PSM_GB1_SB_44	66	9234.637215	2.50	0.02	52	PO_PSM_GB2_SB_01B	66	56092.10347	2.50	0.14
41	PR_PSM_GB1_SB_45	66	4395.636311	2.50	0.01	53	PO_PSM_GB2_SB_01B_02_03_04	66	298744.3632	2.50	0.75
42	PR_PSM_GB1_SB_46	65	3631.957454	2.50	0.01	54	PO_PSM_GB2_SB_02A	65	14645.3576	2.50	0.04
43	PR_PSM_GB1_SB_47	66	6986.756976	2.50	0.02	55	PO_PSM_GB2_SB_03	66	10604.77385	2.50	0.03
44	PR_PSM_GB2_SB_04	65	26563.17301	2.50	0.07	56	PO_PSM_GB2_SB_04	65	40101.64036	2.50	0.10
45	PR_PSM_GB2_SB_05	64	35923.14183	2.50	0.09	57	PO_PSM_GB2_SB_05	64	67886.49659	2.50	0.17
						58	PO_PSM_GB2_SB_05A	65	22091.09745	2.50	0.06
46	PR_PSM_GB2_SB_06	66	24832.87297	2.50	0.06	59	PO_PSM_GB2_SB_06	66	55008.69473	2.50	0.14
47	PR_PSM_GB2_SB_07	64	71065.94042	2.50	0.18	60	PO_PSM_GB2_SB_07	64	231874.2654	2.50	0.58
48	PR_PSM_GB2_SB_07A	62	168370.8593	2.50	0.42	61	PO_PSM_GB2_SB_07A	62	108940.2195	2.50	0.27
49	PR_PSM_GB2_SB_08	62	65786.76388	2.50	0.16	62	PO_PSM_GB2_SB_08	62	124843.3674	2.50	0.31
						63	PO_PSM_GB2_SB_08A	63	41090.4522	2.50	0.10

Pre monsoon						Post monsoon					
S L No	**Sand Bar_Code**	**RL (m)**	**Area in sq.m.**	**Sand Thick**	**Sand Volume**	**S L No**	**Sand Bar_Code**	**RL (m)**	**Area in sq.m.**	**Sand Thick**	**Sand Volum**
						64	PO_PSM_GB2_SB_08B	61	10822.08304	2.50	0.03
50	PR_PSM_GB2_SB_09	62	23502.66331	2.50	0.06	65	PO_PSM_GB2_SB_09	62	60243.24569	2.50	0.15
51	PR_PSM_GB2_SB_10	61	53290.25959	2.50	0.13	66	PO_PSM_GB2_SB_10	61	133606.4229	2.50	0.33
Estimation of Sand Resources in Pre monsoon period & Post monsoon period of Subarnarekha River											
1	PR_PSM_KS_SR_01	37	1929965.937	2.50	4.82	1	PO_PSM_KS_SR_01	37	1867935.96	3.00	5.60
2	PR_PSM_KS_SR_02_04	40	164965.0449	2.50	0.41	2	PO_PSM_KS_SR_02_04	40	187306.3351	3.00	0.56
3	PR_PSM_KS_SR_04_05	42	274647.5379	2.50	0.69	3	PO_PSM_KS_SR_04_05	42	327748.146	3.00	0.98
4	PR_PSM_KS_SR_04_05_07	43	2136270.663	2.50	5.34	4	PO_PSM_KS_SR_04_05_07	43	2189849.334	3.00	6.57
5	PR_PSM_KS_SR_06_07	40	475480.6438	2.50	1.19	5	PO_PSM_KS_SR_06_07	40	266292.83	3.00	0.80
6	PR_PSM_DT1_SR_08	41	24188.83041	2.50	0.06	6	PO_PSM_DT1_SR_08	41	91035.74759	3.00	0.27
7	PR_PSM_DT1_SR_08_10	42	424996.9882	2.50	1.06	7	PO_PSM_DT1_SR_08_10_11(A)	42	419938.7916	3.00	1.26
8	PR_PSM_DT1_SR_11A		451826.0823	2.50	1.13						
9	PR_PSM_DT1_SR_09	39	417280.3563	2.50	1.04	8	PO_PSM_DT1_SR_09	39	253326.804	3.00	0.76
10	PR_PSM_DT1_SR_11	43	503124.9135	2.50	1.26	9	PO_PSM_DT1_SR_11	43	1466805.316	3.00	4.40
11	PR_PSM_DT1_SR_12(XIID)	39	1792460.938	2.50	4.48	10	PO_PSM_DT1_SR_12(XIID)	39	1822610.417	3.00	5.47
12	PR_PSM_DT1_SR_12AI	36	453193.2964	2.50	1.13	11	PO_PSM_DT1_SR_12AI	36	453891.6751	3.00	1.36
13	PR_PSM_DT1_SR_12A	37	49003.71394	2.50	0.12	12	PO_PSM_DT1_SR_12A	37	49003.72215	3.00	0.15
14	PR_PSM_DT1_SR_13	37	814565.2031	2.50	2.04	13	PO_PSM_DT1_SR_13	37	881671.8653	3.00	2.65
15	PR_PSM_DT1_SR_17	35	576805.6147	2.50	1.44	14	PO_PSM_DT1_SR_17	35	575799.7052	3.00	1.73
						15	PO_PSM_DT1_SR_17I	36	175446.2615	3.00	0.53
16	PR_PSM_DT1_SR_18	35	17436.27259	2.50	0.04	16	PO_PSM_DT1_SR_18	35	17542.13804	3.00	0.05
17	PR_PSM_DT1_SR_18A	36	8362.001847	2.50	0.02	17	PO_PSM_DT1_SR_18A	36	8514.067931	3.00	0.03
18	PR_PSM_DT1_SR_19	31	287578.4624	2.50	0.72	18	PO_PSM_DT1_SR_19	31	323380.9403	3.00	0.97
19	PR_PSM_DT1_SR_20	31	249192.6102	2.50	0.62	19	PO_PSM_DT1_SR_20	31	380953.2937	3.00	1.14

Annexure 3
Boundary Coordinates of Potential Blocks of Paschim Medinipur District

Abbreviation used in the table as below

ABBREVIATION FORM		
PERIOD	PR	PRE MONSOON
	PO	POST MONSOON
BLOCK	KS	KESHIARY
	DT1	DANTAN 1
	MD	MIDNAPORE
	GB1	GARHBETA 1
	GB2	GARHBETA 2
	DB	DEBRA
	KP	KESHPUR
	KG2	KHARAGPUR 2
RIVER	SR	SUBARNAREKHA
	KS	KANGSABATI
	SB	SHILABATI

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
PSM_MD_KS_01_03	1	22° 29' 53.682" N	87° 5' 27.460" E
	2	22° 29' 51.464" N	87° 5' 28.882" E
	3	22° 29' 51.547" N	87° 5' 25.122" E
	4	22° 29' 53.369" N	87° 5' 23.452" E
	5	22° 29' 55.698" N	87° 5' 21.532" E
	6	22° 29' 55.719" N	87° 5' 19.751" E
	7	22° 29' 58.323" N	87° 5' 18.293" E
	8	22° 30' 0.723" N	87° 5' 18.989" E
PSM_MD_KS_07	1	22° 28' 3.199" N	87° 5' 9.108" E
	2	22° 28' 3.251" N	87° 5' 9.018" E
	3	22° 28' 9.866" N	87° 5' 2.250" E
	4	22° 28' 11.261" N	87° 5' 1.567" E
	5	22° 28' 14.661" N	87° 4' 59.904" E
	6	22° 28' 19.277" N	87° 4' 58.906" E
	7	22° 28' 23.308" N	87° 4' 57.628" E
	8	22° 28' 25.532" N	87° 4' 57.359" E
	9	22° 28' 26.906" N	87° 4' 57.193" E
	10	22° 28' 29.531" N	87° 4' 57.332" E
	11	22° 28' 35.236" N	87° 5' 0.517" E
	12	22° 28' 38.332" N	87° 5' 4.075" E
	13	22° 28' 43.284" N	87° 5' 11.229" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	14	22° 28' 38.485" N	87° 5' 8.893" E
	15	22° 28' 32.120" N	87° 5' 3.889" E
	16	22° 28' 26.615" N	87° 5' 0.738" E
	17	22° 28' 17.494" N	87° 5' 0.177" E
PSM_MD_KS_08	1	22° 27' 52.797" N	87° 7' 15.888" E
	2	22° 27' 48.860" N	87° 7' 19.187" E
	3	22° 27' 50.957" N	87° 7' 12.916" E
	4	22° 27' 51.076" N	87° 6' 57.987" E
	5	22° 27' 50.003" N	87° 6' 53.241" E
	6	22° 27' 49.900" N	87° 6' 47.455" E
	7	22° 27' 50.917" N	87° 6' 45.914" E
	8	22° 27' 56.419" N	87° 7' 6.078" E
PSM_MD_KS_09	1	22° 27' 16.963" N	87° 7' 18.441" E
	2	22° 27' 16.212" N	87° 7' 17.222" E
	3	22° 27' 17.690" N	87° 7' 17.672" E
	4	22° 27' 21.670" N	87° 7' 18.255" E
	5	22° 27' 26.726" N	87° 7' 17.449" E
	6	22° 27' 31.030" N	87° 7' 15.254" E
	7	22° 27' 34.689" N	87° 7' 12.827" E
	8	22° 27' 38.993" N	87° 7' 10.053" E
	9	22° 27' 43.623" N	87° 7' 4.618" E
	10	22° 27' 47.069" N	87° 6' 58.140" E
	11	22° 27' 47.222" N	87° 6' 56.465" E
	12	22° 27' 48.707" N	87° 7' 1.226" E
	13	22° 27' 48.702" N	87° 7' 7.591" E
	14	22° 27' 48.267" N	87° 7' 13.608" E
	15	22° 27' 46.219" N	87° 7' 19.855" E
	16	22° 27' 36.140" N	87° 7' 25.980" E
	17	22° 27' 30.960" N	87° 7' 25.786" E
	18	22° 27' 27.026" N	87° 7' 25.077" E
	19	22° 27' 26.125" N	87° 7' 24.807" E
	20	22° 27' 24.705" N	87° 7' 22.730" E
PSM_MD_KS_10	1	22° 26' 48.237" N	87° 7' 5.504" E
	2	22° 26' 49.326" N	87° 7' 3.143" E
	3	22° 26' 51.050" N	87° 7' 1.126" E
	4	22° 26' 53.178" N	87° 7' 2.377" E
	5	22° 27' 1.067" N	87° 7' 8.701" E
	6	22° 26' 53.415" N	87° 7' 7.659" E
PSM_MD_KS_10_11_12	1	22° 26' 20.964" N	87° 6' 50.292" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	2	22° 26' 21.399" N	87° 6' 51.587" E
	3	22° 26' 25.171" N	87° 6' 55.923" E
	4	22° 26' 30.113" N	87° 6' 58.913" E
	5	22° 26' 33.299" N	87° 7' 1.343" E
	6	22° 26' 35.737" N	87° 7' 3.511" E
	7	22° 26' 45.846" N	87° 7' 9.627" E
	8	22° 26' 45.880" N	87° 7' 9.648" E
	9	22° 26' 47.464" N	87° 7' 7.314" E
	10	22° 26' 55.780" N	87° 7' 9.860" E
	11	22° 27' 0.834" N	87° 7' 11.831" E
	12	22° 27' 7.715" N	87° 7' 16.003" E
	13	22° 27' 14.774" N	87° 7' 20.990" E
	14	22° 27' 9.253" N	87° 7' 20.294" E
	15	22° 26' 57.723" N	87° 7' 20.099" E
	16	22° 26' 46.021" N	87° 7' 18.052" E
	17	22° 26' 36.904" N	87° 7' 12.490" E
	18	22° 26' 25.724" N	87° 7' 4.705" E
	19	22° 26' 15.227" N	87° 7' 2.289" E
	20	22° 26' 5.245" N	87° 7' 3.762" E
	21	22° 25' 54.054" N	87° 7' 9.676" E
	22	22° 25' 44.582" N	87° 7' 18.554" E
	23	22° 25' 40.972" N	87° 7' 23.615" E
	24	22° 25' 34.010" N	87° 7' 19.633" E
	25	22° 25' 35.155" N	87° 7' 16.646" E
	26	22° 25' 36.021" N	87° 7' 13.504" E
	27	22° 25' 36.778" N	87° 7' 10.760" E
	28	22° 25' 41.491" N	87° 7' 7.035" E
	29	22° 25' 45.056" N	87° 7' 3.817" E
	30	22° 25' 50.531" N	87° 7' 1.100" E
	31	22° 25' 56.419" N	87° 6' 57.440" E
	32	22° 26' 0.672" N	87° 6' 54.722" E
	33	22° 26' 4.735" N	87° 6' 52.355" E
	34	22° 26' 13.273" N	87° 6' 49.845" E
	35	22° 26' 15.751" N	87° 6' 49.773" E
PSM_MD_KS_13	1	22° 25' 28.987" N	87° 9' 6.985" E
	2	22° 25' 23.234" N	87° 9' 11.236" E
	3	22° 25' 19.964" N	87° 9' 15.411" E
	4	22° 25' 14.418" N	87° 9' 6.907" E
	5	22° 25' 15.947" N	87° 9' 5.507" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	6	22° 25' 23.373" N	87° 9' 0.193" E
	7	22° 25' 25.635" N	87° 8' 57.303" E
	8	22° 25' 26.931" N	87° 8' 51.520" E
	9	22° 25' 27.043" N	87° 8' 45.967" E
	10	22° 25' 25.116" N	87° 8' 36.131" E
	11	22° 25' 22.431" N	87° 8' 31.732" E
	12	22° 25' 22.464" N	87° 8' 27.512" E
	13	22° 25' 30.749" N	87° 8' 26.044" E
	14	22° 25' 33.108" N	87° 8' 29.735" E
	15	22° 25' 36.651" N	87° 8' 36.912" E
	16	22° 25' 38.384" N	87° 8' 41.719" E
	17	22° 25' 38.480" N	87° 8' 52.032" E
	18	22° 25' 34.395" N	87° 9' 1.610" E
PSM_MD_KS_14	1	22° 25' 29.837" N	87° 9' 10.562" E
	2	22° 25' 29.133" N	87° 9' 11.693" E
	3	22° 25' 28.477" N	87° 9' 12.269" E
	4	22° 25' 21.685" N	87° 9' 18.229" E
	5	22° 25' 19.964" N	87° 9' 15.411" E
	6	22° 25' 24.088" N	87° 9' 10.145" E
	7	22° 25' 28.987" N	87° 9' 6.985" E
	8	22° 25' 31.241" N	87° 9' 8.306" E
PSM_MD_KS_18_I	1	22° 24' 35.360" N	87° 10' 7.891" E
	2	22° 24' 32.241" N	87° 10' 7.887" E
	3	22° 24' 33.858" N	87° 10' 4.303" E
	4	22° 24' 36.659" N	87° 10' 0.604" E
	5	22° 24' 36.770" N	87° 9' 57.250" E
	6	22° 24' 37.221" N	87° 9' 55.126" E
	7	22° 24' 41.444" N	87° 9' 49.399" E
	8	22° 24' 42.507" N	87° 9' 49.636" E
	9	22° 24' 48.341" N	87° 9' 52.942" E
	10	22° 24' 49.687" N	87° 9' 53.178" E
	11	22° 24' 49.873" N	87° 9' 54.817" E
	12	22° 24' 46.958" N	87° 9' 58.427" E
	13	22° 24' 45.685" N	87° 10' 2.311" E
PSM_MD_KS_18_II	1	22° 24' 42.554" N	87° 10' 34.935" E
	2	22° 24' 38.376" N	87° 10' 40.335" E
	3	22° 24' 37.370" N	87° 10' 39.359" E
	4	22° 24' 38.450" N	87° 10' 35.196" E
	5	22° 24' 38.025" N	87° 10' 30.684" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	6	22° 24' 36.843" N	87° 10' 29.525" E
	7	22° 24' 36.418" N	87° 10' 24.898" E
	8	22° 24' 31.907" N	87° 10' 18.529" E
	9	22° 24' 32.235" N	87° 10' 13.671" E
	10	22° 24' 34.067" N	87° 10' 10.666" E
	11	22° 24' 38.265" N	87° 10' 7.779" E
	12	22° 24' 41.062" N	87° 10' 6.972" E
	13	22° 24' 42.568" N	87° 10' 6.858" E
	14	22° 24' 44.779" N	87° 10' 6.069" E
	15	22° 24' 45.892" N	87° 10' 19.539" E
	16	22° 24' 45.384" N	87° 10' 27.905" E
PSM_MD_KS_18	1	22° 24' 34.937" N	87° 10' 35.723" E
	2	22° 24' 34.824" N	87° 10' 40.466" E
	3	22° 24' 34.822" N	87° 10' 42.432" E
	4	22° 24' 29.425" N	87° 10' 49.188" E
	5	22° 24' 24.054" N	87° 10' 53.177" E
	6	22° 24' 18.457" N	87° 10' 56.408" E
	7	22° 24' 16.410" N	87° 10' 59.066" E
	8	22° 24' 11.891" N	87° 11' 0.680" E
	9	22° 24' 8.123" N	87° 11' 3.567" E
	10	22° 24' 4.353" N	87° 11' 8.073" E
	11	22° 24' 2.839" N	87° 11' 15.012" E
	12	22° 24' 0.894" N	87° 11' 23.106" E
	13	22° 24' 0.561" N	87° 11' 31.435" E
	14	22° 24' 0.534" N	87° 11' 35.260" E
	15	22° 23' 55.392" N	87° 11' 26.105" E
	16	22° 23' 53.421" N	87° 11' 18.884" E
	17	22° 23' 56.100" N	87° 11' 9.634" E
	18	22° 23' 58.943" N	87° 11' 6.399" E
	19	22° 24' 5.459" N	87° 11' 2.162" E
	20	22° 24' 8.798" N	87° 10' 57.655" E
	21	22° 24' 10.956" N	87° 10' 51.759" E
	22	22° 24' 11.937" N	87° 10' 40.076" E
	23	22° 24' 13.881" N	87° 10' 33.023" E
	24	22° 24' 17.230" N	87° 10' 26.260" E
	25	22° 24' 22.710" N	87° 10' 24.589" E
	26	22° 24' 24.434" N	87° 10' 21.931" E
	27	22° 24' 25.085" N	87° 10' 17.188" E
	28	22° 24' 27.782" N	87° 10' 9.325" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	29	22° 24' 33.497" N	87° 10' 0.416" E
	30	22° 24' 32.950" N	87° 10' 2.890" E
	31	22° 24' 28.397" N	87° 10' 15.817" E
	32	22° 24' 28.176" N	87° 10' 21.254" E
	33	22° 24' 29.033" N	87° 10' 24.726" E
	34	22° 24' 31.399" N	87° 10' 24.960" E
	35	22° 24' 34.191" N	87° 10' 29.128" E
	36	22° 24' 34.727" N	87° 10' 30.980" E
PSM_MD_KS_20_20A	1	22° 24' 6.760" N	87° 11' 18.440" E
	2	22° 24' 5.321" N	87° 11' 26.752" E
	3	22° 24' 6.459" N	87° 11' 31.707" E
	4	22° 24' 3.488" N	87° 11' 35.040" E
	5	22° 24' 3.428" N	87° 11' 26.858" E
	6	22° 24' 5.372" N	87° 11' 20.197" E
	7	22° 24' 4.732" N	87° 11' 15.199" E
	8	22° 24' 7.193" N	87° 11' 7.568" E
	9	22° 24' 15.332" N	87° 11' 1.471" E
	10	22° 24' 19.523" N	87° 11' 0.284" E
	11	22° 24' 10.743" N	87° 11' 10.011" E
	12	22° 24' 6.760" N	87° 11' 18.440" E
PSM_MD_KS_20_20A_I	1	22° 24' 57.702" N	87° 12' 20.657" E
	2	22° 24' 54.355" N	87° 12' 19.196" E
	3	22° 24' 56.736" N	87° 12' 14.638" E
	4	22° 24' 56.968" N	87° 12' 14.183" E
	5	22° 24' 59.020" N	87° 12' 15.601" E
	6	22° 25' 5.825" N	87° 12' 22.204" E
	7	22° 25' 7.529" N	87° 12' 23.950" E
	8	22° 25' 9.727" N	87° 12' 26.202" E
	9	22° 25' 4.020" N	87° 12' 25.525" E
PSM_MD_KS_21	1	22° 25' 2.694" N	87° 12' 52.872" E
	2	22° 24' 56.876" N	87° 13' 0.221" E
	3	22° 24' 58.027" N	87° 13' 7.719" E
	4	22° 25' 1.502" N	87° 13' 15.777" E
	5	22° 25' 1.687" N	87° 13' 16.769" E
	6	22° 25' 0.044" N	87° 13' 22.311" E
	7	22° 24' 58.133" N	87° 13' 24.934" E
	8	22° 24' 55.932" N	87° 13' 29.928" E
	9	22° 24' 56.058" N	87° 13' 32.010" E
	10	22° 24' 53.847" N	87° 13' 43.807" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	11	22° 24' 53.453" N	87° 13' 48.943" E
	12	22° 24' 47.497" N	87° 14' 1.288" E
	13	22° 24' 49.154" N	87° 14' 15.867" E
	14	22° 24' 45.021" N	87° 14' 17.804" E
	15	22° 24' 43.270" N	87° 14' 15.752" E
	16	22° 24' 41.822" N	87° 13' 59.423" E
	17	22° 24' 40.905" N	87° 13' 53.760" E
	18	22° 24' 44.621" N	87° 13' 54.223" E
	19	22° 24' 44.634" N	87° 13' 54.226" E
	20	22° 24' 44.665" N	87° 13' 54.232" E
	21	22° 24' 44.674" N	87° 13' 54.234" E
	22	22° 24' 44.675" N	87° 13' 54.234" E
	23	22° 24' 43.861" N	87° 13' 50.403" E
	24	22° 24' 43.686" N	87° 13' 49.583" E
	25	22° 24' 42.847" N	87° 13' 45.436" E
	26	22° 24' 42.844" N	87° 13' 45.425" E
	27	22° 24' 42.844" N	87° 13' 45.422" E
	28	22° 24' 42.844" N	87° 13' 45.421" E
	29	22° 24' 42.926" N	87° 13' 40.998" E
	30	22° 24' 42.927" N	87° 13' 40.935" E
	31	22° 24' 42.927" N	87° 13' 40.933" E
	32	22° 24' 42.928" N	87° 13' 40.913" E
	33	22° 24' 42.928" N	87° 13' 40.911" E
	34	22° 24' 42.835" N	87° 13' 34.112" E
	35	22° 24' 42.835" N	87° 13' 34.110" E
	36	22° 24' 42.751" N	87° 13' 32.825" E
	37	22° 24' 42.828" N	87° 13' 32.586" E
	38	22° 24' 44.882" N	87° 13' 25.185" E
	39	22° 24' 45.119" N	87° 13' 21.453" E
	40	22° 24' 48.594" N	87° 13' 15.617" E
	41	22° 24' 50.278" N	87° 13' 11.455" E
	42	22° 24' 51.320" N	87° 13' 4.099" E
	43	22° 24' 50.940" N	87° 12' 58.962" E
	44	22° 24' 49.657" N	87° 12' 53.407" E
	45	22° 24' 43.209" N	87° 12' 48.678" E
	46	22° 24' 41.663" N	87° 12' 44.448" E
	47	22° 24' 40.120" N	87° 12' 42.426" E
	48	22° 24' 39.999" N	87° 12' 37.400" E
	49	22° 24' 38.979" N	87° 12' 34.970" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	50	22° 24' 39.165" N	87° 12' 34.879" E
	51	22° 24' 52.845" N	87° 12' 21.977" E
	52	22° 24' 52.885" N	87° 12' 21.908" E
	53	22° 24' 58.599" N	87° 12' 25.517" E
	54	22° 25' 3.885" N	87° 12' 30.384" E
	55	22° 25' 7.499" N	87° 12' 30.945" E
	56	22° 25' 13.304" N	87° 12' 32.897" E
	57	22° 25' 13.818" N	87° 12' 34.703" E
	58	22° 25' 13.551" N	87° 12' 41.644" E
	59	22° 25' 11.866" N	87° 12' 47.194" E
	60	22° 25' 10.700" N	87° 12' 50.247" E
PSM_MD_KS_22	1	22° 24' 58.027" N	87° 13' 7.719" E
	2	22° 24' 58.551" N	87° 13' 2.722" E
	3	22° 25' 2.558" N	87° 12' 58.147" E
	4	22° 25' 8.370" N	87° 12' 55.380" E
	5	22° 25' 10.123" N	87° 12' 54.754" E
	6	22° 25' 1.687" N	87° 13' 16.769" E
	7	22° 25' 1.502" N	87° 13' 15.777" E
PSM_MD_KS_23	1	22° 25' 1.258" N	87° 14' 35.185" E
	2	22° 24' 57.359" N	87° 14' 50.448" E
	3	22° 24' 56.515" N	87° 14' 54.850" E
	4	22° 24' 54.494" N	87° 14' 53.634" E
	5	22° 24' 58.685" N	87° 14' 43.948" E
	6	22° 24' 57.469" N	87° 14' 38.808" E
	7	22° 24' 56.485" N	87° 14' 33.649" E
	8	22° 24' 54.944" N	87° 14' 28.649" E
	9	22° 24' 54.950" N	87° 14' 24.484" E
	10	22° 24' 52.248" N	87° 14' 18.371" E
	11	22° 24' 52.512" N	87° 14' 14.762" E
	12	22° 24' 52.007" N	87° 14' 6.710" E
	13	22° 24' 50.212" N	87° 13' 58.516" E
	14	22° 24' 53.303" N	87° 13' 56.147" E
	15	22° 24' 55.128" N	87° 13' 51.028" E
	16	22° 24' 55.908" N	87° 13' 46.726" E
	17	22° 24' 55.526" N	87° 13' 43.393" E
	18	22° 24' 56.693" N	87° 13' 39.508" E
	19	22° 24' 57.355" N	87° 13' 38.498" E
	20	22° 24' 57.183" N	87° 13' 41.670" E
	21	22° 24' 54.925" N	87° 13' 56.474" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	22	22° 24' 54.731" N	87° 14' 11.837" E
	23	22° 24' 55.822" N	87° 14' 16.618" E
	24	22° 25' 1.142" N	87° 14' 26.994" E
PSM_MD_KS_23A	1	22° 24' 38.031" N	87° 15' 32.310" E
	2	22° 24' 37.871" N	87° 15' 25.663" E
	3	22° 24' 38.853" N	87° 15' 24.010" E
	4	22° 24' 42.214" N	87° 15' 20.685" E
	5	22° 24' 44.286" N	87° 15' 16.801" E
	6	22° 24' 45.441" N	87° 15' 12.245" E
	7	22° 24' 46.488" N	87° 15' 12.620" E
	8	22° 24' 53.965" N	87° 14' 54.857" E
	9	22° 24' 55.154" N	87° 15' 0.162" E
	10	22° 24' 52.300" N	87° 15' 9.320" E
	11	22° 24' 48.029" N	87° 15' 16.531" E
	12	22° 24' 44.001" N	87° 15' 33.182" E
	13	22° 24' 40.052" N	87° 15' 40.981" E
PSM_MD_KS_23B	1	22° 24' 32.421" N	87° 16' 15.302" E
	2	22° 24' 35.756" N	87° 16' 6.533" E
	3	22° 24' 37.562" N	87° 16' 4.695" E
	4	22° 24' 39.141" N	87° 16' 3.721" E
	5	22° 24' 38.202" N	87° 16' 6.566" E
	6	22° 24' 38.351" N	87° 16' 20.263" E
	7	22° 24' 36.266" N	87° 16' 31.920" E
	8	22° 24' 35.789" N	87° 16' 34.431" E
	9	22° 24' 33.055" N	87° 16' 31.454" E
	10	22° 24' 31.101" N	87° 16' 24.917" E
PSM_MD_KS_24	1	22° 24' 27.013" N	87° 16' 21.875" E
	2	22° 24' 26.736" N	87° 16' 32.563" E
	3	22° 24' 27.614" N	87° 16' 47.696" E
	4	22° 24' 27.429" N	87° 16' 52.944" E
	5	22° 24' 23.275" N	87° 16' 44.582" E
	6	22° 24' 20.286" N	87° 16' 31.504" E
	7	22° 24' 19.427" N	87° 16' 17.120" E
	8	22° 24' 23.934" N	87° 16' 10.208" E
	9	22° 24' 25.379" N	87° 16' 7.114" E
	10	22° 24' 29.215" N	87° 16' 9.515" E
PSM_MD_KS_25B	1	22° 23' 45.809" N	87° 26' 5.282" E
	2	22° 23' 45.585" N	87° 26' 11.722" E
	3	22° 23' 45.621" N	87° 26' 17.607" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	4	22° 23' 46.318" N	87° 26' 19.726" E
	5	22° 23' 43.144" N	87° 26' 16.413" E
	6	22° 23' 42.646" N	87° 26' 9.887" E
	7	22° 23' 44.986" N	87° 26' 3.510" E
	8	22° 23' 48.163" N	87° 25' 58.884" E
PSM_MD_KS_25C	1	22° 24' 47.509" N	87° 26' 24.466" E
	2	22° 24' 52.677" N	87° 26' 21.427" E
	3	22° 24' 58.465" N	87° 26' 19.113" E
	4	22° 25' 3.165" N	87° 26' 18.683" E
	5	22° 25' 9.356" N	87° 26' 20.424" E
	6	22° 25' 13.630" N	87° 26' 24.380" E
	7	22° 25' 16.150" N	87° 26' 27.831" E
	8	22° 25' 16.405" N	87° 26' 29.136" E
	9	22° 25' 12.944" N	87° 26' 29.327" E
	10	22° 25' 7.025" N	87° 26' 22.506" E
	11	22° 25' 1.994" N	87° 26' 21.380" E
	12	22° 24' 57.735" N	87° 26' 21.366" E
	13	22° 24' 54.632" N	87° 26' 23.300" E
PSM_MD_KS_26	1	22° 25' 14.062" N	87° 26' 45.157" E
	2	22° 25' 12.636" N	87° 26' 47.235" E
	3	22° 25' 10.305" N	87° 26' 50.004" E
	4	22° 25' 9.016" N	87° 26' 49.583" E
	5	22° 25' 5.650" N	87° 26' 53.043" E
	6	22° 24' 57.637" N	87° 26' 57.043" E
	7	22° 24' 52.340" N	87° 26' 58.692" E
	8	22° 24' 49.497" N	87° 26' 58.690" E
	9	22° 24' 49.517" N	87° 26' 58.679" E
	10	22° 24' 56.083" N	87° 26' 55.313" E
	11	22° 25' 7.871" N	87° 26' 49.298" E
	12	22° 25' 9.889" N	87° 26' 47.583" E
	13	22° 25' 11.655" N	87° 26' 43.868" E
	14	22° 25' 12.284" N	87° 26' 40.594" E
	15	22° 25' 12.814" N	87° 26' 35.376" E
	16	22° 25' 11.793" N	87° 26' 31.041" E
	17	22° 25' 11.651" N	87° 26' 30.017" E
	18	22° 25' 15.005" N	87° 26' 30.722" E
	19	22° 25' 15.106" N	87° 26' 40.857" E
PSM_MD_KS_26A	1	22° 24' 42.762" N	87° 27' 5.389" E
	2	22° 24' 41.520" N	87° 27' 6.163" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	3	22° 24' 42.829" N	87° 27' 6.194" E
	4	22° 24' 38.606" N	87° 27' 8.803" E
	5	22° 24' 29.612" N	87° 27' 12.494" E
	6	22° 24' 27.447" N	87° 27' 13.136" E
	7	22° 24' 26.121" N	87° 27' 11.277" E
	8	22° 24' 25.557" N	87° 27' 9.776" E
	9	22° 24' 24.598" N	87° 27' 9.197" E
	10	22° 24' 28.891" N	87° 27' 8.052" E
	11	22° 24' 33.440" N	87° 27' 5.735" E
	12	22° 24' 36.644" N	87° 27' 4.690" E
	13	22° 24' 48.502" N	87° 26' 59.250" E
	14	22° 24' 49.025" N	87° 26' 59.413" E
	15	22° 24' 48.403" N	87° 27' 0.521" E
	16	22° 24' 47.212" N	87° 27' 1.739" E
	17	22° 24' 46.229" N	87° 27' 2.569" E
	18	22° 24' 44.832" N	87° 27' 3.453" E
PSM_MD_KS_26B	1	22° 24' 48.524" N	87° 28' 6.765" E
	2	22° 24' 44.949" N	87° 28' 6.343" E
	3	22° 24' 55.695" N	87° 28' 3.165" E
	4	22° 25' 0.446" N	87° 28' 2.792" E
	5	22° 25' 3.902" N	87° 28' 3.914" E
	6	22° 25' 9.369" N	87° 28' 6.043" E
	7	22° 25' 15.295" N	87° 28' 9.839" E
	8	22° 25' 19.949" N	87° 28' 13.787" E
	9	22° 25' 16.578" N	87° 28' 13.338" E
	10	22° 25' 7.337" N	87° 28' 10.184" E
	11	22° 25' 3.901" N	87° 28' 8.205" E
	12	22° 24' 53.254" N	87° 28' 7.938" E
PSM_KG2_KS_28	1	22° 25' 45.319" N	87° 28' 42.475" E
	2	22° 25' 45.311" N	87° 28' 40.072" E
	3	22° 25' 47.365" N	87° 28' 42.045" E
	4	22° 25' 55.410" N	87° 28' 45.072" E
	5	22° 26' 5.479" N	87° 28' 44.829" E
	6	22° 26' 13.333" N	87° 28' 42.690" E
	7	22° 26' 17.862" N	87° 28' 41.044" E
	8	22° 26' 15.110" N	87° 28' 43.387" E
	9	22° 26' 10.477" N	87° 28' 46.032" E
	10	22° 26' 0.681" N	87° 28' 48.660" E
	11	22° 25' 54.444" N	87° 28' 48.175" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	12	22° 25' 49.717" N	87° 28' 46.424" E
PSM_MD_KS_29	1	22° 26' 52.778" N	87° 28' 43.238" E
	2	22° 26' 52.162" N	87° 28' 47.865" E
	3	22° 26' 52.143" N	87° 28' 54.067" E
	4	22° 26' 50.405" N	87° 28' 59.800" E
	5	22° 26' 46.340" N	87° 29' 6.914" E
	6	22° 26' 43.500" N	87° 29' 9.507" E
	7	22° 26' 47.442" N	87° 29' 1.805" E
	8	22° 26' 49.160" N	87° 28' 57.201" E
	9	22° 26' 49.316" N	87° 28' 39.540" E
	10	22° 26' 47.933" N	87° 28' 35.814" E
	11	22° 26' 46.544" N	87° 28' 34.143" E
	12	22° 26' 42.726" N	87° 28' 33.019" E
	13	22° 26' 35.238" N	87° 28' 33.771" E
	14	22° 26' 33.593" N	87° 28' 34.412" E
	15	22° 26' 35.259" N	87° 28' 31.538" E
	16	22° 26' 39.785" N	87° 28' 28.661" E
	17	22° 26' 42.581" N	87° 28' 28.786" E
	18	22° 26' 45.940" N	87° 28' 27.663" E
	19	22° 26' 46.507" N	87° 28' 27.706" E
	20	22° 26' 48.167" N	87° 28' 29.242" E
	21	22° 26' 50.738" N	87° 28' 34.715" E
	22	22° 26' 51.068" N	87° 28' 39.622" E
	23	22° 26' 51.663" N	87° 28' 42.031" E
PSM_MD_KS_30(XXXB)	1	22° 26' 30.181" N	87° 29' 45.340" E
	2	22° 26' 29.436" N	87° 29' 52.391" E
	3	22° 26' 30.429" N	87° 29' 55.177" E
	4	22° 26' 29.249" N	87° 29' 54.587" E
	5	22° 26' 21.525" N	87° 29' 42.000" E
	6	22° 26' 23.431" N	87° 29' 37.100" E
	7	22° 26' 25.556" N	87° 29' 34.441" E
	8	22° 26' 26.881" N	87° 29' 32.524" E
	9	22° 26' 27.504" N	87° 29' 32.303" E
	10	22° 26' 28.547" N	87° 29' 29.067" E
	11	22° 26' 30.448" N	87° 29' 26.390" E
	12	22° 26' 32.605" N	87° 29' 24.361" E
	13	22° 26' 36.225" N	87° 29' 22.522" E
	14	22° 26' 42.066" N	87° 29' 18.884" E
	15	22° 26' 30.181" N	87° 29' 45.340" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	16	22° 26' 35.440" N	87° 29' 57.683" E
	17	22° 26' 40.108" N	87° 29' 57.261" E
	18	22° 26' 48.743" N	87° 29' 53.293" E
	19	22° 26' 52.462" N	87° 29' 52.473" E
	20	22° 26' 54.431" N	87° 29' 51.512" E
	21	22° 26' 56.014" N	87° 29' 51.196" E
	22	22° 26' 48.258" N	87° 29' 55.056" E
	23	22° 26' 45.151" N	87° 29' 58.192" E
	24	22° 26' 41.790" N	87° 29' 59.754" E
	25	22° 26' 40.225" N	87° 30' 0.075" E
PSM_KG2_KS_31	1	22° 26' 36.454" N	87° 30' 0.105" E
	2	22° 26' 35.935" N	87° 30' 1.121" E
	3	22° 26' 36.838" N	87° 30' 2.567" E
	4	22° 26' 33.266" N	87° 30' 2.349" E
	5	22° 26' 27.390" N	87° 29' 59.496" E
	6	22° 26' 24.454" N	87° 29' 57.153" E
	7	22° 26' 20.180" N	87° 29' 53.472" E
	8	22° 26' 19.412" N	87° 29' 51.414" E
	9	22° 26' 19.421" N	87° 29' 48.693" E
	10	22° 26' 21.525" N	87° 29' 42.000" E
	11	22° 26' 29.249" N	87° 29' 54.587" E
	12	22° 26' 30.429" N	87° 29' 55.177" E
	13	22° 26' 30.665" N	87° 29' 55.839" E
	14	22° 26' 32.519" N	87° 29' 57.178" E
	15	22° 26' 35.440" N	87° 29' 57.683" E
	16	22° 26' 40.225" N	87° 30' 0.075" E
	17	22° 26' 38.690" N	87° 30' 0.391" E
PSM_MD_KS_32	1	22° 27' 2.723" N	87° 29' 53.291" E
	2	22° 26' 52.351" N	87° 29' 56.614" E
	3	22° 26' 59.581" N	87° 29' 49.820" E
	4	22° 27' 3.027" N	87° 29' 48.444" E
	5	22° 27' 7.340" N	87° 29' 47.926" E
	6	22° 27' 7.796" N	87° 29' 49.448" E
	7	22° 27' 14.429" N	87° 29' 51.265" E
	8	22° 27' 13.262" N	87° 29' 51.106" E
	9	22° 27' 7.786" N	87° 29' 51.920" E
PSM_KP_KS_33(XXXIIIA)	1	22° 27' 7.796" N	87° 29' 49.448" E
	2	22° 27' 7.340" N	87° 29' 47.926" E
	3	22° 27' 10.516" N	87° 29' 47.545" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	4	22° 27' 19.721" N	87° 29' 48.318" E
	5	22° 27' 26.680" N	87° 29' 51.768" E
	6	22° 27' 29.411" N	87° 29' 55.518" E
	7	22° 27' 26.831" N	87° 29' 54.043" E
	8	22° 27' 19.145" N	87° 29' 51.905" E
	9	22° 27' 14.429" N	87° 29' 51.265" E
PSM_KP_KS_33(XXXIIIB)	1	22° 27' 46.752" N	87° 30' 28.501" E
	2	22° 27' 43.382" N	87° 30' 33.025" E
	3	22° 27' 39.412" N	87° 30' 36.806" E
	4	22° 27' 31.999" N	87° 30' 40.945" E
	5	22° 27' 28.086" N	87° 30' 41.896" E
	6	22° 27' 28.127" N	87° 30' 41.872" E
	7	22° 27' 34.906" N	87° 30' 36.676" E
	8	22° 27' 36.202" N	87° 30' 35.181" E
	9	22° 27' 41.903" N	87° 30' 28.092" E
	10	22° 27' 43.824" N	87° 30' 24.655" E
	11	22° 27' 45.290" N	87° 30' 18.328" E
	12	22° 27' 45.250" N	87° 30' 14.495" E
	13	22° 27' 44.124" N	87° 30' 11.269" E
	14	22° 27' 42.071" N	87° 30' 7.540" E
	15	22° 27' 40.735" N	87° 30' 5.536" E
	16	22° 27' 39.552" N	87° 30' 4.198" E
	17	22° 27' 32.729" N	87° 29' 57.619" E
	18	22° 27' 32.310" N	87° 29' 56.602" E
	19	22° 27' 29.824" N	87° 29' 53.353" E
	20	22° 27' 30.731" N	87° 29' 52.107" E
	21	22° 27' 36.696" N	87° 29' 56.242" E
	22	22° 27' 42.616" N	87° 30' 2.040" E
	23	22° 27' 44.436" N	87° 30' 5.212" E
	24	22° 27' 44.496" N	87° 30' 7.107" E
	25	22° 27' 47.660" N	87° 30' 13.506" E
	26	22° 27' 47.985" N	87° 30' 19.340" E
	27	22° 27' 47.276" N	87° 30' 26.096" E
PSM_KP_KS_34_35	1	22° 27' 1.429" N	87° 31' 0.953" E
	2	22° 27' 1.199" N	87° 31' 0.422" E
	3	22° 27' 2.238" N	87° 30' 58.426" E
	4	22° 27' 17.604" N	87° 30' 48.263" E
	5	22° 27' 23.497" N	87° 30' 45.841" E
	6	22° 27' 26.545" N	87° 30' 45.407" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	7	22° 27' 29.182" N	87° 30' 44.775" E
	8	22° 27' 24.142" N	87° 30' 48.464" E
	9	22° 27' 21.140" N	87° 30' 50.620" E
	10	22° 27' 9.193" N	87° 30' 57.185" E
PSM_KP_KS_36	1	22° 26' 57.315" N	87° 31' 1.121" E
	2	22° 26' 57.817" N	87° 31' 2.697" E
	3	22° 26' 54.819" N	87° 31' 3.964" E
	4	22° 26' 51.098" N	87° 31' 5.005" E
	5	22° 26' 46.580" N	87° 31' 5.909" E
	6	22° 26' 46.461" N	87° 31' 4.969" E
	7	22° 26' 41.212" N	87° 31' 4.949" E
	8	22° 26' 36.655" N	87° 31' 3.914" E
	9	22° 26' 28.317" N	87° 31' 1.291" E
	10	22° 26' 27.753" N	87° 31' 0.709" E
	11	22° 26' 41.236" N	87° 31' 1.973" E
	12	22° 26' 44.282" N	87° 31' 1.928" E
	13	22° 26' 50.120" N	87° 31' 0.784" E
	14	22° 26' 52.909" N	87° 31' 0.350" E
	15	22° 26' 54.821" N	87° 30' 59.801" E
	16	22° 27' 4.281" N	87° 30' 55.173" E
	17	22° 27' 3.761" N	87° 30' 56.632" E
PSM_KP_KS_37	1	22° 26' 0.718" N	87° 31' 18.369" E
	2	22° 26' 0.292" N	87° 31' 22.366" E
	3	22° 26' 1.207" N	87° 31' 26.645" E
	4	22° 26' 4.979" N	87° 31' 32.377" E
	5	22° 26' 1.804" N	87° 31' 30.997" E
	6	22° 25' 59.156" N	87° 31' 25.064" E
	7	22° 25' 59.360" N	87° 31' 15.068" E
	8	22° 26' 1.100" N	87° 31' 9.336" E
	9	22° 26' 4.213" N	87° 31' 4.627" E
	10	22° 26' 7.494" N	87° 31' 1.122" E
	11	22° 26' 9.849" N	87° 30' 58.519" E
	12	22° 26' 13.955" N	87° 30' 58.554" E
	13	22° 26' 19.284" N	87° 31' 0.517" E
	14	22° 26' 24.089" N	87° 31' 3.635" E
	15	22° 26' 12.326" N	87° 31' 4.695" E
	16	22° 26' 9.069" N	87° 31' 6.349" E
	17	22° 26' 5.755" N	87° 31' 9.113" E
PSM_KP_KS_40	1	22° 27' 30.007" N	87° 31' 55.955" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	2	22° 27' 28.902" N	87° 31' 52.494" E
	3	22° 27' 37.288" N	87° 31' 52.683" E
	4	22° 27' 34.400" N	87° 31' 54.583" E
	5	22° 27' 31.729" N	87° 31' 55.684" E
PSM_KP_KS_41	1	22° 28' 1.425" N	87° 31' 52.557" E
	2	22° 28' 7.451" N	87° 31' 55.299" E
	3	22° 28' 9.817" N	87° 31' 55.308" E
	4	22° 28' 11.133" N	87° 31' 54.588" E
	5	22° 28' 16.309" N	87° 31' 56.162" E
	6	22° 28' 14.669" N	87° 31' 56.488" E
	7	22° 28' 5.986" N	87° 31' 56.725" E
	8	22° 28' 2.013" N	87° 31' 56.155" E
	9	22° 27' 49.673" N	87° 31' 56.385" E
	10	22° 27' 38.570" N	87° 31' 57.065" E
	11	22° 27' 34.986" N	87° 31' 57.084" E
	12	22° 27' 36.290" N	87° 31' 55.331" E
	13	22° 27' 41.546" N	87° 31' 53.314" E
	14	22° 27' 50.355" N	87° 31' 53.549" E
	15	22° 27' 52.020" N	87° 31' 52.169" E
	16	22° 27' 54.000" N	87° 31' 52.240" E
	17	22° 27' 57.740" N	87° 31' 52.126" E
PSM_KP_KS_43	1	22° 28' 10.371" N	87° 31' 53.516" E
	2	22° 28' 8.739" N	87° 31' 52.584" E
	3	22° 28' 8.925" N	87° 31' 52.315" E
	4	22° 28' 20.674" N	87° 31' 52.445" E
	5	22° 28' 25.974" N	87° 31' 53.229" E
	6	22° 28' 24.393" N	87° 31' 54.588" E
	7	22° 28' 22.153" N	87° 31' 55.413" E
	8	22° 28' 18.885" N	87° 31' 54.845" E
	9	22° 28' 15.272" N	87° 31' 54.646" E
PSM_KP_KS_44	1	22° 28' 26.459" N	87° 31' 54.226" E
	2	22° 28' 29.385" N	87° 31' 54.237" E
	3	22° 28' 34.456" N	87° 31' 55.923" E
	4	22° 28' 39.942" N	87° 31' 59.764" E
	5	22° 28' 38.243" N	87° 31' 59.849" E
	6	22° 28' 23.833" N	87° 31' 57.684" E
	7	22° 28' 22.153" N	87° 31' 55.413" E
	8	22° 28' 23.165" N	87° 31' 55.040" E
	9	22° 28' 24.393" N	87° 31' 54.588" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
PSM_KP_KS_45	1	22° 28' 33.999" N	87° 31' 54.327" E
	2	22° 28' 36.107" N	87° 31' 54.606" E
	3	22° 28' 47.086" N	87° 31' 55.652" E
	4	22° 28' 49.633" N	87° 31' 55.550" E
	5	22° 28' 51.939" N	87° 31' 55.448" E
	6	22° 29' 0.100" N	87° 31' 54.331" E
	7	22° 29' 5.230" N	87° 31' 53.869" E
	8	22° 29' 6.065" N	87° 31' 53.974" E
	9	22° 29' 2.333" N	87° 31' 56.493" E
	10	22° 28' 59.318" N	87° 31' 57.592" E
	11	22° 28' 55.534" N	87° 31' 56.837" E
	12	22° 28' 52.520" N	87° 31' 57.566" E
	13	22° 28' 50.624" N	87° 31' 58.577" E
	14	22° 28' 47.098" N	87° 31' 58.008" E
	15	22° 28' 42.741" N	87° 31' 59.624" E
	16	22° 28' 39.942" N	87° 31' 59.764" E
	17	22° 28' 39.012" N	87° 31' 59.070" E
	18	22° 28' 37.289" N	87° 31' 57.786" E
	19	22° 28' 36.657" N	87° 31' 57.370" E
	20	22° 28' 35.269" N	87° 31' 56.458" E
	21	22° 28' 34.687" N	87° 31' 56.075" E
	22	22° 28' 34.456" N	87° 31' 55.923" E
PSM_KP_KS_48	1	22° 29' 21.368" N	87° 32' 16.751" E
	2	22° 29' 21.249" N	87° 32' 26.566" E
	3	22° 29' 20.623" N	87° 32' 33.694" E
	4	22° 29' 18.374" N	87° 32' 37.198" E
	5	22° 29' 20.073" N	87° 32' 27.621" E
	6	22° 29' 19.772" N	87° 32' 24.786" E
	7	22° 29' 18.958" N	87° 32' 21.339" E
	8	22° 29' 18.501" N	87° 32' 18.892" E
	9	22° 29' 17.802" N	87° 32' 11.834" E
	10	22° 29' 17.139" N	87° 32' 9.498" E
	11	22° 29' 14.776" N	87° 32' 5.989" E
	12	22° 29' 13.134" N	87° 32' 2.927" E
	13	22° 29' 11.694" N	87° 32' 1.143" E
	14	22° 29' 7.107" N	87° 31' 58.737" E
	15	22° 29' 2.780" N	87° 31' 58.299" E
	16	22° 29' 4.655" N	87° 31' 56.964" E
	17	22° 29' 8.872" N	87° 31' 56.610" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	18	22° 29' 12.738" N	87° 31' 58.569" E
	19	22° 29' 17.110" N	87° 32' 3.401" E
	20	22° 29' 19.679" N	87° 32' 7.207" E
	21	22° 29' 20.955" N	87° 32' 11.750" E
PSM_DB_KS_48A	1	22° 29' 11.973" N	87° 34' 32.551" E
	2	22° 29' 12.653" N	87° 34' 27.138" E
	3	22° 29' 16.175" N	87° 34' 19.720" E
	4	22° 29' 18.355" N	87° 34' 16.562" E
	5	22° 29' 19.702" N	87° 34' 15.012" E
	6	22° 29' 22.218" N	87° 34' 12.414" E
	7	22° 29' 23.983" N	87° 34' 11.593" E
	8	22° 29' 26.108" N	87° 34' 9.268" E
	9	22° 29' 27.606" N	87° 34' 8.776" E
	10	22° 29' 25.480" N	87° 34' 11.582" E
	11	22° 29' 22.439" N	87° 34' 15.052" E
	12	22° 29' 19.123" N	87° 34' 18.408" E
	13	22° 29' 16.146" N	87° 34' 23.063" E
PSM_DB_KS_48B	1	22° 28' 49.550" N	87° 34' 48.593" E
	2	22° 28' 52.331" N	87° 34' 49.799" E
	3	22° 28' 54.039" N	87° 34' 50.304" E
	4	22° 28' 55.857" N	87° 34' 50.473" E
	5	22° 28' 57.181" N	87° 34' 50.189" E
	6	22° 28' 58.608" N	87° 34' 49.868" E
	7	22° 28' 59.462" N	87° 34' 49.217" E
	8	22° 29' 1.465" N	87° 34' 47.548" E
	9	22° 29' 3.487" N	87° 34' 45.112" E
	10	22° 29' 4.995" N	87° 34' 42.174" E
	11	22° 29' 6.917" N	87° 34' 38.960" E
	12	22° 29' 11.208" N	87° 34' 30.247" E
	13	22° 29' 11.681" N	87° 34' 30.320" E
	14	22° 29' 11.531" N	87° 34' 33.507" E
	15	22° 29' 11.035" N	87° 34' 34.582" E
	16	22° 29' 9.490" N	87° 34' 36.534" E
	17	22° 29' 5.693" N	87° 34' 44.407" E
	18	22° 29' 5.661" N	87° 34' 45.346" E
	19	22° 29' 3.328" N	87° 34' 48.770" E
	20	22° 29' 2.423" N	87° 34' 49.338" E
	21	22° 29' 0.253" N	87° 34' 50.902" E
	22	22° 28' 58.007" N	87° 34' 52.099" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	23	22° 28' 56.373" N	87° 34' 51.979" E
	24	22° 28' 52.813" N	87° 34' 51.297" E
	25	22° 28' 52.138" N	87° 34' 51.420" E
	26	22° 28' 48.099" N	87° 34' 49.683" E
	27	22° 28' 48.516" N	87° 34' 49.429" E
	28	22° 28' 49.465" N	87° 34' 49.548" E
	29	22° 28' 49.436" N	87° 34' 48.865" E
PSM_KP_KS_49	1	22° 29' 16.770" N	87° 33' 18.772" E
	2	22° 29' 16.352" N	87° 33' 15.159" E
	3	22° 29' 15.850" N	87° 33' 10.806" E
	4	22° 29' 14.496" N	87° 33' 4.411" E
	5	22° 29' 14.175" N	87° 32' 57.465" E
	6	22° 29' 17.345" N	87° 32' 53.894" E
	7	22° 29' 16.664" N	87° 33' 3.656" E
	8	22° 29' 17.326" N	87° 33' 11.214" E
	9	22° 29' 17.727" N	87° 33' 14.771" E
	10	22° 29' 18.986" N	87° 33' 18.821" E
PSM_DB_KS_49A	1	22° 29' 31.868" N	87° 34' 5.608" E
	2	22° 29' 30.383" N	87° 34' 6.332" E
	3	22° 29' 31.751" N	87° 34' 4.902" E
	4	22° 29' 32.378" N	87° 34' 2.793" E
	5	22° 29' 33.160" N	87° 34' 0.685" E
	6	22° 29' 33.732" N	87° 33' 59.521" E
	7	22° 29' 33.996" N	87° 33' 57.688" E
	8	22° 29' 35.884" N	87° 33' 57.963" E
	9	22° 29' 35.985" N	87° 33' 59.588" E
	10	22° 29' 35.117" N	87° 34' 1.732" E
	11	22° 29' 33.663" N	87° 34' 4.134" E
PSM_DB_KS_49E	1	22° 28' 17.914" N	87° 34' 58.229" E
	2	22° 28' 18.395" N	87° 34' 58.325" E
	3	22° 28' 16.126" N	87° 34' 59.961" E
	4	22° 28' 14.228" N	87° 35' 1.212" E
	5	22° 28' 12.849" N	87° 35' 1.873" E
	6	22° 28' 12.471" N	87° 35' 2.155" E
	7	22° 28' 11.473" N	87° 35' 1.791" E
	8	22° 28' 10.279" N	87° 35' 1.896" E
	9	22° 28' 13.096" N	87° 35' 0.012" E
	10	22° 28' 14.236" N	87° 34' 58.906" E
	11	22° 28' 15.214" N	87° 34' 58.297" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	12	22° 28' 18.462" N	87° 34' 56.198" E
	13	22° 28' 20.319" N	87° 34' 54.992" E
	14	22° 28' 29.567" N	87° 34' 47.674" E
	15	22° 28' 35.348" N	87° 34' 46.152" E
	16	22° 28' 36.771" N	87° 34' 45.287" E
	17	22° 28' 37.132" N	87° 34' 44.967" E
	18	22° 28' 39.429" N	87° 34' 44.989" E
	19	22° 28' 40.569" N	87° 34' 45.297" E
	20	22° 28' 41.243" N	87° 34' 45.404" E
	21	22° 28' 42.300" N	87° 34' 45.936" E
	22	22° 28' 43.287" N	87° 34' 47.644" E
	23	22° 28' 43.680" N	87° 34' 48.132" E
	24	22° 28' 42.637" N	87° 34' 47.813" E
	25	22° 28' 38.785" N	87° 34' 46.982" E
	26	22° 28' 36.652" N	87° 34' 46.788" E
	27	22° 28' 34.414" N	87° 34' 47.001" E
	28	22° 28' 32.415" N	87° 34' 47.659" E
	29	22° 28' 31.093" N	87° 34' 48.315" E
	30	22° 28' 28.000" N	87° 34' 50.270" E
	31	22° 28' 26.343" N	87° 34' 51.634" E
	32	22° 28' 25.065" N	87° 34' 52.999" E
	33	22° 28' 24.109" N	87° 34' 53.856" E
	34	22° 28' 23.841" N	87° 34' 54.096" E
PSM_DB_KS_50	1	22° 28' 1.900" N	87° 35' 25.839" E
	2	22° 28' 0.860" N	87° 35' 24.132" E
	3	22° 27' 59.872" N	87° 35' 22.932" E
	4	22° 27' 58.877" N	87° 35' 20.283" E
	5	22° 27' 58.681" N	87° 35' 17.394" E
	6	22° 27' 59.155" N	87° 35' 14.841" E
	7	22° 28' 0.406" N	87° 35' 11.457" E
	8	22° 28' 1.862" N	87° 35' 8.519" E
	9	22° 28' 3.730" N	87° 35' 6.083" E
	10	22° 28' 9.435" N	87° 35' 2.445" E
	11	22° 28' 11.006" N	87° 35' 2.511" E
	12	22° 28' 11.146" N	87° 35' 3.144" E
	13	22° 28' 6.050" N	87° 35' 6.843" E
	14	22° 28' 4.013" N	87° 35' 8.724" E
	15	22° 28' 1.308" N	87° 35' 14.193" E
	16	22° 28' 1.055" N	87° 35' 17.488" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	17	22° 28' 1.078" N	87° 35' 20.821" E
	18	22° 28' 2.443" N	87° 35' 23.826" E
	19	22° 28' 3.712" N	87° 35' 25.202" E
	20	22° 28' 7.491" N	87° 35' 26.958" E
	21	22° 28' 13.236" N	87° 35' 27.871" E
	22	22° 28' 18.516" N	87° 35' 29.261" E
	23	22° 28' 18.032" N	87° 35' 29.538" E
	24	22° 28' 15.090" N	87° 35' 29.192" E
	25	22° 28' 12.198" N	87° 35' 29.457" E
	26	22° 28' 9.152" N	87° 35' 29.444" E
	27	22° 28' 4.157" N	87° 35' 27.398" E
PSM_DB_KS_51	1	22° 28' 21.343" N	87° 35' 32.099" E
	2	22° 28' 16.717" N	87° 35' 30.834" E
	3	22° 28' 17.667" N	87° 35' 30.369" E
	4	22° 28' 20.249" N	87° 35' 30.436" E
	5	22° 28' 23.908" N	87° 35' 32.007" E
	6	22° 28' 25.813" N	87° 35' 33.515" E
	7	22° 28' 26.841" N	87° 35' 34.686" E
	8	22° 28' 27.495" N	87° 35' 36.372" E
	9	22° 28' 24.281" N	87° 35' 33.334" E
PSM_DB_KS_51A	1	22° 28' 30.454" N	87° 35' 48.922" E
	2	22° 28' 28.164" N	87° 35' 53.912" E
	3	22° 28' 27.917" N	87° 35' 55.180" E
	4	22° 28' 27.624" N	87° 35' 55.597" E
	5	22° 28' 24.854" N	87° 35' 58.045" E
	6	22° 28' 21.470" N	87° 35' 59.041" E
	7	22° 28' 19.836" N	87° 35' 58.265" E
	8	22° 28' 18.887" N	87° 35' 57.531" E
	9	22° 28' 22.231" N	87° 35' 57.156" E
	10	22° 28' 24.248" N	87° 35' 56.276" E
	11	22° 28' 26.060" N	87° 35' 55.006" E
	12	22° 28' 27.513" N	87° 35' 53.068" E
	13	22° 28' 28.656" N	87° 35' 51.073" E
	14	22° 28' 29.854" N	87° 35' 48.301" E
	15	22° 28' 30.380" N	87° 35' 45.581" E
	16	22° 28' 30.275" N	87° 35' 43.214" E
	17	22° 28' 30.780" N	87° 35' 44.757" E
	18	22° 28' 32.058" N	87° 35' 44.484" E
	19	22° 28' 31.622" N	87° 35' 47.281" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	20	22° 28' 31.026" N	87° 35' 47.925" E
PSM_DB_KS_52_52A	1	22° 27' 58.614" N	87° 36' 3.508" E
	2	22° 27' 58.013" N	87° 36' 7.801" E
	3	22° 27' 58.956" N	87° 36' 13.434" E
	4	22° 27' 59.910" N	87° 36' 16.068" E
	5	22° 28' 1.616" N	87° 36' 19.816" E
	6	22° 28' 1.985" N	87° 36' 22.409" E
	7	22° 28' 1.946" N	87° 36' 24.233" E
	8	22° 28' 0.883" N	87° 36' 27.291" E
	9	22° 28' 0.520" N	87° 36' 27.734" E
	10	22° 27' 59.685" N	87° 36' 30.174" E
	11	22° 27' 58.755" N	87° 36' 30.599" E
	12	22° 27' 59.241" N	87° 36' 28.998" E
	13	22° 28' 0.127" N	87° 36' 26.835" E
	14	22° 28' 0.395" N	87° 36' 24.281" E
	15	22° 27' 59.890" N	87° 36' 21.279" E
	16	22° 27' 58.286" N	87° 36' 17.079" E
	17	22° 27' 59.322" N	87° 36' 16.785" E
	18	22° 27' 57.369" N	87° 36' 12.907" E
	19	22° 27' 57.173" N	87° 36' 11.999" E
	20	22° 27' 57.899" N	87° 36' 10.835" E
	21	22° 27' 57.701" N	87° 36' 8.557" E
	22	22° 27' 56.714" N	87° 36' 6.712" E
	23	22° 27' 56.642" N	87° 36' 5.767" E
	24	22° 27' 57.462" N	87° 36' 3.557" E
	25	22° 27' 59.019" N	87° 36' 1.286" E
	26	22° 28' 0.678" N	87° 35' 59.516" E
	27	22° 28' 1.581" N	87° 35' 58.129" E
	28	22° 28' 2.818" N	87° 35' 57.517" E
	29	22° 28' 4.420" N	87° 35' 57.080" E
	30	22° 28' 5.326" N	87° 35' 57.007" E
	31	22° 28' 7.427" N	87° 35' 58.430" E
	32	22° 28' 6.378" N	87° 35' 58.320" E
	33	22° 28' 4.450" N	87° 35' 58.312" E
	34	22° 28' 2.589" N	87° 35' 58.971" E
	35	22° 28' 0.415" N	87° 36' 0.405" E
PSM_DB_KS_52B	1	22° 28' 9.739" N	87° 37' 0.881" E
	2	22° 28' 10.552" N	87° 37' 1.949" E
	3	22° 28' 11.060" N	87° 37' 2.235" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	4	22° 28' 11.607" N	87° 37' 3.107" E
	5	22° 28' 11.913" N	87° 37' 4.164" E
	6	22° 28' 12.320" N	87° 37' 5.703" E
	7	22° 28' 12.192" N	87° 37' 7.391" E
	8	22° 28' 11.303" N	87° 37' 10.387" E
	9	22° 28' 8.661" N	87° 37' 12.708" E
	10	22° 28' 5.927" N	87° 37' 12.196" E
	11	22° 28' 3.297" N	87° 37' 11.007" E
	12	22° 28' 7.082" N	87° 37' 11.360" E
	13	22° 28' 8.890" N	87° 37' 11.146" E
	14	22° 28' 10.236" N	87° 37' 10.319" E
	15	22° 28' 10.858" N	87° 37' 9.488" E
	16	22° 28' 11.330" N	87° 37' 7.546" E
	17	22° 28' 10.876" N	87° 37' 4.822" E
	18	22° 28' 10.007" N	87° 37' 2.541" E
	19	22° 28' 8.919" N	87° 37' 1.022" E
PSM_DB_KS_52C	1	22° 27' 44.691" N	87° 37' 9.982" E
	2	22° 27' 47.765" N	87° 37' 9.227" E
	3	22° 27' 49.674" N	87° 37' 9.569" E
	4	22° 27' 52.874" N	87° 37' 9.861" E
	5	22° 27' 56.278" N	87° 37' 10.653" E
	6	22° 27' 57.838" N	87° 37' 11.654" E
	7	22° 27' 56.291" N	87° 37' 11.674" E
	8	22° 27' 48.654" N	87° 37' 10.788" E
	9	22° 27' 47.244" N	87° 37' 10.412" E
PSM_DB_KS_53	1	22° 27' 33.702" N	87° 37' 5.538" E
	2	22° 27' 32.965" N	87° 37' 4.942" E
	3	22° 27' 33.266" N	87° 37' 4.802" E
	4	22° 27' 31.209" N	87° 37' 2.756" E
	5	22° 27' 31.505" N	87° 37' 2.490" E
	6	22° 27' 33.140" N	87° 37' 3.988" E
	7	22° 27' 35.612" N	87° 37' 5.555" E
	8	22° 27' 38.086" N	87° 37' 6.677" E
	9	22° 27' 41.128" N	87° 37' 7.690" E
	10	22° 27' 45.307" N	87° 37' 8.486" E
	11	22° 27' 46.562" N	87° 37' 8.616" E
	12	22° 27' 46.157" N	87° 37' 9.072" E
	13	22° 27' 44.822" N	87° 37' 9.390" E
	14	22° 27' 41.555" N	87° 37' 8.727" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	15	22° 27' 40.948" N	87° 37' 9.216" E
	16	22° 27' 40.881" N	87° 37' 9.198" E
	17	22° 27' 39.987" N	87° 37' 9.009" E
	18	22° 27' 37.994" N	87° 37' 8.112" E
	19	22° 27' 35.864" N	87° 37' 7.102" E
	20	22° 27' 35.177" N	87° 37' 6.692" E
PSM_DB_KS_54	1	22° 27' 7.850" N	87° 37' 9.417" E
	2	22° 27' 7.362" N	87° 37' 6.030" E
	3	22° 27' 7.975" N	87° 37' 3.070" E
	4	22° 27' 9.914" N	87° 36' 59.250" E
	5	22° 27' 11.245" N	87° 36' 57.745" E
	6	22° 27' 13.290" N	87° 36' 56.085" E
	7	22° 27' 14.748" N	87° 36' 55.630" E
	8	22° 27' 17.728" N	87° 36' 55.383" E
	9	22° 27' 20.478" N	87° 36' 56.414" E
	10	22° 27' 22.843" N	87° 36' 56.702" E
	11	22° 27' 23.960" N	87° 36' 56.938" E
	12	22° 27' 25.418" N	87° 36' 58.334" E
	13	22° 27' 25.200" N	87° 36' 59.033" E
	14	22° 27' 24.023" N	87° 36' 58.329" E
	15	22° 27' 20.536" N	87° 36' 56.833" E
	16	22° 27' 18.885" N	87° 36' 56.400" E
	17	22° 27' 17.526" N	87° 36' 56.264" E
	18	22° 27' 15.821" N	87° 36' 56.608" E
	19	22° 27' 12.356" N	87° 36' 58.074" E
	20	22° 27' 10.301" N	87° 37' 0.139" E
PSM_DB_KS_58	1	22° 26' 33.694" N	87° 38' 28.905" E
	2	22° 26' 33.222" N	87° 38' 30.947" E
	3	22° 26' 33.387" N	87° 38' 32.669" E
	4	22° 26' 35.740" N	87° 38' 38.382" E
	5	22° 26' 36.572" N	87° 38' 41.089" E
	6	22° 26' 36.836" N	87° 38' 43.867" E
	7	22° 26' 36.500" N	87° 38' 46.087" E
	8	22° 26' 35.399" N	87° 38' 50.358" E
	9	22° 26' 35.350" N	87° 38' 51.117" E
	10	22° 26' 34.817" N	87° 38' 49.754" E
	11	22° 26' 34.793" N	87° 38' 48.476" E
	12	22° 26' 35.361" N	87° 38' 44.240" E
	13	22° 26' 35.336" N	87° 38' 43.299" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	14	22° 26' 35.191" N	87° 38' 40.910" E
	15	22° 26' 33.730" N	87° 38' 36.121" E
	16	22° 26' 32.070" N	87° 38' 32.358" E
	17	22° 26' 32.186" N	87° 38' 29.155" E
	18	22° 26' 33.497" N	87° 38' 25.964" E
	19	22° 26' 36.045" N	87° 38' 23.693" E
	20	22° 26' 37.162" N	87° 38' 24.589" E
	21	22° 26' 36.872" N	87° 38' 24.696" E
	22	22° 26' 35.690" N	87° 38' 25.713" E
	23	22° 26' 34.653" N	87° 38' 27.063" E
	24	22° 26' 33.831" N	87° 38' 28.548" E
PSM_GB2_SB_01	1	22° 53' 27.232" N	87° 10' 32.607" E
	2	22° 53' 24.301" N	87° 10' 22.406" E
	3	22° 53' 24.345" N	87° 10' 16.227" E
	4	22° 53' 25.725" N	87° 10' 17.326" E
	5	22° 53' 28.190" N	87° 10' 19.384" E
	6	22° 53' 30.219" N	87° 10' 23.900" E
	7	22° 53' 31.786" N	87° 10' 30.976" E
	8	22° 53' 33.471" N	87° 10' 39.091" E
	9	22° 53' 28.638" N	87° 10' 41.915" E
	10	22° 52' 37.854" N	87° 12' 0.868" E
	11	22° 52' 42.359" N	87° 11' 54.161" E
	12	22° 52' 43.910" N	87° 11' 52.937" E
	13	22° 52' 45.823" N	87° 11' 50.656" E
	14	22° 52' 46.960" N	87° 11' 49.487" E
	15	22° 53' 1.016" N	87° 11' 38.308" E
	16	22° 53' 2.825" N	87° 11' 36.528" E
	17	22° 53' 7.169" N	87° 11' 30.628" E
	18	22° 53' 11.150" N	87° 11' 26.176" E
	19	22° 53' 14.560" N	87° 11' 23.339" E
	20	22° 53' 17.767" N	87° 11' 17.970" E
	21	22° 53' 18.721" N	87° 11' 16.928" E
	22	22° 53' 18.876" N	87° 11' 22.760" E
	23	22° 53' 17.097" N	87° 11' 24.590" E
	24	22° 53' 15.096" N	87° 11' 28.748" E
	25	22° 53' 7.375" N	87° 11' 38.469" E
	26	22° 53' 4.551" N	87° 11' 39.431" E
	27	22° 53' 3.732" N	87° 11' 41.246" E
	28	22° 53' 3.138" N	87° 11' 41.714" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	29	22° 53' 0.553" N	87° 11' 44.830" E
	30	22° 52' 58.949" N	87° 11' 48.059" E
	31	22° 52' 57.812" N	87° 11' 49.172" E
	32	22° 52' 51.201" N	87° 11' 50.890" E
	33	22° 52' 44.212" N	87° 11' 57.020" E
	34	22° 52' 43.603" N	87° 11' 57.156" E
PSM_GB2_SB_01A	1	22° 52' 37.854" N	87° 12' 0.868" E
	2	22° 52' 42.359" N	87° 11' 54.161" E
	3	22° 52' 43.910" N	87° 11' 52.937" E
	4	22° 52' 45.823" N	87° 11' 50.656" E
	5	22° 52' 46.960" N	87° 11' 49.487" E
	6	22° 53' 1.016" N	87° 11' 38.308" E
	7	22° 53' 2.825" N	87° 11' 36.528" E
	8	22° 53' 7.169" N	87° 11' 30.628" E
	9	22° 53' 11.150" N	87° 11' 26.176" E
	10	22° 53' 14.560" N	87° 11' 23.339" E
	11	22° 53' 17.767" N	87° 11' 17.970" E
	12	22° 53' 18.721" N	87° 11' 16.928" E
	13	22° 53' 18.876" N	87° 11' 22.760" E
	14	22° 53' 17.097" N	87° 11' 24.590" E
	15	22° 53' 15.096" N	87° 11' 28.748" E
	16	22° 53' 7.375" N	87° 11' 38.469" E
	17	22° 53' 4.551" N	87° 11' 39.431" E
	18	22° 53' 3.732" N	87° 11' 41.246" E
	19	22° 53' 3.138" N	87° 11' 41.714" E
	20	22° 53' 0.553" N	87° 11' 44.830" E
	21	22° 52' 58.949" N	87° 11' 48.059" E
	22	22° 52' 57.812" N	87° 11' 49.172" E
	23	22° 52' 51.201" N	87° 11' 50.890" E
	24	22° 52' 44.212" N	87° 11' 57.020" E
	25	22° 52' 43.603" N	87° 11' 57.156" E
PSM_GB2_SB_01B	1	22° 52' 28.291" N	87° 12' 21.054" E
	2	22° 52' 25.258" N	87° 12' 24.466" E
	3	22° 52' 20.299" N	87° 12' 26.910" E
	4	22° 52' 20.039" N	87° 12' 26.626" E
	5	22° 52' 25.748" N	87° 12' 19.996" E
	6	22° 52' 26.610" N	87° 12' 19.143" E
	7	22° 52' 35.067" N	87° 12' 5.343" E
	8	22° 52' 35.605" N	87° 12' 7.990" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	9	22° 52' 28.775" N	87° 12' 19.569" E
PSM_GB2_SB_01B_02_03_04	1	22° 51' 33.993" N	87° 12' 51.111" E
	2	22° 51' 33.884" N	87° 12' 51.125" E
	3	22° 51' 34.148" N	87° 12' 50.461" E
	4	22° 51' 30.568" N	87° 12' 50.752" E
	5	22° 51' 25.749" N	87° 12' 51.190" E
	6	22° 51' 21.754" N	87° 12' 52.744" E
	7	22° 51' 16.382" N	87° 12' 54.741" E
	8	22° 51' 16.036" N	87° 12' 55.854" E
	9	22° 51' 14.246" N	87° 12' 56.743" E
	10	22° 51' 10.734" N	87° 12' 57.629" E
	11	22° 51' 7.151" N	87° 13' 0.148" E
	12	22° 51' 4.945" N	87° 13' 2.373" E
	13	22° 51' 3.502" N	87° 13' 2.661" E
	14	22° 51' 10.177" N	87° 12' 56.028" E
	15	22° 51' 10.796" N	87° 12' 56.196" E
	16	22° 51' 12.345" N	87° 12' 55.864" E
	17	22° 51' 13.585" N	87° 12' 54.975" E
	18	22° 51' 14.878" N	87° 12' 53.584" E
	19	22° 51' 17.411" N	87° 12' 51.193" E
	20	22° 51' 21.286" N	87° 12' 49.138" E
	21	22° 51' 24.590" N	87° 12' 48.920" E
	22	22° 51' 28.050" N	87° 12' 47.978" E
	23	22° 51' 30.890" N	87° 12' 47.481" E
	24	22° 51' 35.589" N	87° 12' 47.154" E
	25	22° 51' 39.359" N	87° 12' 46.380" E
	26	22° 51' 44.780" N	87° 12' 45.720" E
	27	22° 51' 56.247" N	87° 12' 42.005" E
	28	22° 52' 3.167" N	87° 12' 40.178" E
	29	22° 52' 6.990" N	87° 12' 38.178" E
	30	22° 52' 10.245" N	87° 12' 36.177" E
	31	22° 52' 13.536" N	87° 12' 33.296" E
	32	22° 52' 13.612" N	87° 12' 34.180" E
	33	22° 52' 14.437" N	87° 12' 34.690" E
	34	22° 52' 15.610" N	87° 12' 33.217" E
	35	22° 52' 18.435" N	87° 12' 31.067" E
	36	22° 52' 22.364" N	87° 12' 26.839" E
	37	22° 52' 25.860" N	87° 12' 25.448" E
	38	22° 52' 18.776" N	87° 12' 34.021" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	39	22° 52' 15.778" N	87° 12' 36.635" E
	40	22° 52' 12.685" N	87° 12' 38.705" E
	41	22° 52' 11.403" N	87° 12' 39.005" E
	42	22° 52' 7.409" N	87° 12' 40.484" E
	43	22° 52' 3.693" N	87° 12' 44.434" E
	44	22° 52' 1.104" N	87° 12' 45.582" E
	45	22° 51' 57.593" N	87° 12' 45.799" E
	46	22° 51' 44.474" N	87° 12' 50.180" E
	47	22° 51' 40.343" N	87° 12' 50.842" E
PSM_GB2_SB_02A	1	22° 50' 53.299" N	87° 13' 11.290" E
	2	22° 50' 53.498" N	87° 13' 11.123" E
	3	22° 50' 55.291" N	87° 13' 8.824" E
	4	22° 50' 56.118" N	87° 13' 7.934" E
	5	22° 51' 1.480" N	87° 13' 4.436" E
	6	22° 51' 1.483" N	87° 13' 4.447" E
	7	22° 50' 58.933" N	87° 13' 7.080" E
	8	22° 50' 57.416" N	87° 13' 8.971" E
	9	22° 50' 56.243" N	87° 13' 10.381" E
	10	22° 50' 55.692" N	87° 13' 11.159" E
PSM_GB2_SB_03	1	22° 50' 50.213" N	87° 13' 15.978" E
	2	22° 50' 50.318" N	87° 13' 14.493" E
	3	22° 50' 52.214" N	87° 13' 12.379" E
	4	22° 50' 53.453" N	87° 13' 12.047" E
	5	22° 50' 56.497" N	87° 13' 11.942" E
	6	22° 50' 53.309" N	87° 13' 14.565" E
PSM_GB2_SB_04	1	22° 50' 33.022" N	87° 13' 27.425" E
	2	22° 50' 32.096" N	87° 13' 27.741" E
	3	22° 50' 41.094" N	87° 13' 20.758" E
	4	22° 50' 43.921" N	87° 13' 17.866" E
	5	22° 50' 46.815" N	87° 13' 15.866" E
	6	22° 50' 49.681" N	87° 13' 14.147" E
	7	22° 50' 49.802" N	87° 13' 14.307" E
	8	22° 50' 49.524" N	87° 13' 16.163" E
	9	22° 50' 45.769" N	87° 13' 18.719" E
	10	22° 50' 41.841" N	87° 13' 21.721" E
	11	22° 50' 40.566" N	87° 13' 22.498" E
	12	22° 50' 39.773" N	87° 13' 23.648" E
	13	22° 50' 38.636" N	87° 13' 24.909" E
	14	22° 50' 37.498" N	87° 13' 26.207" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	15	22° 50' 36.395" N	87° 13' 27.282" E
	16	22° 50' 35.637" N	87° 13' 27.689" E
PSM_GB2_SB_05	1	22° 50' 58.757" N	87° 13' 10.273" E
	2	22° 50' 57.004" N	87° 13' 11.568" E
	3	22° 50' 57.156" N	87° 13' 10.085" E
	4	22° 51' 4.943" N	87° 13' 3.710" E
	5	22° 51' 6.943" N	87° 13' 1.411" E
	6	22° 51' 9.147" N	87° 13' 0.077" E
	7	22° 51' 13.005" N	87° 12' 58.004" E
	8	22° 51' 16.724" N	87° 12' 56.747" E
	9	22° 51' 18.034" N	87° 12' 55.115" E
	10	22° 51' 22.648" N	87° 12' 53.414" E
	11	22° 51' 24.563" N	87° 12' 53.162" E
	12	22° 51' 23.457" N	87° 12' 53.935" E
	13	22° 51' 19.116" N	87° 12' 57.159" E
	14	22° 51' 16.687" N	87° 12' 58.715" E
	15	22° 51' 14.518" N	87° 12' 59.715" E
	16	22° 51' 10.902" N	87° 13' 0.990" E
	17	22° 51' 2.477" N	87° 13' 8.553" E
	18	22° 51' 0.875" N	87° 13' 9.441" E
PSM_GB2_SB_05A	1	22° 50' 38.858" N	87° 13' 26.618" E
	2	22° 50' 37.418" N	87° 13' 27.151" E
	3	22° 50' 37.532" N	87° 13' 26.838" E
	4	22° 50' 38.393" N	87° 13' 25.837" E
	5	22° 50' 39.979" N	87° 13' 24.317" E
	6	22° 50' 41.564" N	87° 13' 23.169" E
	7	22° 50' 43.458" N	87° 13' 22.280" E
	8	22° 50' 43.527" N	87° 13' 21.761" E
	9	22° 50' 44.183" N	87° 13' 20.722" E
	10	22° 50' 47.353" N	87° 13' 18.425" E
	11	22° 50' 48.076" N	87° 13' 17.757" E
	12	22° 50' 48.765" N	87° 13' 17.350" E
	13	22° 50' 50.475" N	87° 13' 17.000" E
	14	22° 50' 40.512" N	87° 13' 25.562" E
PSM_GB2_SB_06	1	22° 50' 28.554" N	87° 13' 46.839" E
	2	22° 50' 28.179" N	87° 13' 44.350" E
	3	22° 50' 28.460" N	87° 13' 40.674" E
	4	22° 50' 28.572" N	87° 13' 34.362" E
	5	22° 50' 28.988" N	87° 13' 32.209" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	6	22° 50' 29.472" N	87° 13' 30.984" E
	7	22° 50' 30.334" N	87° 13' 29.649" E
	8	22° 50' 32.057" N	87° 13' 28.315" E
	9	22° 50' 33.696" N	87° 13' 27.681" E
	10	22° 50' 35.428" N	87° 13' 28.085" E
	11	22° 50' 33.690" N	87° 13' 30.007" E
	12	22° 50' 29.360" N	87° 13' 48.110" E
PSM_GB2_SB_07	1	22° 50' 6.231" N	87° 14' 43.600" E
	2	22° 50' 4.987" N	87° 14' 46.642" E
	3	22° 50' 4.984" N	87° 14' 48.499" E
	4	22° 50' 2.775" N	87° 14' 52.728" E
	5	22° 49' 59.257" N	87° 14' 57.400" E
	6	22° 49' 58.562" N	87° 15' 1.780" E
	7	22° 49' 57.445" N	87° 14' 58.863" E
	8	22° 49' 59.107" N	87° 14' 51.960" E
	9	22° 50' 1.388" N	87° 14' 46.394" E
	10	22° 50' 4.424" N	87° 14' 41.498" E
	11	22° 50' 6.148" N	87° 14' 39.571" E
	12	22° 50' 9.473" N	87° 14' 34.208" E
	13	22° 50' 11.338" N	87° 14' 35.143" E
	14	22° 50' 10.026" N	87° 14' 37.591" E
	15	22° 50' 27.854" N	87° 13' 55.378" E
	16	22° 50' 27.025" N	87° 13' 57.197" E
	17	22° 50' 27.159" N	87° 13' 59.388" E
	18	22° 50' 27.394" N	87° 14' 0.346" E
	19	22° 50' 26.857" N	87° 14' 4.355" E
	20	22° 50' 26.165" N	87° 14' 6.386" E
	21	22° 50' 25.671" N	87° 14' 7.837" E
	22	22° 50' 24.253" N	87° 14' 9.892" E
	23	22° 50' 22.748" N	87° 14' 11.454" E
	24	22° 50' 22.248" N	87° 14' 12.585" E
	25	22° 50' 19.281" N	87° 14' 17.184" E
	26	22° 50' 17.952" N	87° 14' 17.609" E
	27	22° 50' 21.200" N	87° 14' 9.371" E
	28	22° 50' 27.194" N	87° 13' 40.314" E
	29	22° 50' 27.356" N	87° 13' 42.232" E
	30	22° 50' 27.592" N	87° 13' 46.206" E
	31	22° 50' 28.859" N	87° 13' 50.256" E
	32	22° 50' 28.372" N	87° 13' 53.634" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
PSM_GB2_SB_07A	1	22° 50' 6.711" N	87° 14' 45.622" E
	2	22° 50' 7.056" N	87° 14' 44.121" E
	3	22° 50' 11.817" N	87° 14' 36.554" E
	4	22° 50' 14.582" N	87° 14' 28.910" E
	5	22° 50' 21.693" N	87° 14' 14.960" E
	6	22° 50' 24.666" N	87° 14' 12.586" E
	7	22° 50' 23.139" N	87° 14' 18.784" E
	8	22° 50' 16.768" N	87° 14' 32.809" E
	9	22° 50' 15.165" N	87° 14' 34.644" E
PSM_GB2_SB_08	1	22° 50' 1.133" N	87° 15' 13.281" E
	2	22° 50' 0.182" N	87° 15' 10.716" E
	3	22° 49' 59.154" N	87° 15' 2.257" E
	4	22° 50' 0.633" N	87° 14' 57.625" E
	5	22° 50' 2.159" N	87° 14' 56.124" E
	6	22° 50' 1.550" N	87° 14' 58.737" E
	7	22° 50' 2.732" N	87° 15' 5.696" E
	8	22° 50' 3.096" N	87° 15' 6.777" E
	9	22° 50' 4.198" N	87° 15' 9.275" E
	10	22° 50' 6.509" N	87° 15' 13.575" E
	11	22° 50' 8.235" N	87° 15' 15.628" E
	12	22° 50' 9.819" N	87° 15' 17.312" E
	13	22° 50' 11.264" N	87° 15' 18.836" E
	14	22° 50' 13.068" N	87° 15' 20.318" E
	15	22° 50' 15.268" N	87° 15' 22.129" E
	16	22° 50' 17.644" N	87° 15' 23.940" E
	17	22° 50' 19.216" N	87° 15' 24.892" E
	18	22° 50' 24.117" N	87° 15' 26.851" E
	19	22° 50' 26.770" N	87° 15' 27.585" E
	20	22° 50' 25.887" N	87° 15' 27.809" E
	21	22° 50' 23.151" N	87° 15' 27.748" E
	22	22° 50' 19.861" N	87° 15' 26.476" E
	23	22° 50' 17.247" N	87° 15' 25.951" E
	24	22° 50' 16.699" N	87° 15' 26.900" E
	25	22° 50' 15.438" N	87° 15' 26.071" E
	26	22° 50' 9.921" N	87° 15' 22.347" E
PSM_GB2_SB_08A	1	22° 50' 19.080" N	87° 15' 28.832" E
	2	22° 50' 17.586" N	87° 15' 28.055" E
	3	22° 50' 18.246" N	87° 15' 28.017" E
	4	22° 50' 19.846" N	87° 15' 28.243" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	5	22° 50' 23.046" N	87° 15' 28.694" E
	6	22° 50' 24.904" N	87° 15' 29.645" E
	7	22° 50' 27.741" N	87° 15' 30.653" E
	8	22° 50' 30.167" N	87° 15' 30.880" E
	9	22° 50' 32.954" N	87° 15' 31.721" E
	10	22° 50' 34.968" N	87° 15' 31.056" E
	11	22° 50' 36.673" N	87° 15' 30.670" E
	12	22° 50' 37.965" N	87° 15' 29.781" E
	13	22° 50' 40.185" N	87° 15' 29.952" E
	14	22° 50' 43.074" N	87° 15' 30.821" E
	15	22° 50' 40.415" N	87° 15' 31.249" E
	16	22° 50' 35.252" N	87° 15' 31.834" E
	17	22° 50' 28.299" N	87° 15' 32.192" E
	18	22° 50' 25.339" N	87° 15' 31.889" E
	19	22° 50' 23.069" N	87° 15' 31.142" E
PSM_GB2_SB_08B	1	22° 50' 26.711" N	87° 15' 29.258" E
	2	22° 50' 26.196" N	87° 15' 28.645" E
	3	22° 50' 26.764" N	87° 15' 28.256" E
	4	22° 50' 27.909" N	87° 15' 27.828" E
	5	22° 50' 30.310" N	87° 15' 28.311" E
	6	22° 50' 31.383" N	87° 15' 28.313" E
	7	22° 50' 32.390" N	87° 15' 29.213" E
	8	22° 50' 32.905" N	87° 15' 29.994" E
	9	22° 50' 32.491" N	87° 15' 30.606" E
	10	22° 50' 29.343" N	87° 15' 30.154" E
	11	22° 50' 27.898" N	87° 15' 29.650" E
PSM_GB2_SB_09	1	22° 50' 34.041" N	87° 15' 29.996" E
	2	22° 50' 33.033" N	87° 15' 28.316" E
	3	22° 50' 36.764" N	87° 15' 28.212" E
	4	22° 50' 39.914" N	87° 15' 27.438" E
	5	22° 50' 43.426" N	87° 15' 26.943" E
	6	22° 50' 46.059" N	87° 15' 27.004" E
	7	22° 50' 46.832" N	87° 15' 27.729" E
	8	22° 50' 48.329" N	87° 15' 27.732" E
	9	22° 50' 51.118" N	87° 15' 27.292" E
	10	22° 50' 53.752" N	87° 15' 26.573" E
	11	22° 50' 56.953" N	87° 15' 26.300" E
	12	22° 51' 0.257" N	87° 15' 26.251" E
	13	22° 51' 4.335" N	87° 15' 26.983" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	14	22° 51' 5.586" N	87° 15' 27.540" E
	15	22° 51' 4.453" N	87° 15' 27.547" E
	16	22° 51' 2.233" N	87° 15' 27.877" E
	17	22° 50' 58.826" N	87° 15' 27.258" E
	18	22° 50' 55.521" N	87° 15' 27.809" E
	19	22° 50' 53.406" N	87° 15' 27.081" E
	20	22° 50' 50.307" N	87° 15' 27.465" E
	21	22° 50' 48.291" N	87° 15' 29.633" E
	22	22° 50' 46.482" N	87° 15' 30.354" E
	23	22° 50' 44.831" N	87° 15' 30.128" E
	24	22° 50' 38.638" N	87° 15' 28.724" E
	25	22° 50' 36.365" N	87° 15' 29.499" E
PSM_GB2_SB_10	1	22° 51' 14.526" N	87° 15' 55.530" E
	2	22° 51' 14.730" N	87° 15' 57.091" E
	3	22° 51' 14.263" N	87° 15' 58.427" E
	4	22° 51' 13.125" N	87° 15' 59.594" E
	5	22° 51' 12.310" N	87° 16' 0.060" E
	6	22° 51' 12.792" N	87° 15' 58.866" E
	7	22° 51' 14.460" N	87° 15' 53.288" E
	8	22° 51' 15.085" N	87° 15' 49.835" E
	9	22° 51' 14.938" N	87° 15' 45.044" E
	10	22° 51' 13.912" N	87° 15' 40.976" E
	11	22° 51' 12.421" N	87° 15' 37.463" E
	12	22° 51' 9.639" N	87° 15' 34.004" E
	13	22° 51' 4.954" N	87° 15' 31.185" E
	14	22° 51' 4.371" N	87° 15' 30.849" E
	15	22° 51' 3.611" N	87° 15' 30.632" E
	16	22° 51' 1.756" N	87° 15' 30.101" E
	17	22° 50' 49.066" N	87° 15' 30.659" E
	18	22° 50' 48.961" N	87° 15' 30.303" E
	19	22° 50' 50.306" N	87° 15' 28.523" E
	20	22° 50' 51.081" N	87° 15' 27.967" E
	21	22° 50' 52.475" N	87° 15' 27.914" E
	22	22° 50' 54.178" N	87° 15' 28.085" E
	23	22° 50' 56.243" N	87° 15' 28.590" E
	24	22° 51' 0.475" N	87° 15' 29.322" E
	25	22° 51' 2.540" N	87° 15' 29.103" E
	26	22° 51' 3.883" N	87° 15' 28.771" E
	27	22° 51' 5.897" N	87° 15' 28.775" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	28	22° 51' 8.166" N	87° 15' 30.005" E
	29	22° 51' 10.796" N	87° 15' 32.127" E
	30	22° 51' 12.497" N	87° 15' 33.578" E
	31	22° 51' 14.198" N	87° 15' 35.476" E
	32	22° 51' 15.073" N	87° 15' 37.093" E
	33	22° 51' 16.361" N	87° 15' 38.376" E
	34	22° 51' 17.647" N	87° 15' 41.276" E
	35	22° 51' 18.623" N	87° 15' 44.119" E
	36	22° 51' 18.981" N	87° 15' 46.682" E
	37	22° 51' 17.578" N	87° 15' 51.637" E
PSM_GB1_SB_14	1	22° 51' 7.194" N	87° 16' 17.178" E
	2	22° 51' 5.701" N	87° 16' 18.355" E
	3	22° 51' 5.974" N	87° 16' 15.345" E
	4	22° 51' 8.715" N	87° 16' 12.732" E
	5	22° 51' 8.975" N	87° 16' 11.619" E
	6	22° 51' 8.159" N	87° 16' 9.556" E
	7	22° 51' 9.817" N	87° 16' 7.328" E
	8	22° 51' 10.914" N	87° 16' 3.594" E
	9	22° 51' 12.035" N	87° 16' 3.102" E
	10	22° 51' 12.347" N	87° 16' 1.988" E
	11	22° 51' 14.779" N	87° 15' 58.539" E
	12	22° 51' 15.608" N	87° 15' 56.814" E
	13	22° 51' 15.973" N	87° 15' 54.753" E
	14	22° 51' 18.168" N	87° 15' 52.545" E
	15	22° 51' 16.935" N	87° 15' 56.419" E
	16	22° 51' 13.722" N	87° 16' 3.432" E
	17	22° 51' 12.321" N	87° 16' 7.496" E
PSM_GB1_SB_15	1	22° 50' 42.819" N	87° 16' 30.951" E
	2	22° 50' 40.547" N	87° 16' 31.611" E
	3	22° 50' 39.423" N	87° 16' 33.057" E
	4	22° 50' 38.994" N	87° 16' 33.172" E
	5	22° 50' 36.214" N	87° 16' 35.685" E
	6	22° 50' 34.806" N	87° 16' 36.951" E
	7	22° 50' 34.483" N	87° 16' 37.677" E
	8	22° 50' 32.825" N	87° 16' 38.611" E
	9	22° 50' 32.814" N	87° 16' 38.635" E
	10	22° 50' 31.548" N	87° 16' 41.443" E
	11	22° 50' 30.047" N	87° 16' 42.567" E
	12	22° 50' 29.709" N	87° 16' 42.985" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	13	22° 50' 28.795" N	87° 16' 44.116" E
	14	22° 50' 28.339" N	87° 16' 44.680" E
	15	22° 50' 27.716" N	87° 16' 46.740" E
	16	22° 50' 26.384" N	87° 16' 45.936" E
	17	22° 50' 26.046" N	87° 16' 42.519" E
	18	22° 50' 27.704" N	87° 16' 39.403" E
	19	22° 50' 30.738" N	87° 16' 36.067" E
	20	22° 50' 33.426" N	87° 16' 34.142" E
	21	22° 50' 37.490" N	87° 16' 32.590" E
	22	22° 50' 38.457" N	87° 16' 30.958" E
	23	22° 50' 39.836" N	87° 16' 29.253" E
	24	22° 50' 48.929" N	87° 16' 25.335" E
	25	22° 50' 53.065" N	87° 16' 22.446" E
	26	22° 50' 58.782" N	87° 16' 19.932" E
	27	22° 51' 7.058" N	87° 16' 11.036" E
	28	22° 51' 7.697" N	87° 16' 10.177" E
	29	22° 51' 7.738" N	87° 16' 10.335" E
	30	22° 51' 7.528" N	87° 16' 12.117" E
	31	22° 51' 6.649" N	87° 16' 13.174" E
	32	22° 51' 5.823" N	87° 16' 13.339" E
	33	22° 51' 4.008" N	87° 16' 18.126" E
	34	22° 51' 2.457" N	87° 16' 19.237" E
	35	22° 50' 59.722" N	87° 16' 23.352" E
	36	22° 50' 57.217" N	87° 16' 24.679" E
	37	22° 50' 54.838" N	87° 16' 25.292" E
	38	22° 50' 54.600" N	87° 16' 25.071" E
	39	22° 50' 53.102" N	87° 16' 25.457" E
	40	22° 50' 50.726" N	87° 16' 25.843" E
	41	22° 50' 48.865" N	87° 16' 27.454" E
	42	22° 50' 47.158" N	87° 16' 29.400" E
	43	22° 50' 44.264" N	87° 16' 31.010" E
PSM_GB1_SB_16	1	22° 50' 36.028" N	87° 16' 37.392" E
	2	22° 50' 34.320" N	87° 16' 38.042" E
	3	22° 50' 34.806" N	87° 16' 36.951" E
	4	22° 50' 37.340" N	87° 16' 34.672" E
	5	22° 50' 38.994" N	87° 16' 33.172" E
	6	22° 50' 41.060" N	87° 16' 32.619" E
	7	22° 50' 42.559" N	87° 16' 32.009" E
	8	22° 50' 44.882" N	87° 16' 31.735" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	9	22° 50' 46.204" N	87° 16' 31.296" E
	10	22° 50' 44.399" N	87° 16' 33.398" E
	11	22° 50' 39.645" N	87° 16' 35.895" E
PSM_GB1_SB_17	1	22° 50' 28.845" N	87° 16' 50.641" E
	2	22° 50' 27.716" N	87° 16' 46.740" E
	3	22° 50' 28.339" N	87° 16' 44.680" E
	4	22° 50' 30.047" N	87° 16' 42.567" E
	5	22° 50' 31.548" N	87° 16' 41.443" E
	6	22° 50' 30.746" N	87° 16' 46.349" E
	7	22° 50' 31.051" N	87° 16' 49.135" E
	8	22° 50' 32.183" N	87° 16' 51.477" E
	9	22° 50' 34.862" N	87° 16' 54.880" E
	10	22° 50' 36.269" N	87° 16' 55.966" E
	11	22° 50' 35.341" N	87° 16' 55.724" E
	12	22° 50' 34.207" N	87° 16' 54.830" E
	13	22° 50' 32.919" N	87° 16' 53.323" E
PSM_GB1_SB_18	1	22° 50' 42.805" N	87° 17' 3.794" E
	2	22° 50' 40.838" N	87° 17' 2.639" E
	3	22° 50' 33.567" N	87° 16' 56.898" E
	4	22° 50' 33.997" N	87° 16' 56.389" E
	5	22° 50' 34.874" N	87° 16' 57.059" E
	6	22° 50' 37.453" N	87° 16' 58.402" E
	7	22° 50' 40.031" N	87° 16' 59.967" E
	8	22° 50' 42.557" N	87° 17' 2.089" E
	9	22° 50' 43.500" N	87° 17' 4.104" E
PSM_GB1_SB_19	1	22° 50' 43.126" N	87° 17' 1.867" E
	2	22° 50' 42.287" N	87° 17' 0.111" E
	3	22° 50' 43.112" N	87° 17' 0.634" E
	4	22° 50' 49.715" N	87° 17' 3.489" E
	5	22° 50' 52.964" N	87° 17' 5.222" E
	6	22° 50' 53.969" N	87° 17' 5.709" E
	7	22° 50' 52.979" N	87° 17' 6.288" E
	8	22° 50' 50.758" N	87° 17' 6.618" E
	9	22° 50' 48.848" N	87° 17' 6.224" E
	10	22° 50' 46.475" N	87° 17' 5.272" E
PSM_GB1_SB_20	1	22° 50' 51.594" N	87° 17' 7.971" E
	2	22° 50' 54.112" N	87° 17' 7.571" E
	3	22° 50' 59.428" N	87° 17' 8.418" E
	4	22° 51' 2.986" N	87° 17' 10.988" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	5	22° 51' 6.133" N	87° 17' 12.053" E
	6	22° 51' 9.229" N	87° 17' 13.174" E
	7	22° 51' 12.735" N	87° 17' 15.688" E
	8	22° 51' 15.106" N	87° 17' 17.420" E
	9	22° 51' 16.959" N	87° 17' 20.933" E
	10	22° 51' 17.832" N	87° 17' 22.996" E
	11	22° 51' 18.189" N	87° 17' 25.893" E
	12	22° 51' 17.925" N	87° 17' 28.734" E
	13	22° 51' 17.012" N	87° 17' 30.438" E
	14	22° 51' 16.831" N	87° 17' 29.713" E
	15	22° 51' 12.918" N	87° 17' 24.134" E
	16	22° 51' 9.070" N	87° 17' 20.115" E
	17	22° 51' 5.152" N	87° 17' 17.284" E
	18	22° 51' 0.616" N	87° 17' 13.041" E
	19	22° 50' 54.909" N	87° 17' 9.464" E
PSM_GB1_SB_23	1	22° 52' 24.518" N	87° 17' 44.058" E
	2	22° 52' 24.520" N	87° 17' 42.832" E
	3	22° 52' 24.937" N	87° 17' 40.994" E
	4	22° 52' 24.735" N	87° 17' 38.542" E
	5	22° 52' 25.724" N	87° 17' 40.683" E
	6	22° 52' 26.041" N	87° 17' 47.523" E
PSM_GB1_SB_25	1	22° 52' 21.665" N	87° 18' 18.872" E
	2	22° 52' 21.821" N	87° 18' 23.427" E
	3	22° 52' 20.359" N	87° 18' 26.836" E
	4	22° 52' 19.374" N	87° 18' 28.617" E
	5	22° 52' 18.697" N	87° 18' 31.903" E
	6	22° 52' 16.519" N	87° 18' 36.745" E
	7	22° 52' 15.546" N	87° 18' 37.807" E
	8	22° 52' 15.497" N	87° 18' 37.030" E
	9	22° 52' 16.628" N	87° 18' 26.057" E
	10	22° 52' 18.443" N	87° 18' 22.419" E
	11	22° 52' 20.311" N	87° 18' 17.892" E
	12	22° 52' 21.941" N	87° 18' 10.917" E
	13	22° 52' 22.087" N	87° 18' 13.803" E
	14	22° 52' 22.704" N	87° 18' 15.086" E
PSM_GB1_SB_26	1	22° 52' 19.169" N	87° 18' 34.981" E
	2	22° 52' 18.661" N	87° 18' 47.570" E
	3	22° 52' 17.069" N	87° 18' 46.820" E
	4	22° 52' 16.863" N	87° 18' 45.492" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	5	22° 52' 16.487" N	87° 18' 44.452" E
	6	22° 52' 16.564" N	87° 18' 37.734" E
	7	22° 52' 17.535" N	87° 18' 36.357" E
PSM_GB1_SB_26A	1	22° 52' 25.062" N	87° 17' 56.761" E
	2	22° 52' 24.493" N	87° 17' 57.485" E
	3	22° 52' 23.647" N	87° 17' 57.544" E
	4	22° 52' 22.970" N	87° 17' 58.460" E
	5	22° 52' 23.249" N	87° 17' 52.716" E
	6	22° 52' 22.779" N	87° 17' 46.698" E
	7	22° 52' 21.069" N	87° 17' 40.974" E
	8	22° 52' 18.393" N	87° 17' 36.140" E
	9	22° 52' 15.780" N	87° 17' 34.723" E
	10	22° 52' 11.284" N	87° 17' 33.551" E
	11	22° 52' 9.188" N	87° 17' 30.386" E
	12	22° 52' 12.225" N	87° 17' 28.543" E
	13	22° 52' 15.152" N	87° 17' 28.085" E
	14	22° 52' 18.033" N	87° 17' 28.713" E
	15	22° 52' 20.052" N	87° 17' 30.602" E
	16	22° 52' 22.693" N	87° 17' 35.232" E
	17	22° 52' 23.480" N	87° 17' 40.676" E
	18	22° 52' 22.747" N	87° 17' 43.181" E
	19	22° 52' 23.316" N	87° 17' 47.502" E
	20	22° 52' 24.252" N	87° 17' 48.124" E
	21	22° 52' 24.452" N	87° 17' 51.802" E
	22	22° 52' 24.862" N	87° 17' 53.362" E
	23	22° 52' 25.015" N	87° 17' 54.366" E
	24	22° 52' 24.816" N	87° 17' 55.960" E
PSM_GB1_SB_27	1	22° 52' 25.891" N	87° 18' 2.077" E
	2	22° 52' 23.811" N	87° 18' 12.150" E
	3	22° 52' 23.537" N	87° 18' 11.578" E
	4	22° 52' 24.372" N	87° 18' 6.844" E
	5	22° 52' 24.944" N	87° 18' 5.007" E
	6	22° 52' 23.860" N	87° 18' 4.726" E
	7	22° 52' 23.191" N	87° 18' 3.554" E
	8	22° 52' 23.246" N	87° 18' 1.716" E
	9	22° 52' 23.817" N	87° 18' 0.269" E
	10	22° 52' 24.851" N	87° 17' 59.212" E
	11	22° 52' 25.834" N	87° 17' 58.156" E
	12	22° 52' 25.784" N	87° 17' 57.097" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	13	22° 52' 25.786" N	87° 17' 56.150" E
	14	22° 52' 25.945" N	87° 17' 54.201" E
	15	22° 52' 26.220" N	87° 17' 53.760" E
PSM_GB1_SB_28	1	22° 51' 38.001" N	87° 20' 1.276" E
	2	22° 51' 38.859" N	87° 19' 58.325" E
	3	22° 51' 40.000" N	87° 19' 55.932" E
	4	22° 51' 41.526" N	87° 19' 54.571" E
	5	22° 51' 43.204" N	87° 19' 54.074" E
	6	22° 51' 45.245" N	87° 19' 53.522" E
	7	22° 51' 46.124" N	87° 19' 52.939" E
	8	22° 51' 47.340" N	87° 19' 51.271" E
	9	22° 51' 47.588" N	87° 19' 51.143" E
	10	22° 51' 47.184" N	87° 19' 51.939" E
	11	22° 51' 45.977" N	87° 19' 53.282" E
	12	22° 51' 39.896" N	87° 20' 0.045" E
	13	22° 51' 38.096" N	87° 20' 2.751" E
PSM_GB1_SB_28A	1	22° 51' 41.280" N	87° 19' 53.596" E
	2	22° 51' 42.642" N	87° 19' 51.904" E
	3	22° 51' 44.321" N	87° 19' 47.321" E
	4	22° 51' 44.559" N	87° 19' 47.033" E
	5	22° 51' 48.441" N	87° 19' 49.732" E
	6	22° 51' 48.208" N	87° 19' 49.924" E
	7	22° 51' 47.601" N	87° 19' 50.073" E
	8	22° 51' 47.110" N	87° 19' 50.434" E
	9	22° 51' 46.695" N	87° 19' 51.185" E
	10	22° 51' 46.229" N	87° 19' 51.881" E
	11	22° 51' 45.040" N	87° 19' 52.574" E
	12	22° 51' 43.928" N	87° 19' 53.491" E
	13	22° 51' 42.792" N	87° 19' 53.599" E
PSM_GB1_SB_29	1	22° 51' 33.516" N	87° 20' 22.434" E
	2	22° 51' 32.957" N	87° 20' 18.254" E
	3	22° 51' 35.402" N	87° 20' 9.514" E
	4	22° 51' 35.622" N	87° 20' 9.118" E
	5	22° 51' 34.922" N	87° 20' 12.614" E
	6	22° 51' 34.782" N	87° 20' 17.859" E
	7	22° 51' 35.763" N	87° 20' 21.947" E
	8	22° 51' 37.603" N	87° 20' 26.369" E
PSM_GB1_SB_29A	1	22° 51' 49.717" N	87° 20' 47.539" E
	2	22° 51' 52.075" N	87° 20' 48.432" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	3	22° 51' 54.955" N	87° 20' 49.925" E
	4	22° 51' 57.447" N	87° 20' 51.464" E
	5	22° 51' 59.380" N	87° 20' 52.768" E
	6	22° 52' 0.713" N	87° 20' 52.725" E
	7	22° 52' 2.947" N	87° 20' 54.542" E
	8	22° 52' 5.439" N	87° 20' 55.709" E
	9	22° 52' 8.959" N	87° 20' 59.525" E
	10	22° 52' 10.211" N	87° 21' 0.807" E
	11	22° 52' 7.080" N	87° 21' 0.883" E
	12	22° 52' 4.880" N	87° 20' 59.912" E
	13	22° 52' 2.776" N	87° 20' 58.510" E
	14	22° 52' 0.495" N	87° 20' 56.662" E
	15	22° 51' 58.268" N	87° 20' 55.230" E
	16	22° 51' 54.778" N	87° 20' 52.265" E
	17	22° 51' 52.002" N	87° 20' 50.029" E
PSM_GB1_SB_29B	1	22° 52' 8.919" N	87° 20' 58.085" E
	2	22° 52' 6.987" N	87° 20' 55.935" E
	3	22° 52' 13.704" N	87° 20' 58.102" E
	4	22° 52' 15.411" N	87° 20' 58.092" E
	5	22° 52' 20.640" N	87° 20' 58.982" E
	6	22° 52' 41.859" N	87° 20' 57.674" E
	7	22° 52' 45.716" N	87° 20' 56.866" E
	8	22° 52' 49.400" N	87° 20' 56.281" E
	9	22° 52' 52.463" N	87° 20' 56.289" E
	10	22° 53' 3.231" N	87° 20' 58.471" E
	11	22° 53' 2.350" N	87° 20' 59.058" E
	12	22° 52' 45.830" N	87° 20' 58.876" E
	13	22° 52' 45.055" N	87° 20' 59.199" E
	14	22° 52' 41.524" N	87° 21' 0.444" E
	15	22° 52' 39.286" N	87° 21' 0.995" E
	16	22° 52' 37.005" N	87° 21' 1.268" E
	17	22° 52' 34.036" N	87° 21' 1.632" E
	18	22° 52' 31.844" N	87° 21' 0.744" E
	19	22° 52' 28.705" N	87° 21' 0.040" E
	20	22° 52' 26.208" N	87° 21' 0.590" E
	21	22° 52' 24.574" N	87° 21' 0.122" E
	22	22° 52' 20.700" N	87° 21' 1.040" E
PSM_GB1_SB_29C	1	22° 53' 1.344" N	87° 21' 0.925" E
	2	22° 53' 0.920" N	87° 20' 59.921" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	3	22° 53' 3.606" N	87° 20' 59.376" E
	4	22° 53' 4.316" N	87° 20' 59.377" E
	5	22° 53' 7.517" N	87° 21' 1.104" E
	6	22° 53' 8.311" N	87° 21' 1.849" E
	7	22° 53' 8.741" N	87° 21' 2.198" E
	8	22° 53' 7.621" N	87° 21' 2.729" E
	9	22° 53' 6.373" N	87° 21' 3.051" E
	10	22° 53' 1.818" N	87° 21' 0.718" E
PSM_GB1_SB_30A,B	1	22° 53' 7.604" N	87° 21' 5.744" E
	2	22° 53' 4.932" N	87° 21' 3.236" E
	3	22° 53' 5.770" N	87° 21' 3.398" E
	4	22° 53' 7.125" N	87° 21' 3.169" E
	5	22° 53' 8.417" N	87° 21' 2.801" E
	6	22° 53' 9.514" N	87° 21' 2.757" E
	7	22° 53' 10.717" N	87° 21' 3.666" E
	8	22° 53' 11.956" N	87° 21' 5.321" E
PSM_GB1_SB_32	1	22° 52' 43.683" N	87° 22' 53.671" E
	2	22° 52' 41.547" N	87° 22' 47.444" E
	3	22° 52' 42.059" N	87° 22' 45.213" E
	4	22° 52' 44.798" N	87° 22' 51.676" E
	5	22° 52' 47.748" N	87° 22' 55.882" E
	6	22° 52' 49.942" N	87° 22' 59.268" E
	7	22° 52' 52.232" N	87° 23' 1.592" E
	8	22° 52' 50.548" N	87° 23' 1.444" E
	9	22° 52' 46.945" N	87° 22' 56.838" E
PSM_GB1_SB_32A	1	22° 52' 54.582" N	87° 23' 31.398" E
	2	22° 52' 53.767" N	87° 23' 26.757" E
	3	22° 52' 53.773" N	87° 23' 24.157" E
	4	22° 52' 54.046" N	87° 23' 18.307" E
	5	22° 52' 53.622" N	87° 23' 15.613" E
	6	22° 52' 52.514" N	87° 23' 11.245" E
	7	22° 52' 50.373" N	87° 23' 7.153" E
	8	22° 52' 47.973" N	87° 23' 3.339" E
	9	22° 52' 47.508" N	87° 23' 2.351" E
	10	22° 52' 49.125" N	87° 23' 2.833" E
	11	22° 52' 50.586" N	87° 23' 3.627" E
	12	22° 52' 51.832" N	87° 23' 4.187" E
	13	22° 52' 53.941" N	87° 23' 3.868" E
	14	22° 52' 55.056" N	87° 23' 5.218" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	15	22° 52' 55.183" N	87° 23' 6.054" E
	16	22° 52' 56.213" N	87° 23' 7.218" E
	17	22° 52' 57.410" N	87° 23' 10.378" E
	18	22° 52' 57.833" N	87° 23' 13.305" E
	19	22° 52' 58.772" N	87° 23' 16.233" E
	20	22° 52' 58.506" N	87° 23' 19.482" E
	21	22° 52' 57.638" N	87° 23' 22.823" E
	22	22° 52' 56.554" N	87° 23' 26.070" E
	23	22° 52' 55.945" N	87° 23' 28.714" E
PSM_GB1_SB_32B	1	22° 52' 57.939" N	87° 23' 51.871" E
	2	22° 52' 57.393" N	87° 23' 52.213" E
	3	22° 52' 56.233" N	87° 23' 51.420" E
	4	22° 52' 52.291" N	87° 23' 45.048" E
	5	22° 52' 52.819" N	87° 23' 40.545" E
	6	22° 52' 55.762" N	87° 23' 33.311" E
	7	22° 52' 58.104" N	87° 23' 29.005" E
	8	22° 52' 58.096" N	87° 23' 29.118" E
	9	22° 52' 58.074" N	87° 23' 37.661" E
	10	22° 52' 58.441" N	87° 23' 42.640" E
	11	22° 52' 59.726" N	87° 23' 51.744" E
	12	22° 53' 0.199" N	87° 23' 55.089" E
	13	22° 53' 0.744" N	87° 23' 56.659" E
	14	22° 53' 0.093" N	87° 23' 56.307" E
	15	22° 52' 59.234" N	87° 23' 55.793" E
	16	22° 52' 58.505" N	87° 23' 54.770" E
	17	22° 52' 58.295" N	87° 23' 52.865" E
PSM_GB1_SB_33	1	22° 52' 59.298" N	87° 24' 21.377" E
	2	22° 52' 56.714" N	87° 24' 22.484" E
	3	22° 52' 55.945" N	87° 24' 20.531" E
	4	22° 52' 55.648" N	87° 24' 18.766" E
	5	22° 52' 53.843" N	87° 24' 18.111" E
	6	22° 52' 51.559" N	87° 24' 19.543" E
	7	22° 52' 48.461" N	87° 24' 19.627" E
	8	22° 52' 48.032" N	87° 24' 19.394" E
	9	22° 52' 50.616" N	87° 24' 18.055" E
	10	22° 52' 51.479" N	87° 24' 16.989" E
	11	22° 52' 50.942" N	87° 24' 16.682" E
	12	22° 52' 53.236" N	87° 24' 15.561" E
	13	22° 53' 0.546" N	87° 24' 8.657" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	14	22° 53' 0.725" N	87° 24' 5.779" E
	15	22° 52' 59.936" N	87° 23' 59.893" E
	16	22° 53' 0.900" N	87° 24' 0.348" E
	17	22° 53' 3.002" N	87° 24' 2.815" E
	18	22° 53' 3.905" N	87° 24' 3.097" E
	19	22° 53' 4.805" N	87° 24' 4.399" E
	20	22° 53' 5.477" N	87° 24' 10.763" E
	21	22° 53' 4.522" N	87° 24' 14.196" E
	22	22° 53' 1.884" N	87° 24' 19.527" E
PSM_GB1_SB_34	1	22° 52' 16.205" N	87° 24' 43.387" E
	2	22° 52' 19.857" N	87° 24' 51.055" E
	3	22° 52' 20.932" N	87° 24' 52.663" E
	4	22° 52' 28.488" N	87° 25' 1.500" E
	5	22° 52' 28.218" N	87° 25' 1.770" E
	6	22° 52' 26.545" N	87° 25' 0.047" E
	7	22° 52' 24.225" N	87° 24' 58.694" E
	8	22° 52' 21.137" N	87° 24' 55.109" E
	9	22° 52' 18.311" N	87° 24' 50.040" E
	10	22° 52' 16.346" N	87° 24' 44.463" E
PSM_GB1_SB_35	1	22° 52' 14.031" N	87° 25' 31.026" E
	2	22° 52' 16.285" N	87° 25' 28.196" E
	3	22° 52' 17.923" N	87° 25' 26.901" E
	4	22° 52' 19.903" N	87° 25' 26.443" E
	5	22° 52' 21.882" N	87° 25' 25.289" E
	6	22° 52' 20.002" N	87° 25' 27.867" E
	7	22° 52' 19.252" N	87° 25' 31.076" E
	8	22° 52' 17.384" N	87° 25' 31.450" E
	9	22° 52' 16.538" N	87° 25' 31.972" E
	10	22° 52' 15.962" N	87° 25' 32.328" E
	11	22° 52' 14.046" N	87° 25' 32.970" E
	12	22° 52' 13.847" N	87° 25' 33.037" E
	13	22° 52' 13.561" N	87° 25' 32.904" E
PSM_GB1_SB_36	1	22° 52' 11.974" N	87° 25' 43.326" E
	2	22° 52' 11.272" N	87° 25' 48.672" E
	3	22° 52' 12.130" N	87° 25' 59.134" E
	4	22° 52' 11.028" N	87° 25' 59.054" E
	5	22° 52' 10.696" N	87° 25' 54.550" E
	6	22° 52' 10.056" N	87° 25' 52.644" E
	7	22° 52' 10.021" N	87° 25' 49.627" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	8	22° 52' 9.338" N	87° 25' 47.767" E
	9	22° 52' 9.474" N	87° 25' 45.261" E
	10	22° 52' 10.471" N	87° 25' 42.432" E
	11	22° 52' 11.076" N	87° 25' 41.459" E
	12	22° 52' 13.118" N	87° 25' 34.037" E
	13	22° 52' 13.766" N	87° 25' 33.064" E
	14	22° 52' 15.962" N	87° 25' 32.328" E
	15	22° 52' 17.384" N	87° 25' 31.450" E
	16	22° 52' 20.393" N	87° 25' 30.746" E
	17	22° 52' 14.432" N	87° 25' 38.060" E
	18	22° 52' 13.326" N	87° 25' 39.728" E
PSM_GB1_SB_37_38	1	22° 52' 3.267" N	87° 26' 21.128" E
	2	22° 52' 2.143" N	87° 26' 23.260" E
	3	22° 51' 59.382" N	87° 26' 25.666" E
	4	22° 51' 57.828" N	87° 26' 27.889" E
	5	22° 51' 57.521" N	87° 26' 29.699" E
	6	22° 51' 56.382" N	87° 26' 31.972" E
	7	22° 51' 55.383" N	87° 26' 30.545" E
	8	22° 51' 56.783" N	87° 26' 28.569" E
	9	22° 52' 0.513" N	87° 26' 23.679" E
	10	22° 52' 8.425" N	87° 26' 10.976" E
	11	22° 52' 9.464" N	87° 26' 8.472" E
	12	22° 52' 9.476" N	87° 26' 4.201" E
	13	22° 52' 9.697" N	87° 26' 1.491" E
	14	22° 52' 10.800" N	87° 26' 3.975" E
	15	22° 52' 11.133" N	87° 26' 8.061" E
	16	22° 52' 10.476" N	87° 26' 12.191" E
PSM_GB1_SB_41	1	22° 51' 6.168" N	87° 28' 54.426" E
	2	22° 51' 4.933" N	87° 28' 55.352" E
	3	22° 51' 6.118" N	87° 28' 52.049" E
	4	22° 51' 7.151" N	87° 28' 50.454" E
	5	22° 51' 7.470" N	87° 28' 48.638" E
	6	22° 51' 8.250" N	87° 28' 46.853" E
	7	22° 51' 9.461" N	87° 28' 44.629" E
	8	22° 51' 10.733" N	87° 28' 42.840" E
	9	22° 51' 12.266" N	87° 28' 37.922" E
	10	22° 51' 13.892" N	87° 28' 38.655" E
	11	22° 51' 10.582" N	87° 28' 45.974" E
	12	22° 51' 6.899" N	87° 28' 51.699" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
PSM_KS_SR_01	1	22° 5' 9.214" N	87° 9' 27.727" E
	2	22° 5' 0.769" N	87° 9' 40.275" E
	3	22° 4' 47.850" N	87° 9' 50.786" E
	4	22° 4' 29.655" N	87° 9' 55.659" E
	5	22° 4' 29.772" N	87° 9' 50.526" E
	6	22° 4' 38.333" N	87° 9' 38.959" E
	7	22° 4' 52.160" N	87° 9' 36.148" E
	8	22° 5' 5.594" N	87° 9' 26.561" E
	9	22° 5' 9.171" N	87° 9' 18.263" E
	10	22° 5' 7.925" N	87° 8' 39.524" E
	11	22° 5' 17.002" N	87° 8' 21.839" E
	12	22° 5' 17.310" N	87° 8' 13.935" E
	13	22° 5' 21.212" N	87° 8' 7.269" E
	14	22° 5' 24.035" N	87° 8' 9.436" E
	15	22° 5' 25.873" N	87° 8' 9.229" E
	16	22° 5' 35.982" N	87° 8' 14.636" E
	17	22° 5' 32.684" N	87° 8' 17.761" E
	18	22° 5' 20.097" N	87° 8' 44.526" E
	19	22° 5' 15.433" N	87° 9' 3.173" E
	20	22° 5' 12.838" N	87° 9' 17.944" E
PSM_KS_SR_02_04	1	22° 4' 19.567" N	87° 9' 58.546" E
	2	22° 4' 18.699" N	87° 9' 59.549" E
	3	22° 4' 16.160" N	87° 10' 4.600" E
	4	22° 4' 13.415" N	87° 10' 7.235" E
	5	22° 4' 10.997" N	87° 10' 6.543" E
	6	22° 4' 3.854" N	87° 10' 5.914" E
	7	22° 3' 57.400" N	87° 10' 5.906" E
	8	22° 3' 48.642" N	87° 10' 7.206" E
	9	22° 3' 57.084" N	87° 10' 3.330" E
	10	22° 4' 1.034" N	87° 10' 1.884" E
	11	22° 4' 11.495" N	87° 9' 55.254" E
	12	22° 4' 18.202" N	87° 9' 51.904" E
	13	22° 4' 22.820" N	87° 9' 49.682" E
	14	22° 4' 25.596" N	87° 9' 53.244" E
	15	22° 4' 19.567" N	87° 9' 58.546" E
PSM_KS_SR_04_05	1	22° 3' 32.843" N	87° 10' 36.572" E
	2	22° 3' 29.616" N	87° 10' 37.359" E
	3	22° 3' 19.989" N	87° 10' 28.057" E
	4	22° 3' 23.902" N	87° 10' 20.026" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	5	22° 3' 32.881" N	87° 10' 14.911" E
	6	22° 3' 38.158" N	87° 10' 12.260" E
	7	22° 3' 45.148" N	87° 10' 8.874" E
	8	22° 3' 40.554" N	87° 10' 26.914" E
	9	22° 3' 39.363" N	87° 10' 30.070" E
	10	22° 3' 37.554" N	87° 10' 32.135" E
PSM_KS_SR_04_05_07	1	22° 4' 0.491" N	87° 10' 19.720" E
	2	22° 3' 42.745" N	87° 10' 50.047" E
	3	22° 3' 33.490" N	87° 10' 41.103" E
	4	22° 3' 36.067" N	87° 10' 38.884" E
	5	22° 3' 42.968" N	87° 10' 23.891" E
	6	22° 3' 45.560" N	87° 10' 13.970" E
	7	22° 3' 48.468" N	87° 10' 11.022" E
	8	22° 3' 57.933" N	87° 10' 11.610" E
	9	22° 4' 4.603" N	87° 10' 10.810" E
	10	22° 4' 8.320" N	87° 10' 12.157" E
PSM_KS_SR_06_07	1	22° 2' 36.345" N	87° 11' 19.760" E
	2	22° 2' 43.209" N	87° 11' 26.394" E
	3	22° 2' 45.977" N	87° 11' 29.193" E
	4	22° 2' 47.387" N	87° 11' 30.764" E
	5	22° 2' 44.164" N	87° 11' 34.212" E
	6	22° 2' 38.137" N	87° 11' 37.342" E
	7	22° 2' 27.631" N	87° 11' 43.974" E
	8	22° 2' 22.508" N	87° 11' 42.087" E
	9	22° 2' 20.249" N	87° 11' 39.358" E
	10	22° 2' 21.562" N	87° 11' 38.481" E
	11	22° 2' 21.761" N	87° 11' 38.348" E
	12	22° 2' 25.047" N	87° 11' 33.694" E
	13	22° 2' 28.123" N	87° 11' 30.063" E
PSM_DT1_SR_08	1	22° 2' 9.270" N	87° 11' 30.400" E
	2	22° 2' 16.447" N	87° 11' 34.527" E
	3	22° 2' 18.933" N	87° 11' 37.686" E
	4	22° 2' 14.463" N	87° 11' 39.009" E
	5	22° 2' 10.170" N	87° 11' 41.638" E
	6	22° 2' 3.184" N	87° 11' 32.045" E
	7	22° 2' 5.544" N	87° 11' 32.006" E
PSM_DT1_SR_08_10_11	1	22° 1' 20.639" N	87° 12' 45.459" E
	2	22° 1' 13.330" N	87° 12' 49.509" E
	3	22° 1' 14.147" N	87° 12' 42.838" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	4	22° 1' 17.809" N	87° 12' 39.152" E
	5	22° 1' 28.144" N	87° 12' 32.015" E
	6	22° 1' 43.643" N	87° 12' 25.115" E
	7	22° 1' 45.408" N	87° 12' 24.926" E
	8	22° 1' 35.112" N	87° 12' 32.633" E
	9	22° 1' 20.639" N	87° 12' 45.459" E
PSM_DT1_SR_09	1	22° 2' 27.631" N	87° 11' 43.974" E
	2	22° 2' 15.218" N	87° 12' 1.457" E
	3	22° 2' 8.192" N	87° 12' 4.549" E
	4	22° 2' 6.157" N	87° 12' 6.399" E
	5	22° 2' 0.258" N	87° 12' 11.762" E
	6	22° 2' 0.001" N	87° 12' 11.997" E
	7	22° 1' 58.981" N	87° 12' 10.390" E
	8	22° 2' 5.971" N	87° 11' 55.189" E
	9	22° 2' 9.628" N	87° 11' 53.180" E
	10	22° 2' 12.377" N	87° 11' 49.868" E
	11	22° 2' 11.629" N	87° 11' 45.927" E
	12	22° 2' 17.772" N	87° 11' 44.573" E
	13	22° 2' 19.065" N	87° 11' 42.174" E
	14	22° 2' 22.508" N	87° 11' 42.087" E
	15	22° 2' 27.631" N	87° 11' 43.974" E
PSM_DT1_SR_11	1	22° 1' 41.661" N	87° 12' 8.543" E
	2	22° 1' 59.201" N	87° 11' 58.908" E
	3	22° 1' 59.373" N	87° 12' 4.832" E
	4	22° 1' 55.489" N	87° 12' 14.057" E
	5	22° 1' 51.180" N	87° 12' 19.358" E
	6	22° 1' 45.801" N	87° 12' 19.350" E
	7	22° 1' 36.333" N	87° 12' 21.413" E
	8	22° 1' 25.350" N	87° 12' 29.703" E
	9	22° 1' 16.093" N	87° 12' 34.766" E
	10	22° 1' 11.209" N	87° 12' 47.115" E
	11	22° 1' 8.101" N	87° 12' 51.957" E
	12	22° 0' 56.876" N	87° 12' 54.505" E
	13	22° 0' 45.999" N	87° 12' 54.309" E
	14	22° 0' 41.865" N	87° 12' 51.788" E
	15	22° 0' 37.920" N	87° 12' 46.089" E
	16	22° 0' 36.711" N	87° 12' 43.783" E
	17	22° 0' 44.468" N	87° 12' 31.568" E
	18	22° 1' 15.265" N	87° 12' 12.564" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	19	22° 1' 19.595" N	87° 12' 18.108" E
	20	22° 1' 24.606" N	87° 12' 16.978" E
	21	22° 1' 31.354" N	87° 12' 14.804" E
PSM_DT1_SR_12(XIIA)	1	21° 59' 27.670" N	87° 13' 16.008" E
	2	21° 59' 22.463" N	87° 13' 2.137" E
	3	21° 59' 26.072" N	87° 13' 1.216" E
	4	21° 59' 46.629" N	87° 12' 58.721" E
	5	21° 59' 51.784" N	87° 12' 56.612" E
	6	21° 59' 52.973" N	87° 12' 56.534" E
	7	22° 0' 23.308" N	87° 12' 43.550" E
	8	22° 0' 26.860" N	87° 12' 46.441" E
	9	22° 0' 28.719" N	87° 12' 46.473" E
	10	22° 0' 30.893" N	87° 12' 51.310" E
	11	22° 0' 34.103" N	87° 12' 55.529" E
	12	22° 0' 14.326" N	87° 12' 58.206" E
PSM_DT1_SR_12(XIID)	1	21° 59' 22.463" N	87° 13' 2.137" E
	2	21° 59' 27.670" N	87° 13' 16.008" E
	3	21° 59' 23.081" N	87° 13' 17.837" E
	4	21° 58' 57.164" N	87° 13' 38.223" E
	5	21° 58' 57.864" N	87° 13' 36.153" E
	6	21° 58' 47.211" N	87° 13' 28.986" E
	7	21° 58' 59.115" N	87° 13' 7.507" E
	8	21° 59' 8.773" N	87° 13' 5.876" E
	9	21° 59' 13.618" N	87° 13' 4.380" E
	10	21° 59' 16.577" N	87° 13' 3.493" E
PSM_DT1_SR_12AI	1	21° 57' 28.081" N	87° 13' 39.915" E
	2	21° 57' 32.476" N	87° 13' 43.164" E
	3	21° 57' 35.486" N	87° 13' 44.784" E
	4	21° 57' 44.311" N	87° 13' 41.338" E
	5	21° 57' 49.851" N	87° 13' 35.390" E
	6	21° 57' 53.245" N	87° 13' 38.626" E
	7	21° 57' 59.036" N	87° 13' 42.291" E
	8	21° 57' 53.825" N	87° 13' 42.939" E
	9	21° 57' 39.331" N	87° 13' 55.025" E
	10	21° 57' 38.484" N	87° 13' 54.936" E
	11	21° 57' 32.455" N	87° 13' 58.616" E
	12	21° 57' 30.238" N	87° 14' 2.287" E
	13	21° 57' 21.911" N	87° 14' 8.672" E
	14	21° 57' 21.850" N	87° 14' 8.718" E

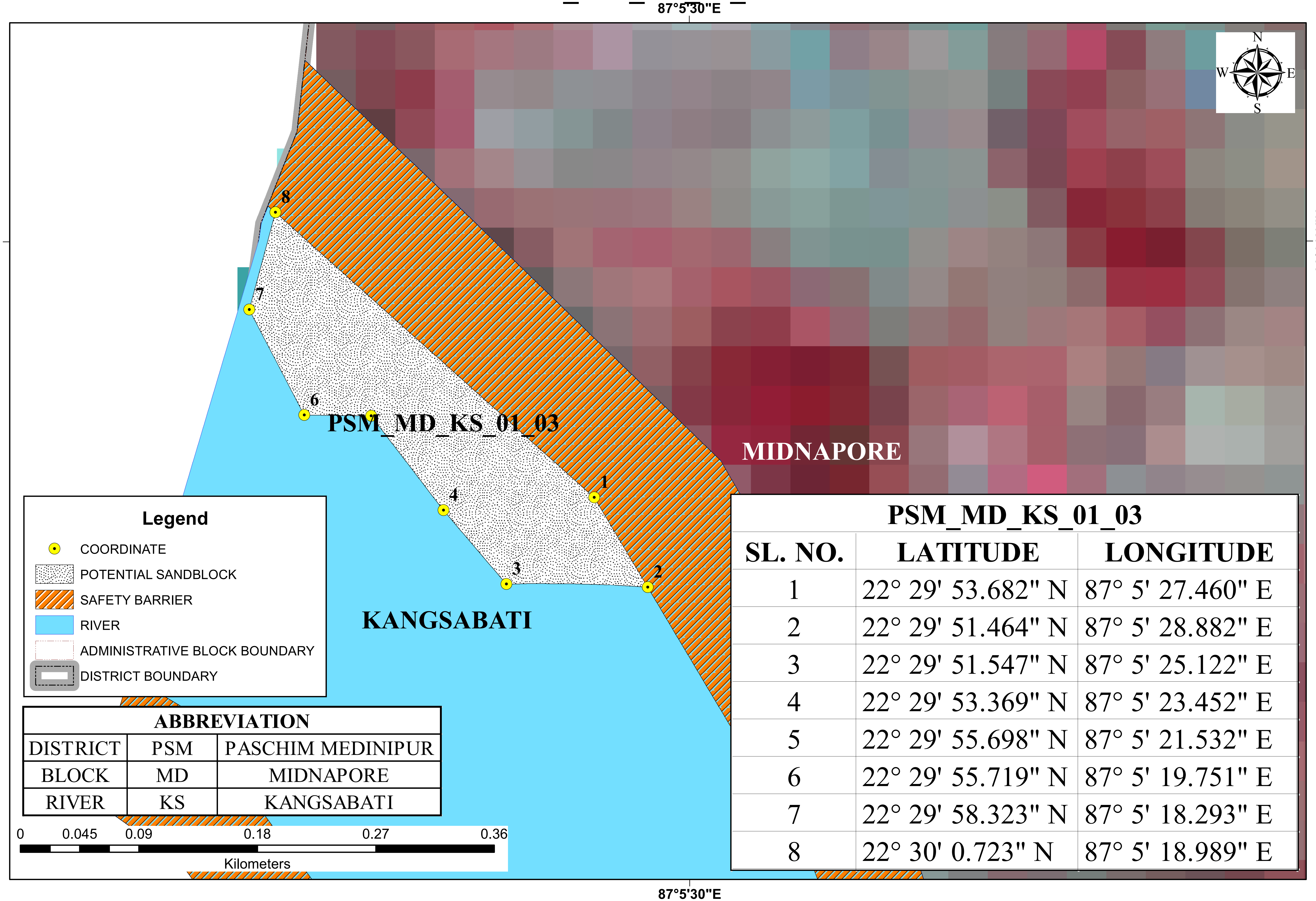
SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	15	21° 57' 25.305" N	87° 13' 54.498" E
	16	21° 57' 26.167" N	87° 13' 53.244" E
	17	21° 57' 28.237" N	87° 13' 45.108" E
PSM_DT1_SR_12A	1	21° 57' 32.943" N	87° 13' 33.344" E
	2	21° 57' 43.511" N	87° 13' 33.530" E
	3	21° 57' 42.053" N	87° 13' 37.497" E
	4	21° 57' 38.332" N	87° 13' 39.926" E
	5	21° 57' 34.410" N	87° 13' 38.592" E
	6	21° 57' 32.554" N	87° 13' 36.596" E
PSM_DT1_SR_13	1	21° 55' 59.432" N	87° 14' 52.409" E
	2	21° 55' 59.299" N	87° 14' 51.316" E
	3	21° 56' 10.500" N	87° 14' 42.693" E
	4	21° 56' 16.267" N	87° 14' 35.661" E
	5	21° 56' 19.296" N	87° 14' 33.015" E
	6	21° 56' 32.320" N	87° 14' 23.163" E
	7	21° 56' 44.045" N	87° 14' 12.511" E
	8	21° 56' 51.172" N	87° 14' 9.122" E
	9	21° 57' 13.026" N	87° 14' 12.701" E
	10	21° 57' 9.986" N	87° 14' 16.632" E
	11	21° 57' 0.196" N	87° 14' 24.331" E
	12	21° 56' 57.012" N	87° 14' 24.326" E
	13	21° 56' 50.552" N	87° 14' 28.651" E
	14	21° 56' 48.076" N	87° 14' 28.993" E
	15	21° 56' 46.966" N	87° 14' 33.065" E
	16	21° 56' 19.743" N	87° 14' 45.075" E
PSM_DT1_SR_17	1	21° 53' 32.015" N	87° 14' 34.112" E
	2	21° 53' 31.035" N	87° 14' 34.743" E
	3	21° 53' 31.684" N	87° 14' 32.769" E
	4	21° 53' 47.302" N	87° 14' 15.189" E
	5	21° 53' 58.128" N	87° 14' 9.896" E
	6	21° 54' 5.360" N	87° 14' 7.252" E
	7	21° 54' 24.712" N	87° 14' 15.242" E
	8	21° 54' 25.786" N	87° 14' 21.893" E
	9	21° 54' 25.715" N	87° 14' 24.395" E
	10	21° 54' 15.261" N	87° 14' 21.321" E
	11	21° 54' 3.488" N	87° 14' 21.523" E
	12	21° 53' 56.705" N	87° 14' 21.791" E
	13	21° 53' 54.728" N	87° 14' 22.693" E
	14	21° 53' 49.950" N	87° 14' 24.483" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
PSM_DT1_SR_17I	1	21° 54' 28.527" N	87° 14' 25.788" E
	2	21° 54' 29.683" N	87° 14' 21.985" E
	3	21° 54' 36.490" N	87° 14' 30.110" E
	4	21° 54' 37.106" N	87° 14' 32.052" E
	5	21° 54' 44.796" N	87° 14' 44.124" E
	6	21° 54' 47.880" N	87° 14' 48.273" E
	7	21° 54' 51.128" N	87° 14' 51.262" E
	8	21° 54' 52.477" N	87° 14' 52.459" E
	9	21° 54' 50.608" N	87° 14' 52.451" E
	10	21° 54' 46.411" N	87° 14' 50.062" E
PSM_DT1_SR_18	1	21° 53' 26.823" N	87° 14' 34.559" E
	2	21° 53' 29.083" N	87° 14' 33.499" E
	3	21° 53' 28.157" N	87° 14' 35.419" E
	4	21° 53' 26.498" N	87° 14' 37.433" E
	5	21° 53' 24.994" N	87° 14' 38.733" E
	6	21° 53' 21.977" N	87° 14' 40.747" E
	7	21° 53' 20.819" N	87° 14' 41.520" E
	8	21° 53' 20.301" N	87° 14' 41.049" E
	9	21° 53' 19.428" N	87° 14' 39.238" E
	10	21° 53' 21.028" N	87° 14' 38.247" E
PSM_DT1_SR_19	1	21° 52' 42.751" N	87° 15' 5.912" E
	2	21° 53' 2.151" N	87° 14' 49.640" E
	3	21° 53' 7.506" N	87° 14' 48.427" E
	4	21° 53' 12.786" N	87° 14' 48.365" E
	5	21° 53' 5.404" N	87° 14' 56.991" E
	6	21° 53' 0.269" N	87° 15' 1.002" E
	7	21° 52' 57.546" N	87° 15' 3.284" E
	8	21° 52' 51.525" N	87° 15' 6.757" E
	9	21° 52' 45.091" N	87° 15' 6.597" E
	10	21° 52' 41.147" N	87° 15' 8.770" E
	11	21° 52' 40.184" N	87° 15' 12.105" E
	12	21° 52' 39.013" N	87° 15' 12.509" E
	13	21° 52' 37.739" N	87° 15' 12.527" E
	14	21° 52' 36.271" N	87° 15' 13.738" E
	15	21° 52' 24.476" N	87° 15' 17.117" E
	16	21° 52' 17.140" N	87° 15' 15.492" E
	17	21° 52' 17.428" N	87° 15' 14.388" E
	18	21° 52' 19.359" N	87° 15' 12.142" E
	19	21° 52' 24.077" N	87° 15' 10.417" E

SANDBAR CODE	SL. NO.	LATITUDE	LONGITUDE
	20	21° 52' 28.594" N	87° 15' 8.986" E
	21	21° 52' 35.127" N	87° 15' 8.528" E
	22	21° 52' 37.600" N	87° 15' 8.355" E
PSM_DT1_SR_20	1	21° 51' 29.514" N	87° 14' 54.271" E
	2	21° 51' 37.635" N	87° 14' 51.898" E
	3	21° 51' 39.245" N	87° 14' 52.071" E
	4	21° 51' 43.670" N	87° 14' 56.264" E
	5	21° 51' 55.045" N	87° 15' 1.131" E
	6	21° 52' 5.568" N	87° 14' 58.520" E
	7	21° 52' 12.845" N	87° 15' 0.635" E
	8	21° 52' 23.790" N	87° 15' 1.097" E
	9	21° 52' 26.696" N	87° 15' 5.841" E
	10	21° 52' 21.246" N	87° 15' 7.934" E
	11	21° 52' 14.980" N	87° 15' 9.541" E
	12	21° 52' 13.426" N	87° 15' 12.489" E
	13	21° 52' 10.501" N	87° 15' 11.931" E
	14	21° 51' 58.115" N	87° 15' 8.037" E
	15	21° 51' 45.560" N	87° 15' 2.483" E
	16	21° 51' 41.777" N	87° 15' 0.080" E
	17	21° 51' 41.082" N	87° 15' 4.135" E
	18	21° 51' 34.315" N	87° 14' 59.550" E

Annexure 4
Map showing of Potential Blocks of Paschim Medinipur District

POTENTIAL BLOCK PSM_MD_KS_01_03 OF KANGSABATI RIVER

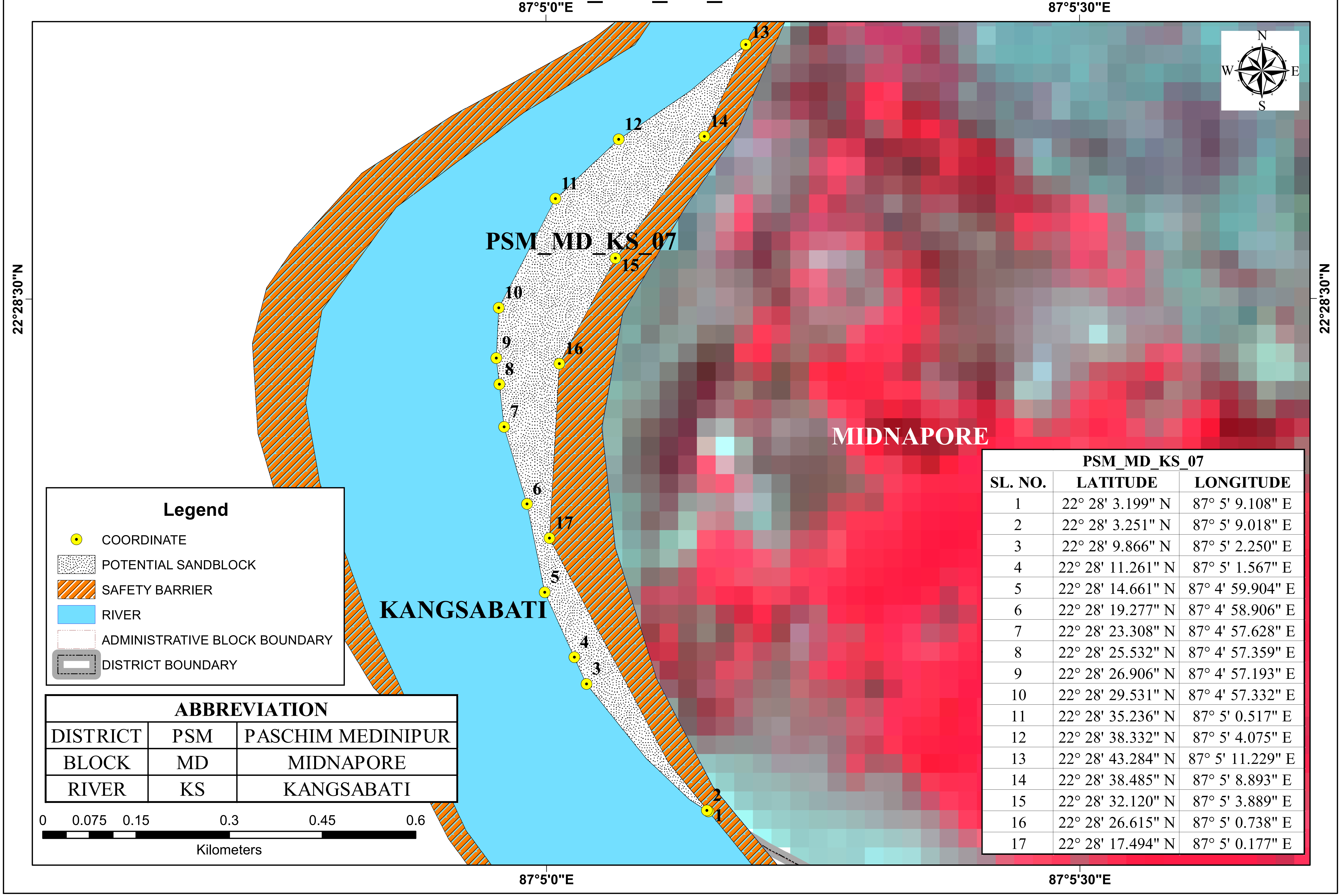


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_01_03

SL. NO.	LATITUDE	LONGITUDE
1	22° 29' 53.682" N	87° 5' 27.460" E
2	22° 29' 51.464" N	87° 5' 28.882" E
3	22° 29' 51.547" N	87° 5' 25.122" E
4	22° 29' 53.369" N	87° 5' 23.452" E
5	22° 29' 55.698" N	87° 5' 21.532" E
6	22° 29' 55.719" N	87° 5' 19.751" E
7	22° 29' 58.323" N	87° 5' 18.293" E
8	22° 30' 0.723" N	87° 5' 18.989" E

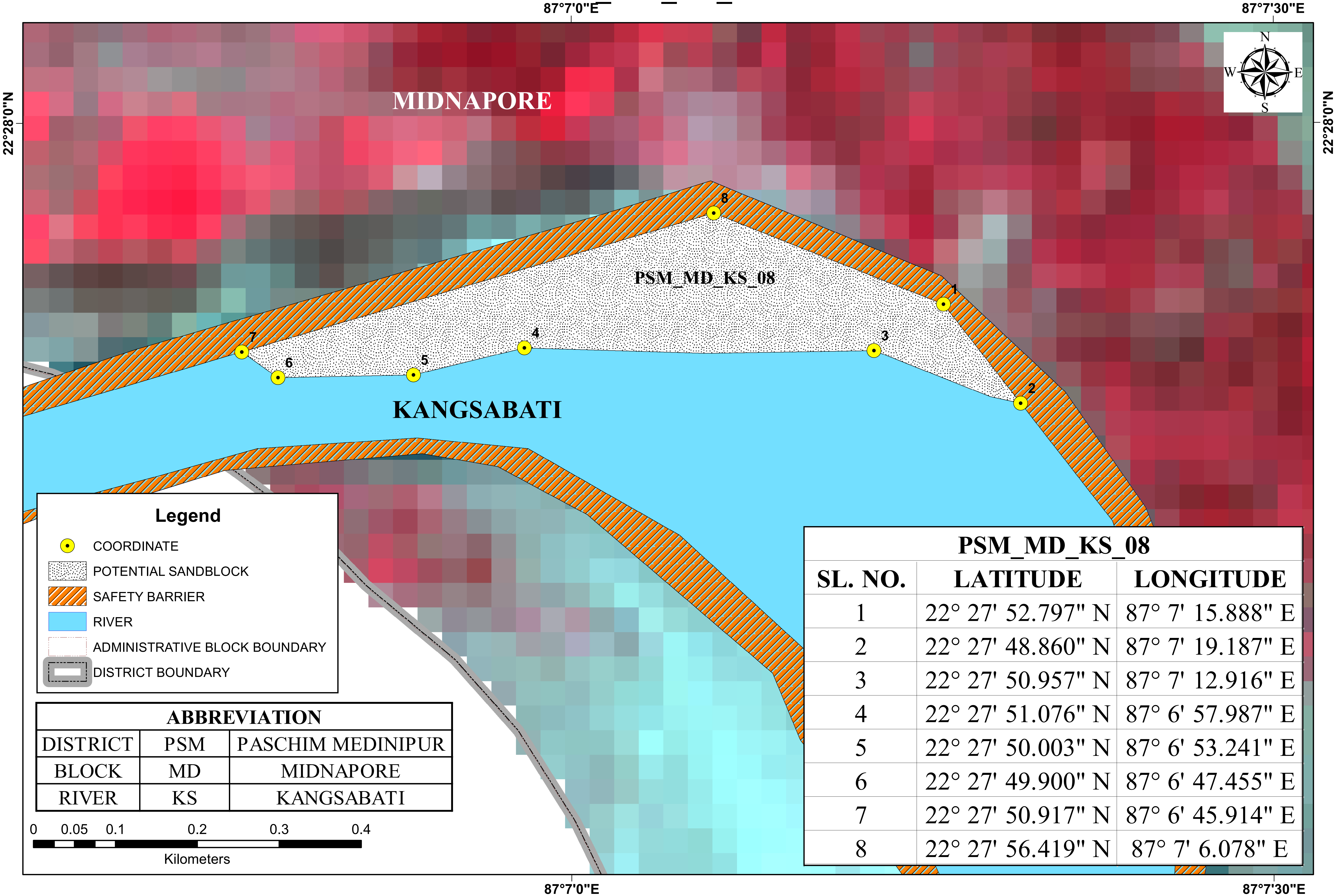
POTENTIAL BLOCK PSM_MD_KS_07 OF KANGSABATI RIVER



PSM_MD_KS_07		
SL. NO.	LATITUDE	LONGITUDE
1	22° 28' 3.199" N	87° 5' 9.108" E
2	22° 28' 3.251" N	87° 5' 9.018" E
3	22° 28' 9.866" N	87° 5' 2.250" E
4	22° 28' 11.261" N	87° 5' 1.567" E
5	22° 28' 14.661" N	87° 4' 59.904" E
6	22° 28' 19.277" N	87° 4' 58.906" E
7	22° 28' 23.308" N	87° 4' 57.628" E
8	22° 28' 25.532" N	87° 4' 57.359" E
9	22° 28' 26.906" N	87° 4' 57.193" E
10	22° 28' 29.531" N	87° 4' 57.332" E
11	22° 28' 35.236" N	87° 5' 0.517" E
12	22° 28' 38.332" N	87° 5' 4.075" E
13	22° 28' 43.284" N	87° 5' 11.229" E
14	22° 28' 38.485" N	87° 5' 8.893" E
15	22° 28' 32.120" N	87° 5' 3.889" E
16	22° 28' 26.615" N	87° 5' 0.738" E
17	22° 28' 17.494" N	87° 5' 0.177" E

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

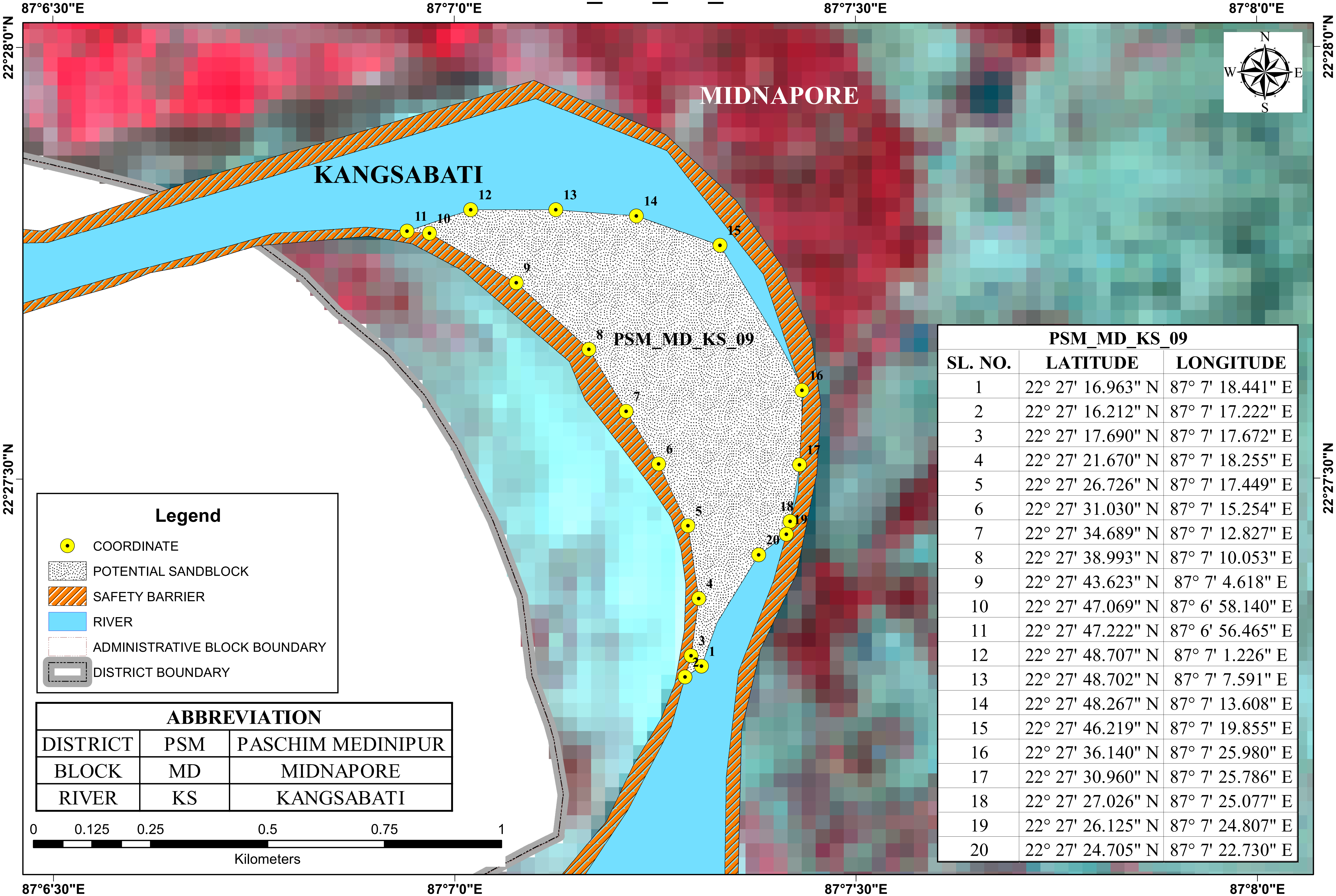
POTENTIAL BLOCK PSM_MD_KS_08 OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_08		
SL. NO.	LATITUDE	LONGITUDE
1	22° 27' 52.797" N	87° 7' 15.888" E
2	22° 27' 48.860" N	87° 7' 19.187" E
3	22° 27' 50.957" N	87° 7' 12.916" E
4	22° 27' 51.076" N	87° 6' 57.987" E
5	22° 27' 50.003" N	87° 6' 53.241" E
6	22° 27' 49.900" N	87° 6' 47.455" E
7	22° 27' 50.917" N	87° 6' 45.914" E
8	22° 27' 56.419" N	87° 7' 6.078" E

POTENTIAL BLOCK PSM_MD_KS_09 OF KANGSABATI RIVER



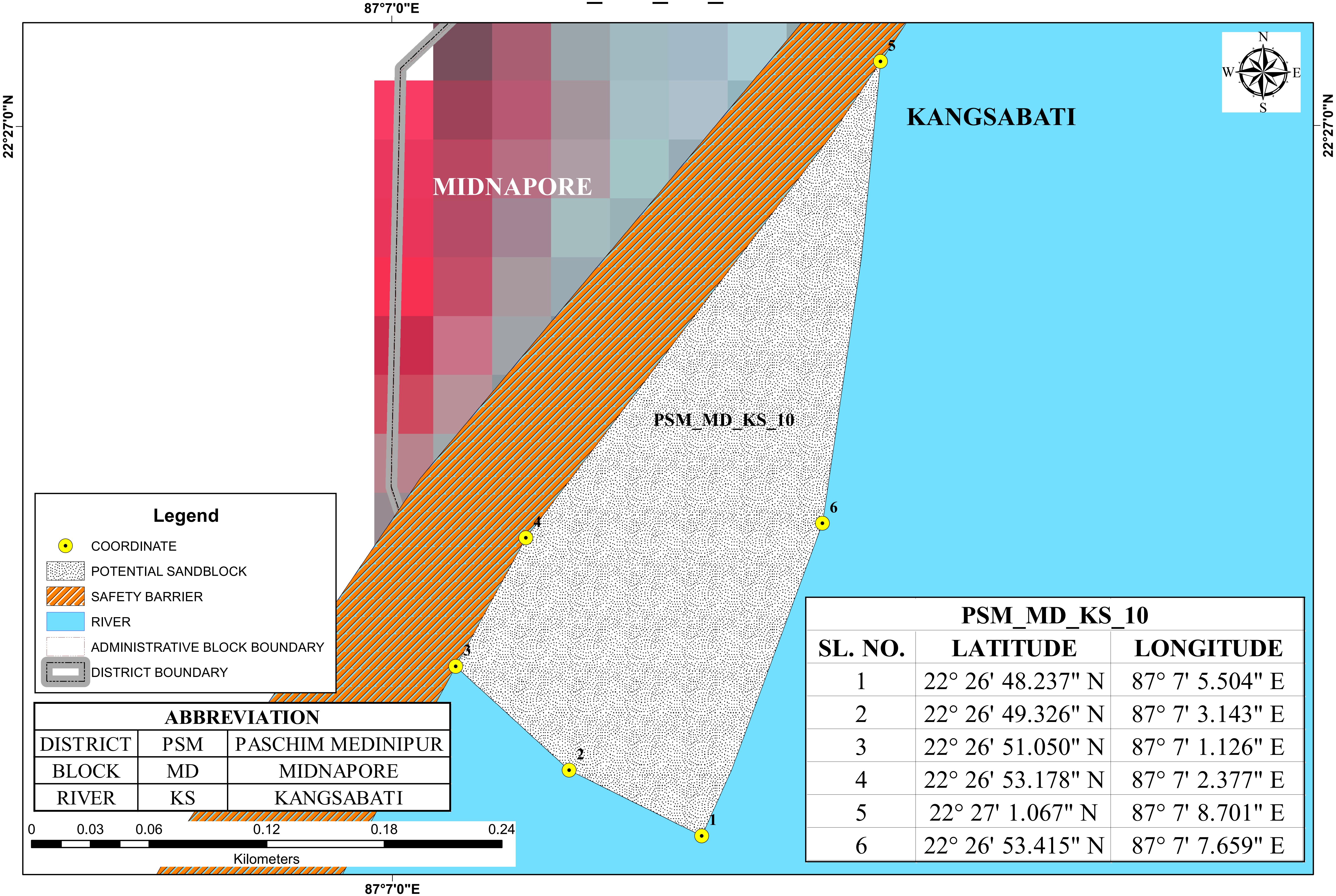
PSM_MD_KS_09

SL. NO.	LATITUDE	LONGITUDE
1	22° 27' 16.963" N	87° 7' 18.441" E
2	22° 27' 16.212" N	87° 7' 17.222" E
3	22° 27' 17.690" N	87° 7' 17.672" E
4	22° 27' 21.670" N	87° 7' 18.255" E
5	22° 27' 26.726" N	87° 7' 17.449" E
6	22° 27' 31.030" N	87° 7' 15.254" E
7	22° 27' 34.689" N	87° 7' 12.827" E
8	22° 27' 38.993" N	87° 7' 10.053" E
9	22° 27' 43.623" N	87° 7' 4.618" E
10	22° 27' 47.069" N	87° 6' 58.140" E
11	22° 27' 47.222" N	87° 6' 56.465" E
12	22° 27' 48.707" N	87° 7' 1.226" E
13	22° 27' 48.702" N	87° 7' 7.591" E
14	22° 27' 48.267" N	87° 7' 13.608" E
15	22° 27' 46.219" N	87° 7' 19.855" E
16	22° 27' 36.140" N	87° 7' 25.980" E
17	22° 27' 30.960" N	87° 7' 25.786" E
18	22° 27' 27.026" N	87° 7' 25.077" E
19	22° 27' 26.125" N	87° 7' 24.807" E
20	22° 27' 24.705" N	87° 7' 22.730" E

ABBREVIATION

DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

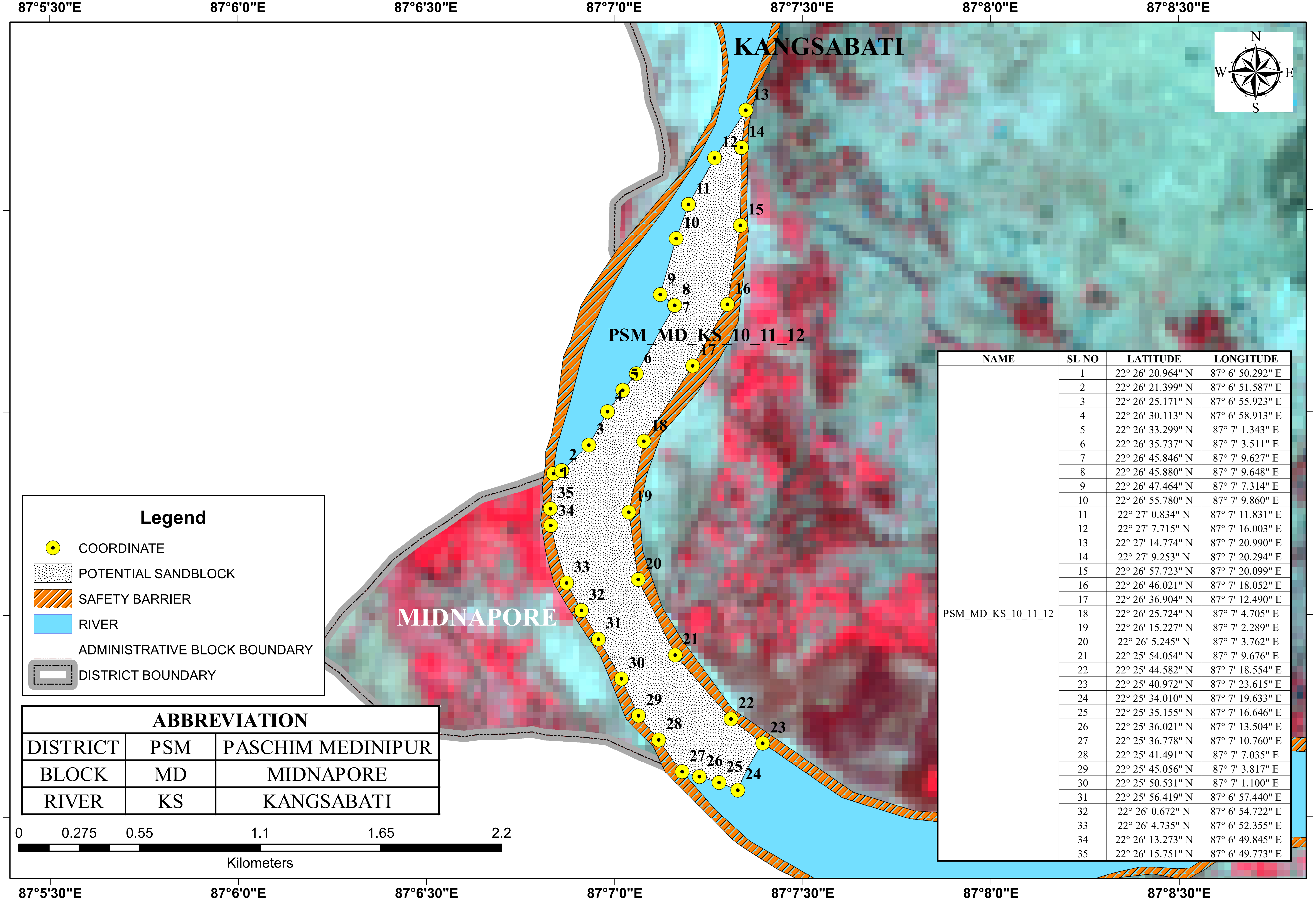
POTENTIAL BLOCK PSM_MD_KS_10 OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_10		
SL. NO.	LATITUDE	LONGITUDE
1	22° 26' 48.237" N	87° 7' 5.504" E
2	22° 26' 49.326" N	87° 7' 3.143" E
3	22° 26' 51.050" N	87° 7' 1.126" E
4	22° 26' 53.178" N	87° 7' 2.377" E
5	22° 27' 1.067" N	87° 7' 8.701" E
6	22° 26' 53.415" N	87° 7' 7.659" E

POTENTIAL BLOCK PSM_MD_KS_10_11_12 OF KANGSABATI RIVER

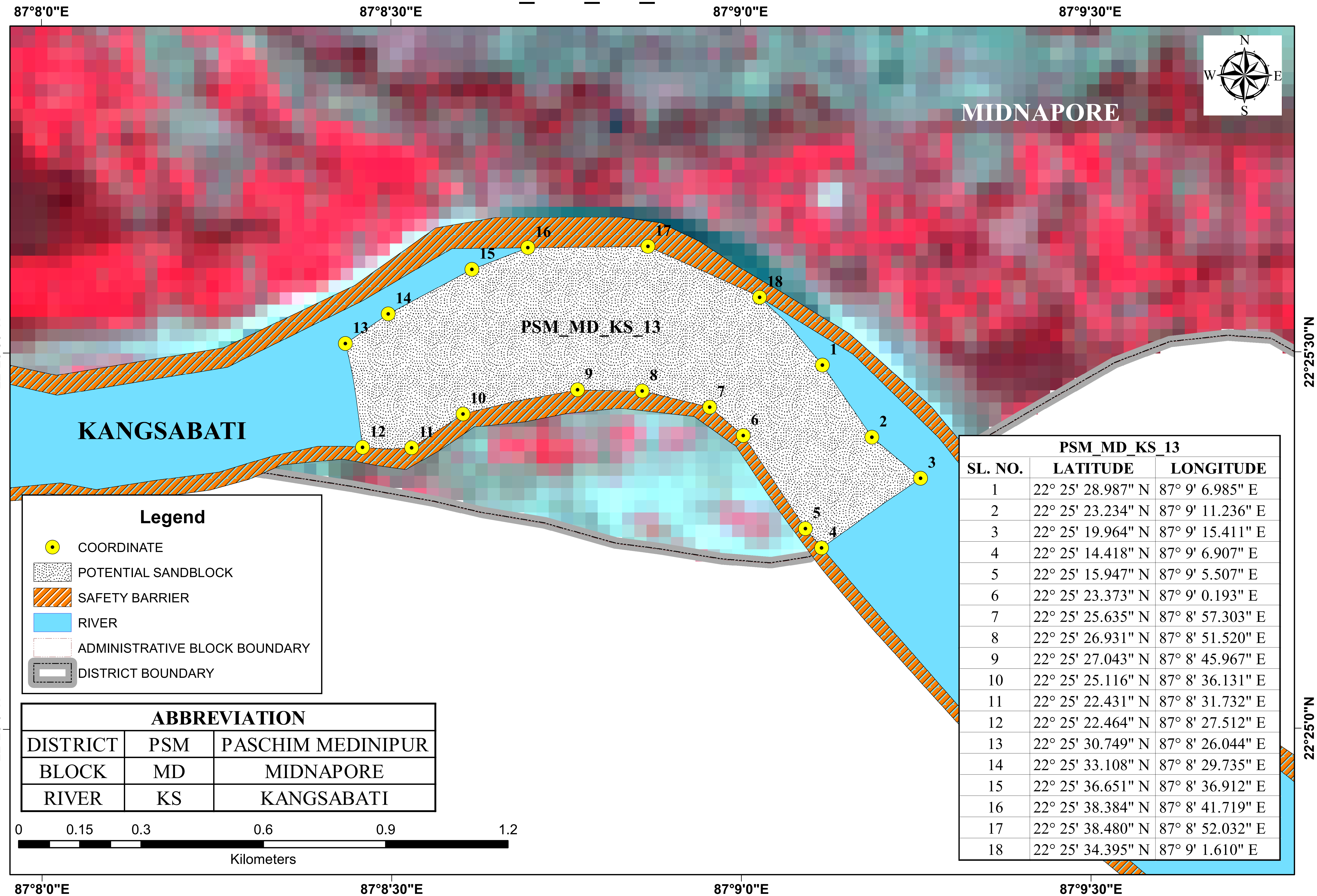


ABBREVIATION

DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

NAME	SL NO	LATITUDE	LONGITUDE
PSM_MD_KS_10_11_12	1	22° 26' 20.964" N	87° 6' 50.292" E
	2	22° 26' 21.399" N	87° 6' 51.587" E
	3	22° 26' 25.171" N	87° 6' 55.923" E
	4	22° 26' 30.113" N	87° 6' 58.913" E
	5	22° 26' 33.299" N	87° 7' 1.343" E
	6	22° 26' 35.737" N	87° 7' 3.511" E
	7	22° 26' 45.846" N	87° 7' 9.627" E
	8	22° 26' 45.880" N	87° 7' 9.648" E
	9	22° 26' 47.464" N	87° 7' 7.314" E
	10	22° 26' 55.780" N	87° 7' 9.860" E
	11	22° 27' 0.834" N	87° 7' 11.831" E
	12	22° 27' 7.715" N	87° 7' 16.003" E
	13	22° 27' 14.774" N	87° 7' 20.990" E
	14	22° 27' 9.253" N	87° 7' 20.294" E
	15	22° 26' 57.723" N	87° 7' 20.099" E
	16	22° 26' 46.021" N	87° 7' 18.052" E
	17	22° 26' 36.904" N	87° 7' 12.490" E
	18	22° 26' 25.724" N	87° 7' 4.705" E
	19	22° 26' 15.227" N	87° 7' 2.289" E
	20	22° 26' 5.245" N	87° 7' 3.762" E
	21	22° 25' 54.054" N	87° 7' 9.676" E
	22	22° 25' 44.582" N	87° 7' 18.554" E
	23	22° 25' 40.972" N	87° 7' 23.615" E
	24	22° 25' 34.010" N	87° 7' 19.633" E
	25	22° 25' 35.155" N	87° 7' 16.646" E
	26	22° 25' 36.021" N	87° 7' 13.504" E
	27	22° 25' 36.778" N	87° 7' 10.760" E
	28	22° 25' 41.491" N	87° 7' 7.035" E
	29	22° 25' 45.056" N	87° 7' 3.817" E
	30	22° 25' 50.531" N	87° 7' 1.100" E
	31	22° 25' 56.419" N	87° 6' 57.440" E
	32	22° 26' 0.672" N	87° 6' 54.722" E
	33	22° 26' 4.735" N	87° 6' 52.355" E
	34	22° 26' 13.273" N	87° 6' 49.845" E
	35	22° 26' 15.751" N	87° 6' 49.773" E

POTENTIAL BLOCK PSM_MD_KS_13 OF KANGSABATI RIVER



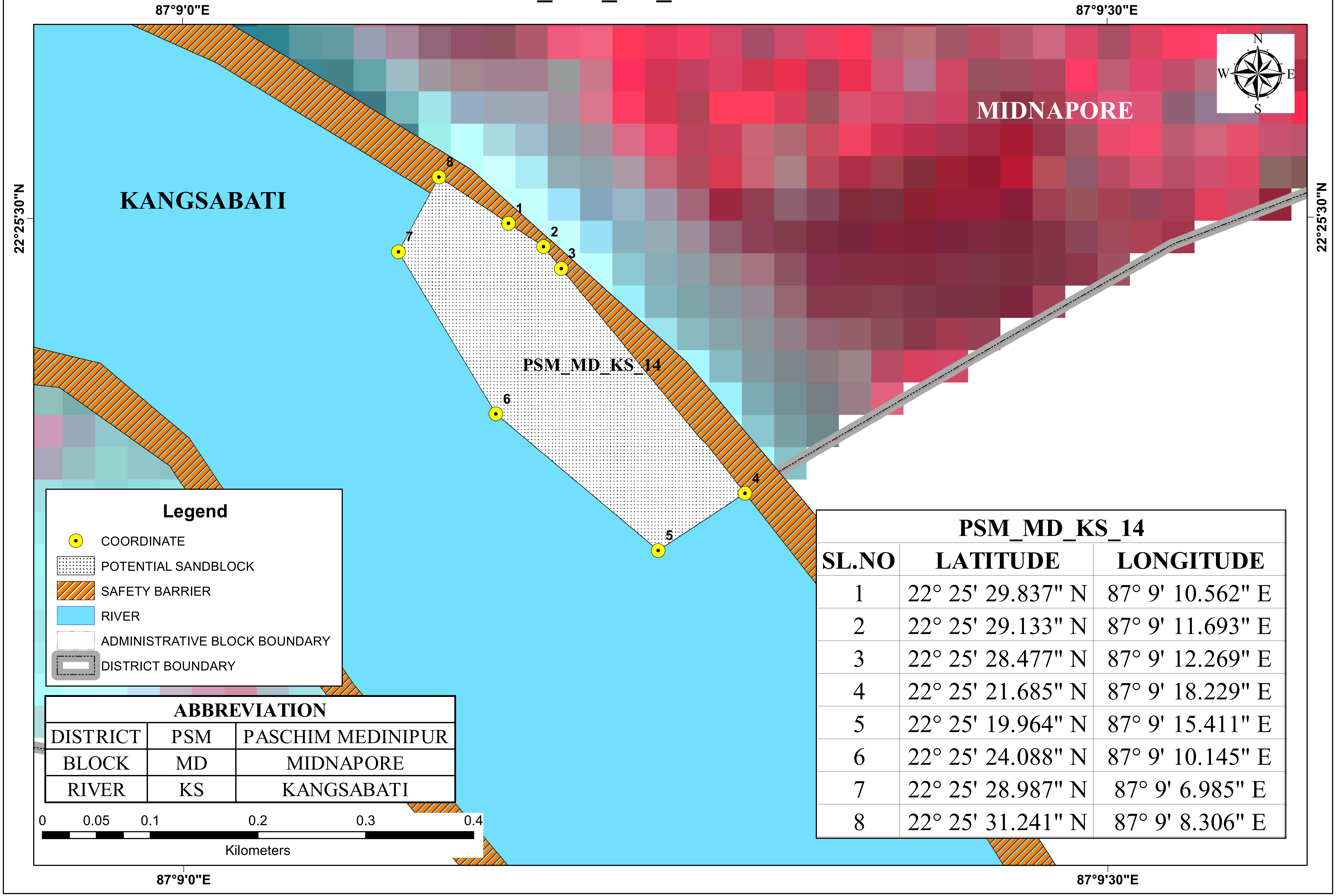
PSM_MD_KS_13

SL. NO.	LATITUDE	LONGITUDE
1	22° 25' 28.987" N	87° 9' 6.985" E
2	22° 25' 23.234" N	87° 9' 11.236" E
3	22° 25' 19.964" N	87° 9' 15.411" E
4	22° 25' 14.418" N	87° 9' 6.907" E
5	22° 25' 15.947" N	87° 9' 5.507" E
6	22° 25' 23.373" N	87° 9' 0.193" E
7	22° 25' 25.635" N	87° 8' 57.303" E
8	22° 25' 26.931" N	87° 8' 51.520" E
9	22° 25' 27.043" N	87° 8' 45.967" E
10	22° 25' 25.116" N	87° 8' 36.131" E
11	22° 25' 22.431" N	87° 8' 31.732" E
12	22° 25' 22.464" N	87° 8' 27.512" E
13	22° 25' 30.749" N	87° 8' 26.044" E
14	22° 25' 33.108" N	87° 8' 29.735" E
15	22° 25' 36.651" N	87° 8' 36.912" E
16	22° 25' 38.384" N	87° 8' 41.719" E
17	22° 25' 38.480" N	87° 8' 52.032" E
18	22° 25' 34.395" N	87° 9' 1.610" E

ABBREVIATION

DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

POTENTIAL BLOCK PSM_MD_KS_14 OF KANGSABATI RIVER



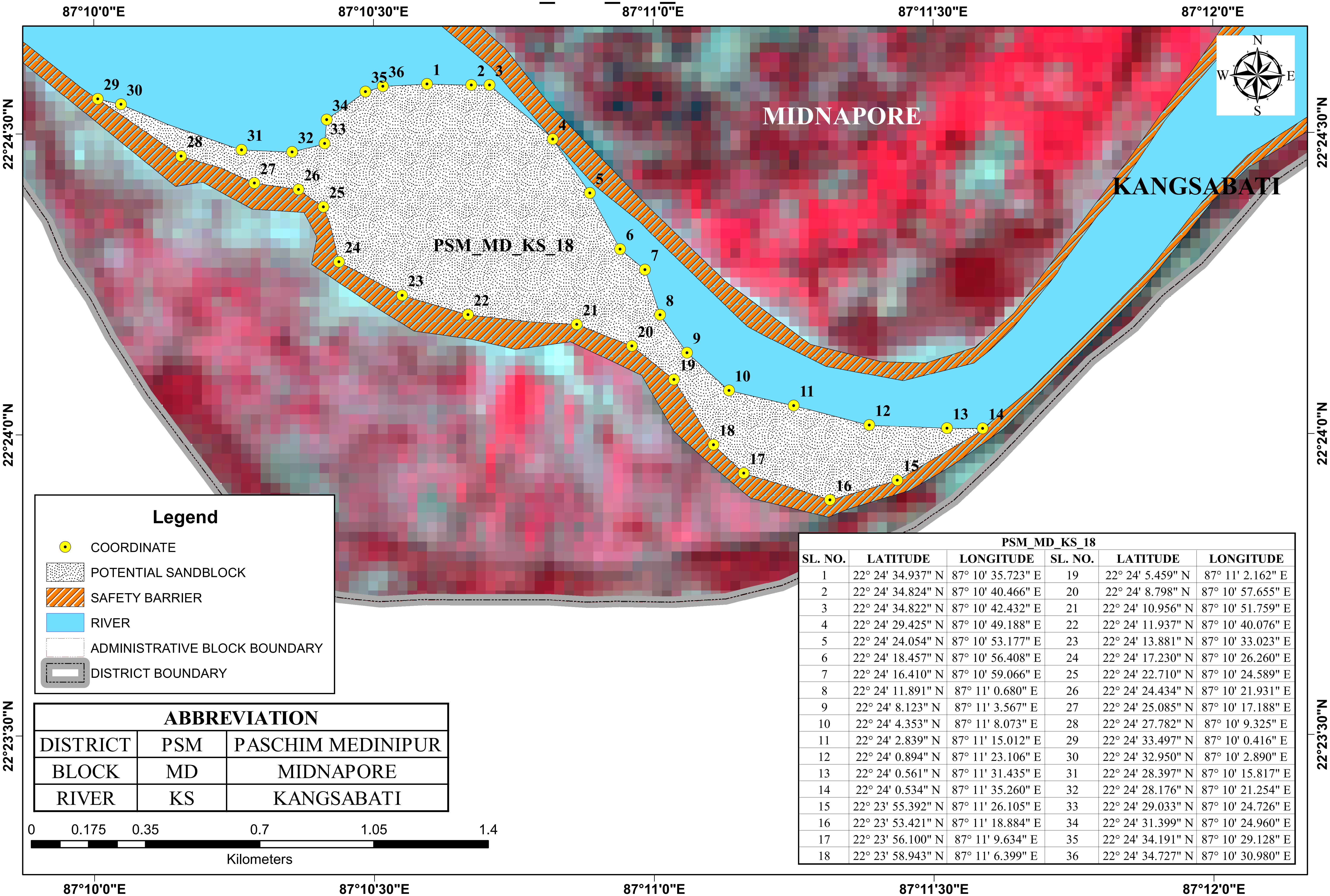
ABBREVIATION

DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_14

SL.NO	LATITUDE	LONGITUDE
1	22° 25' 29.837" N	87° 9' 10.562" E
2	22° 25' 29.133" N	87° 9' 11.693" E
3	22° 25' 28.477" N	87° 9' 12.269" E
4	22° 25' 21.685" N	87° 9' 18.229" E
5	22° 25' 19.964" N	87° 9' 15.411" E
6	22° 25' 24.088" N	87° 9' 10.145" E
7	22° 25' 28.987" N	87° 9' 6.985" E
8	22° 25' 31.241" N	87° 9' 8.306" E

POTENTIAL BLOCK PSM_MD_KS_18 OF KANGSABATI RIVER

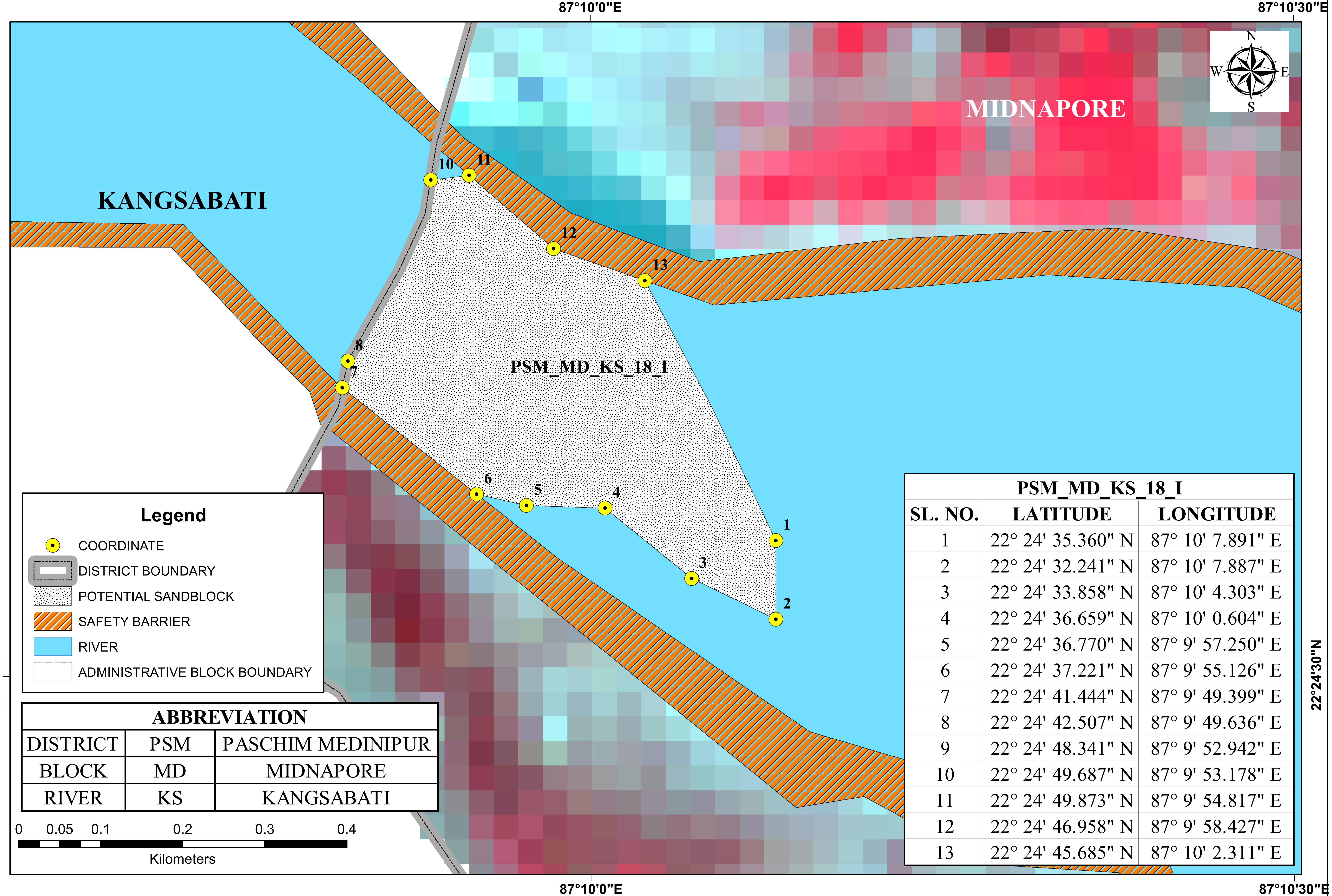


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_18

SL. NO.	LATITUDE	LONGITUDE	SL. NO.	LATITUDE	LONGITUDE
1	22° 24' 34.937" N	87° 10' 35.723" E	19	22° 24' 5.459" N	87° 11' 2.162" E
2	22° 24' 34.824" N	87° 10' 40.466" E	20	22° 24' 8.798" N	87° 10' 57.655" E
3	22° 24' 34.822" N	87° 10' 42.432" E	21	22° 24' 10.956" N	87° 10' 51.759" E
4	22° 24' 29.425" N	87° 10' 49.188" E	22	22° 24' 11.937" N	87° 10' 40.076" E
5	22° 24' 24.054" N	87° 10' 53.177" E	23	22° 24' 13.881" N	87° 10' 33.023" E
6	22° 24' 18.457" N	87° 10' 56.408" E	24	22° 24' 17.230" N	87° 10' 26.260" E
7	22° 24' 16.410" N	87° 10' 59.066" E	25	22° 24' 22.710" N	87° 10' 24.589" E
8	22° 24' 11.891" N	87° 11' 0.680" E	26	22° 24' 24.434" N	87° 10' 21.931" E
9	22° 24' 8.123" N	87° 11' 3.567" E	27	22° 24' 25.085" N	87° 10' 17.188" E
10	22° 24' 4.353" N	87° 11' 8.073" E	28	22° 24' 27.782" N	87° 10' 9.325" E
11	22° 24' 2.839" N	87° 11' 15.012" E	29	22° 24' 33.497" N	87° 10' 0.416" E
12	22° 24' 0.894" N	87° 11' 23.106" E	30	22° 24' 32.950" N	87° 10' 2.890" E
13	22° 24' 0.561" N	87° 11' 31.435" E	31	22° 24' 28.397" N	87° 10' 15.817" E
14	22° 24' 0.534" N	87° 11' 35.260" E	32	22° 24' 28.176" N	87° 10' 21.254" E
15	22° 23' 55.392" N	87° 11' 26.105" E	33	22° 24' 29.033" N	87° 10' 24.726" E
16	22° 23' 53.421" N	87° 11' 18.884" E	34	22° 24' 31.399" N	87° 10' 24.960" E
17	22° 23' 56.100" N	87° 11' 9.634" E	35	22° 24' 34.191" N	87° 10' 29.128" E
18	22° 23' 58.943" N	87° 11' 6.399" E	36	22° 24' 34.727" N	87° 10' 30.980" E

POTENTIAL BLOCK PSM_MD_KS_18_I OF KANGSABATI RIVER

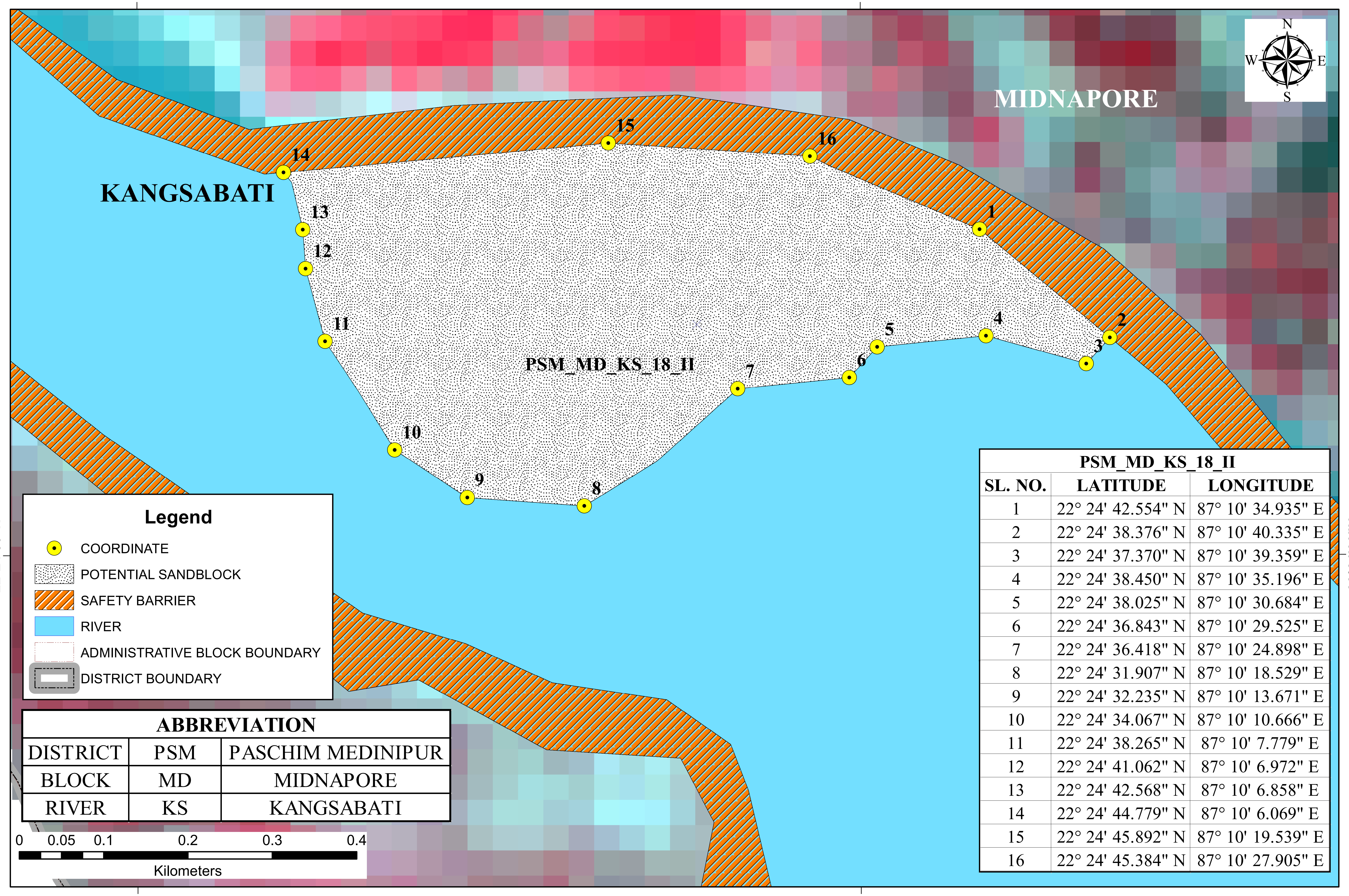


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_18_I

SL. NO.	LATITUDE	LONGITUDE
1	22° 24' 35.360" N	87° 10' 7.891" E
2	22° 24' 32.241" N	87° 10' 7.887" E
3	22° 24' 33.858" N	87° 10' 4.303" E
4	22° 24' 36.659" N	87° 10' 0.604" E
5	22° 24' 36.770" N	87° 9' 57.250" E
6	22° 24' 37.221" N	87° 9' 55.126" E
7	22° 24' 41.444" N	87° 9' 49.399" E
8	22° 24' 42.507" N	87° 9' 49.636" E
9	22° 24' 48.341" N	87° 9' 52.942" E
10	22° 24' 49.687" N	87° 9' 53.178" E
11	22° 24' 49.873" N	87° 9' 54.817" E
12	22° 24' 46.958" N	87° 9' 58.427" E
13	22° 24' 45.685" N	87° 10' 2.311" E

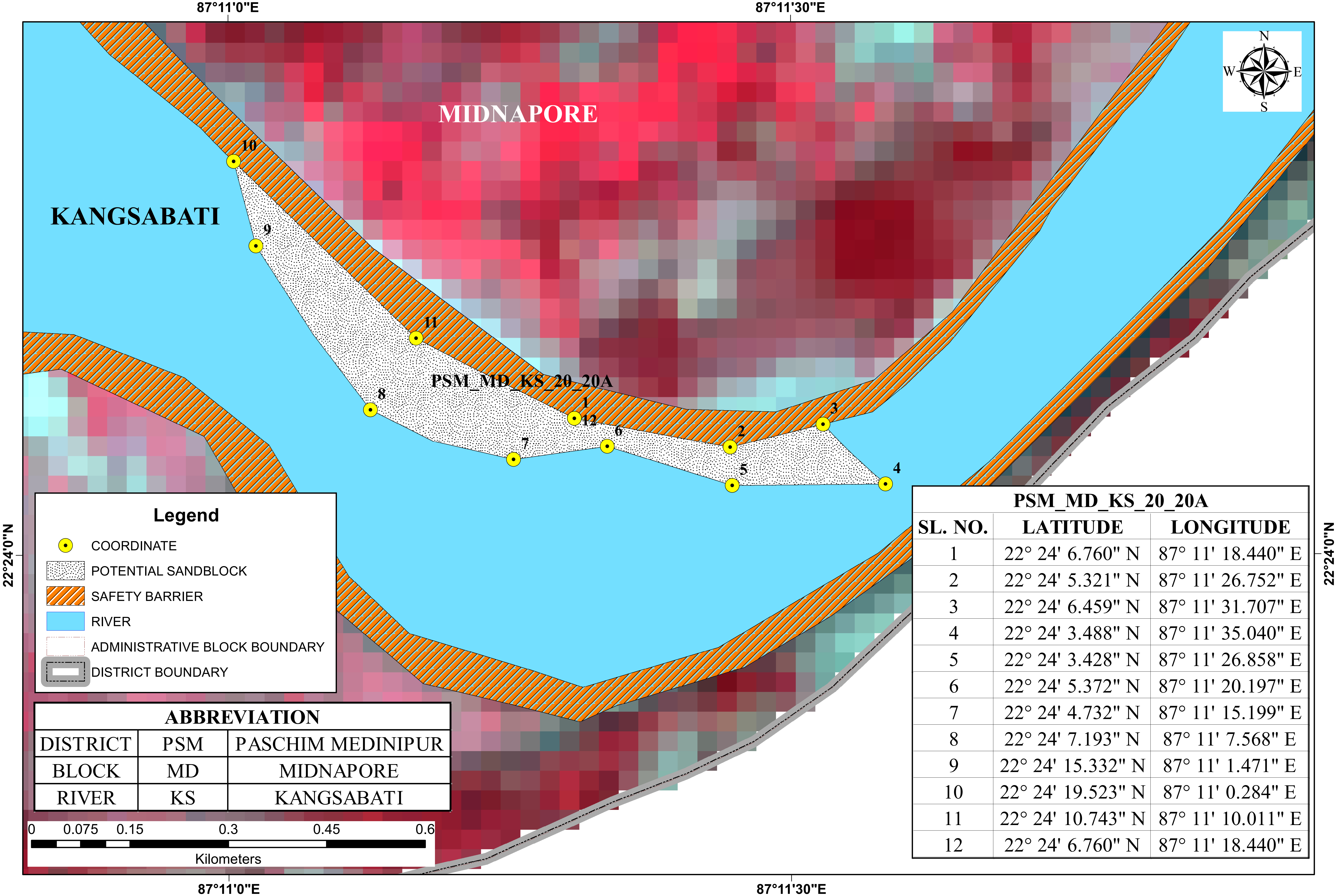
POTENTIAL BLOCK PSM_MD_KS_18_II OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_18_II		
SL. NO.	LATITUDE	LONGITUDE
1	22° 24' 42.554" N	87° 10' 34.935" E
2	22° 24' 38.376" N	87° 10' 40.335" E
3	22° 24' 37.370" N	87° 10' 39.359" E
4	22° 24' 38.450" N	87° 10' 35.196" E
5	22° 24' 38.025" N	87° 10' 30.684" E
6	22° 24' 36.843" N	87° 10' 29.525" E
7	22° 24' 36.418" N	87° 10' 24.898" E
8	22° 24' 31.907" N	87° 10' 18.529" E
9	22° 24' 32.235" N	87° 10' 13.671" E
10	22° 24' 34.067" N	87° 10' 10.666" E
11	22° 24' 38.265" N	87° 10' 7.779" E
12	22° 24' 41.062" N	87° 10' 6.972" E
13	22° 24' 42.568" N	87° 10' 6.858" E
14	22° 24' 44.779" N	87° 10' 6.069" E
15	22° 24' 45.892" N	87° 10' 19.539" E
16	22° 24' 45.384" N	87° 10' 27.905" E

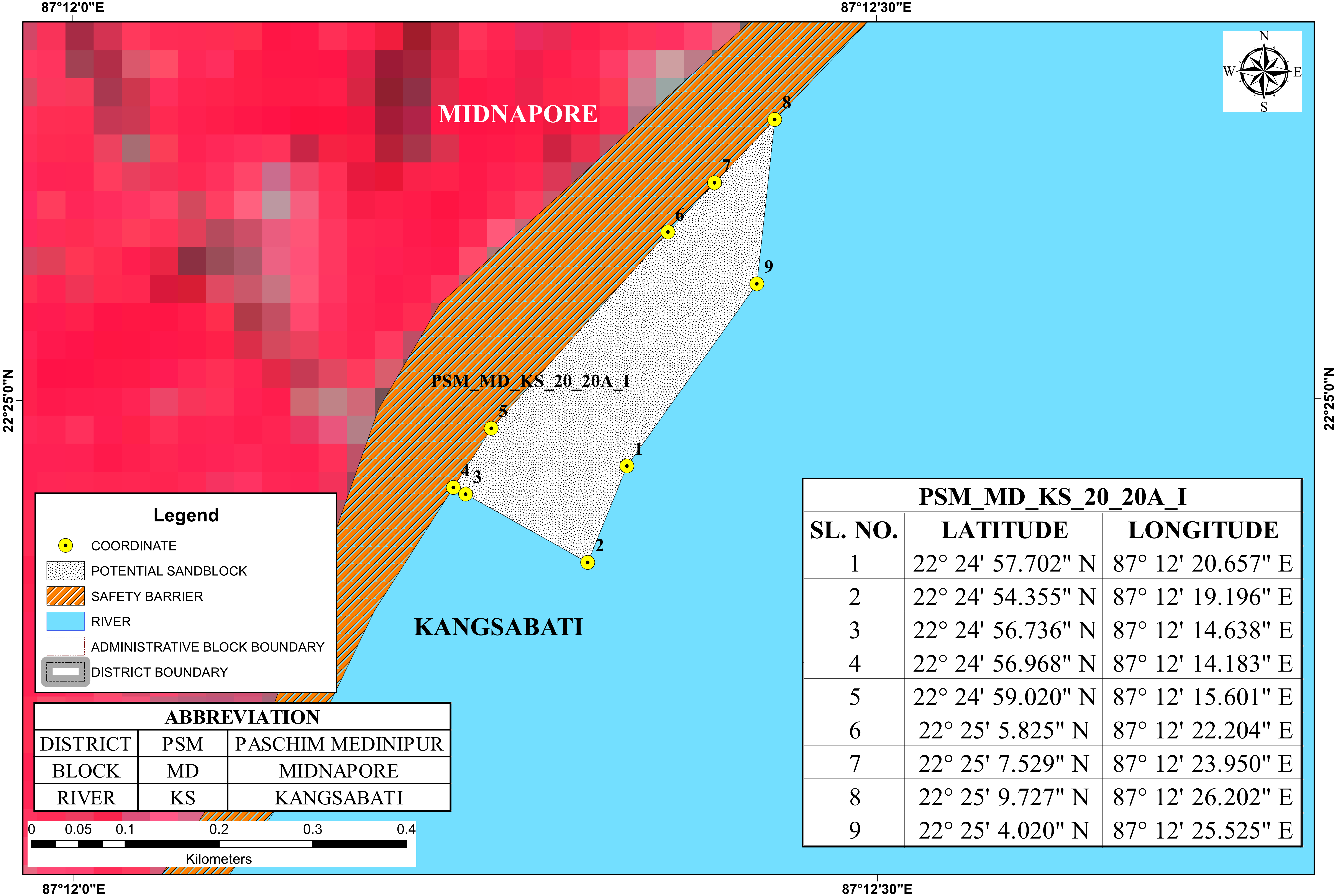
POTENTIAL BLOCK PSM_MD_KS_20_20A OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_20_20A		
SL. NO.	LATITUDE	LONGITUDE
1	22° 24' 6.760" N	87° 11' 18.440" E
2	22° 24' 5.321" N	87° 11' 26.752" E
3	22° 24' 6.459" N	87° 11' 31.707" E
4	22° 24' 3.488" N	87° 11' 35.040" E
5	22° 24' 3.428" N	87° 11' 26.858" E
6	22° 24' 5.372" N	87° 11' 20.197" E
7	22° 24' 4.732" N	87° 11' 15.199" E
8	22° 24' 7.193" N	87° 11' 7.568" E
9	22° 24' 15.332" N	87° 11' 1.471" E
10	22° 24' 19.523" N	87° 11' 0.284" E
11	22° 24' 10.743" N	87° 11' 10.011" E
12	22° 24' 6.760" N	87° 11' 18.440" E

POTENTIAL BLOCK PSM_MD_KS_20_20A_I OF KANGSABATI RIVER

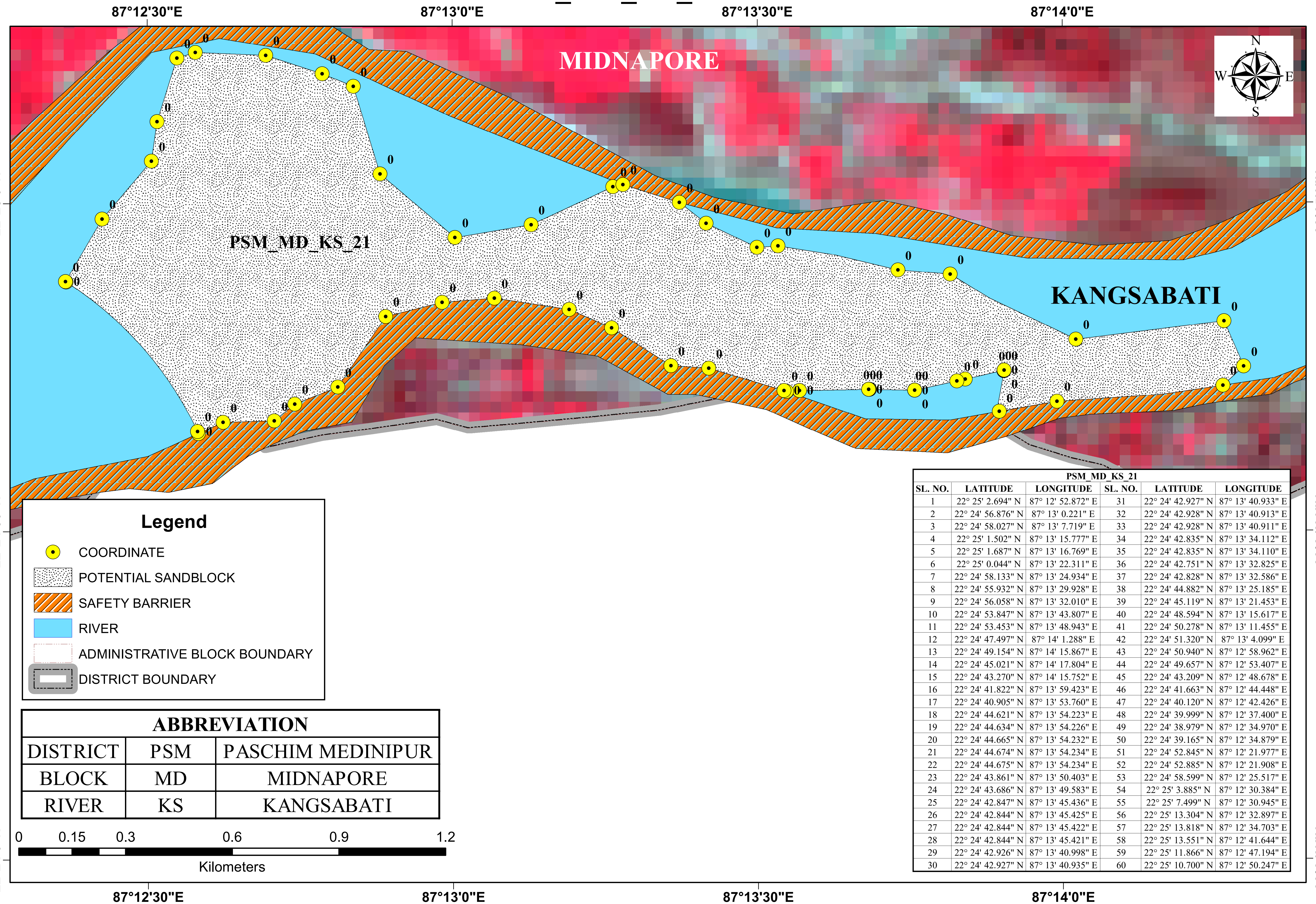


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_20_20A_I

SL. NO.	LATITUDE	LONGITUDE
1	22° 24' 57.702" N	87° 12' 20.657" E
2	22° 24' 54.355" N	87° 12' 19.196" E
3	22° 24' 56.736" N	87° 12' 14.638" E
4	22° 24' 56.968" N	87° 12' 14.183" E
5	22° 24' 59.020" N	87° 12' 15.601" E
6	22° 25' 5.825" N	87° 12' 22.204" E
7	22° 25' 7.529" N	87° 12' 23.950" E
8	22° 25' 9.727" N	87° 12' 26.202" E
9	22° 25' 4.020" N	87° 12' 25.525" E

POTENTIAL BLOCK PSM_MD_KS_21 OF KANGSABATI RIVER

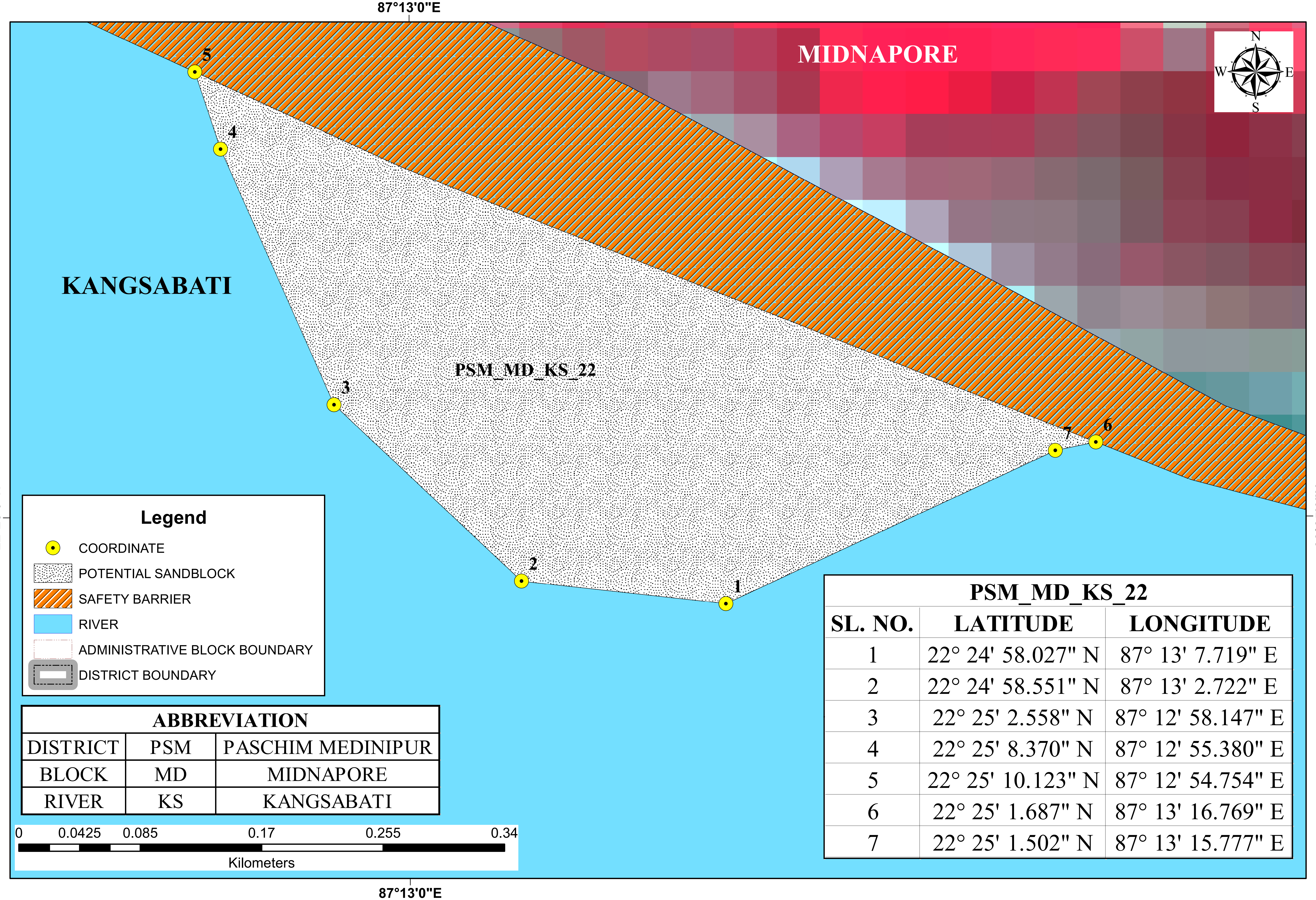


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_21

SL. NO.	LATITUDE	LONGITUDE	SL. NO.	LATITUDE	LONGITUDE
1	22° 25' 2.694" N	87° 12' 52.872" E	31	22° 24' 42.927" N	87° 13' 40.933" E
2	22° 24' 56.876" N	87° 13' 0.221" E	32	22° 24' 42.928" N	87° 13' 40.913" E
3	22° 24' 58.027" N	87° 13' 7.719" E	33	22° 24' 42.928" N	87° 13' 40.911" E
4	22° 25' 1.502" N	87° 13' 15.777" E	34	22° 24' 42.835" N	87° 13' 34.112" E
5	22° 25' 1.687" N	87° 13' 16.769" E	35	22° 24' 42.835" N	87° 13' 34.110" E
6	22° 25' 0.044" N	87° 13' 22.311" E	36	22° 24' 42.751" N	87° 13' 32.825" E
7	22° 24' 58.133" N	87° 13' 24.934" E	37	22° 24' 42.828" N	87° 13' 32.586" E
8	22° 24' 55.932" N	87° 13' 29.928" E	38	22° 24' 44.882" N	87° 13' 25.185" E
9	22° 24' 56.058" N	87° 13' 32.010" E	39	22° 24' 45.119" N	87° 13' 21.453" E
10	22° 24' 53.847" N	87° 13' 43.807" E	40	22° 24' 48.594" N	87° 13' 15.617" E
11	22° 24' 53.453" N	87° 13' 48.943" E	41	22° 24' 50.278" N	87° 13' 11.455" E
12	22° 24' 47.497" N	87° 14' 1.288" E	42	22° 24' 51.320" N	87° 13' 4.099" E
13	22° 24' 49.154" N	87° 14' 15.867" E	43	22° 24' 50.940" N	87° 12' 58.962" E
14	22° 24' 45.021" N	87° 14' 17.804" E	44	22° 24' 49.657" N	87° 12' 53.407" E
15	22° 24' 43.270" N	87° 14' 15.752" E	45	22° 24' 43.209" N	87° 12' 48.678" E
16	22° 24' 41.822" N	87° 13' 59.423" E	46	22° 24' 41.663" N	87° 12' 44.448" E
17	22° 24' 40.905" N	87° 13' 53.760" E	47	22° 24' 40.120" N	87° 12' 42.426" E
18	22° 24' 44.621" N	87° 13' 54.223" E	48	22° 24' 39.999" N	87° 12' 37.400" E
19	22° 24' 44.634" N	87° 13' 54.226" E	49	22° 24' 38.979" N	87° 12' 34.970" E
20	22° 24' 44.665" N	87° 13' 54.232" E	50	22° 24' 39.165" N	87° 12' 34.879" E
21	22° 24' 44.674" N	87° 13' 54.234" E	51	22° 24' 52.845" N	87° 12' 21.977" E
22	22° 24' 44.675" N	87° 13' 54.234" E	52	22° 24' 52.885" N	87° 12' 21.908" E
23	22° 24' 43.861" N	87° 13' 50.403" E	53	22° 24' 58.599" N	87° 12' 25.517" E
24	22° 24' 43.686" N	87° 13' 49.583" E	54	22° 25' 3.885" N	87° 12' 30.384" E
25	22° 24' 42.847" N	87° 13' 45.436" E	55	22° 25' 7.499" N	87° 12' 30.945" E
26	22° 24' 42.844" N	87° 13' 45.425" E	56	22° 25' 13.304" N	87° 12' 32.897" E
27	22° 24' 42.844" N	87° 13' 45.422" E	57	22° 25' 13.818" N	87° 12' 34.703" E
28	22° 24' 42.844" N	87° 13' 45.421" E	58	22° 25' 13.551" N	87° 12' 41.644" E
29	22° 24' 42.926" N	87° 13' 40.998" E	59	22° 25' 11.866" N	87° 12' 47.194" E
30	22° 24' 42.927" N	87° 13' 40.935" E	60	22° 25' 10.700" N	87° 12' 50.247" E

POTENTIAL BLOCK PSM_MD_KS_22 OF KANGSABATI RIVER

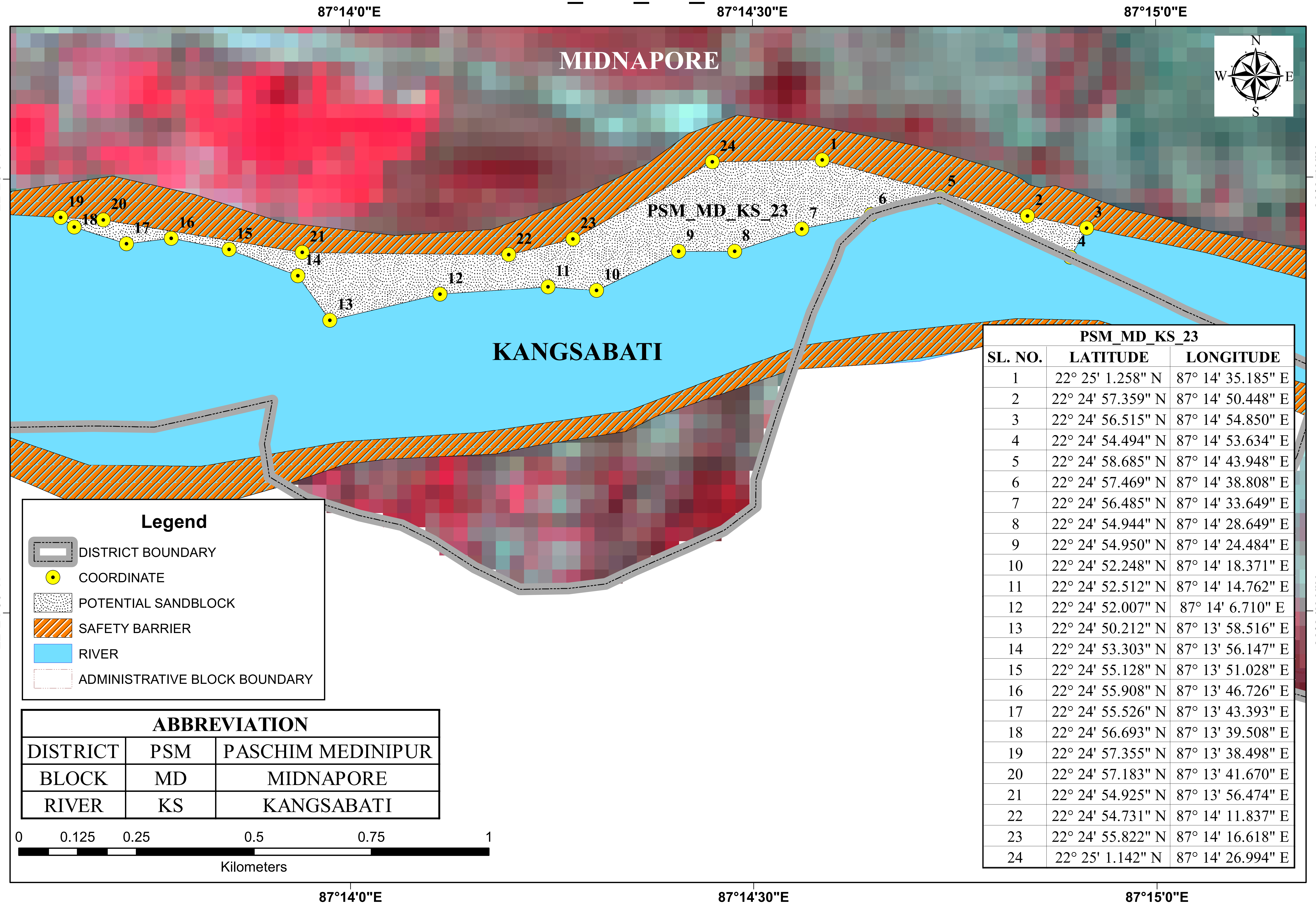


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_22

SL. NO.	LATITUDE	LONGITUDE
1	22° 24' 58.027" N	87° 13' 7.719" E
2	22° 24' 58.551" N	87° 13' 2.722" E
3	22° 25' 2.558" N	87° 12' 58.147" E
4	22° 25' 8.370" N	87° 12' 55.380" E
5	22° 25' 10.123" N	87° 12' 54.754" E
6	22° 25' 1.687" N	87° 13' 16.769" E
7	22° 25' 1.502" N	87° 13' 15.777" E

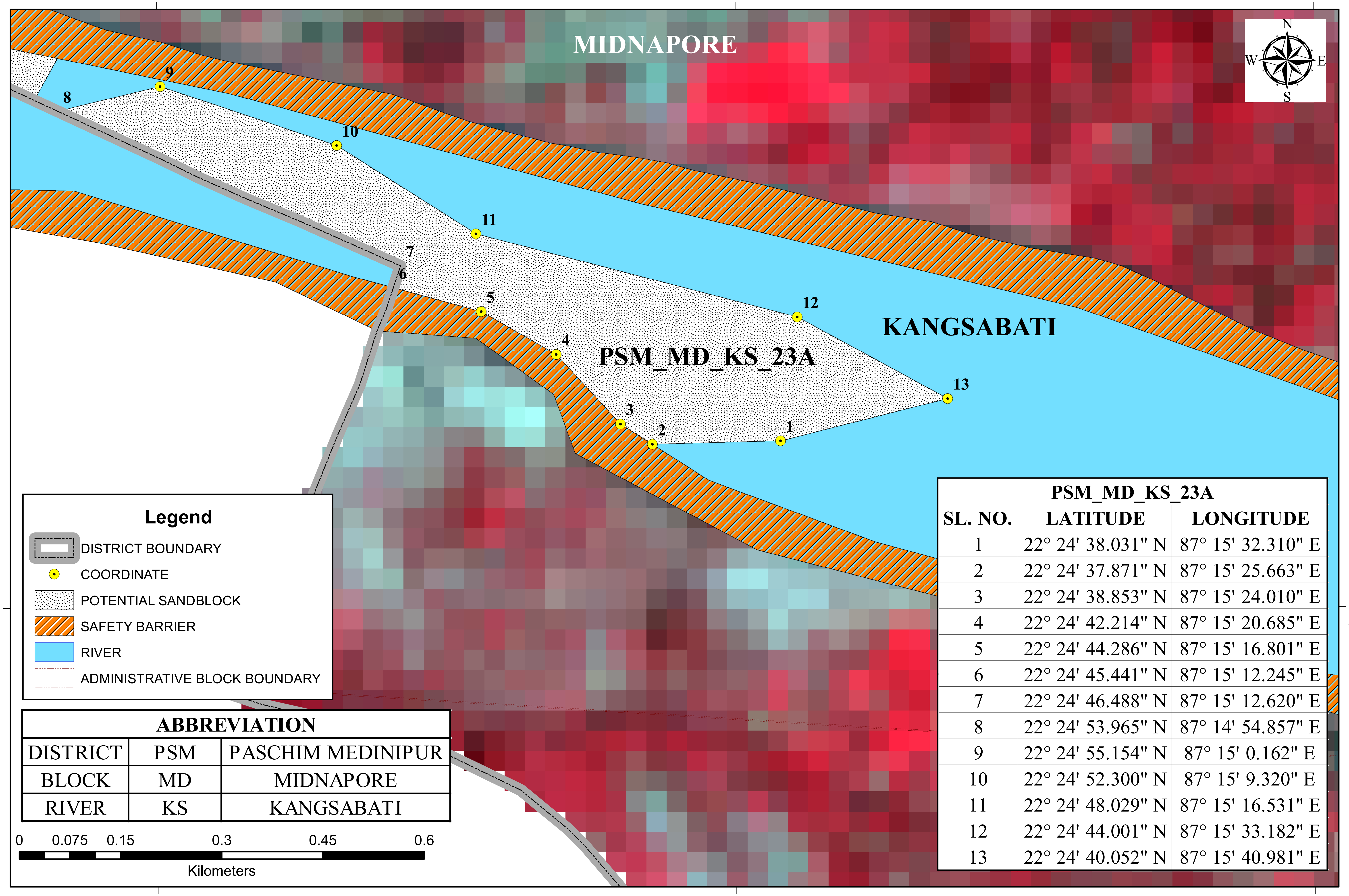
POTENTIAL BLOCK PSM_MD_KS_23 OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_23		
SL. NO.	LATITUDE	LONGITUDE
1	22° 25' 1.258" N	87° 14' 35.185" E
2	22° 24' 57.359" N	87° 14' 50.448" E
3	22° 24' 56.515" N	87° 14' 54.850" E
4	22° 24' 54.494" N	87° 14' 53.634" E
5	22° 24' 58.685" N	87° 14' 43.948" E
6	22° 24' 57.469" N	87° 14' 38.808" E
7	22° 24' 56.485" N	87° 14' 33.649" E
8	22° 24' 54.944" N	87° 14' 28.649" E
9	22° 24' 54.950" N	87° 14' 24.484" E
10	22° 24' 52.248" N	87° 14' 18.371" E
11	22° 24' 52.512" N	87° 14' 14.762" E
12	22° 24' 52.007" N	87° 14' 6.710" E
13	22° 24' 50.212" N	87° 13' 58.516" E
14	22° 24' 53.303" N	87° 13' 56.147" E
15	22° 24' 55.128" N	87° 13' 51.028" E
16	22° 24' 55.908" N	87° 13' 46.726" E
17	22° 24' 55.526" N	87° 13' 43.393" E
18	22° 24' 56.693" N	87° 13' 39.508" E
19	22° 24' 57.355" N	87° 13' 38.498" E
20	22° 24' 57.183" N	87° 13' 41.670" E
21	22° 24' 54.925" N	87° 13' 56.474" E
22	22° 24' 54.731" N	87° 14' 11.837" E
23	22° 24' 55.822" N	87° 14' 16.618" E
24	22° 25' 1.142" N	87° 14' 26.994" E

POTENTIAL BLOCK PSM_MD_KS_23A OF KANGSABATI RIVER



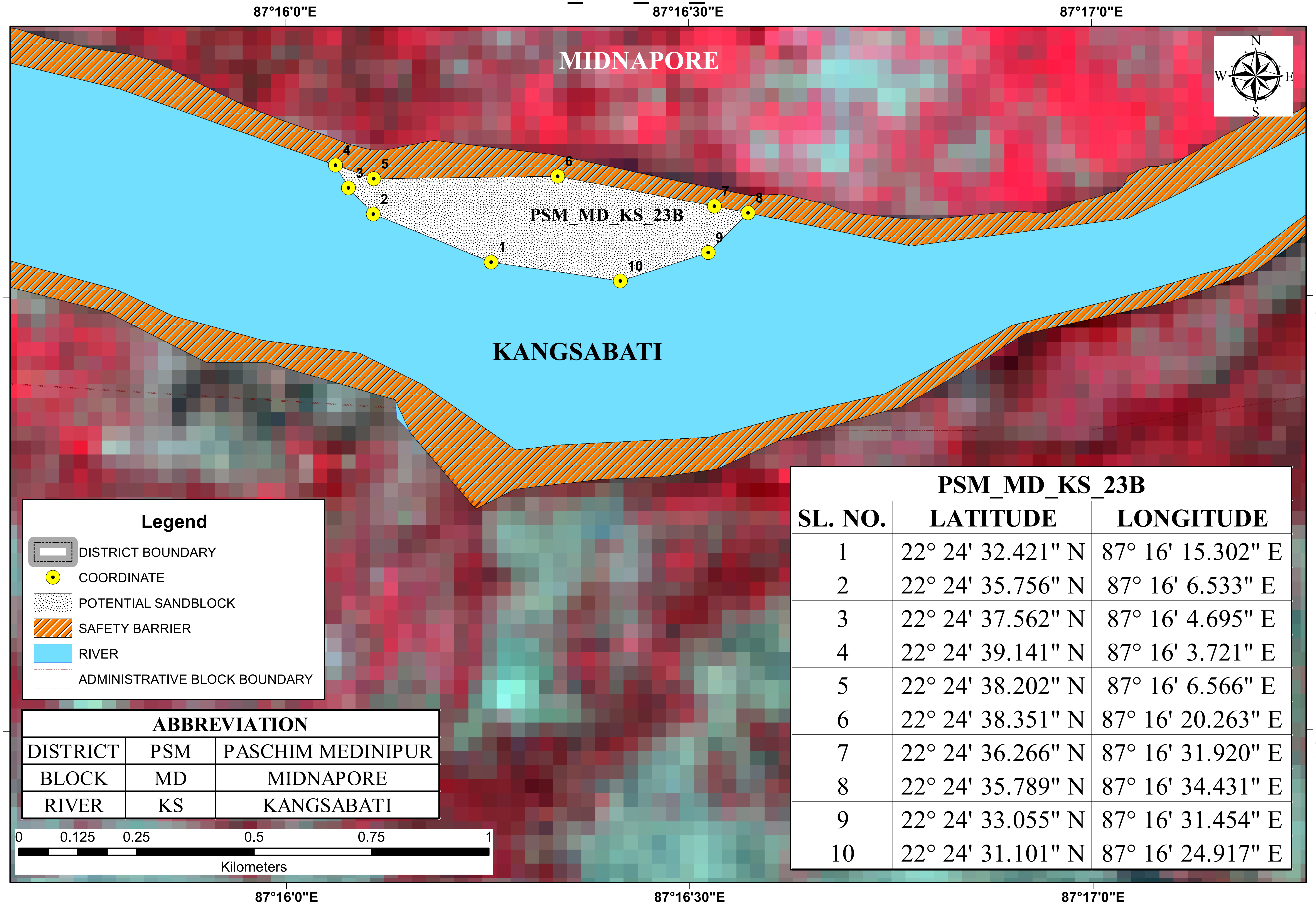
Legend

	DISTRICT BOUNDARY
	COORDINATE
	POTENTIAL SANDBLOCK
	SAFETY BARRIER
	RIVER
	ADMINISTRATIVE BLOCK BOUNDARY

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_23A		
SL. NO.	LATITUDE	LONGITUDE
1	22° 24' 38.031" N	87° 15' 32.310" E
2	22° 24' 37.871" N	87° 15' 25.663" E
3	22° 24' 38.853" N	87° 15' 24.010" E
4	22° 24' 42.214" N	87° 15' 20.685" E
5	22° 24' 44.286" N	87° 15' 16.801" E
6	22° 24' 45.441" N	87° 15' 12.245" E
7	22° 24' 46.488" N	87° 15' 12.620" E
8	22° 24' 53.965" N	87° 14' 54.857" E
9	22° 24' 55.154" N	87° 15' 0.162" E
10	22° 24' 52.300" N	87° 15' 9.320" E
11	22° 24' 48.029" N	87° 15' 16.531" E
12	22° 24' 44.001" N	87° 15' 33.182" E
13	22° 24' 40.052" N	87° 15' 40.981" E

POTENTIAL BLOCK PSM_MD_KS_23B OF KANGSABATI RIVER

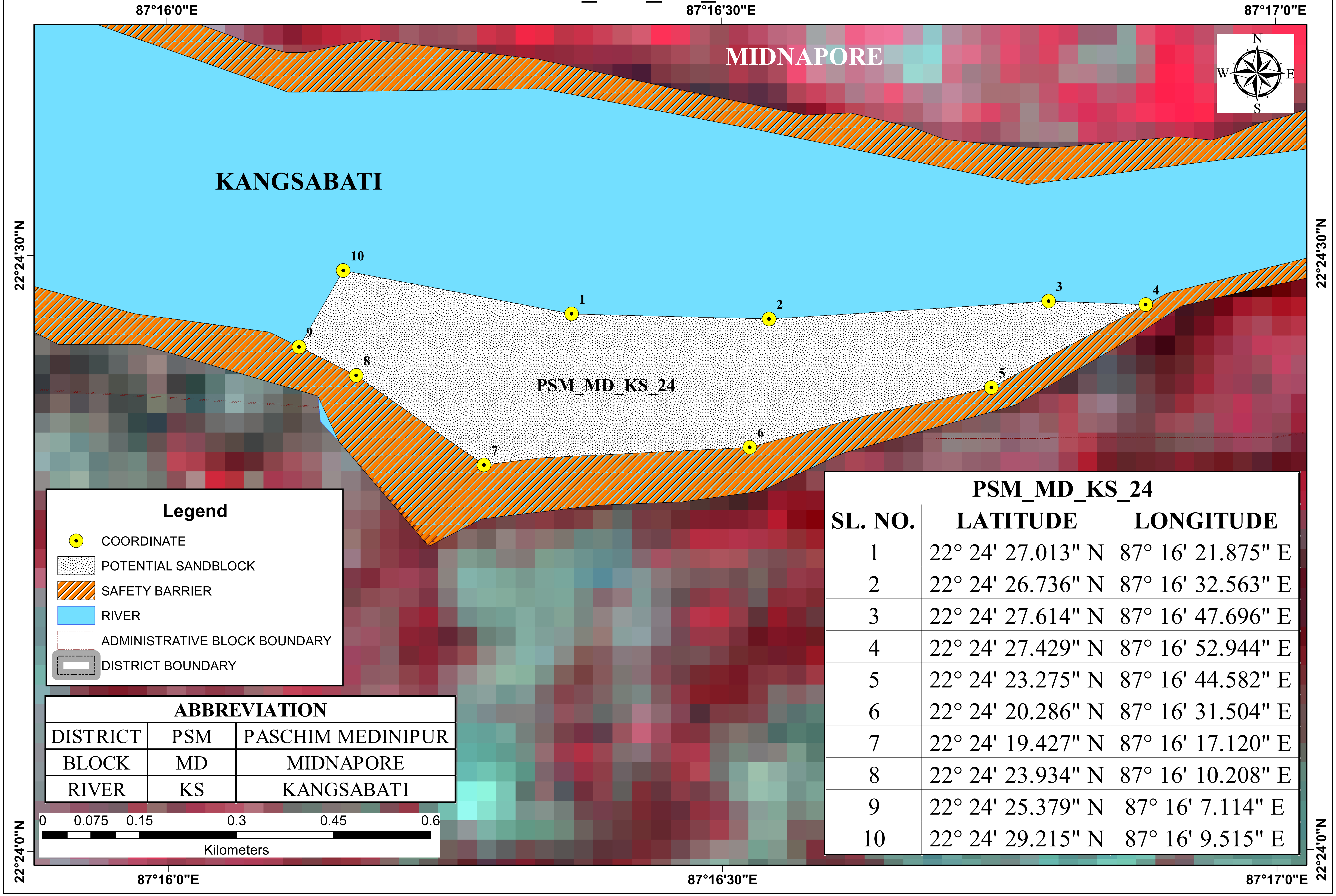


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_23B

SL. NO.	LATITUDE	LONGITUDE
1	22° 24' 32.421" N	87° 16' 15.302" E
2	22° 24' 35.756" N	87° 16' 6.533" E
3	22° 24' 37.562" N	87° 16' 4.695" E
4	22° 24' 39.141" N	87° 16' 3.721" E
5	22° 24' 38.202" N	87° 16' 6.566" E
6	22° 24' 38.351" N	87° 16' 20.263" E
7	22° 24' 36.266" N	87° 16' 31.920" E
8	22° 24' 35.789" N	87° 16' 34.431" E
9	22° 24' 33.055" N	87° 16' 31.454" E
10	22° 24' 31.101" N	87° 16' 24.917" E

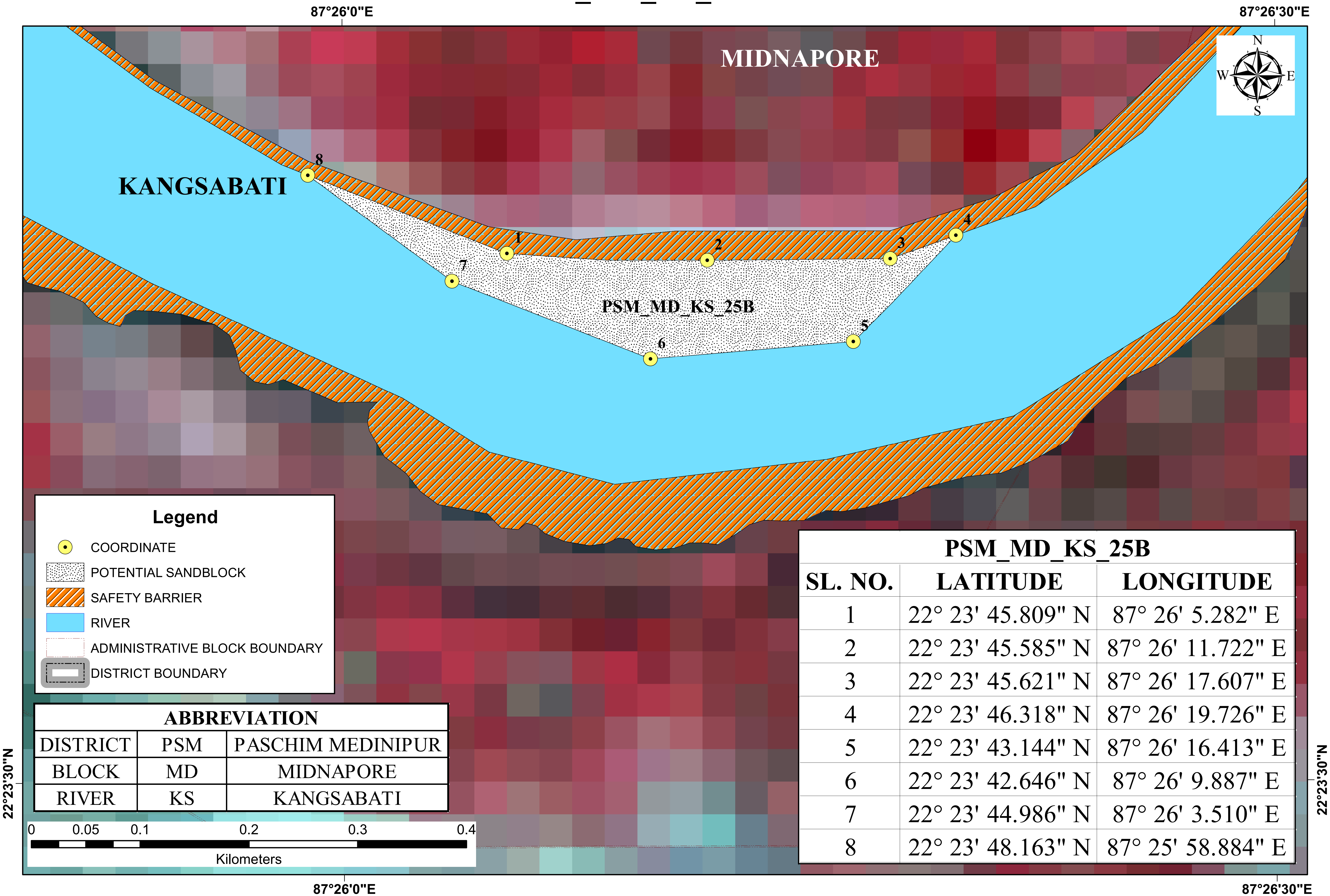
POTENTIAL BLOCK PSM_MD_KS_24 OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_24		
SL. NO.	LATITUDE	LONGITUDE
1	22° 24' 27.013" N	87° 16' 21.875" E
2	22° 24' 26.736" N	87° 16' 32.563" E
3	22° 24' 27.614" N	87° 16' 47.696" E
4	22° 24' 27.429" N	87° 16' 52.944" E
5	22° 24' 23.275" N	87° 16' 44.582" E
6	22° 24' 20.286" N	87° 16' 31.504" E
7	22° 24' 19.427" N	87° 16' 17.120" E
8	22° 24' 23.934" N	87° 16' 10.208" E
9	22° 24' 25.379" N	87° 16' 7.114" E
10	22° 24' 29.215" N	87° 16' 9.515" E

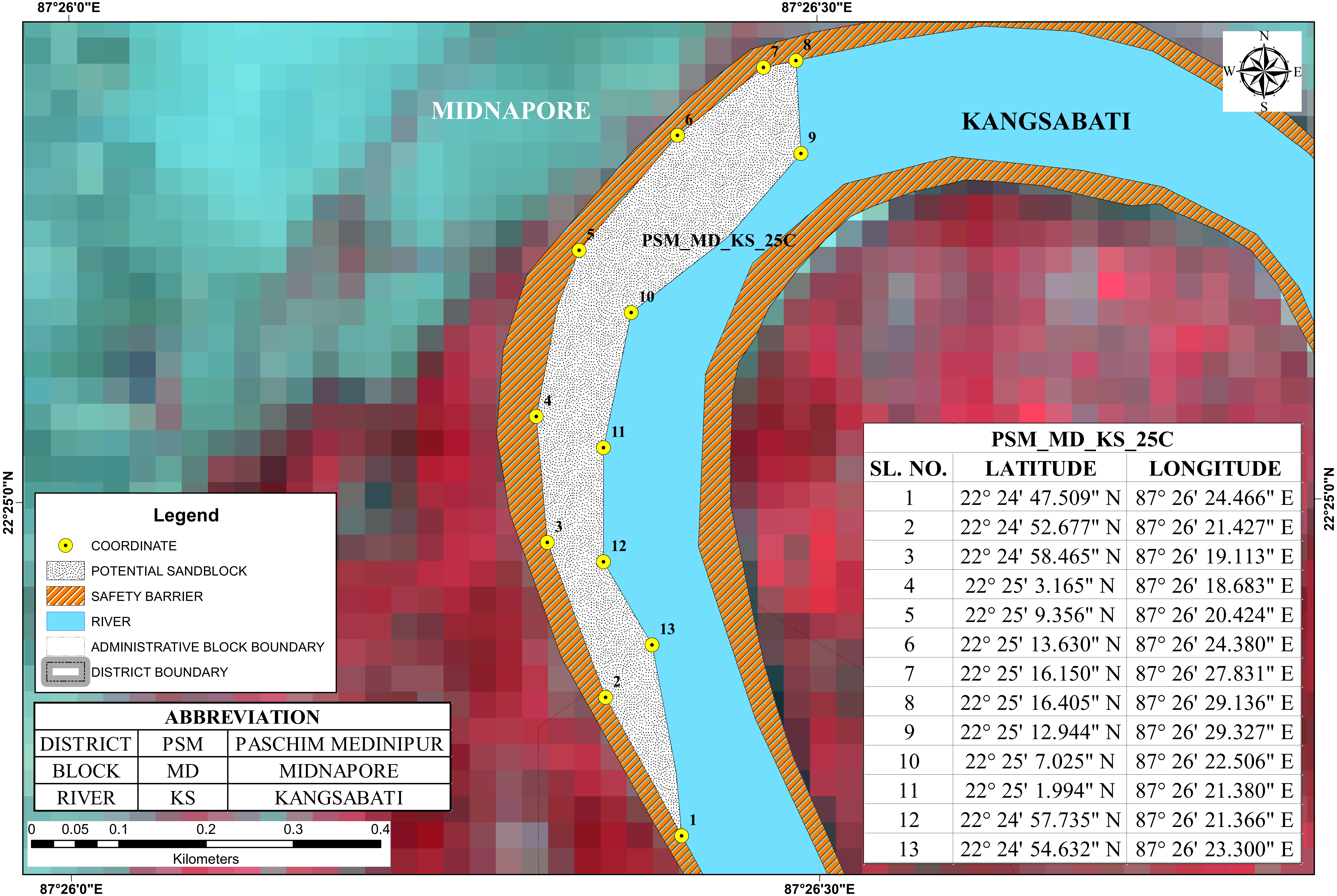
POTENTIAL BLOCK PSM_MD_KS_25B OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_25B		
SL. NO.	LATITUDE	LONGITUDE
1	22° 23' 45.809" N	87° 26' 5.282" E
2	22° 23' 45.585" N	87° 26' 11.722" E
3	22° 23' 45.621" N	87° 26' 17.607" E
4	22° 23' 46.318" N	87° 26' 19.726" E
5	22° 23' 43.144" N	87° 26' 16.413" E
6	22° 23' 42.646" N	87° 26' 9.887" E
7	22° 23' 44.986" N	87° 26' 3.510" E
8	22° 23' 48.163" N	87° 25' 58.884" E

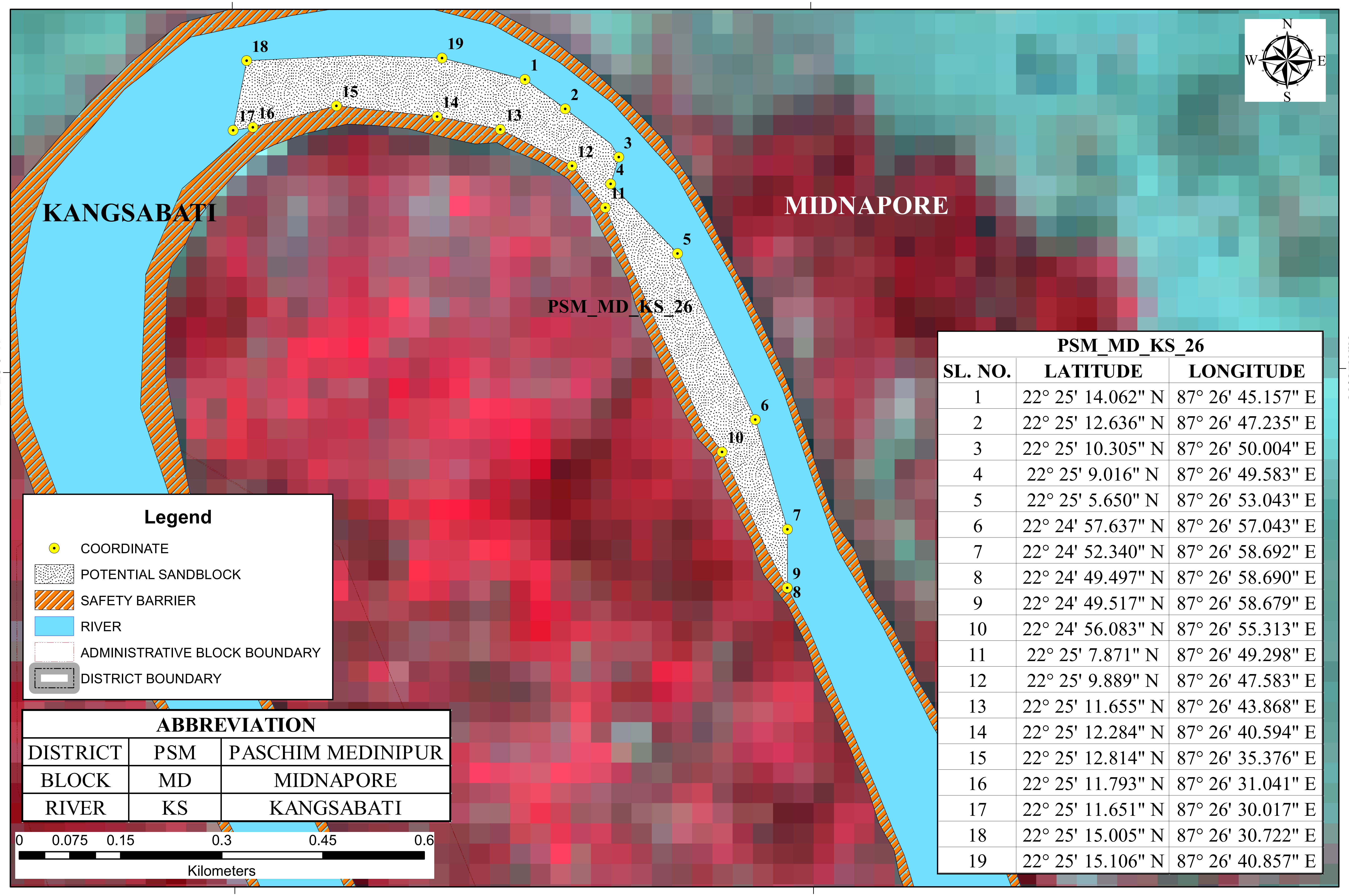
POTENTIAL BLOCK PSM_MD_KS_25C OF KANGSABATI RIVER



PSM_MD_KS_25C		
SL. NO.	LATITUDE	LONGITUDE
1	22° 24' 47.509" N	87° 26' 24.466" E
2	22° 24' 52.677" N	87° 26' 21.427" E
3	22° 24' 58.465" N	87° 26' 19.113" E
4	22° 25' 3.165" N	87° 26' 18.683" E
5	22° 25' 9.356" N	87° 26' 20.424" E
6	22° 25' 13.630" N	87° 26' 24.380" E
7	22° 25' 16.150" N	87° 26' 27.831" E
8	22° 25' 16.405" N	87° 26' 29.136" E
9	22° 25' 12.944" N	87° 26' 29.327" E
10	22° 25' 7.025" N	87° 26' 22.506" E
11	22° 25' 1.994" N	87° 26' 21.380" E
12	22° 24' 57.735" N	87° 26' 21.366" E
13	22° 24' 54.632" N	87° 26' 23.300" E

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

POTENTIAL BLOCK PSM_MD_KS_26 OF KANGSABATI RIVER

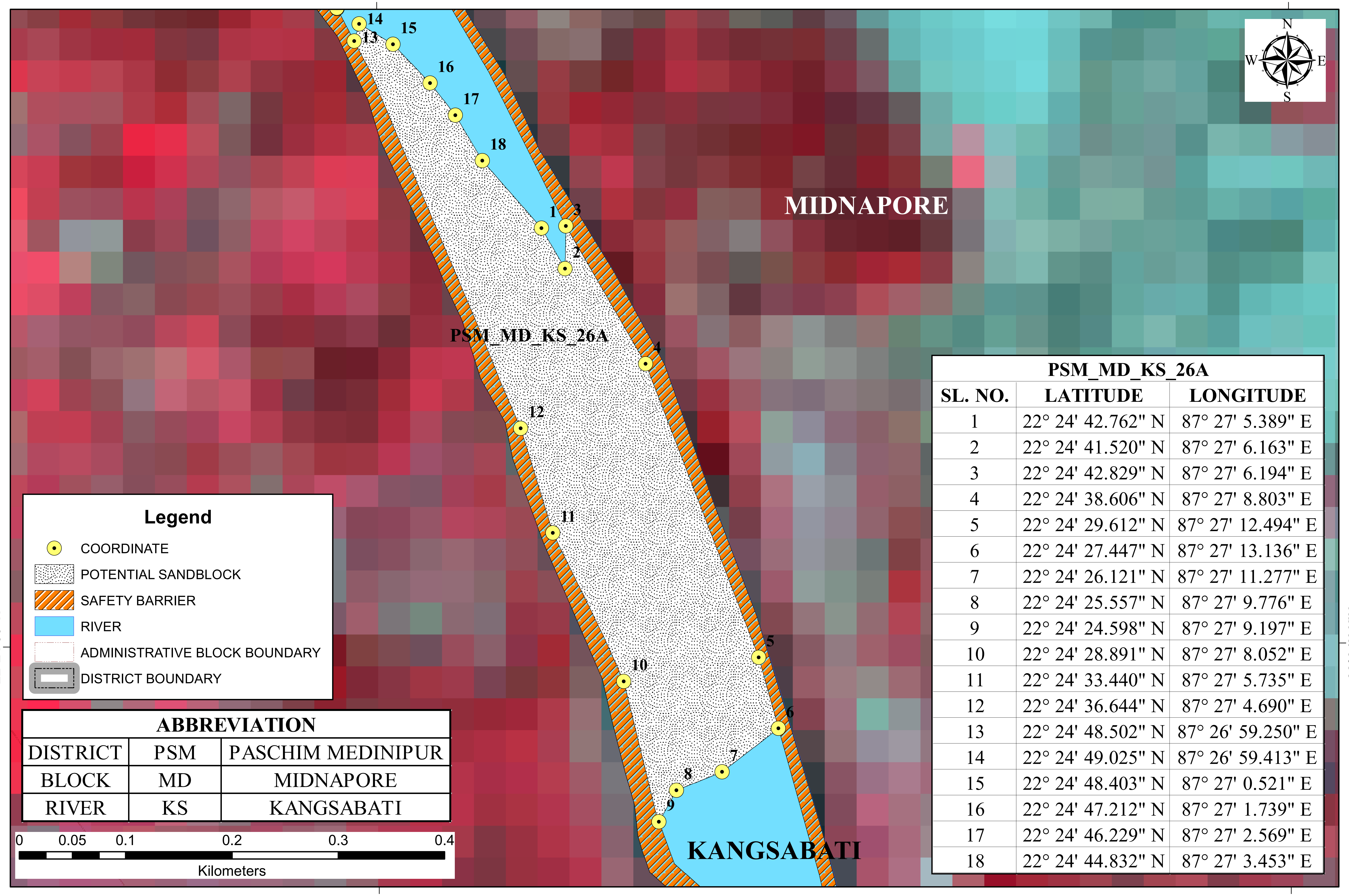


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_26

SL. NO.	LATITUDE	LONGITUDE
1	22° 25' 14.062" N	87° 26' 45.157" E
2	22° 25' 12.636" N	87° 26' 47.235" E
3	22° 25' 10.305" N	87° 26' 50.004" E
4	22° 25' 9.016" N	87° 26' 49.583" E
5	22° 25' 5.650" N	87° 26' 53.043" E
6	22° 24' 57.637" N	87° 26' 57.043" E
7	22° 24' 52.340" N	87° 26' 58.692" E
8	22° 24' 49.497" N	87° 26' 58.690" E
9	22° 24' 49.517" N	87° 26' 58.679" E
10	22° 24' 56.083" N	87° 26' 55.313" E
11	22° 25' 7.871" N	87° 26' 49.298" E
12	22° 25' 9.889" N	87° 26' 47.583" E
13	22° 25' 11.655" N	87° 26' 43.868" E
14	22° 25' 12.284" N	87° 26' 40.594" E
15	22° 25' 12.814" N	87° 26' 35.376" E
16	22° 25' 11.793" N	87° 26' 31.041" E
17	22° 25' 11.651" N	87° 26' 30.017" E
18	22° 25' 15.005" N	87° 26' 30.722" E
19	22° 25' 15.106" N	87° 26' 40.857" E

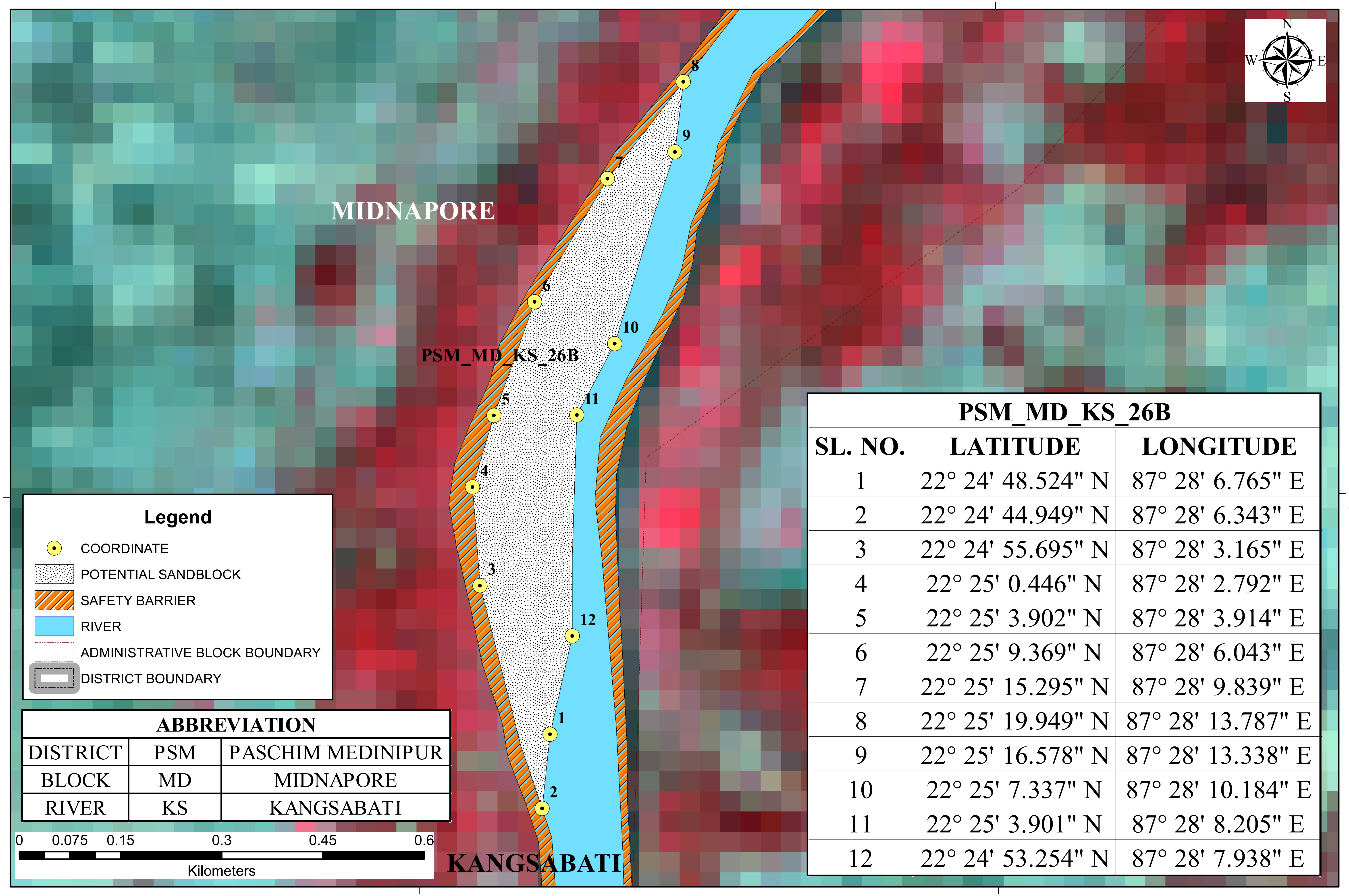
POTENTIAL BLOCK PSM_MD_KS_26A OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_26A		
SL. NO.	LATITUDE	LONGITUDE
1	22° 24' 42.762" N	87° 27' 5.389" E
2	22° 24' 41.520" N	87° 27' 6.163" E
3	22° 24' 42.829" N	87° 27' 6.194" E
4	22° 24' 38.606" N	87° 27' 8.803" E
5	22° 24' 29.612" N	87° 27' 12.494" E
6	22° 24' 27.447" N	87° 27' 13.136" E
7	22° 24' 26.121" N	87° 27' 11.277" E
8	22° 24' 25.557" N	87° 27' 9.776" E
9	22° 24' 24.598" N	87° 27' 9.197" E
10	22° 24' 28.891" N	87° 27' 8.052" E
11	22° 24' 33.440" N	87° 27' 5.735" E
12	22° 24' 36.644" N	87° 27' 4.690" E
13	22° 24' 48.502" N	87° 26' 59.250" E
14	22° 24' 49.025" N	87° 26' 59.413" E
15	22° 24' 48.403" N	87° 27' 0.521" E
16	22° 24' 47.212" N	87° 27' 1.739" E
17	22° 24' 46.229" N	87° 27' 2.569" E
18	22° 24' 44.832" N	87° 27' 3.453" E

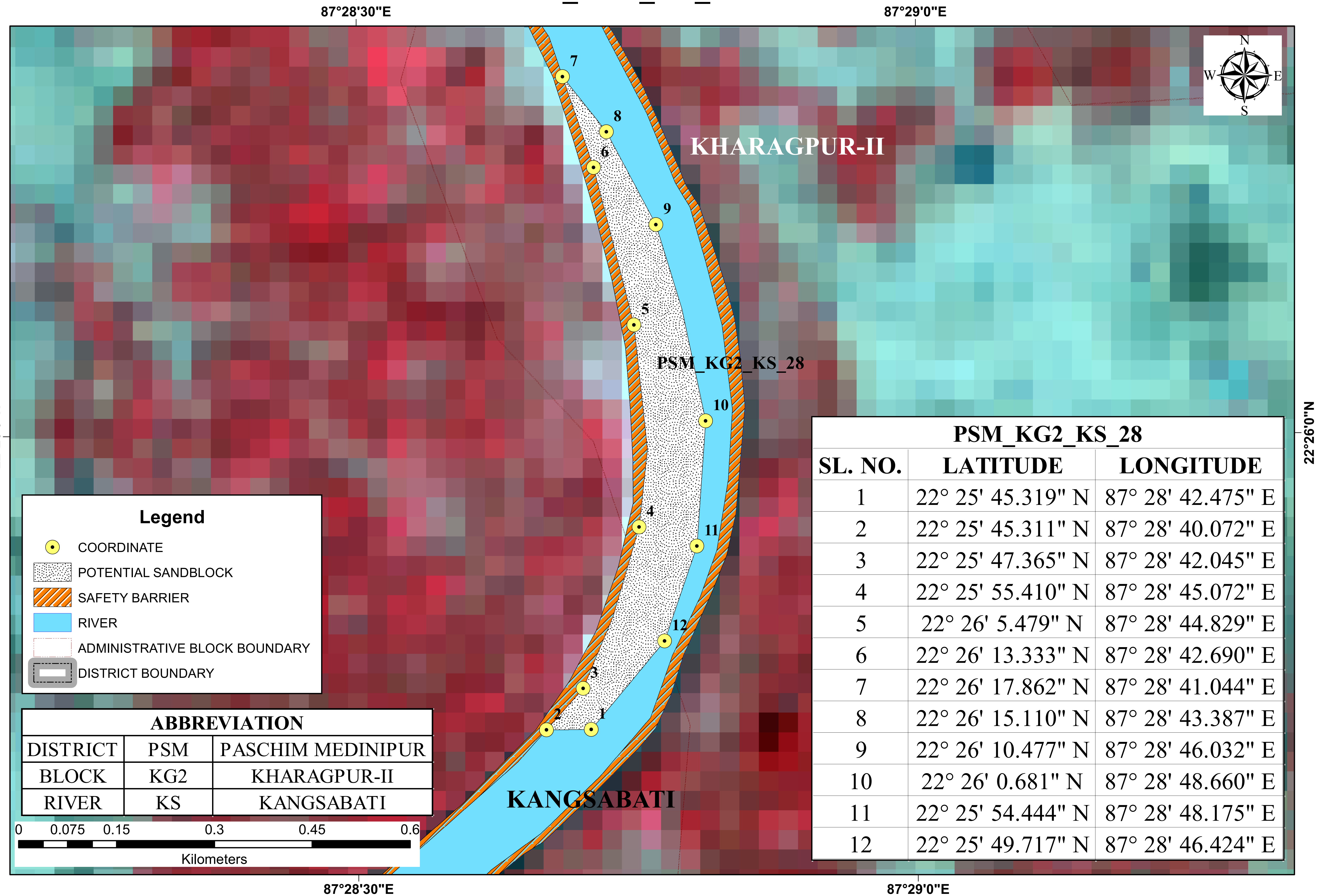
POTENTIAL BLOCK PSM_MD_KS_26B OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_26B		
SL. NO.	LATITUDE	LONGITUDE
1	22° 24' 48.524" N	87° 28' 6.765" E
2	22° 24' 44.949" N	87° 28' 6.343" E
3	22° 24' 55.695" N	87° 28' 3.165" E
4	22° 25' 0.446" N	87° 28' 2.792" E
5	22° 25' 3.902" N	87° 28' 3.914" E
6	22° 25' 9.369" N	87° 28' 6.043" E
7	22° 25' 15.295" N	87° 28' 9.839" E
8	22° 25' 19.949" N	87° 28' 13.787" E
9	22° 25' 16.578" N	87° 28' 13.338" E
10	22° 25' 7.337" N	87° 28' 10.184" E
11	22° 25' 3.901" N	87° 28' 8.205" E
12	22° 24' 53.254" N	87° 28' 7.938" E

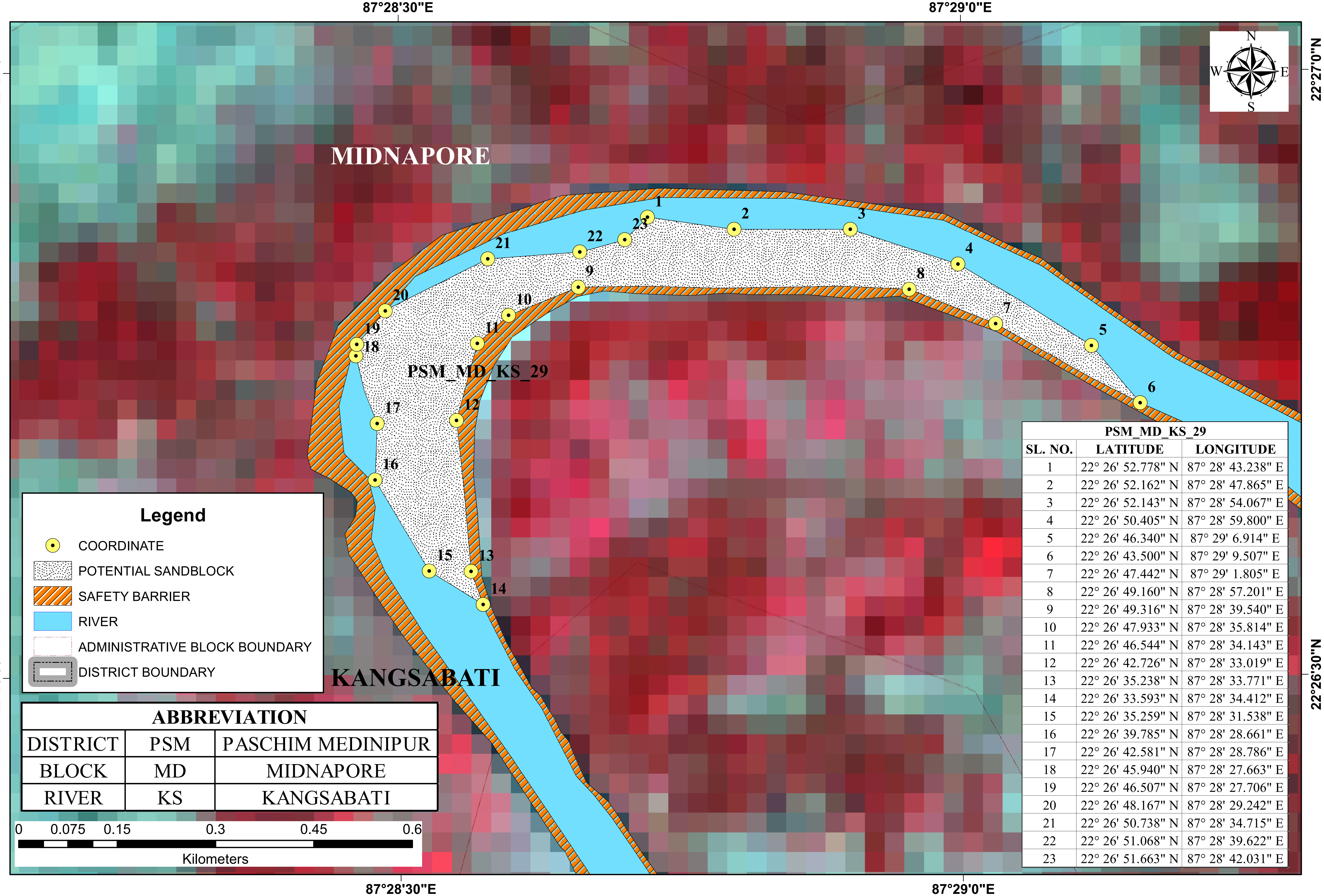
POTENTIAL BLOCK PSM_KG2_KS_28 OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KG2	KHARAGPUR-II
RIVER	KS	KANGSABATI

PSM_KG2_KS_28		
SL. NO.	LATITUDE	LONGITUDE
1	22° 25' 45.319" N	87° 28' 42.475" E
2	22° 25' 45.311" N	87° 28' 40.072" E
3	22° 25' 47.365" N	87° 28' 42.045" E
4	22° 25' 55.410" N	87° 28' 45.072" E
5	22° 26' 5.479" N	87° 28' 44.829" E
6	22° 26' 13.333" N	87° 28' 42.690" E
7	22° 26' 17.862" N	87° 28' 41.044" E
8	22° 26' 15.110" N	87° 28' 43.387" E
9	22° 26' 10.477" N	87° 28' 46.032" E
10	22° 26' 0.681" N	87° 28' 48.660" E
11	22° 25' 54.444" N	87° 28' 48.175" E
12	22° 25' 49.717" N	87° 28' 46.424" E

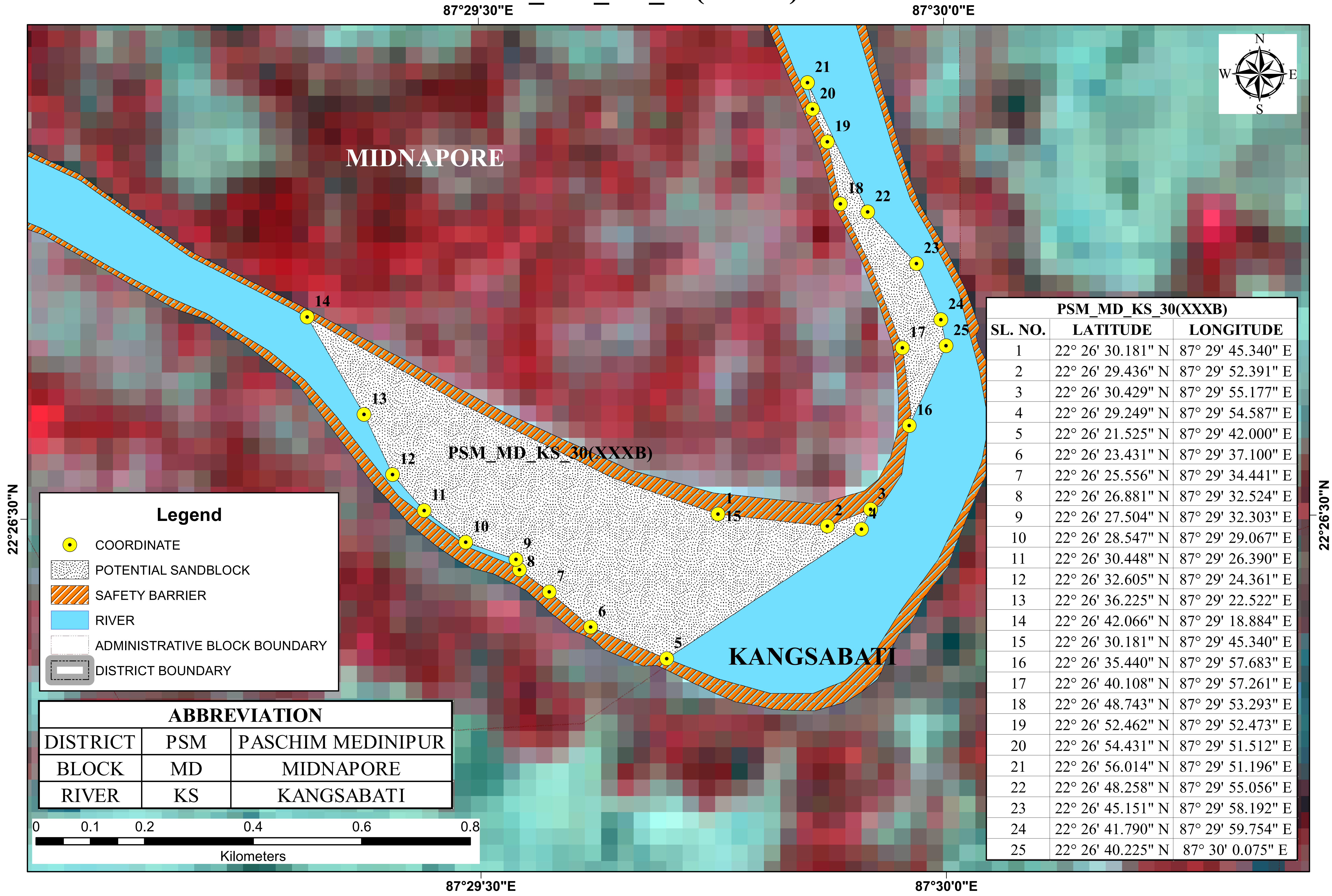
POTENTIAL BLOCK PSM_MD_KS_29 OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_29		
SL. NO.	LATITUDE	LONGITUDE
1	22° 26' 52.778" N	87° 28' 43.238" E
2	22° 26' 52.162" N	87° 28' 47.865" E
3	22° 26' 52.143" N	87° 28' 54.067" E
4	22° 26' 50.405" N	87° 28' 59.800" E
5	22° 26' 46.340" N	87° 29' 6.914" E
6	22° 26' 43.500" N	87° 29' 9.507" E
7	22° 26' 47.442" N	87° 29' 1.805" E
8	22° 26' 49.160" N	87° 28' 57.201" E
9	22° 26' 49.316" N	87° 28' 39.540" E
10	22° 26' 47.933" N	87° 28' 35.814" E
11	22° 26' 46.544" N	87° 28' 34.143" E
12	22° 26' 42.726" N	87° 28' 33.019" E
13	22° 26' 35.238" N	87° 28' 33.771" E
14	22° 26' 33.593" N	87° 28' 34.412" E
15	22° 26' 35.259" N	87° 28' 31.538" E
16	22° 26' 39.785" N	87° 28' 28.661" E
17	22° 26' 42.581" N	87° 28' 28.786" E
18	22° 26' 45.940" N	87° 28' 27.663" E
19	22° 26' 46.507" N	87° 28' 27.706" E
20	22° 26' 48.167" N	87° 28' 29.242" E
21	22° 26' 50.738" N	87° 28' 34.715" E
22	22° 26' 51.068" N	87° 28' 39.622" E
23	22° 26' 51.663" N	87° 28' 42.031" E

POTENTIAL BLOCK PSM_MD_KS_30(XXXB) OF KANGSABATI RIVER



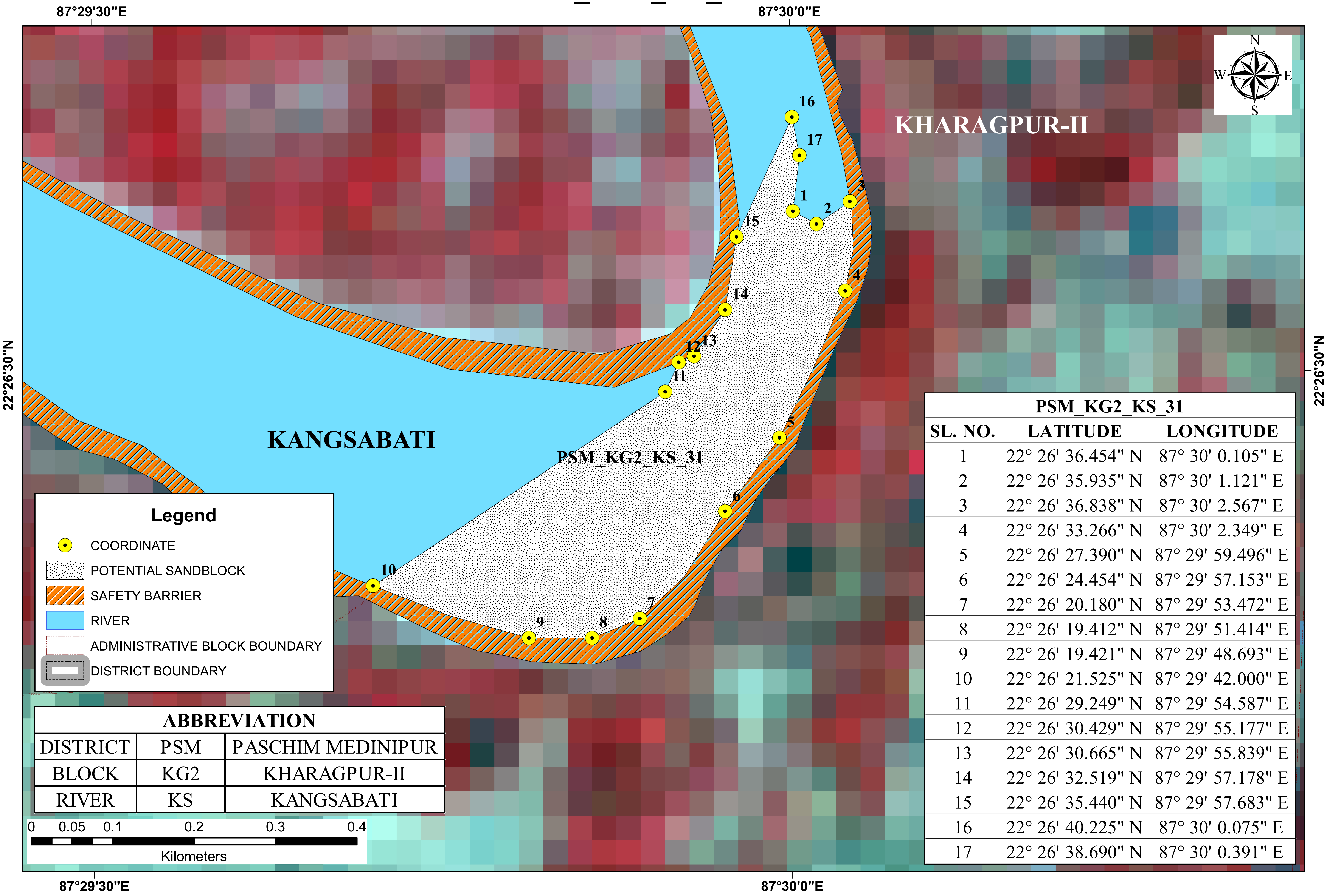
ABBREVIATION

DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_30(XXXB)

SL. NO.	LATITUDE	LONGITUDE
1	22° 26' 30.181" N	87° 29' 45.340" E
2	22° 26' 29.436" N	87° 29' 52.391" E
3	22° 26' 30.429" N	87° 29' 55.177" E
4	22° 26' 29.249" N	87° 29' 54.587" E
5	22° 26' 21.525" N	87° 29' 42.000" E
6	22° 26' 23.431" N	87° 29' 37.100" E
7	22° 26' 25.556" N	87° 29' 34.441" E
8	22° 26' 26.881" N	87° 29' 32.524" E
9	22° 26' 27.504" N	87° 29' 32.303" E
10	22° 26' 28.547" N	87° 29' 29.067" E
11	22° 26' 30.448" N	87° 29' 26.390" E
12	22° 26' 32.605" N	87° 29' 24.361" E
13	22° 26' 36.225" N	87° 29' 22.522" E
14	22° 26' 42.066" N	87° 29' 18.884" E
15	22° 26' 30.181" N	87° 29' 45.340" E
16	22° 26' 35.440" N	87° 29' 57.683" E
17	22° 26' 40.108" N	87° 29' 57.261" E
18	22° 26' 48.743" N	87° 29' 53.293" E
19	22° 26' 52.462" N	87° 29' 52.473" E
20	22° 26' 54.431" N	87° 29' 51.512" E
21	22° 26' 56.014" N	87° 29' 51.196" E
22	22° 26' 48.258" N	87° 29' 55.056" E
23	22° 26' 45.151" N	87° 29' 58.192" E
24	22° 26' 41.790" N	87° 29' 59.754" E
25	22° 26' 40.225" N	87° 30' 0.075" E

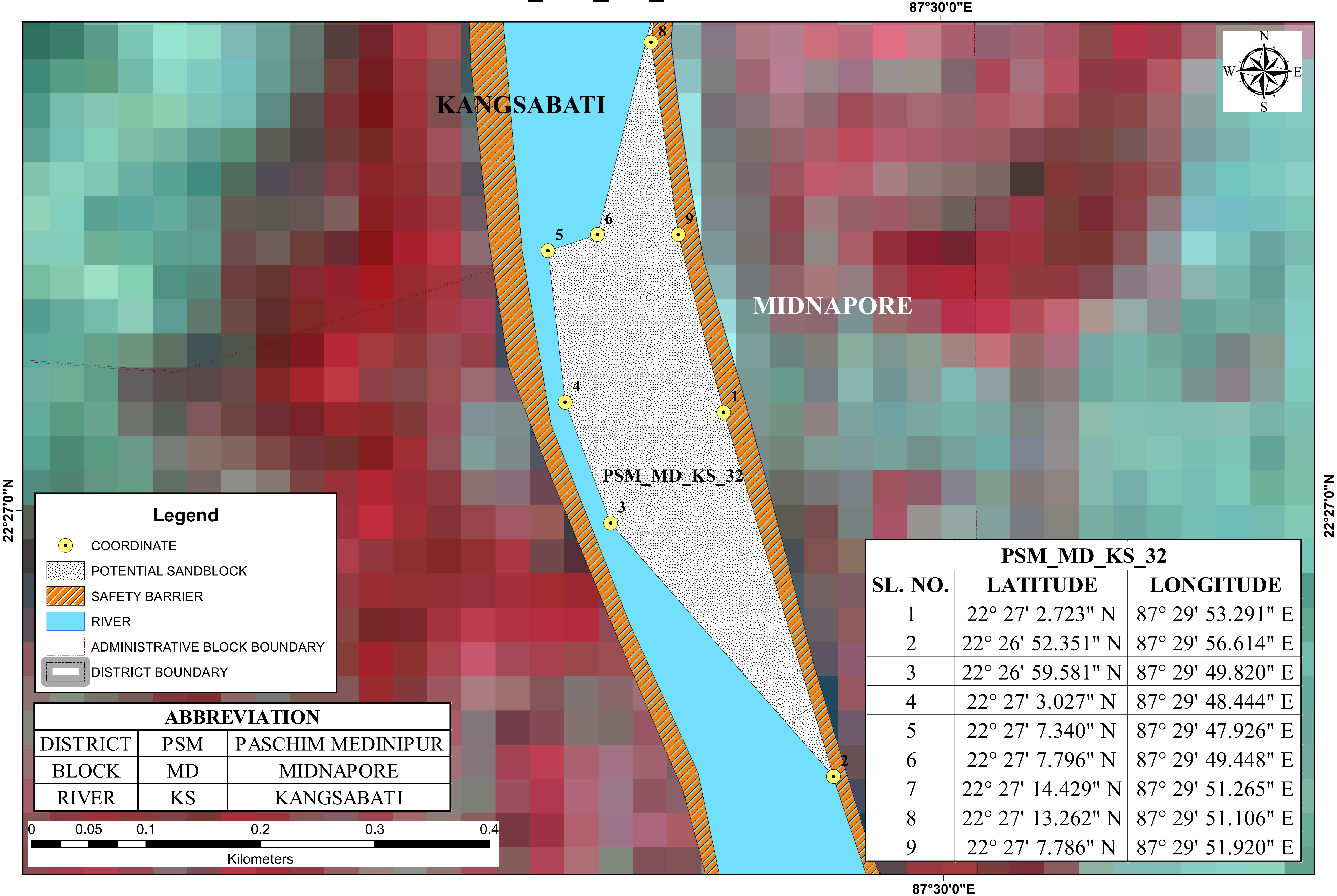
POTENTIAL BLOCK PSM_KG2_KS_31 OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KG2	KHARAGPUR-II
RIVER	KS	KANGSABATI

PSM_KG2_KS_31		
SL. NO.	LATITUDE	LONGITUDE
1	22° 26' 36.454" N	87° 30' 0.105" E
2	22° 26' 35.935" N	87° 30' 1.121" E
3	22° 26' 36.838" N	87° 30' 2.567" E
4	22° 26' 33.266" N	87° 30' 2.349" E
5	22° 26' 27.390" N	87° 29' 59.496" E
6	22° 26' 24.454" N	87° 29' 57.153" E
7	22° 26' 20.180" N	87° 29' 53.472" E
8	22° 26' 19.412" N	87° 29' 51.414" E
9	22° 26' 19.421" N	87° 29' 48.693" E
10	22° 26' 21.525" N	87° 29' 42.000" E
11	22° 26' 29.249" N	87° 29' 54.587" E
12	22° 26' 30.429" N	87° 29' 55.177" E
13	22° 26' 30.665" N	87° 29' 55.839" E
14	22° 26' 32.519" N	87° 29' 57.178" E
15	22° 26' 35.440" N	87° 29' 57.683" E
16	22° 26' 40.225" N	87° 30' 0.075" E
17	22° 26' 38.690" N	87° 30' 0.391" E

POTENTIAL BLOCK PSM_MD_KS_32 OF KANGSABATI RIVER

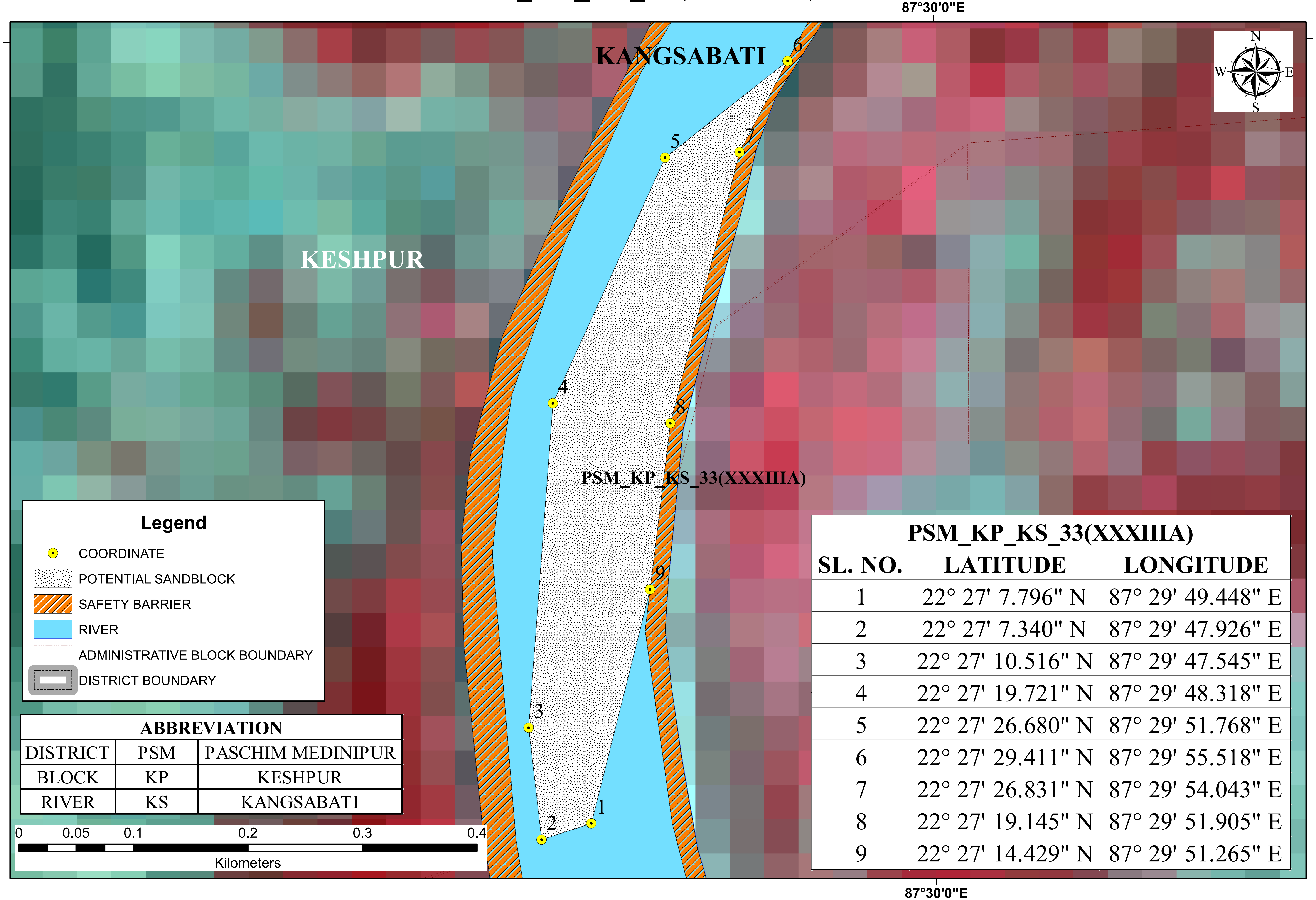


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	MD	MIDNAPORE
RIVER	KS	KANGSABATI

PSM_MD_KS_32

SL. NO.	LATITUDE	LONGITUDE
1	22° 27' 2.723" N	87° 29' 53.291" E
2	22° 26' 52.351" N	87° 29' 56.614" E
3	22° 26' 59.581" N	87° 29' 49.820" E
4	22° 27' 3.027" N	87° 29' 48.444" E
5	22° 27' 7.340" N	87° 29' 47.926" E
6	22° 27' 7.796" N	87° 29' 49.448" E
7	22° 27' 14.429" N	87° 29' 51.265" E
8	22° 27' 13.262" N	87° 29' 51.106" E
9	22° 27' 7.786" N	87° 29' 51.920" E

POTENTIAL BLOCK PSM_KP_KS_33(XXXIIIA) OF KANGSABATI RIVER

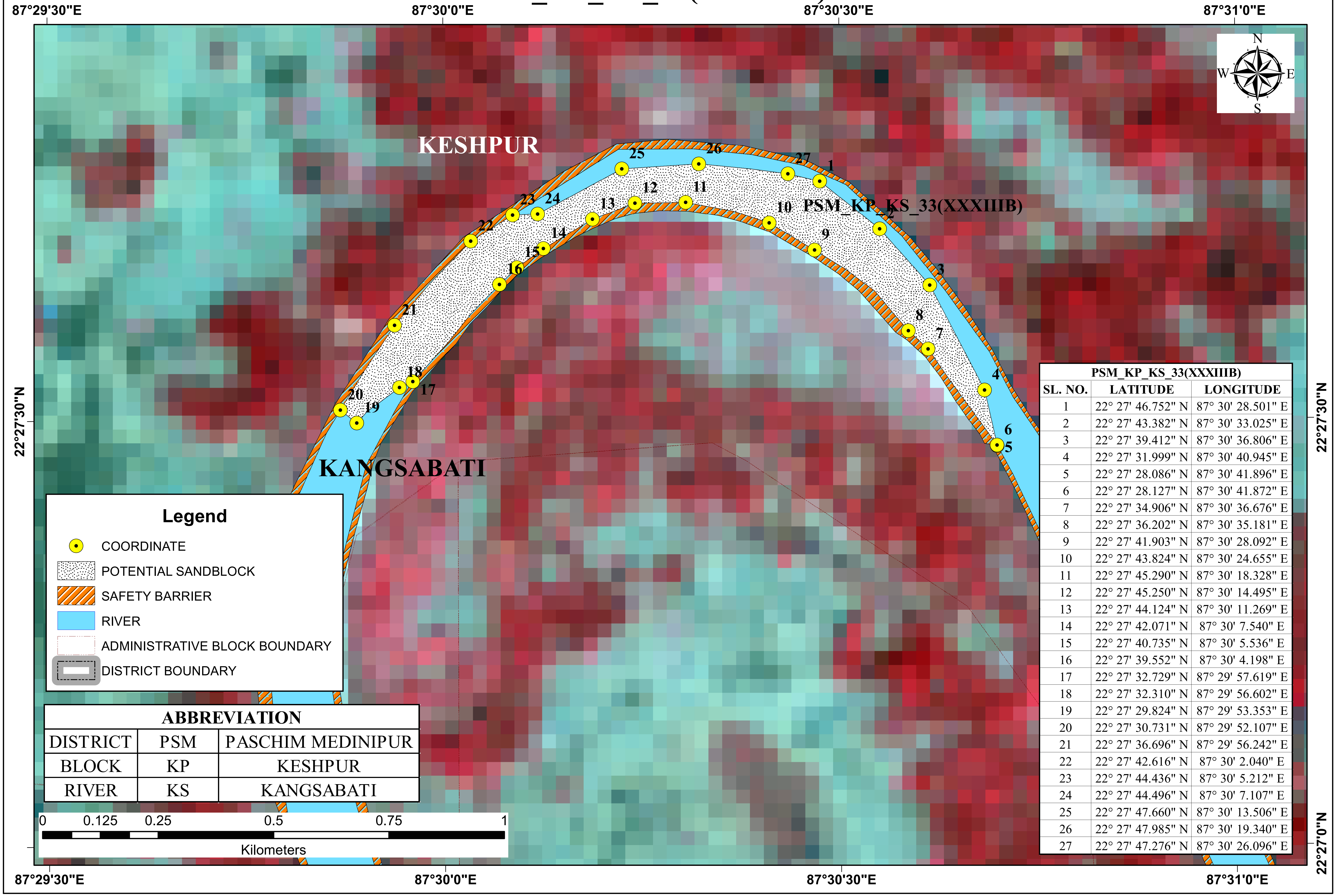


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KP	KESHPUR
RIVER	KS	KANGSABATI

PSM_KP_KS_33(XXXIIIA)

SL. NO.	LATITUDE	LONGITUDE
1	22° 27' 7.796" N	87° 29' 49.448" E
2	22° 27' 7.340" N	87° 29' 47.926" E
3	22° 27' 10.516" N	87° 29' 47.545" E
4	22° 27' 19.721" N	87° 29' 48.318" E
5	22° 27' 26.680" N	87° 29' 51.768" E
6	22° 27' 29.411" N	87° 29' 55.518" E
7	22° 27' 26.831" N	87° 29' 54.043" E
8	22° 27' 19.145" N	87° 29' 51.905" E
9	22° 27' 14.429" N	87° 29' 51.265" E

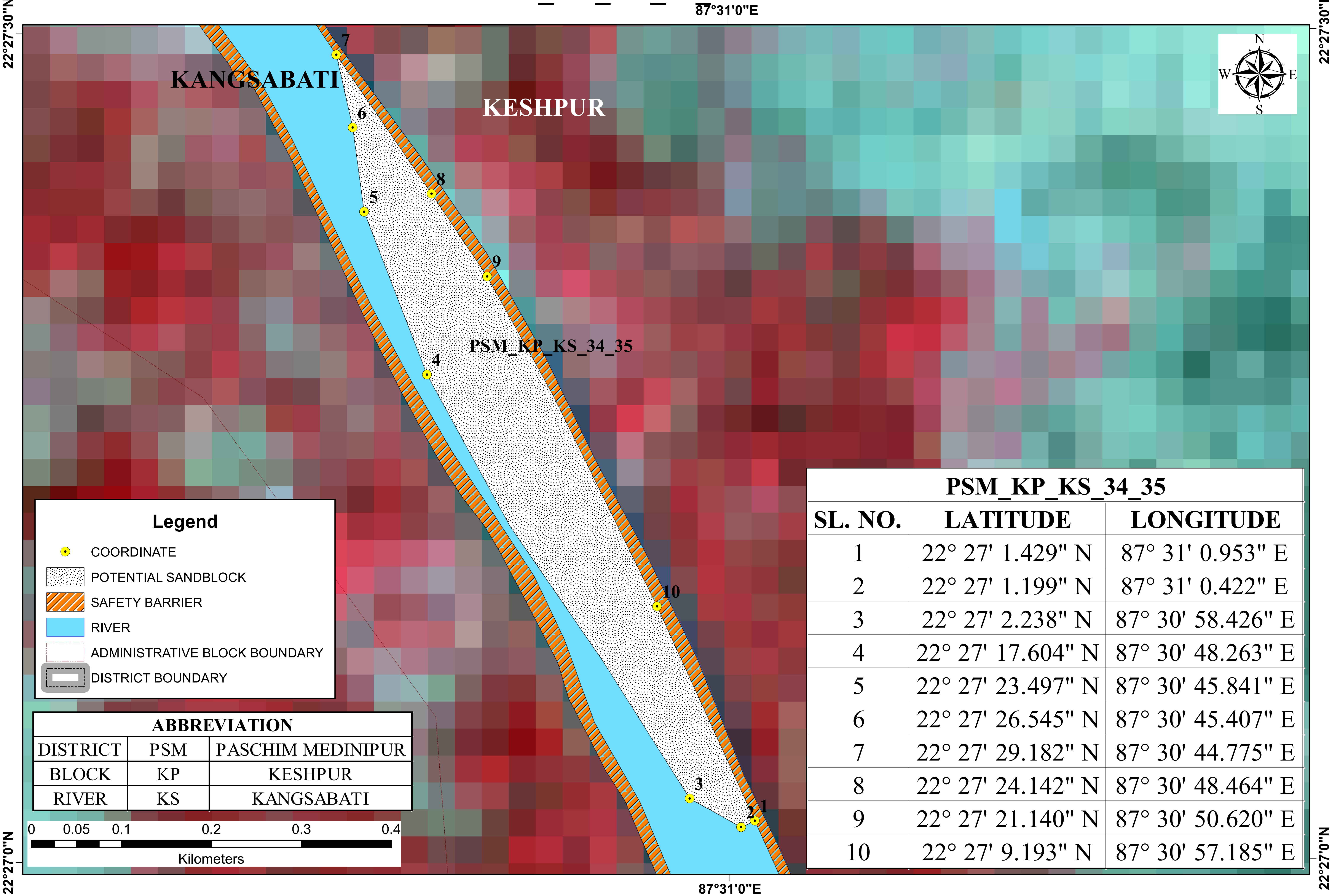
POTENTIAL BLOCK PSM_KP_KS_33(XXXIIIB) OF KANGSABATI RIVER



PSM_KP_KS_33(XXXIIIB)		
SL. NO.	LATITUDE	LONGITUDE
1	22° 27' 46.752" N	87° 30' 28.501" E
2	22° 27' 43.382" N	87° 30' 33.025" E
3	22° 27' 39.412" N	87° 30' 36.806" E
4	22° 27' 31.999" N	87° 30' 40.945" E
5	22° 27' 28.086" N	87° 30' 41.896" E
6	22° 27' 28.127" N	87° 30' 41.872" E
7	22° 27' 34.906" N	87° 30' 36.676" E
8	22° 27' 36.202" N	87° 30' 35.181" E
9	22° 27' 41.903" N	87° 30' 28.092" E
10	22° 27' 43.824" N	87° 30' 24.655" E
11	22° 27' 45.290" N	87° 30' 18.328" E
12	22° 27' 45.250" N	87° 30' 14.495" E
13	22° 27' 44.124" N	87° 30' 11.269" E
14	22° 27' 42.071" N	87° 30' 7.540" E
15	22° 27' 40.735" N	87° 30' 5.536" E
16	22° 27' 39.552" N	87° 30' 4.198" E
17	22° 27' 32.729" N	87° 29' 57.619" E
18	22° 27' 32.310" N	87° 29' 56.602" E
19	22° 27' 29.824" N	87° 29' 53.353" E
20	22° 27' 30.731" N	87° 29' 52.107" E
21	22° 27' 36.696" N	87° 29' 56.242" E
22	22° 27' 42.616" N	87° 30' 2.040" E
23	22° 27' 44.436" N	87° 30' 5.212" E
24	22° 27' 44.496" N	87° 30' 7.107" E
25	22° 27' 47.660" N	87° 30' 13.506" E
26	22° 27' 47.985" N	87° 30' 19.340" E
27	22° 27' 47.276" N	87° 30' 26.096" E

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KP	KESHPUR
RIVER	KS	KANGSABATI

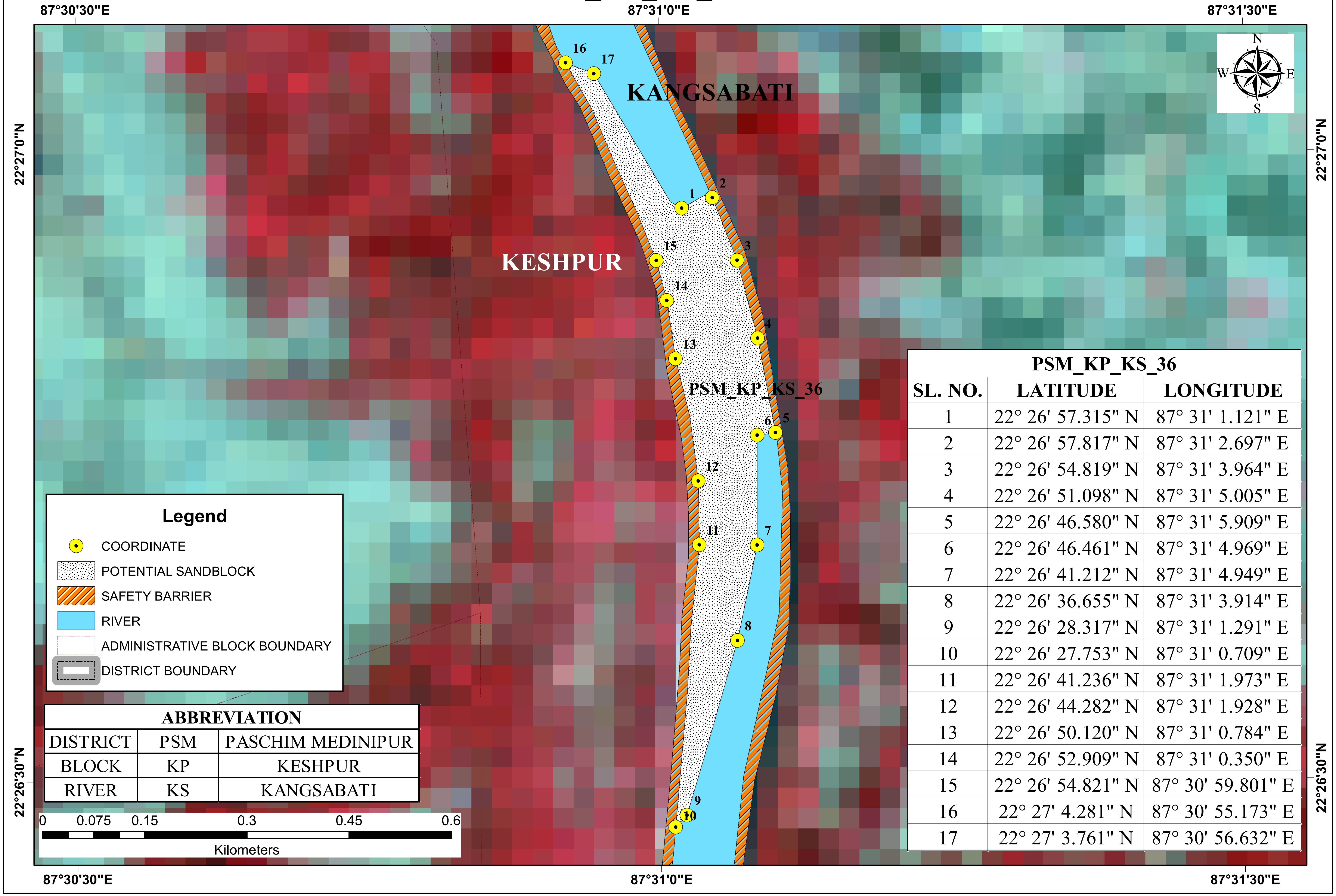
POTENTIAL BLOCK PSM_KP_KS_34_35 OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KP	KESHPUR
RIVER	KS	KANGSABATI

PSM_KP_KS_34_35		
SL. NO.	LATITUDE	LONGITUDE
1	22° 27' 1.429" N	87° 31' 0.953" E
2	22° 27' 1.199" N	87° 31' 0.422" E
3	22° 27' 2.238" N	87° 30' 58.426" E
4	22° 27' 17.604" N	87° 30' 48.263" E
5	22° 27' 23.497" N	87° 30' 45.841" E
6	22° 27' 26.545" N	87° 30' 45.407" E
7	22° 27' 29.182" N	87° 30' 44.775" E
8	22° 27' 24.142" N	87° 30' 48.464" E
9	22° 27' 21.140" N	87° 30' 50.620" E
10	22° 27' 9.193" N	87° 30' 57.185" E

POTENTIAL BLOCK PSM_KP_KS_36 OF KANGSABATI RIVER



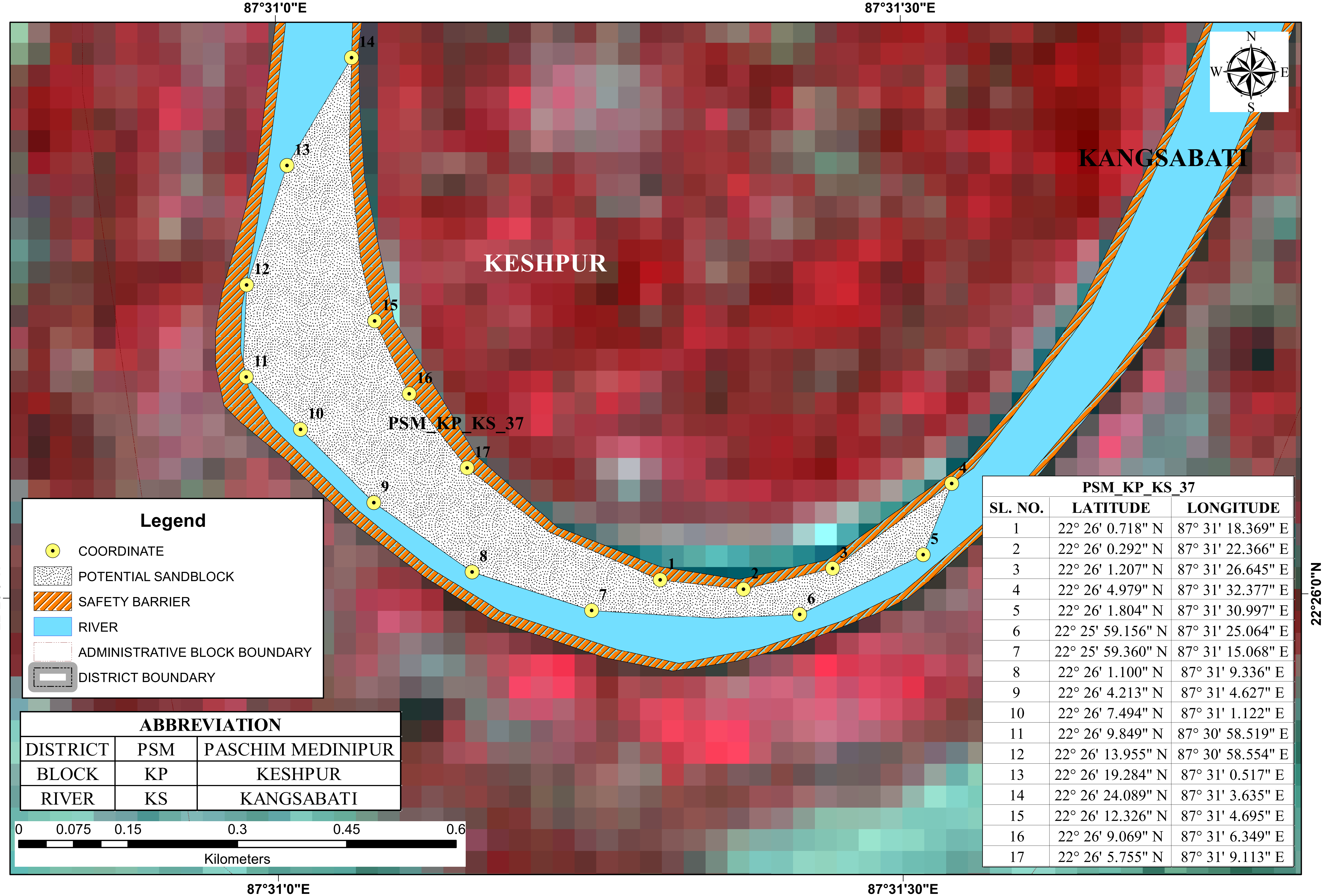
ABBREVIATION

DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KP	KESHPUR
RIVER	KS	KANGSABATI

PSM_KP_KS_36

SL. NO.	LATITUDE	LONGITUDE
1	22° 26' 57.315" N	87° 31' 1.121" E
2	22° 26' 57.817" N	87° 31' 2.697" E
3	22° 26' 54.819" N	87° 31' 3.964" E
4	22° 26' 51.098" N	87° 31' 5.005" E
5	22° 26' 46.580" N	87° 31' 5.909" E
6	22° 26' 46.461" N	87° 31' 4.969" E
7	22° 26' 41.212" N	87° 31' 4.949" E
8	22° 26' 36.655" N	87° 31' 3.914" E
9	22° 26' 28.317" N	87° 31' 1.291" E
10	22° 26' 27.753" N	87° 31' 0.709" E
11	22° 26' 41.236" N	87° 31' 1.973" E
12	22° 26' 44.282" N	87° 31' 1.928" E
13	22° 26' 50.120" N	87° 31' 0.784" E
14	22° 26' 52.909" N	87° 31' 0.350" E
15	22° 26' 54.821" N	87° 30' 59.801" E
16	22° 27' 4.281" N	87° 30' 55.173" E
17	22° 27' 3.761" N	87° 30' 56.632" E

POTENTIAL BLOCK PSM_KP_KS_37 OF KANGSABATI RIVER

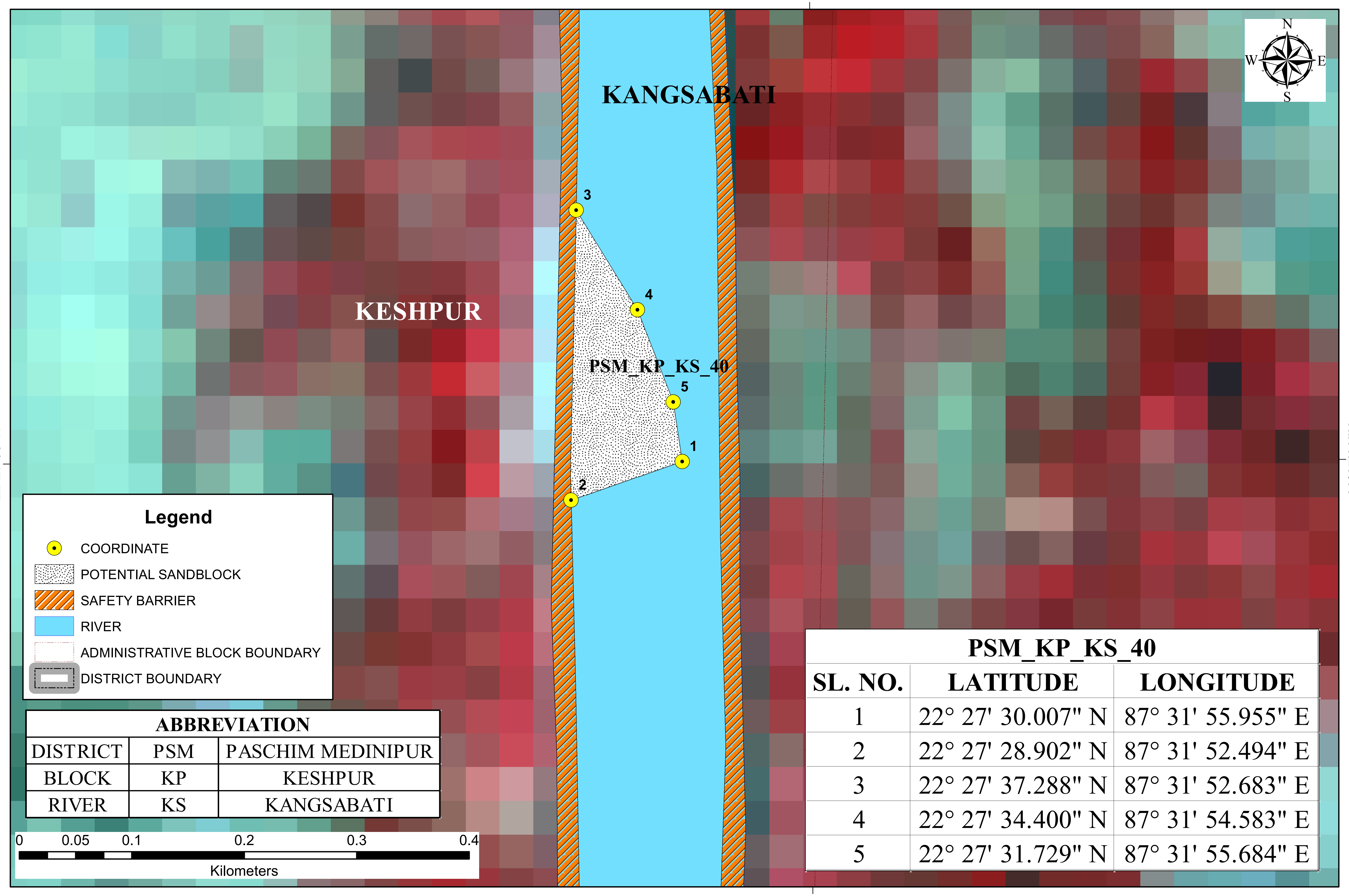


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KP	KESHPUR
RIVER	KS	KANGSABATI

PSM_KP_KS_37

SL. NO.	LATITUDE	LONGITUDE
1	22° 26' 0.718" N	87° 31' 18.369" E
2	22° 26' 0.292" N	87° 31' 22.366" E
3	22° 26' 1.207" N	87° 31' 26.645" E
4	22° 26' 4.979" N	87° 31' 32.377" E
5	22° 26' 1.804" N	87° 31' 30.997" E
6	22° 25' 59.156" N	87° 31' 25.064" E
7	22° 25' 59.360" N	87° 31' 15.068" E
8	22° 26' 1.100" N	87° 31' 9.336" E
9	22° 26' 4.213" N	87° 31' 4.627" E
10	22° 26' 7.494" N	87° 31' 1.122" E
11	22° 26' 9.849" N	87° 30' 58.519" E
12	22° 26' 13.955" N	87° 30' 58.554" E
13	22° 26' 19.284" N	87° 31' 0.517" E
14	22° 26' 24.089" N	87° 31' 3.635" E
15	22° 26' 12.326" N	87° 31' 4.695" E
16	22° 26' 9.069" N	87° 31' 6.349" E
17	22° 26' 5.755" N	87° 31' 9.113" E

POTENTIAL BLOCK PSM_KP_KS_40 OF KANGSABATI RIVER

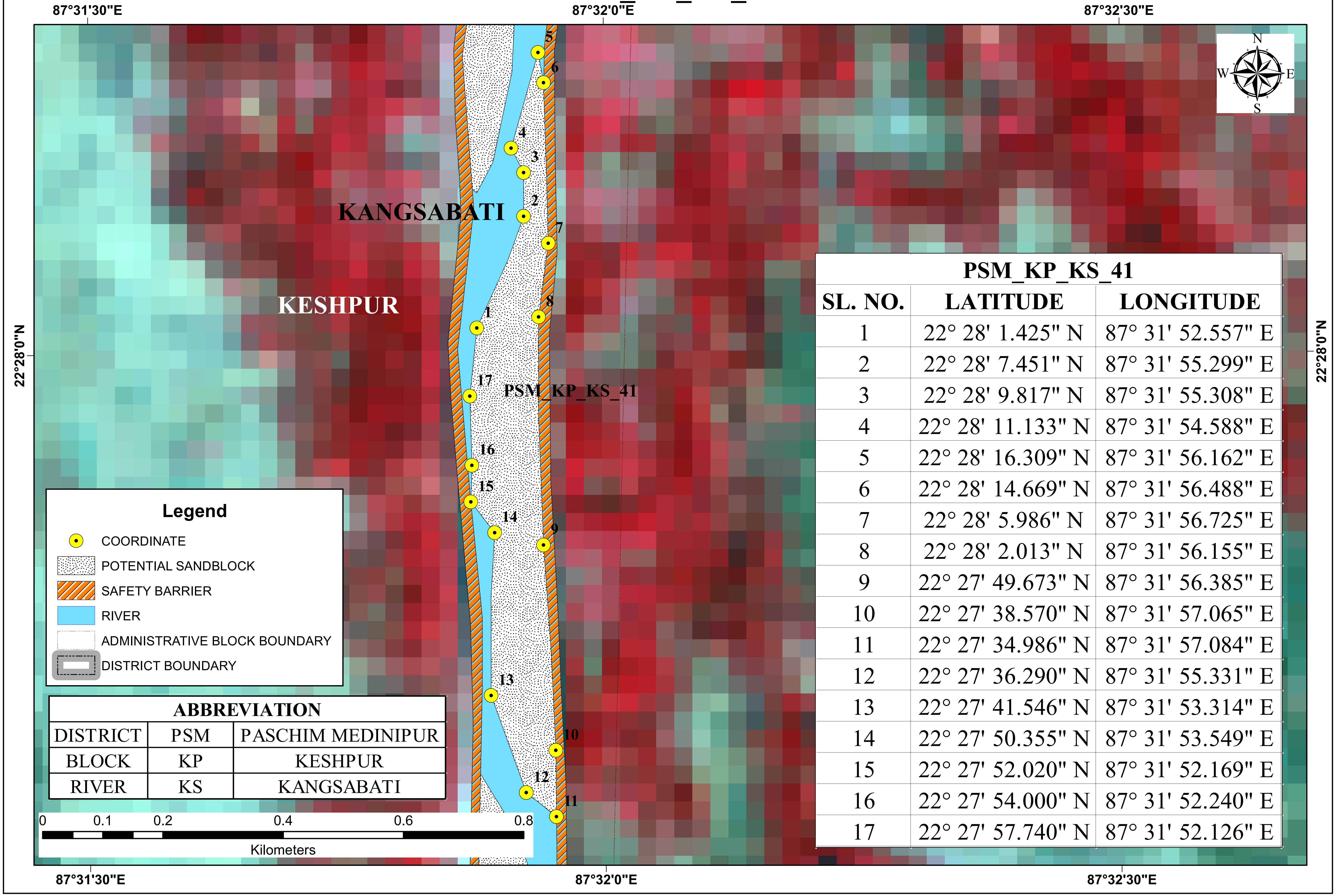


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KP	KESHPUR
RIVER	KS	KANGSABATI

PSM_KP_KS_40

SL. NO.	LATITUDE	LONGITUDE
1	22° 27' 30.007" N	87° 31' 55.955" E
2	22° 27' 28.902" N	87° 31' 52.494" E
3	22° 27' 37.288" N	87° 31' 52.683" E
4	22° 27' 34.400" N	87° 31' 54.583" E
5	22° 27' 31.729" N	87° 31' 55.684" E

POTENTIAL BLOCK PSM_KP_KS_41 OF KANGSABATI RIVER

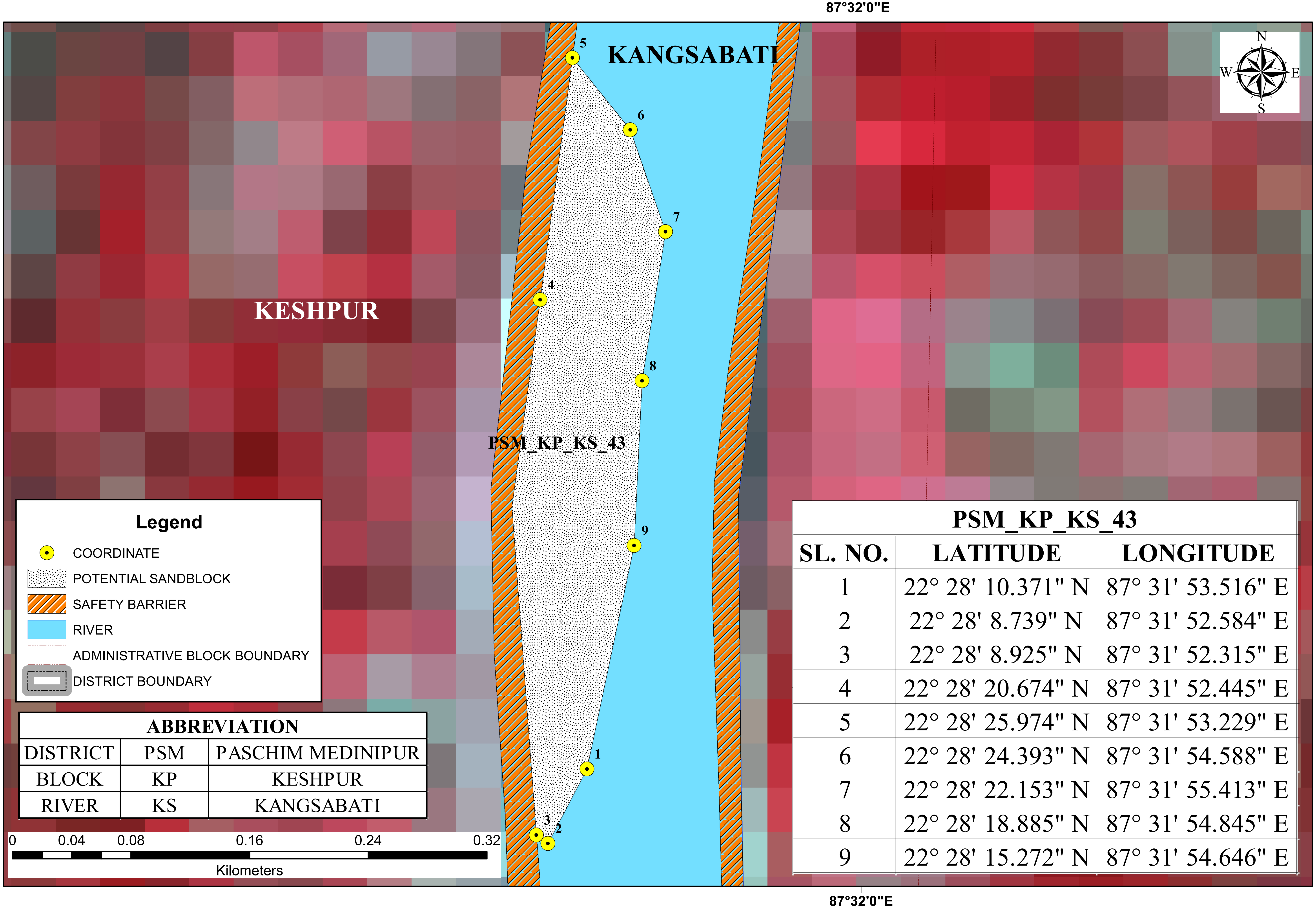


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KP	KESHPUR
RIVER	KS	KANGSABATI

PSM_KP_KS_41

SL. NO.	LATITUDE	LONGITUDE
1	22° 28' 1.425" N	87° 31' 52.557" E
2	22° 28' 7.451" N	87° 31' 55.299" E
3	22° 28' 9.817" N	87° 31' 55.308" E
4	22° 28' 11.133" N	87° 31' 54.588" E
5	22° 28' 16.309" N	87° 31' 56.162" E
6	22° 28' 14.669" N	87° 31' 56.488" E
7	22° 28' 5.986" N	87° 31' 56.725" E
8	22° 28' 2.013" N	87° 31' 56.155" E
9	22° 27' 49.673" N	87° 31' 56.385" E
10	22° 27' 38.570" N	87° 31' 57.065" E
11	22° 27' 34.986" N	87° 31' 57.084" E
12	22° 27' 36.290" N	87° 31' 55.331" E
13	22° 27' 41.546" N	87° 31' 53.314" E
14	22° 27' 50.355" N	87° 31' 53.549" E
15	22° 27' 52.020" N	87° 31' 52.169" E
16	22° 27' 54.000" N	87° 31' 52.240" E
17	22° 27' 57.740" N	87° 31' 52.126" E

POTENTIAL BLOCK PSM_KP_KS_43 OF KANGSABATI RIVER

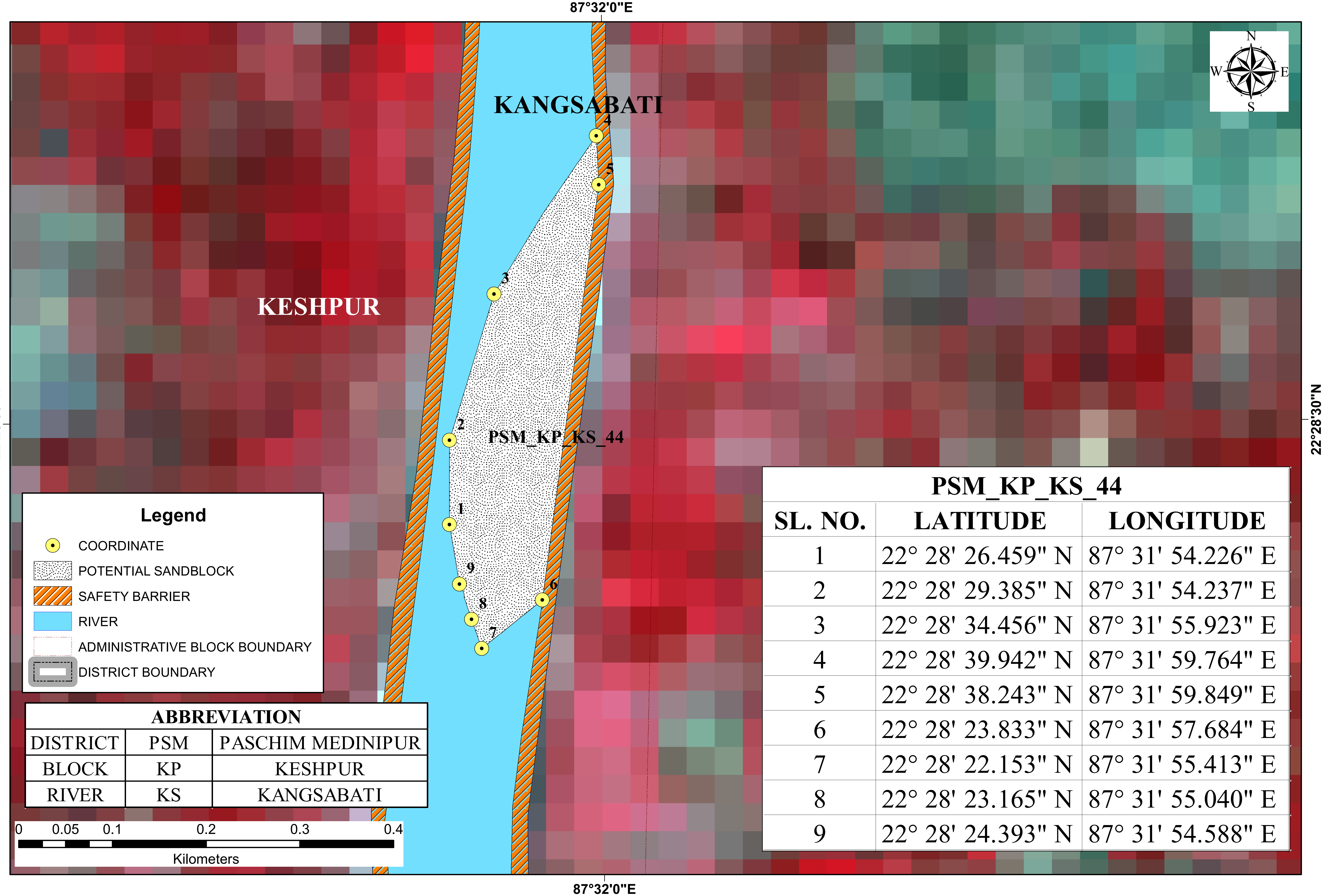


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KP	KESHPUR
RIVER	KS	KANGSABATI

PSM_KP_KS_43

SL. NO.	LATITUDE	LONGITUDE
1	22° 28' 10.371" N	87° 31' 53.516" E
2	22° 28' 8.739" N	87° 31' 52.584" E
3	22° 28' 8.925" N	87° 31' 52.315" E
4	22° 28' 20.674" N	87° 31' 52.445" E
5	22° 28' 25.974" N	87° 31' 53.229" E
6	22° 28' 24.393" N	87° 31' 54.588" E
7	22° 28' 22.153" N	87° 31' 55.413" E
8	22° 28' 18.885" N	87° 31' 54.845" E
9	22° 28' 15.272" N	87° 31' 54.646" E

POTENTIAL BLOCK PSM_KP_KS_44 OF KANGSABATI RIVER

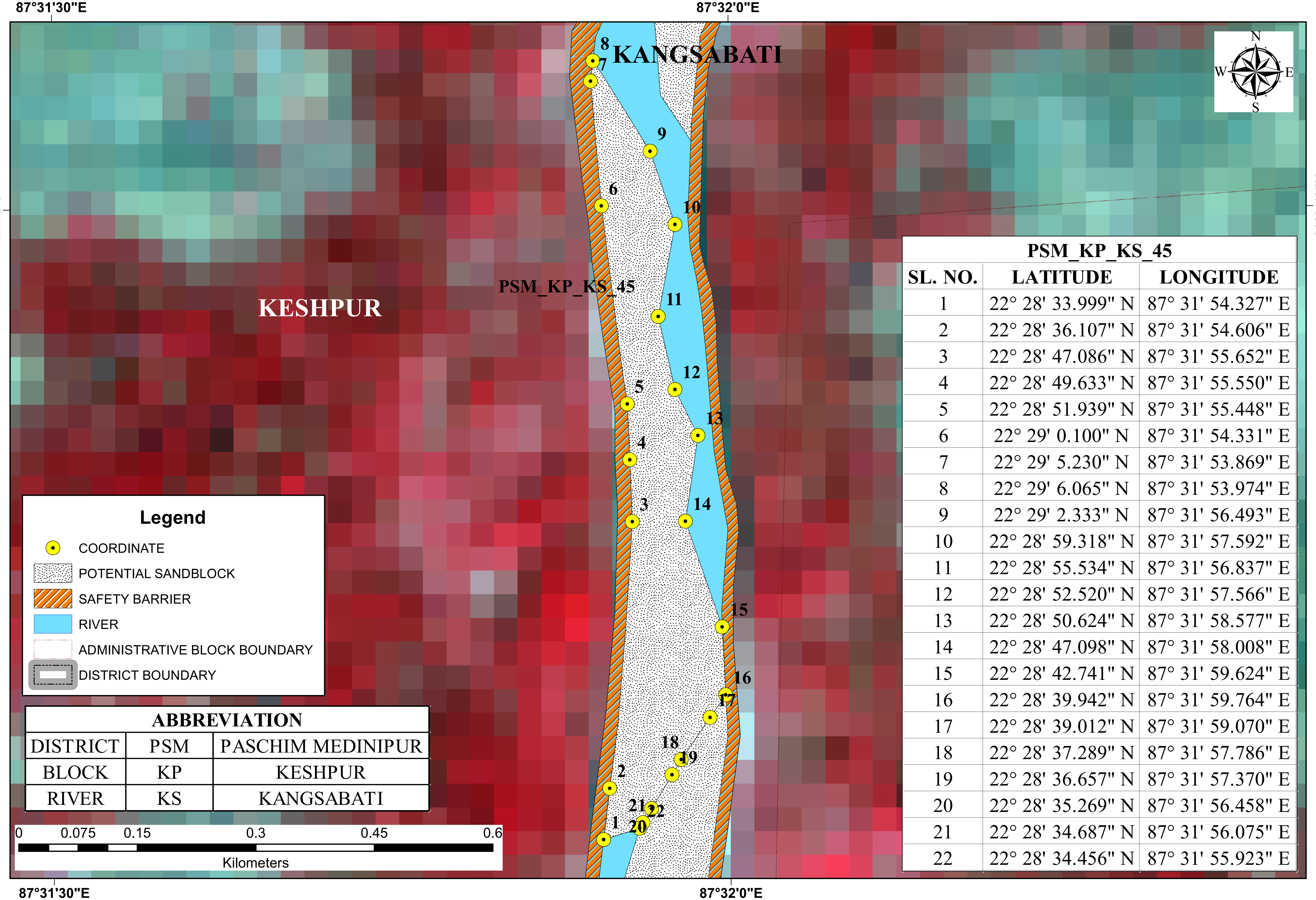


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KP	KESHPUR
RIVER	KS	KANGSABATI

PSM_KP_KS_44

SL. NO.	LATITUDE	LONGITUDE
1	22° 28' 26.459" N	87° 31' 54.226" E
2	22° 28' 29.385" N	87° 31' 54.237" E
3	22° 28' 34.456" N	87° 31' 55.923" E
4	22° 28' 39.942" N	87° 31' 59.764" E
5	22° 28' 38.243" N	87° 31' 59.849" E
6	22° 28' 23.833" N	87° 31' 57.684" E
7	22° 28' 22.153" N	87° 31' 55.413" E
8	22° 28' 23.165" N	87° 31' 55.040" E
9	22° 28' 24.393" N	87° 31' 54.588" E

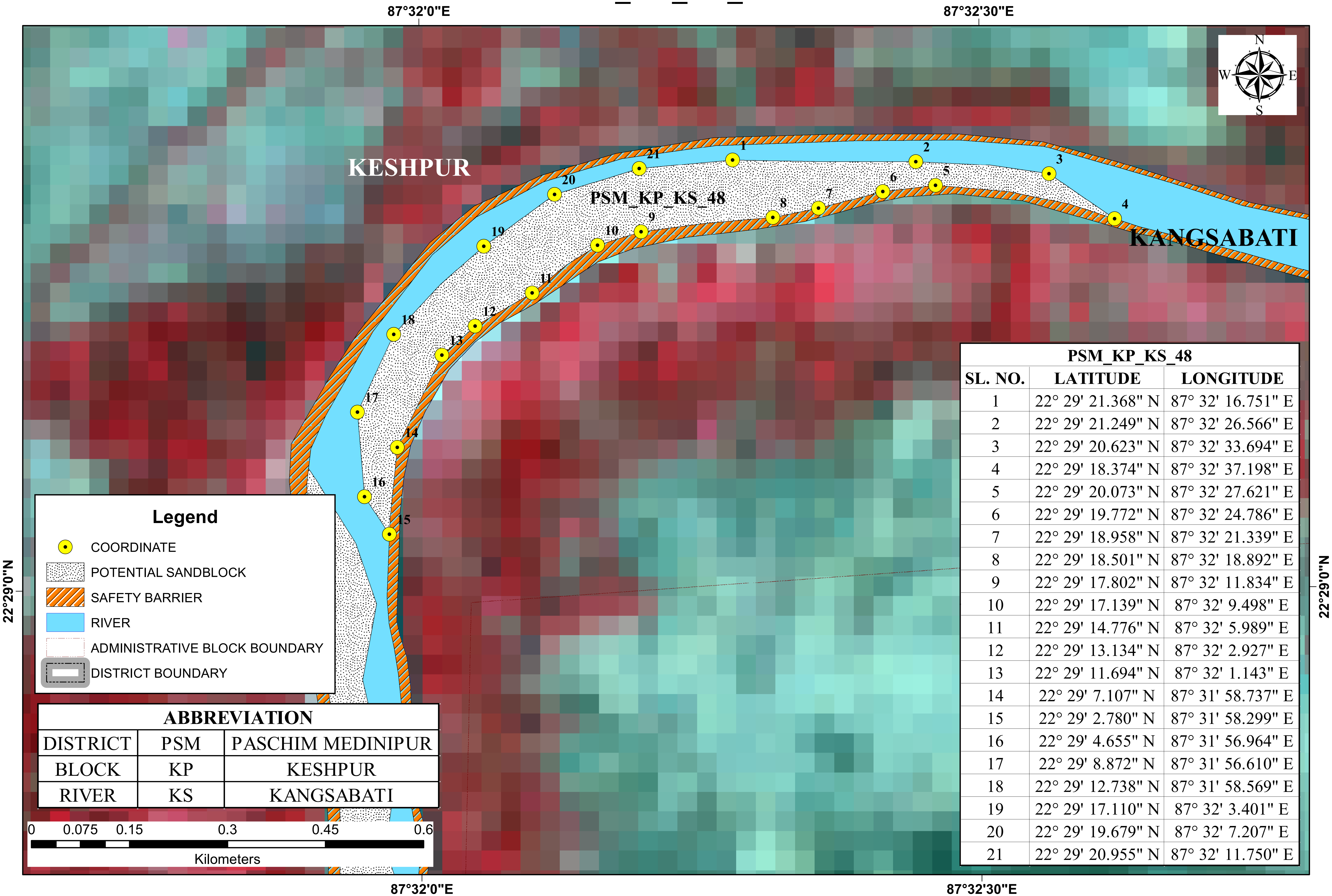
POTENTIAL BLOCK PSM_KP_KS_45 OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KP	KESHPUR
RIVER	KS	KANGSABATI

PSM_KP_KS_45		
SL. NO.	LATITUDE	LONGITUDE
1	22° 28' 33.999" N	87° 31' 54.327" E
2	22° 28' 36.107" N	87° 31' 54.606" E
3	22° 28' 47.086" N	87° 31' 55.652" E
4	22° 28' 49.633" N	87° 31' 55.550" E
5	22° 28' 51.939" N	87° 31' 55.448" E
6	22° 29' 0.100" N	87° 31' 54.331" E
7	22° 29' 5.230" N	87° 31' 53.869" E
8	22° 29' 6.065" N	87° 31' 53.974" E
9	22° 29' 2.333" N	87° 31' 56.493" E
10	22° 28' 59.318" N	87° 31' 57.592" E
11	22° 28' 55.534" N	87° 31' 56.837" E
12	22° 28' 52.520" N	87° 31' 57.566" E
13	22° 28' 50.624" N	87° 31' 58.577" E
14	22° 28' 47.098" N	87° 31' 58.008" E
15	22° 28' 42.741" N	87° 31' 59.624" E
16	22° 28' 39.942" N	87° 31' 59.764" E
17	22° 28' 39.012" N	87° 31' 59.070" E
18	22° 28' 37.289" N	87° 31' 57.786" E
19	22° 28' 36.657" N	87° 31' 57.370" E
20	22° 28' 35.269" N	87° 31' 56.458" E
21	22° 28' 34.687" N	87° 31' 56.075" E
22	22° 28' 34.456" N	87° 31' 55.923" E

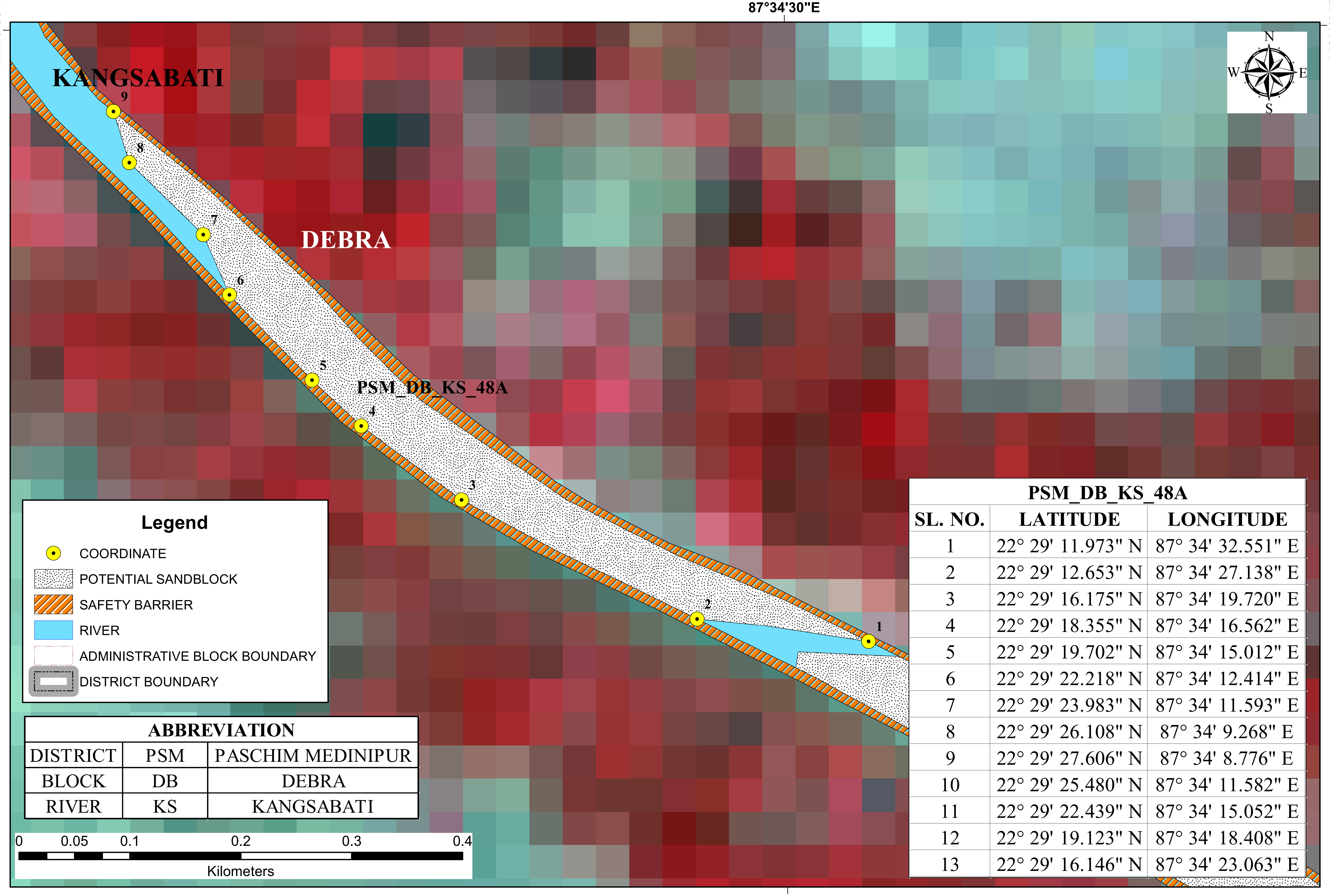
POTENTIAL BLOCK PSM_KP_KS_48 OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KP	KESHPUR
RIVER	KS	KANGSABATI

PSM_KP_KS_48		
SL. NO.	LATITUDE	LONGITUDE
1	22° 29' 21.368" N	87° 32' 16.751" E
2	22° 29' 21.249" N	87° 32' 26.566" E
3	22° 29' 20.623" N	87° 32' 33.694" E
4	22° 29' 18.374" N	87° 32' 37.198" E
5	22° 29' 20.073" N	87° 32' 27.621" E
6	22° 29' 19.772" N	87° 32' 24.786" E
7	22° 29' 18.958" N	87° 32' 21.339" E
8	22° 29' 18.501" N	87° 32' 18.892" E
9	22° 29' 17.802" N	87° 32' 11.834" E
10	22° 29' 17.139" N	87° 32' 9.498" E
11	22° 29' 14.776" N	87° 32' 5.989" E
12	22° 29' 13.134" N	87° 32' 2.927" E
13	22° 29' 11.694" N	87° 32' 1.143" E
14	22° 29' 7.107" N	87° 31' 58.737" E
15	22° 29' 2.780" N	87° 31' 58.299" E
16	22° 29' 4.655" N	87° 31' 56.964" E
17	22° 29' 8.872" N	87° 31' 56.610" E
18	22° 29' 12.738" N	87° 31' 58.569" E
19	22° 29' 17.110" N	87° 32' 3.401" E
20	22° 29' 19.679" N	87° 32' 7.207" E
21	22° 29' 20.955" N	87° 32' 11.750" E

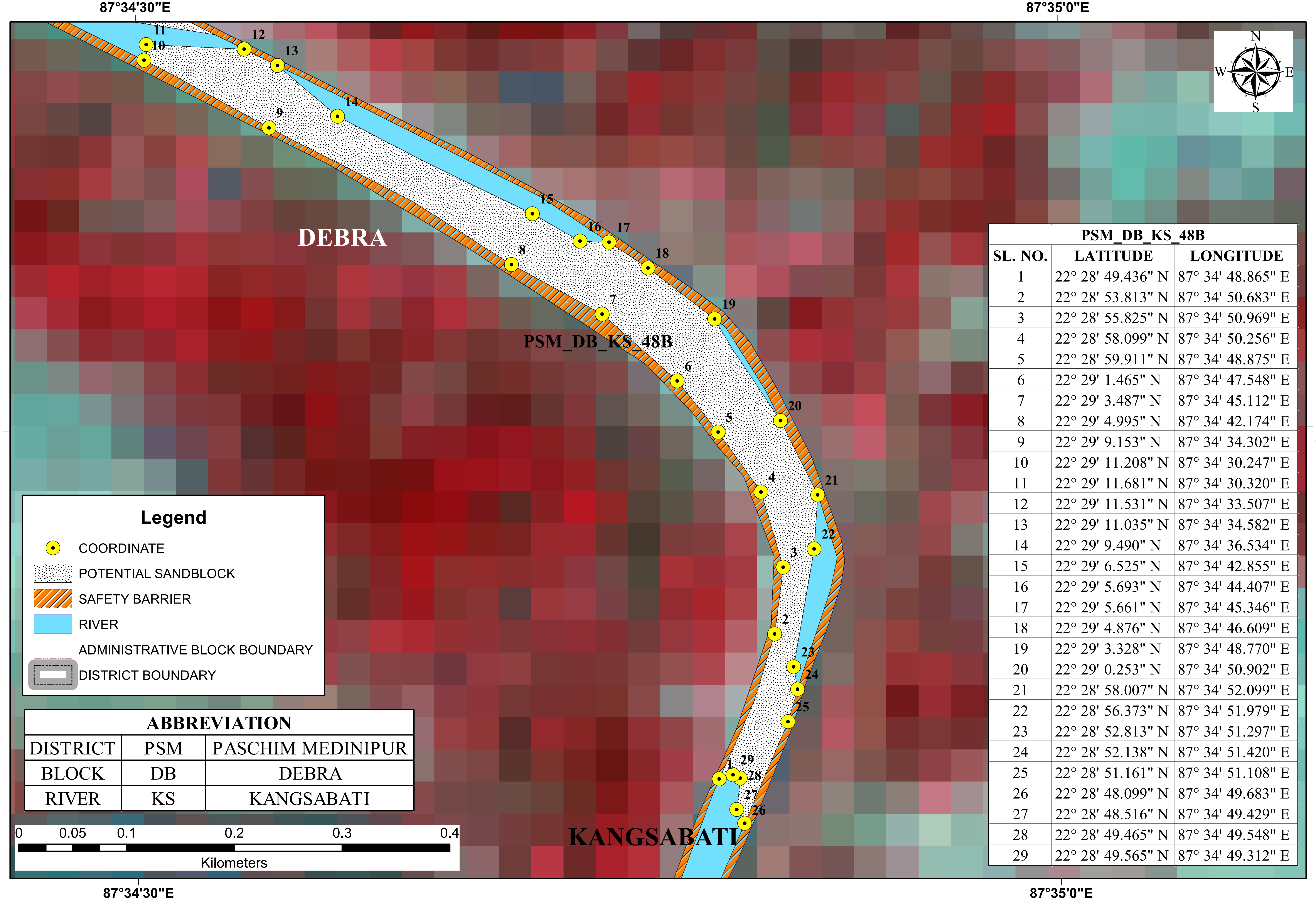
POTENTIAL BLOCK PSM_DB_KS_48A OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DB	DEBRA
RIVER	KS	KANGSABATI

PSM_DB_KS_48A		
SL. NO.	LATITUDE	LONGITUDE
1	22° 29' 11.973" N	87° 34' 32.551" E
2	22° 29' 12.653" N	87° 34' 27.138" E
3	22° 29' 16.175" N	87° 34' 19.720" E
4	22° 29' 18.355" N	87° 34' 16.562" E
5	22° 29' 19.702" N	87° 34' 15.012" E
6	22° 29' 22.218" N	87° 34' 12.414" E
7	22° 29' 23.983" N	87° 34' 11.593" E
8	22° 29' 26.108" N	87° 34' 9.268" E
9	22° 29' 27.606" N	87° 34' 8.776" E
10	22° 29' 25.480" N	87° 34' 11.582" E
11	22° 29' 22.439" N	87° 34' 15.052" E
12	22° 29' 19.123" N	87° 34' 18.408" E
13	22° 29' 16.146" N	87° 34' 23.063" E

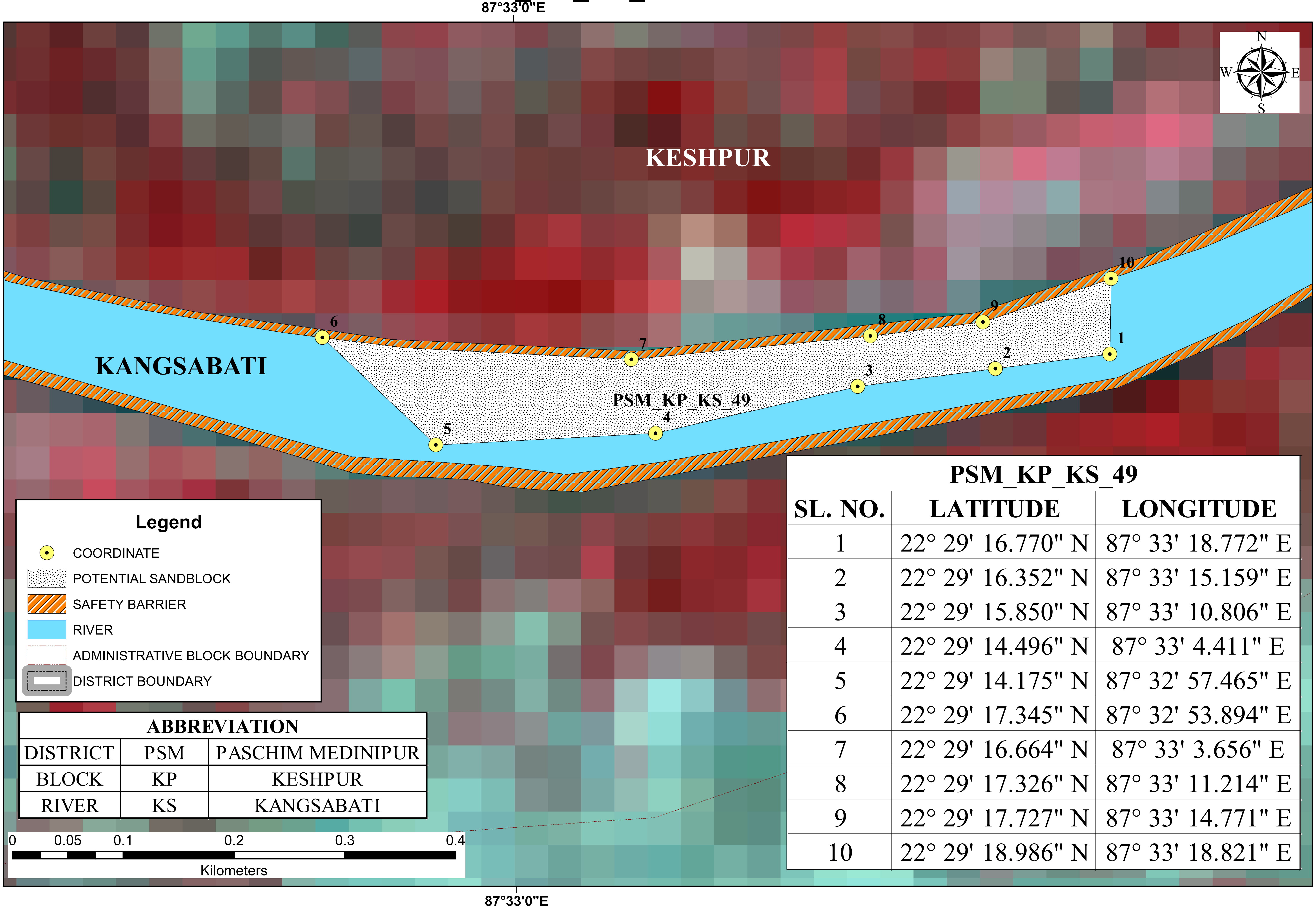
POTENTIAL BLOCK PSM_DB_KS_48B OF KANGSABATI RIVER



PSM_DB_KS_48B		
SL. NO.	LATITUDE	LONGITUDE
1	22° 28' 49.436" N	87° 34' 48.865" E
2	22° 28' 53.813" N	87° 34' 50.683" E
3	22° 28' 55.825" N	87° 34' 50.969" E
4	22° 28' 58.099" N	87° 34' 50.256" E
5	22° 28' 59.911" N	87° 34' 48.875" E
6	22° 29' 1.465" N	87° 34' 47.548" E
7	22° 29' 3.487" N	87° 34' 45.112" E
8	22° 29' 4.995" N	87° 34' 42.174" E
9	22° 29' 9.153" N	87° 34' 34.302" E
10	22° 29' 11.208" N	87° 34' 30.247" E
11	22° 29' 11.681" N	87° 34' 30.320" E
12	22° 29' 11.531" N	87° 34' 33.507" E
13	22° 29' 11.035" N	87° 34' 34.582" E
14	22° 29' 9.490" N	87° 34' 36.534" E
15	22° 29' 6.525" N	87° 34' 42.855" E
16	22° 29' 5.693" N	87° 34' 44.407" E
17	22° 29' 5.661" N	87° 34' 45.346" E
18	22° 29' 4.876" N	87° 34' 46.609" E
19	22° 29' 3.328" N	87° 34' 48.770" E
20	22° 29' 0.253" N	87° 34' 50.902" E
21	22° 28' 58.007" N	87° 34' 52.099" E
22	22° 28' 56.373" N	87° 34' 51.979" E
23	22° 28' 52.813" N	87° 34' 51.297" E
24	22° 28' 52.138" N	87° 34' 51.420" E
25	22° 28' 51.161" N	87° 34' 51.108" E
26	22° 28' 48.099" N	87° 34' 49.683" E
27	22° 28' 48.516" N	87° 34' 49.429" E
28	22° 28' 49.465" N	87° 34' 49.548" E
29	22° 28' 49.565" N	87° 34' 49.312" E

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DB	DEBRA
RIVER	KS	KANGSABATI

POTENTIAL BLOCK PSM_KP_KS_49 OF KANGSABATI RIVER

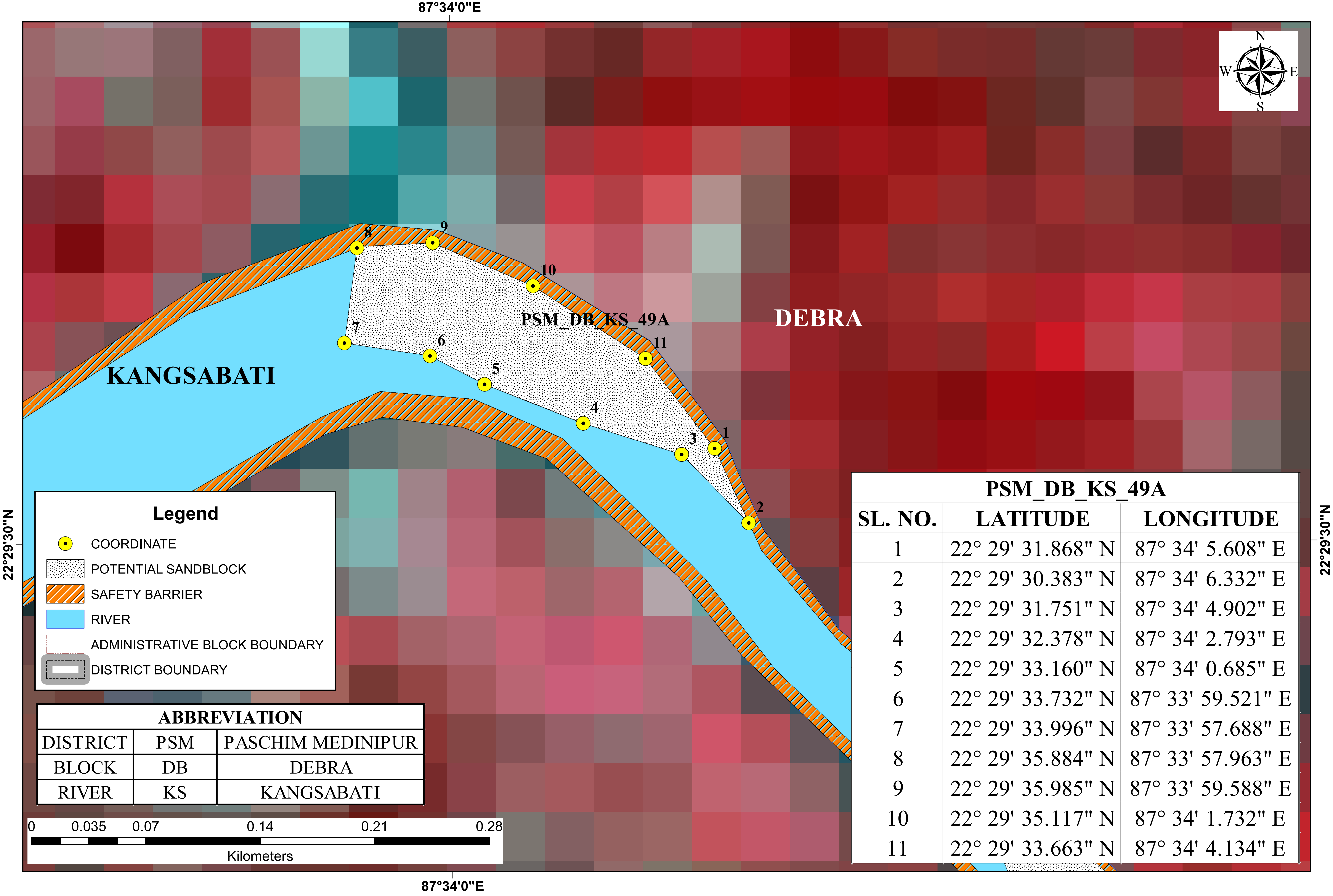


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KP	KESHPUR
RIVER	KS	KANGSABATI

PSM_KP_KS_49

SL. NO.	LATITUDE	LONGITUDE
1	22° 29' 16.770" N	87° 33' 18.772" E
2	22° 29' 16.352" N	87° 33' 15.159" E
3	22° 29' 15.850" N	87° 33' 10.806" E
4	22° 29' 14.496" N	87° 33' 4.411" E
5	22° 29' 14.175" N	87° 32' 57.465" E
6	22° 29' 17.345" N	87° 32' 53.894" E
7	22° 29' 16.664" N	87° 33' 3.656" E
8	22° 29' 17.326" N	87° 33' 11.214" E
9	22° 29' 17.727" N	87° 33' 14.771" E
10	22° 29' 18.986" N	87° 33' 18.821" E

POTENTIAL BLOCK PSM_DB_KS_49A OF KANGSABATI RIVER

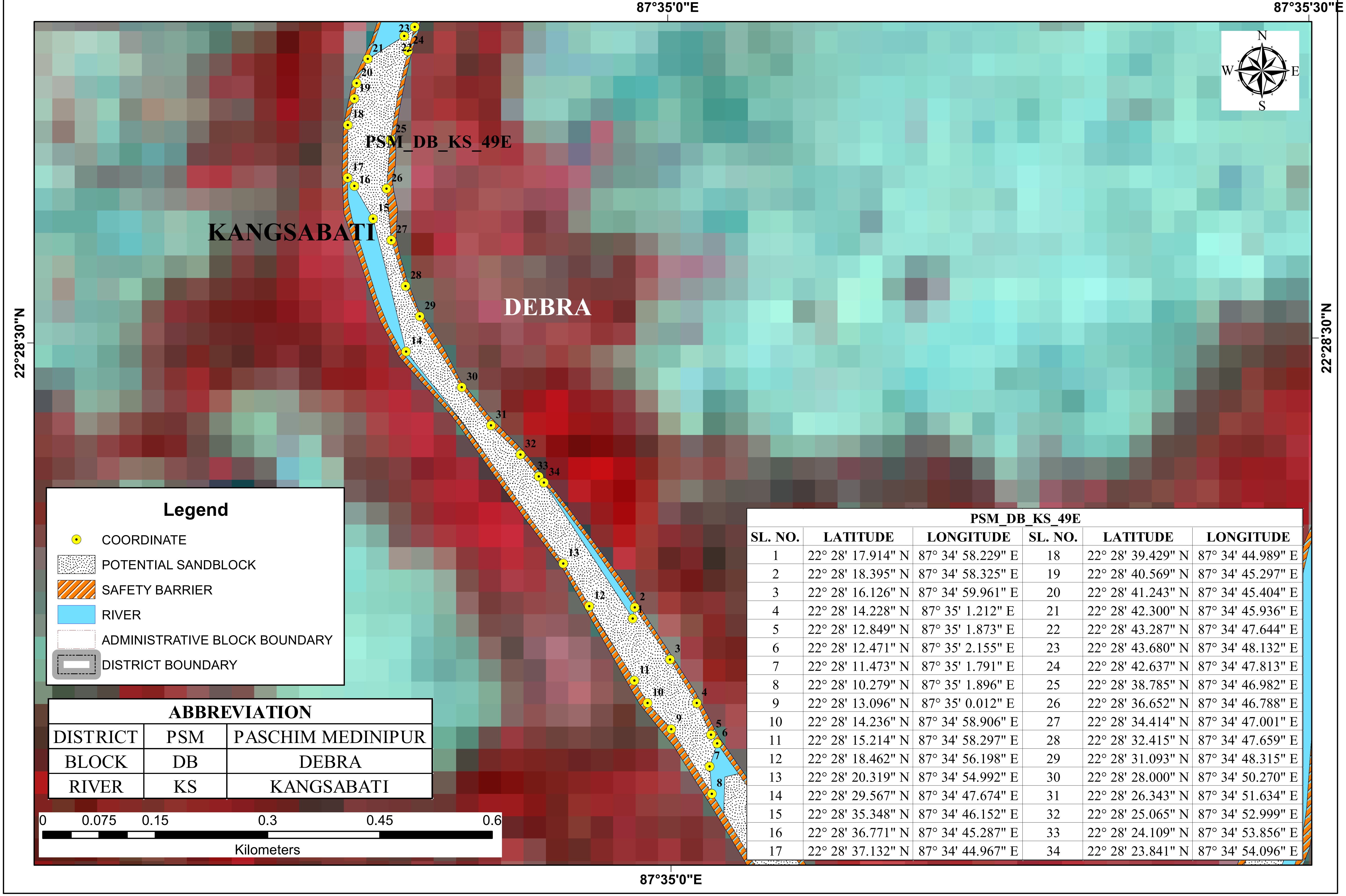


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DB	DEBRA
RIVER	KS	KANGSABATI

PSM_DB_KS_49A

SL. NO.	LATITUDE	LONGITUDE
1	22° 29' 31.868" N	87° 34' 5.608" E
2	22° 29' 30.383" N	87° 34' 6.332" E
3	22° 29' 31.751" N	87° 34' 4.902" E
4	22° 29' 32.378" N	87° 34' 2.793" E
5	22° 29' 33.160" N	87° 34' 0.685" E
6	22° 29' 33.732" N	87° 33' 59.521" E
7	22° 29' 33.996" N	87° 33' 57.688" E
8	22° 29' 35.884" N	87° 33' 57.963" E
9	22° 29' 35.985" N	87° 33' 59.588" E
10	22° 29' 35.117" N	87° 34' 1.732" E
11	22° 29' 33.663" N	87° 34' 4.134" E

POTENTIAL BLOCK PSM_DB_KS_49E OF KANGSABATI RIVER

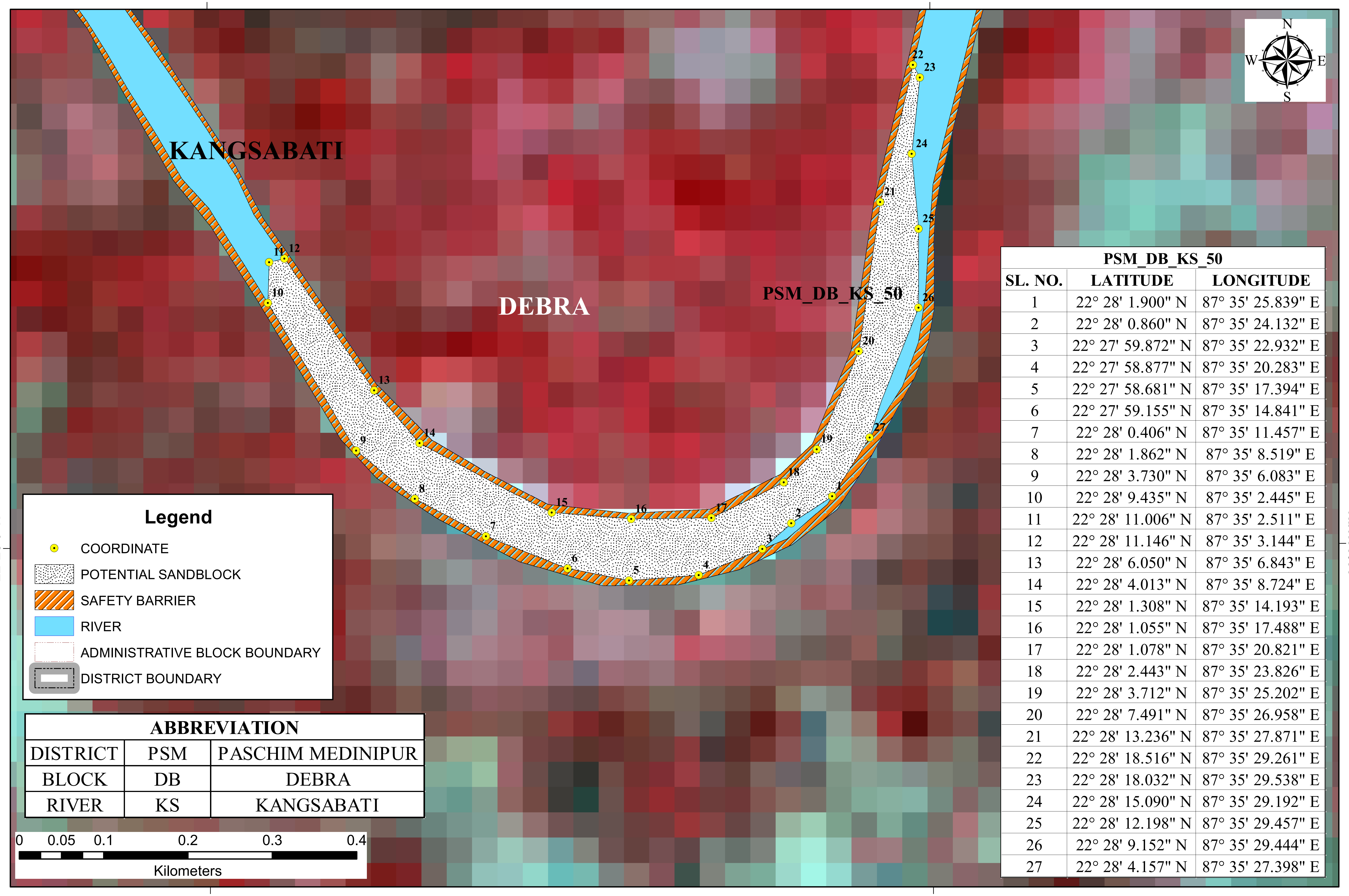


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DB	DEBRA
RIVER	KS	KANGSABATI

PSM_DB_KS_49E

SL. NO.	LATITUDE	LONGITUDE	SL. NO.	LATITUDE	LONGITUDE
1	22° 28' 17.914" N	87° 34' 58.229" E	18	22° 28' 39.429" N	87° 34' 44.989" E
2	22° 28' 18.395" N	87° 34' 58.325" E	19	22° 28' 40.569" N	87° 34' 45.297" E
3	22° 28' 16.126" N	87° 34' 59.961" E	20	22° 28' 41.243" N	87° 34' 45.404" E
4	22° 28' 14.228" N	87° 35' 1.212" E	21	22° 28' 42.300" N	87° 34' 45.936" E
5	22° 28' 12.849" N	87° 35' 1.873" E	22	22° 28' 43.287" N	87° 34' 47.644" E
6	22° 28' 12.471" N	87° 35' 2.155" E	23	22° 28' 43.680" N	87° 34' 48.132" E
7	22° 28' 11.473" N	87° 35' 1.791" E	24	22° 28' 42.637" N	87° 34' 47.813" E
8	22° 28' 10.279" N	87° 35' 1.896" E	25	22° 28' 38.785" N	87° 34' 46.982" E
9	22° 28' 13.096" N	87° 35' 0.012" E	26	22° 28' 36.652" N	87° 34' 46.788" E
10	22° 28' 14.236" N	87° 34' 58.906" E	27	22° 28' 34.414" N	87° 34' 47.001" E
11	22° 28' 15.214" N	87° 34' 58.297" E	28	22° 28' 32.415" N	87° 34' 47.659" E
12	22° 28' 18.462" N	87° 34' 56.198" E	29	22° 28' 31.093" N	87° 34' 48.315" E
13	22° 28' 20.319" N	87° 34' 54.992" E	30	22° 28' 28.000" N	87° 34' 50.270" E
14	22° 28' 29.567" N	87° 34' 47.674" E	31	22° 28' 26.343" N	87° 34' 51.634" E
15	22° 28' 35.348" N	87° 34' 46.152" E	32	22° 28' 25.065" N	87° 34' 52.999" E
16	22° 28' 36.771" N	87° 34' 45.287" E	33	22° 28' 24.109" N	87° 34' 53.856" E
17	22° 28' 37.132" N	87° 34' 44.967" E	34	22° 28' 23.841" N	87° 34' 54.096" E

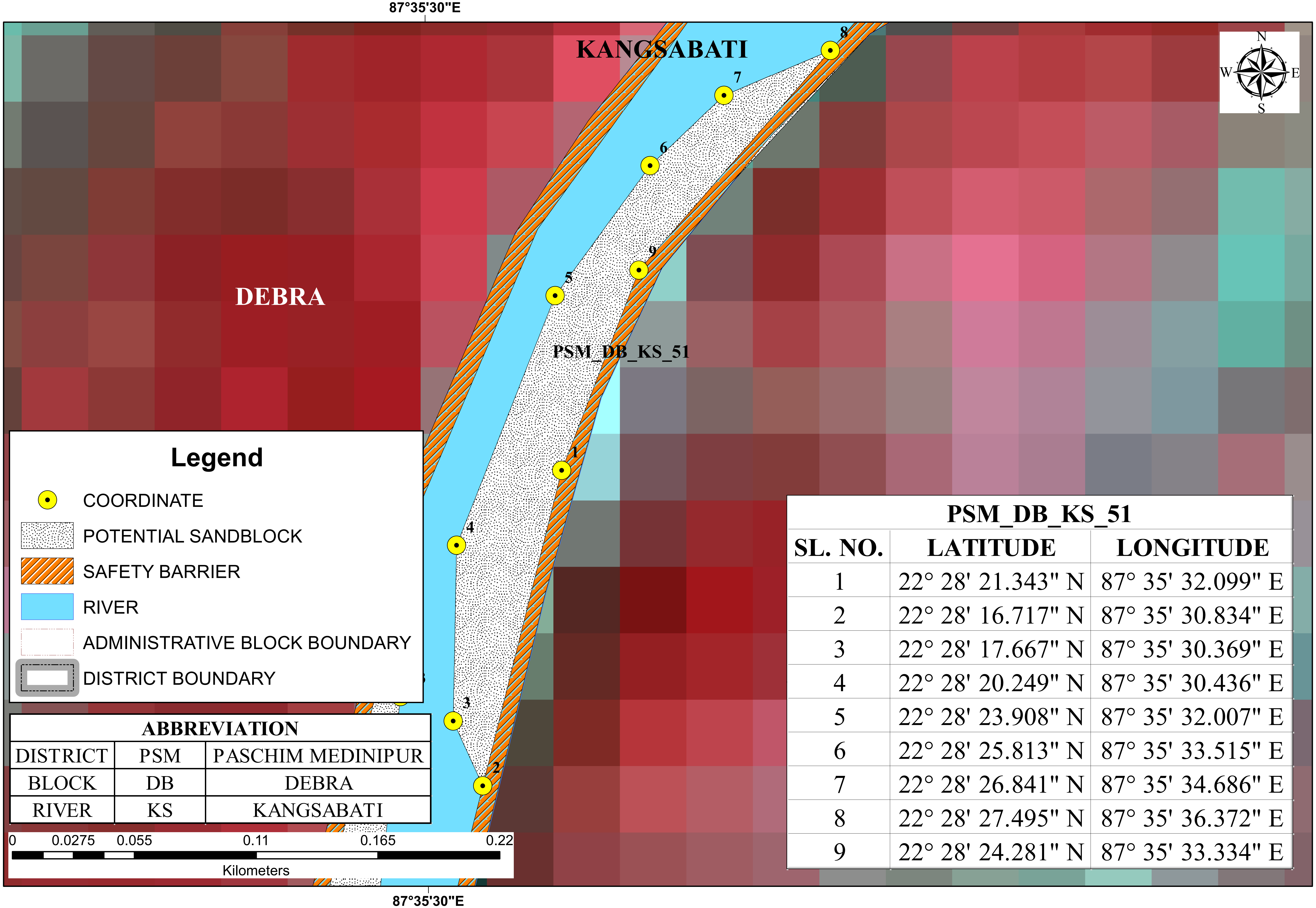
POTENTIAL BLOCK PSM_DB_KS_50 OF KANGSABATI RIVER



PSM_DB_KS_50		
SL. NO.	LATITUDE	LONGITUDE
1	22° 28' 1.900" N	87° 35' 25.839" E
2	22° 28' 0.860" N	87° 35' 24.132" E
3	22° 27' 59.872" N	87° 35' 22.932" E
4	22° 27' 58.877" N	87° 35' 20.283" E
5	22° 27' 58.681" N	87° 35' 17.394" E
6	22° 27' 59.155" N	87° 35' 14.841" E
7	22° 28' 0.406" N	87° 35' 11.457" E
8	22° 28' 1.862" N	87° 35' 8.519" E
9	22° 28' 3.730" N	87° 35' 6.083" E
10	22° 28' 9.435" N	87° 35' 2.445" E
11	22° 28' 11.006" N	87° 35' 2.511" E
12	22° 28' 11.146" N	87° 35' 3.144" E
13	22° 28' 6.050" N	87° 35' 6.843" E
14	22° 28' 4.013" N	87° 35' 8.724" E
15	22° 28' 1.308" N	87° 35' 14.193" E
16	22° 28' 1.055" N	87° 35' 17.488" E
17	22° 28' 1.078" N	87° 35' 20.821" E
18	22° 28' 2.443" N	87° 35' 23.826" E
19	22° 28' 3.712" N	87° 35' 25.202" E
20	22° 28' 7.491" N	87° 35' 26.958" E
21	22° 28' 13.236" N	87° 35' 27.871" E
22	22° 28' 18.516" N	87° 35' 29.261" E
23	22° 28' 18.032" N	87° 35' 29.538" E
24	22° 28' 15.090" N	87° 35' 29.192" E
25	22° 28' 12.198" N	87° 35' 29.457" E
26	22° 28' 9.152" N	87° 35' 29.444" E
27	22° 28' 4.157" N	87° 35' 27.398" E

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DB	DEBRA
RIVER	KS	KANGSABATI

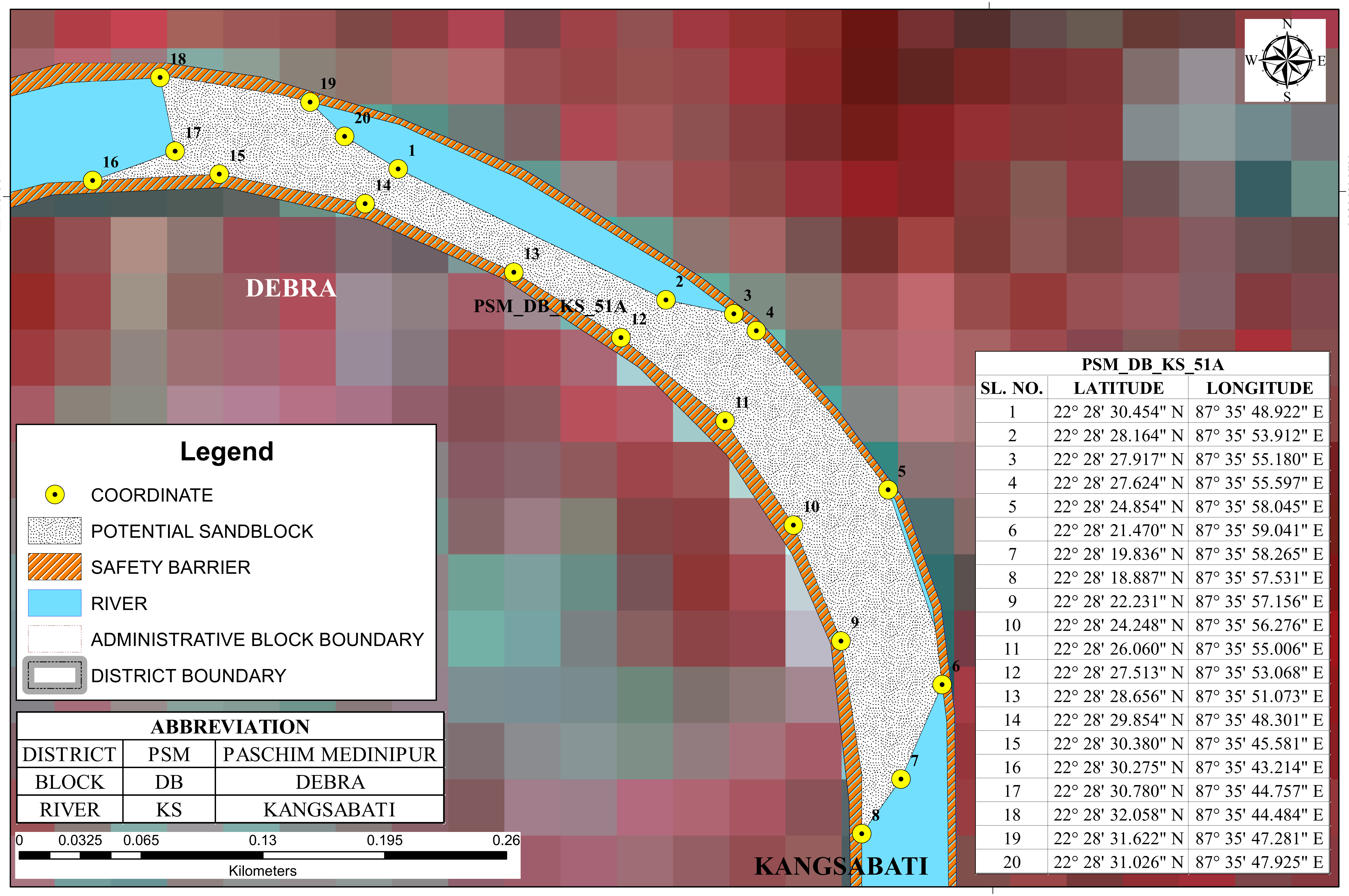
POTENTIAL BLOCK PSM_DB_KS_51 OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DB	DEBRA
RIVER	KS	KANGSABATI

PSM_DB_KS_51		
SL. NO.	LATITUDE	LONGITUDE
1	22° 28' 21.343" N	87° 35' 32.099" E
2	22° 28' 16.717" N	87° 35' 30.834" E
3	22° 28' 17.667" N	87° 35' 30.369" E
4	22° 28' 20.249" N	87° 35' 30.436" E
5	22° 28' 23.908" N	87° 35' 32.007" E
6	22° 28' 25.813" N	87° 35' 33.515" E
7	22° 28' 26.841" N	87° 35' 34.686" E
8	22° 28' 27.495" N	87° 35' 36.372" E
9	22° 28' 24.281" N	87° 35' 33.334" E

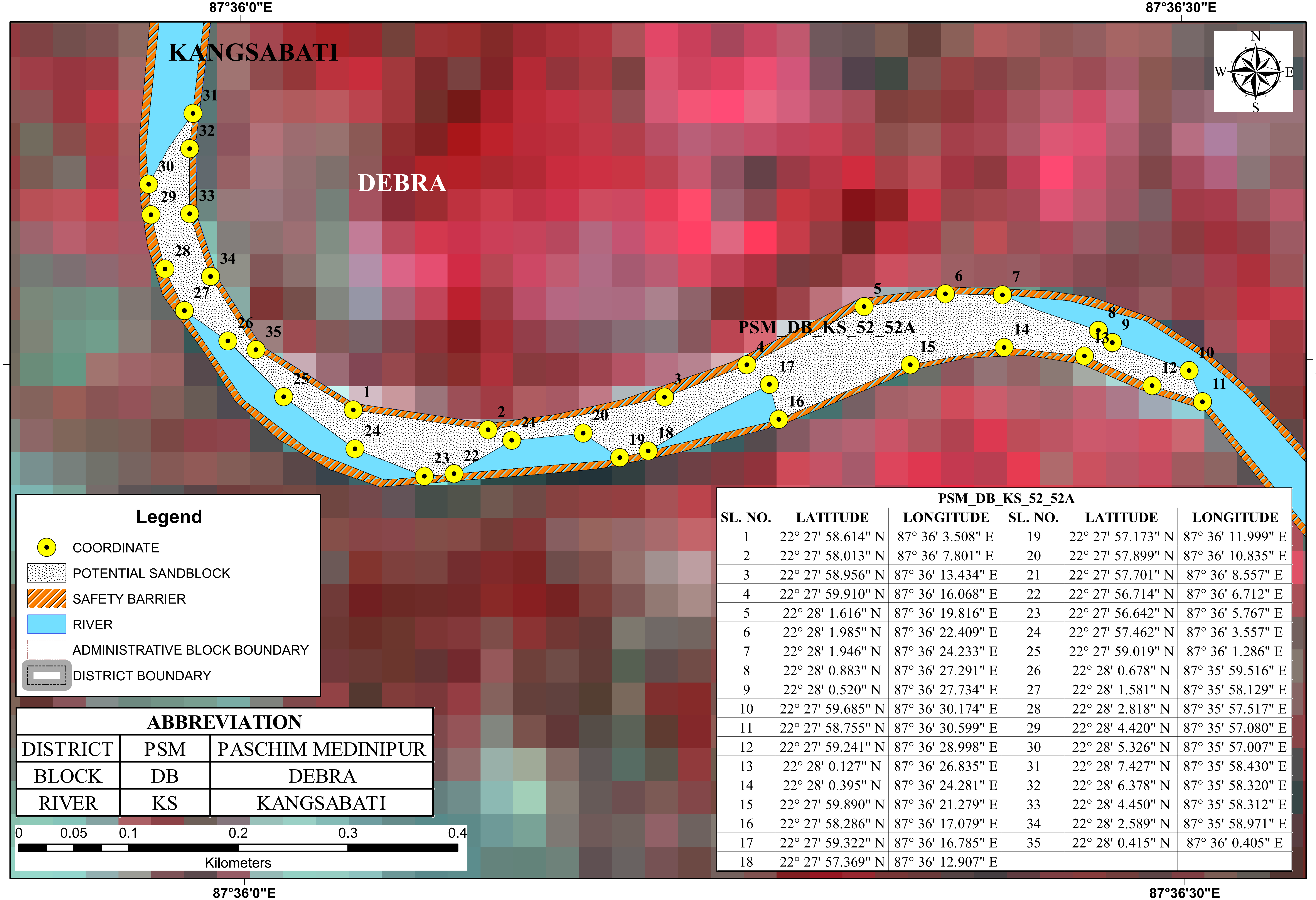
POTENTIAL BLOCK PSM_DB_KS_51A OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DB	DEBRA
RIVER	KS	KANGSABATI

PSM_DB_KS_51A		
SL. NO.	LATITUDE	LONGITUDE
1	22° 28' 30.454" N	87° 35' 48.922" E
2	22° 28' 28.164" N	87° 35' 53.912" E
3	22° 28' 27.917" N	87° 35' 55.180" E
4	22° 28' 27.624" N	87° 35' 55.597" E
5	22° 28' 24.854" N	87° 35' 58.045" E
6	22° 28' 21.470" N	87° 35' 59.041" E
7	22° 28' 19.836" N	87° 35' 58.265" E
8	22° 28' 18.887" N	87° 35' 57.531" E
9	22° 28' 22.231" N	87° 35' 57.156" E
10	22° 28' 24.248" N	87° 35' 56.276" E
11	22° 28' 26.060" N	87° 35' 55.006" E
12	22° 28' 27.513" N	87° 35' 53.068" E
13	22° 28' 28.656" N	87° 35' 51.073" E
14	22° 28' 29.854" N	87° 35' 48.301" E
15	22° 28' 30.380" N	87° 35' 45.581" E
16	22° 28' 30.275" N	87° 35' 43.214" E
17	22° 28' 30.780" N	87° 35' 44.757" E
18	22° 28' 32.058" N	87° 35' 44.484" E
19	22° 28' 31.622" N	87° 35' 47.281" E
20	22° 28' 31.026" N	87° 35' 47.925" E

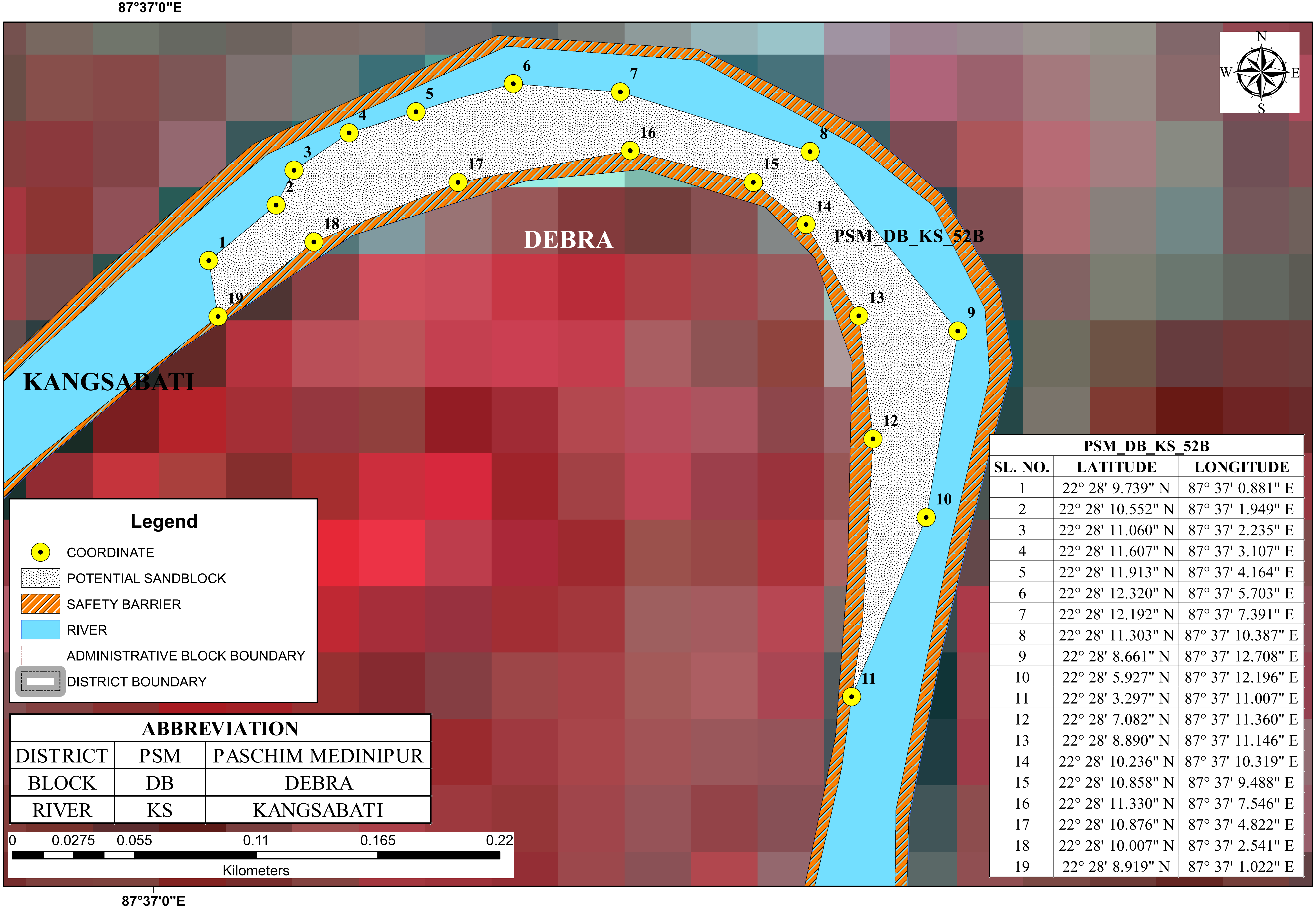
POTENTIAL BLOCK PSM_DB_KS_52_52A OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DB	DEBRA
RIVER	KS	KANGSABATI

PSM_DB_KS_52_52A					
SL. NO.	LATITUDE	LONGITUDE	SL. NO.	LATITUDE	LONGITUDE
1	22° 27' 58.614" N	87° 36' 3.508" E	19	22° 27' 57.173" N	87° 36' 11.999" E
2	22° 27' 58.013" N	87° 36' 7.801" E	20	22° 27' 57.899" N	87° 36' 10.835" E
3	22° 27' 58.956" N	87° 36' 13.434" E	21	22° 27' 57.701" N	87° 36' 8.557" E
4	22° 27' 59.910" N	87° 36' 16.068" E	22	22° 27' 56.714" N	87° 36' 6.712" E
5	22° 28' 1.616" N	87° 36' 19.816" E	23	22° 27' 56.642" N	87° 36' 5.767" E
6	22° 28' 1.985" N	87° 36' 22.409" E	24	22° 27' 57.462" N	87° 36' 3.557" E
7	22° 28' 1.946" N	87° 36' 24.233" E	25	22° 27' 59.019" N	87° 36' 1.286" E
8	22° 28' 0.883" N	87° 36' 27.291" E	26	22° 28' 0.678" N	87° 35' 59.516" E
9	22° 28' 0.520" N	87° 36' 27.734" E	27	22° 28' 1.581" N	87° 35' 58.129" E
10	22° 27' 59.685" N	87° 36' 30.174" E	28	22° 28' 2.818" N	87° 35' 57.517" E
11	22° 27' 58.755" N	87° 36' 30.599" E	29	22° 28' 4.420" N	87° 35' 57.080" E
12	22° 27' 59.241" N	87° 36' 28.998" E	30	22° 28' 5.326" N	87° 35' 57.007" E
13	22° 28' 0.127" N	87° 36' 26.835" E	31	22° 28' 7.427" N	87° 35' 58.430" E
14	22° 28' 0.395" N	87° 36' 24.281" E	32	22° 28' 6.378" N	87° 35' 58.320" E
15	22° 27' 59.890" N	87° 36' 21.279" E	33	22° 28' 4.450" N	87° 35' 58.312" E
16	22° 27' 58.286" N	87° 36' 17.079" E	34	22° 28' 2.589" N	87° 35' 58.971" E
17	22° 27' 59.322" N	87° 36' 16.785" E	35	22° 28' 0.415" N	87° 36' 0.405" E
18	22° 27' 57.369" N	87° 36' 12.907" E			

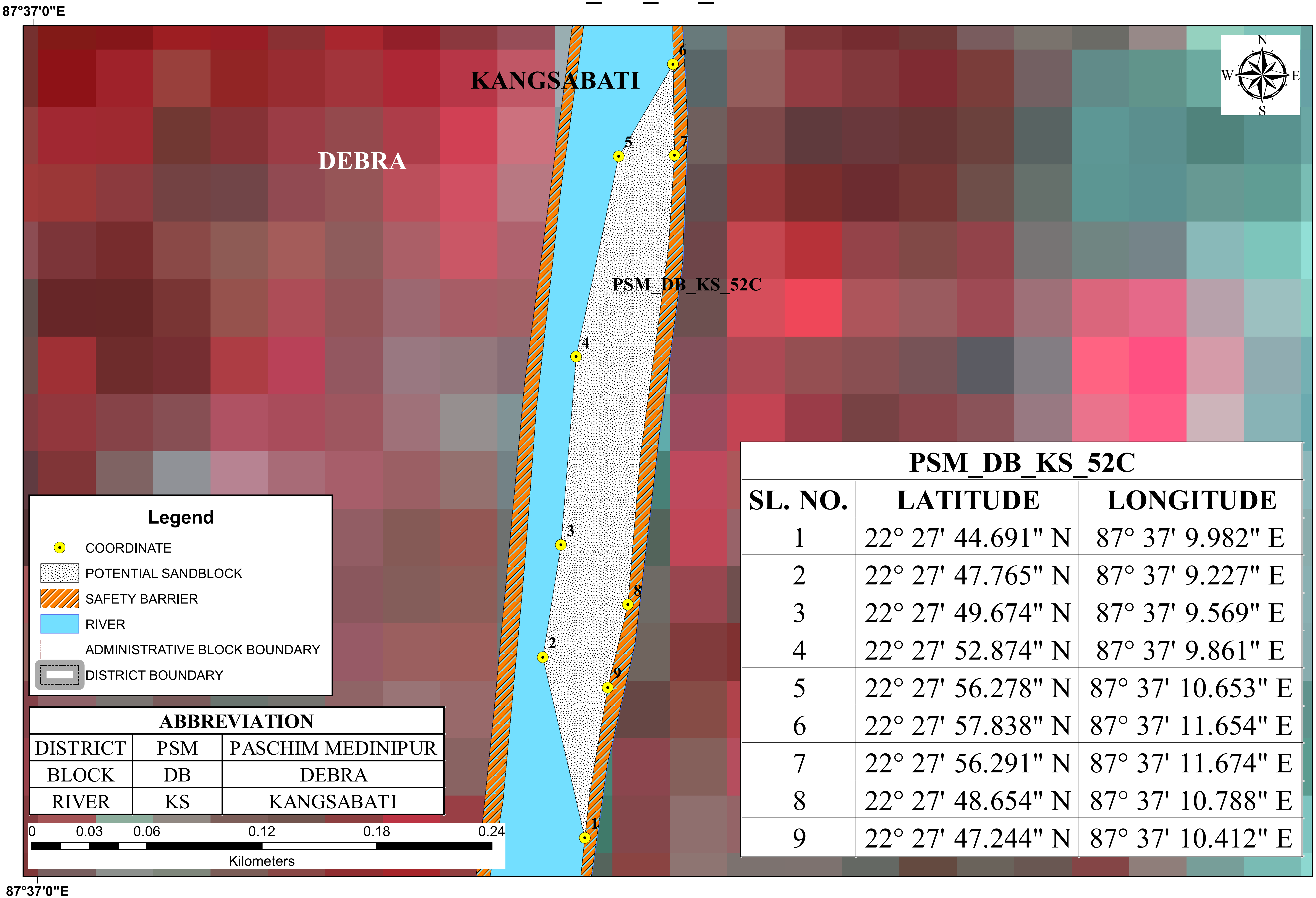
POTENTIAL BLOCK PSM_DB_KS_52B OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DB	DEBRA
RIVER	KS	KANGSABATI

PSM_DB_KS_52B		
SL. NO.	LATITUDE	LONGITUDE
1	22° 28' 9.739" N	87° 37' 0.881" E
2	22° 28' 10.552" N	87° 37' 1.949" E
3	22° 28' 11.060" N	87° 37' 2.235" E
4	22° 28' 11.607" N	87° 37' 3.107" E
5	22° 28' 11.913" N	87° 37' 4.164" E
6	22° 28' 12.320" N	87° 37' 5.703" E
7	22° 28' 12.192" N	87° 37' 7.391" E
8	22° 28' 11.303" N	87° 37' 10.387" E
9	22° 28' 8.661" N	87° 37' 12.708" E
10	22° 28' 5.927" N	87° 37' 12.196" E
11	22° 28' 3.297" N	87° 37' 11.007" E
12	22° 28' 7.082" N	87° 37' 11.360" E
13	22° 28' 8.890" N	87° 37' 11.146" E
14	22° 28' 10.236" N	87° 37' 10.319" E
15	22° 28' 10.858" N	87° 37' 9.488" E
16	22° 28' 11.330" N	87° 37' 7.546" E
17	22° 28' 10.876" N	87° 37' 4.822" E
18	22° 28' 10.007" N	87° 37' 2.541" E
19	22° 28' 8.919" N	87° 37' 1.022" E

POTENTIAL BLOCK PSM_DB_KS_52C OF KANGSABATI RIVER

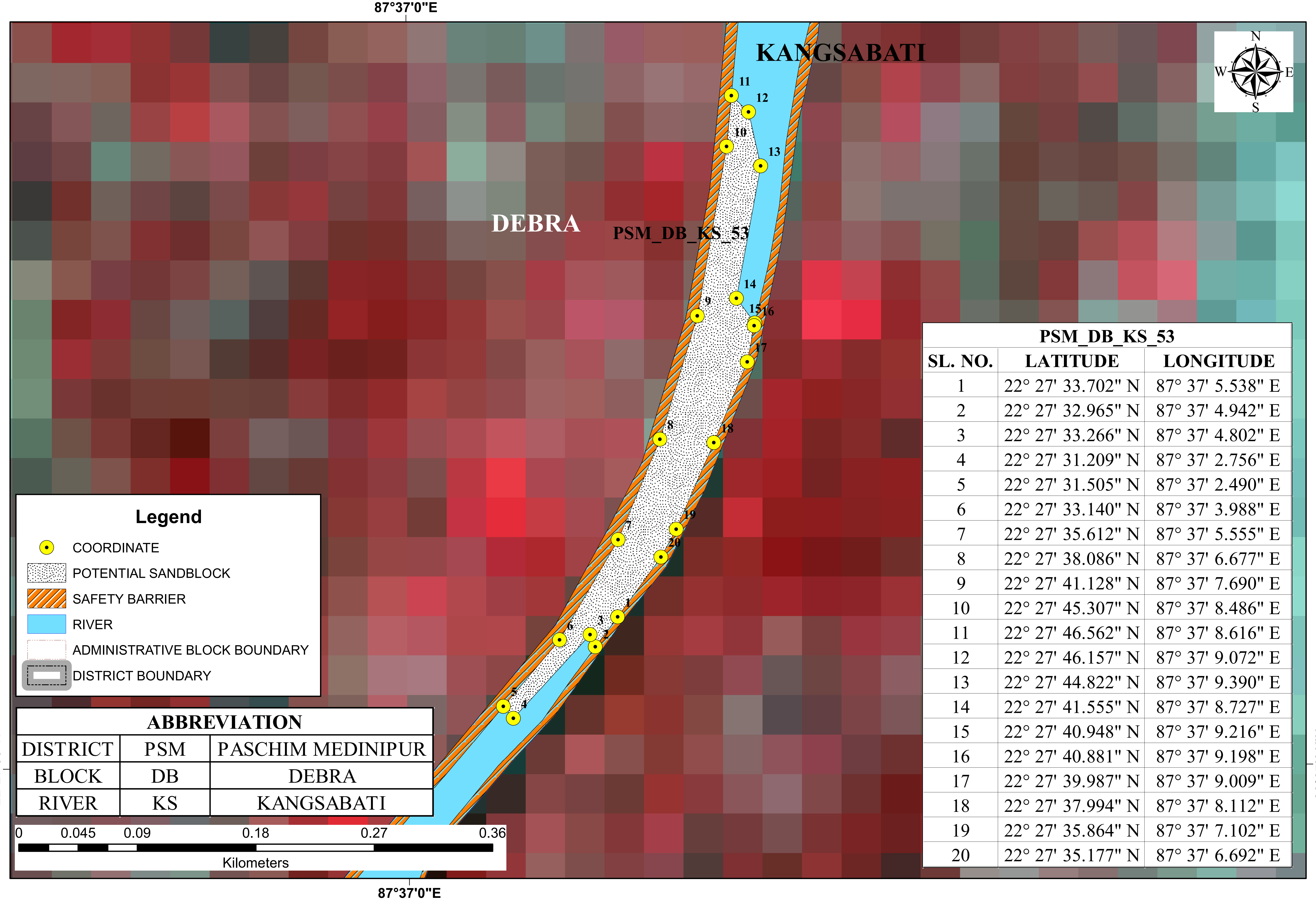


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DB	DEBRA
RIVER	KS	KANGSABATI

PSM_DB_KS_52C

SL. NO.	LATITUDE	LONGITUDE
1	22° 27' 44.691" N	87° 37' 9.982" E
2	22° 27' 47.765" N	87° 37' 9.227" E
3	22° 27' 49.674" N	87° 37' 9.569" E
4	22° 27' 52.874" N	87° 37' 9.861" E
5	22° 27' 56.278" N	87° 37' 10.653" E
6	22° 27' 57.838" N	87° 37' 11.654" E
7	22° 27' 56.291" N	87° 37' 11.674" E
8	22° 27' 48.654" N	87° 37' 10.788" E
9	22° 27' 47.244" N	87° 37' 10.412" E

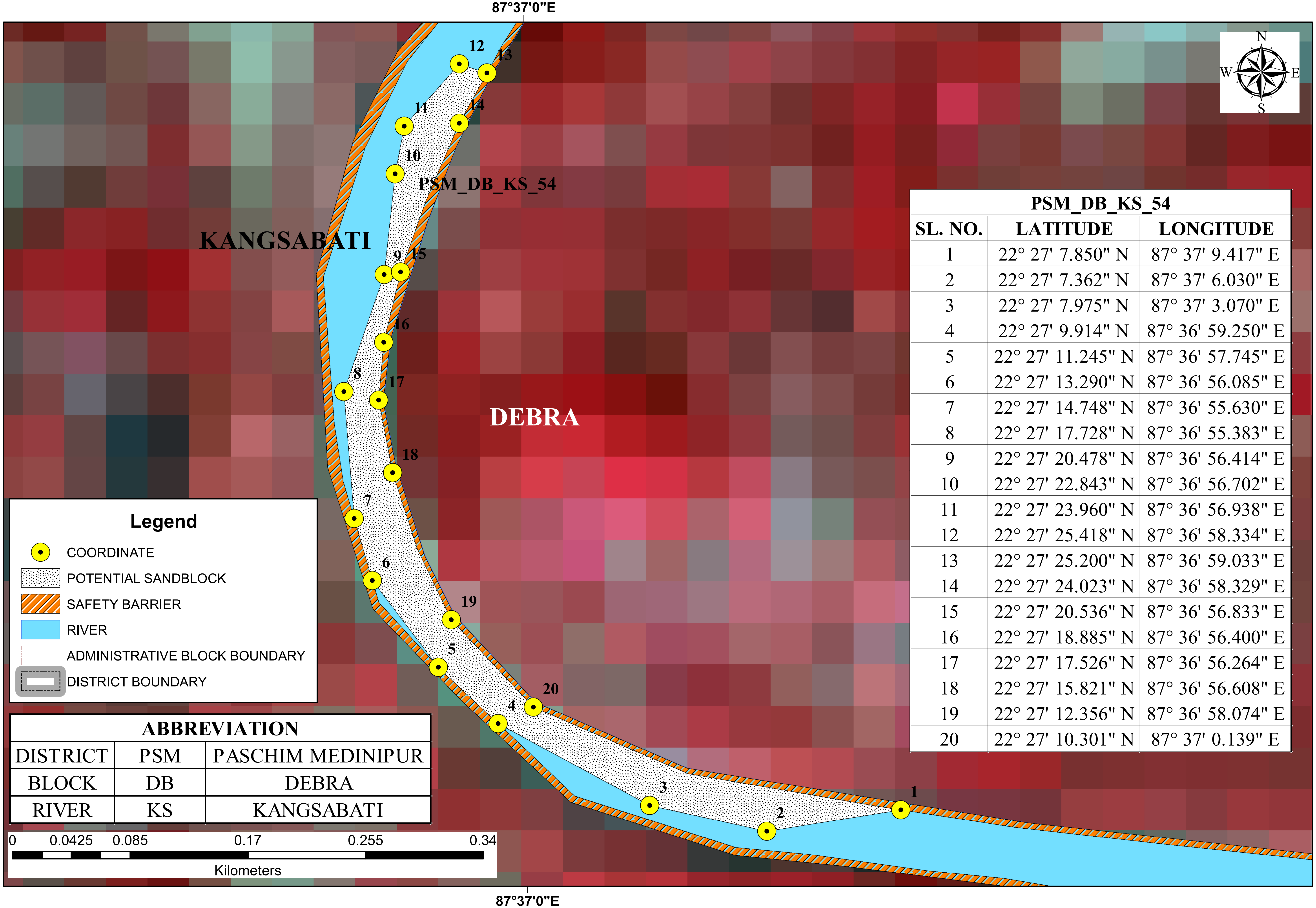
POTENTIAL BLOCK PSM_DB_KS_53 OF KANGSABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DB	DEBRA
RIVER	KS	KANGSABATI

PSM_DB_KS_53		
SL. NO.	LATITUDE	LONGITUDE
1	22° 27' 33.702" N	87° 37' 5.538" E
2	22° 27' 32.965" N	87° 37' 4.942" E
3	22° 27' 33.266" N	87° 37' 4.802" E
4	22° 27' 31.209" N	87° 37' 2.756" E
5	22° 27' 31.505" N	87° 37' 2.490" E
6	22° 27' 33.140" N	87° 37' 3.988" E
7	22° 27' 35.612" N	87° 37' 5.555" E
8	22° 27' 38.086" N	87° 37' 6.677" E
9	22° 27' 41.128" N	87° 37' 7.690" E
10	22° 27' 45.307" N	87° 37' 8.486" E
11	22° 27' 46.562" N	87° 37' 8.616" E
12	22° 27' 46.157" N	87° 37' 9.072" E
13	22° 27' 44.822" N	87° 37' 9.390" E
14	22° 27' 41.555" N	87° 37' 8.727" E
15	22° 27' 40.948" N	87° 37' 9.216" E
16	22° 27' 40.881" N	87° 37' 9.198" E
17	22° 27' 39.987" N	87° 37' 9.009" E
18	22° 27' 37.994" N	87° 37' 8.112" E
19	22° 27' 35.864" N	87° 37' 7.102" E
20	22° 27' 35.177" N	87° 37' 6.692" E

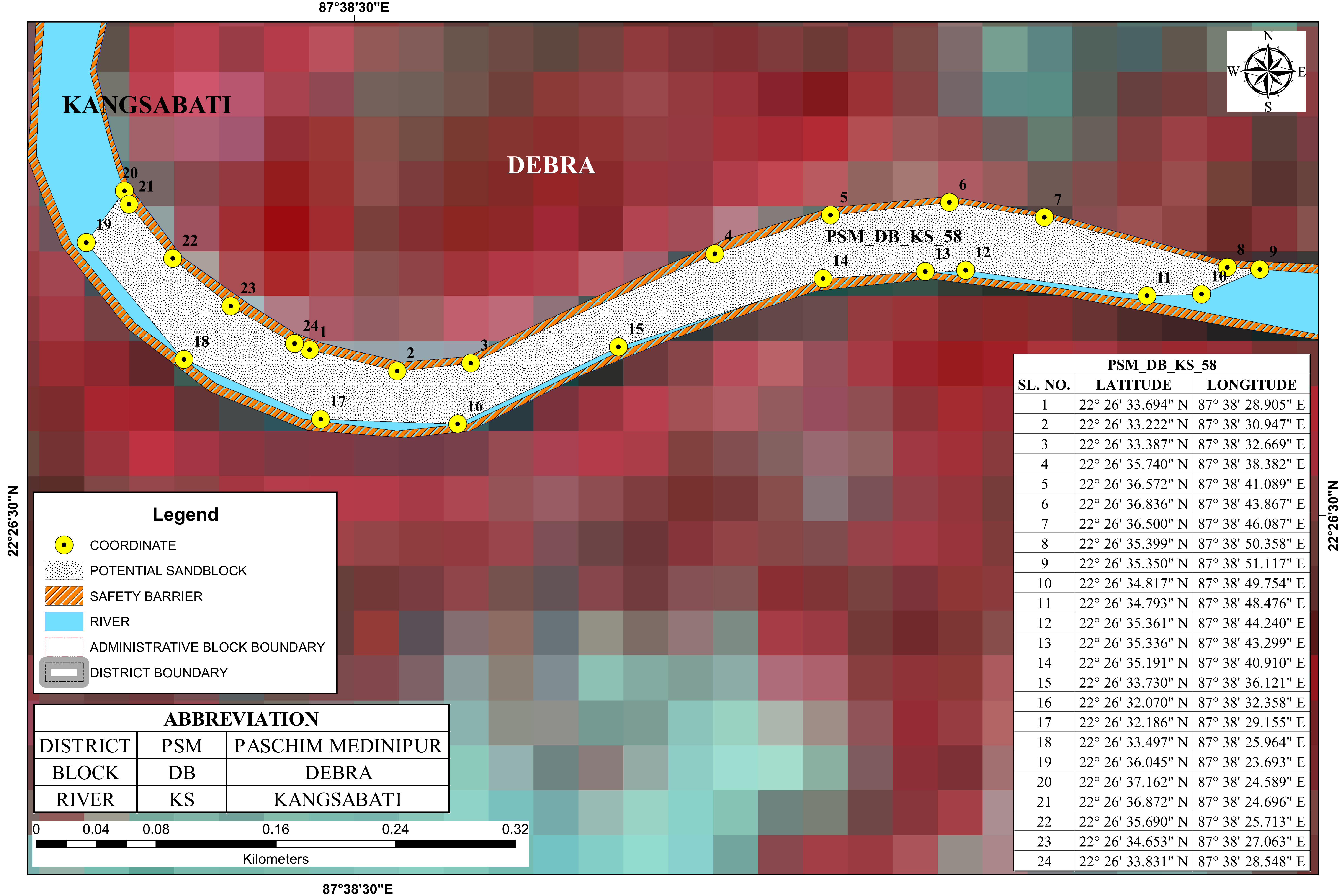
POTENTIAL BLOCK PSM_DB_KS_54 OF KANGSABATI RIVER



PSM_DB_KS_54		
SL. NO.	LATITUDE	LONGITUDE
1	22° 27' 7.850" N	87° 37' 9.417" E
2	22° 27' 7.362" N	87° 37' 6.030" E
3	22° 27' 7.975" N	87° 37' 3.070" E
4	22° 27' 9.914" N	87° 36' 59.250" E
5	22° 27' 11.245" N	87° 36' 57.745" E
6	22° 27' 13.290" N	87° 36' 56.085" E
7	22° 27' 14.748" N	87° 36' 55.630" E
8	22° 27' 17.728" N	87° 36' 55.383" E
9	22° 27' 20.478" N	87° 36' 56.414" E
10	22° 27' 22.843" N	87° 36' 56.702" E
11	22° 27' 23.960" N	87° 36' 56.938" E
12	22° 27' 25.418" N	87° 36' 58.334" E
13	22° 27' 25.200" N	87° 36' 59.033" E
14	22° 27' 24.023" N	87° 36' 58.329" E
15	22° 27' 20.536" N	87° 36' 56.833" E
16	22° 27' 18.885" N	87° 36' 56.400" E
17	22° 27' 17.526" N	87° 36' 56.264" E
18	22° 27' 15.821" N	87° 36' 56.608" E
19	22° 27' 12.356" N	87° 36' 58.074" E
20	22° 27' 10.301" N	87° 37' 0.139" E

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DB	DEBRA
RIVER	KS	KANGSABATI

POTENTIAL BLOCK PSM_DB_KS_58 OF KANGSABATI RIVER

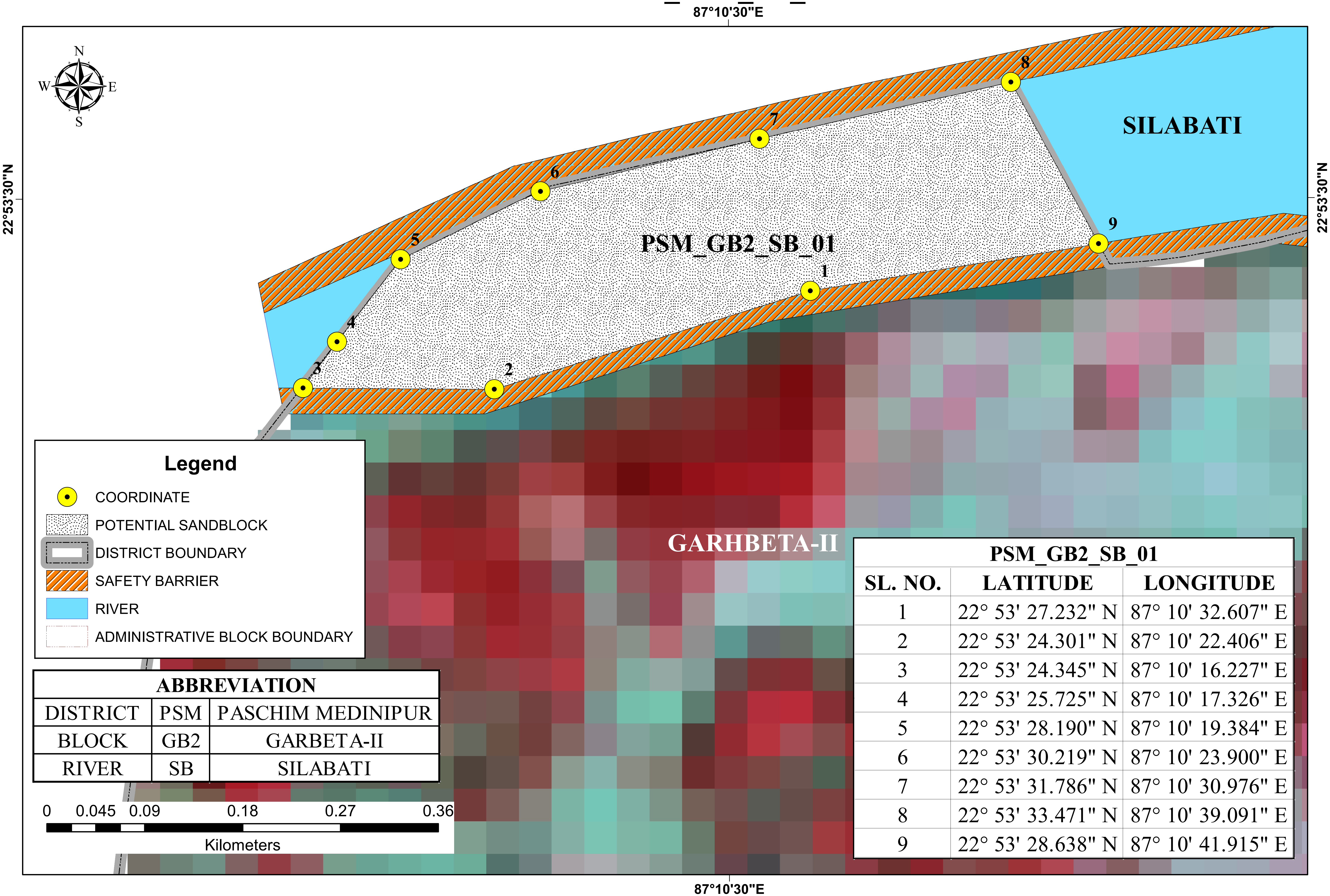


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DB	DEBRA
RIVER	KS	KANGSABATI

PSM_DB_KS_58

SL. NO.	LATITUDE	LONGITUDE
1	22° 26' 33.694" N	87° 38' 28.905" E
2	22° 26' 33.222" N	87° 38' 30.947" E
3	22° 26' 33.387" N	87° 38' 32.669" E
4	22° 26' 35.740" N	87° 38' 38.382" E
5	22° 26' 36.572" N	87° 38' 41.089" E
6	22° 26' 36.836" N	87° 38' 43.867" E
7	22° 26' 36.500" N	87° 38' 46.087" E
8	22° 26' 35.399" N	87° 38' 50.358" E
9	22° 26' 35.350" N	87° 38' 51.117" E
10	22° 26' 34.817" N	87° 38' 49.754" E
11	22° 26' 34.793" N	87° 38' 48.476" E
12	22° 26' 35.361" N	87° 38' 44.240" E
13	22° 26' 35.336" N	87° 38' 43.299" E
14	22° 26' 35.191" N	87° 38' 40.910" E
15	22° 26' 33.730" N	87° 38' 36.121" E
16	22° 26' 32.070" N	87° 38' 32.358" E
17	22° 26' 32.186" N	87° 38' 29.155" E
18	22° 26' 33.497" N	87° 38' 25.964" E
19	22° 26' 36.045" N	87° 38' 23.693" E
20	22° 26' 37.162" N	87° 38' 24.589" E
21	22° 26' 36.872" N	87° 38' 24.696" E
22	22° 26' 35.690" N	87° 38' 25.713" E
23	22° 26' 34.653" N	87° 38' 27.063" E
24	22° 26' 33.831" N	87° 38' 28.548" E

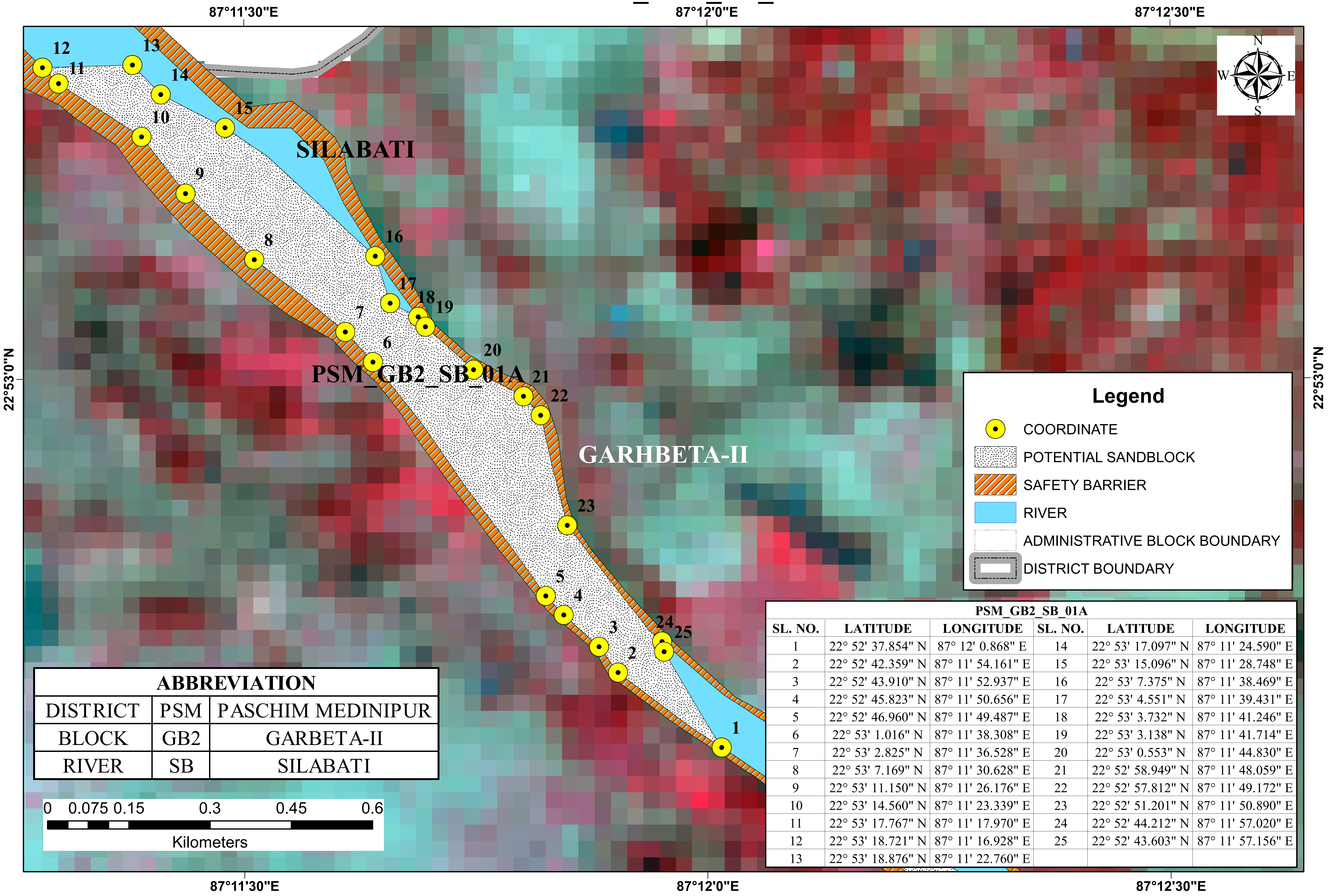
POTENTIAL BLOCK PSM_GB2_SB_01 OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB2	GARBETA-II
RIVER	SB	SILABATI

PSM_GB2_SB_01		
SL. NO.	LATITUDE	LONGITUDE
1	22° 53' 27.232" N	87° 10' 32.607" E
2	22° 53' 24.301" N	87° 10' 22.406" E
3	22° 53' 24.345" N	87° 10' 16.227" E
4	22° 53' 25.725" N	87° 10' 17.326" E
5	22° 53' 28.190" N	87° 10' 19.384" E
6	22° 53' 30.219" N	87° 10' 23.900" E
7	22° 53' 31.786" N	87° 10' 30.976" E
8	22° 53' 33.471" N	87° 10' 39.091" E
9	22° 53' 28.638" N	87° 10' 41.915" E

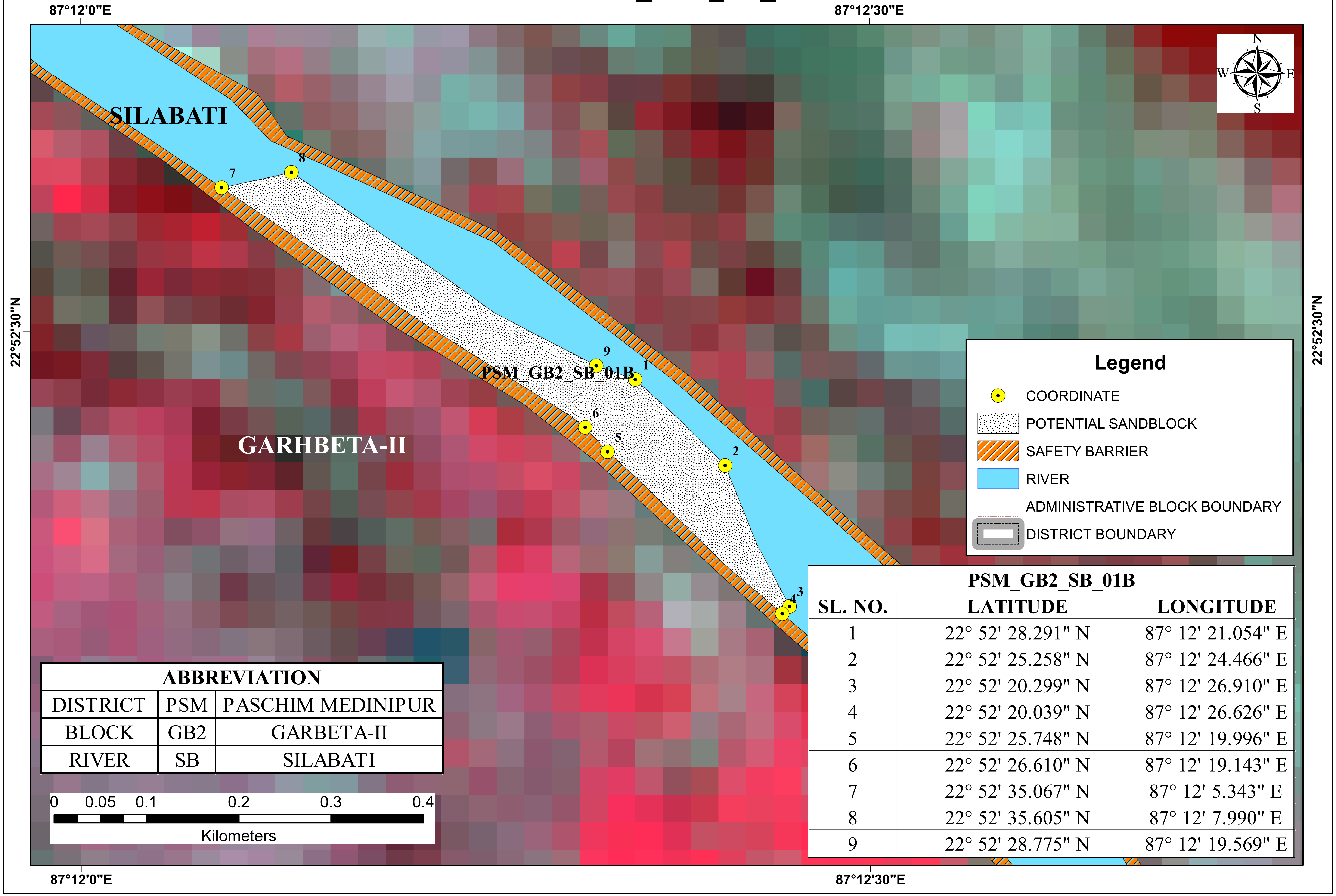
POTENTIAL BLOCK PSM_GB2_SB_01A OF SILABATI RIVER



PSM_GB2_SB_01A					
SL. NO.	LATITUDE	LONGITUDE	SL. NO.	LATITUDE	LONGITUDE
1	22° 52' 37.854" N	87° 12' 0.868" E	14	22° 53' 17.097" N	87° 11' 24.590" E
2	22° 52' 42.359" N	87° 11' 54.161" E	15	22° 53' 15.096" N	87° 11' 28.748" E
3	22° 52' 43.910" N	87° 11' 52.937" E	16	22° 53' 7.375" N	87° 11' 38.469" E
4	22° 52' 45.823" N	87° 11' 50.656" E	17	22° 53' 4.551" N	87° 11' 39.431" E
5	22° 52' 46.960" N	87° 11' 49.487" E	18	22° 53' 3.732" N	87° 11' 41.246" E
6	22° 53' 1.016" N	87° 11' 38.308" E	19	22° 53' 3.138" N	87° 11' 41.714" E
7	22° 53' 2.825" N	87° 11' 36.528" E	20	22° 53' 0.553" N	87° 11' 44.830" E
8	22° 53' 7.169" N	87° 11' 30.628" E	21	22° 52' 58.949" N	87° 11' 48.059" E
9	22° 53' 11.150" N	87° 11' 26.176" E	22	22° 52' 57.812" N	87° 11' 49.172" E
10	22° 53' 14.560" N	87° 11' 23.339" E	23	22° 52' 51.201" N	87° 11' 50.890" E
11	22° 53' 17.767" N	87° 11' 17.970" E	24	22° 52' 44.212" N	87° 11' 57.020" E
12	22° 53' 18.721" N	87° 11' 16.928" E	25	22° 52' 43.603" N	87° 11' 57.156" E
13	22° 53' 18.876" N	87° 11' 22.760" E			

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB2	GARBETA-II
RIVER	SB	SILABATI

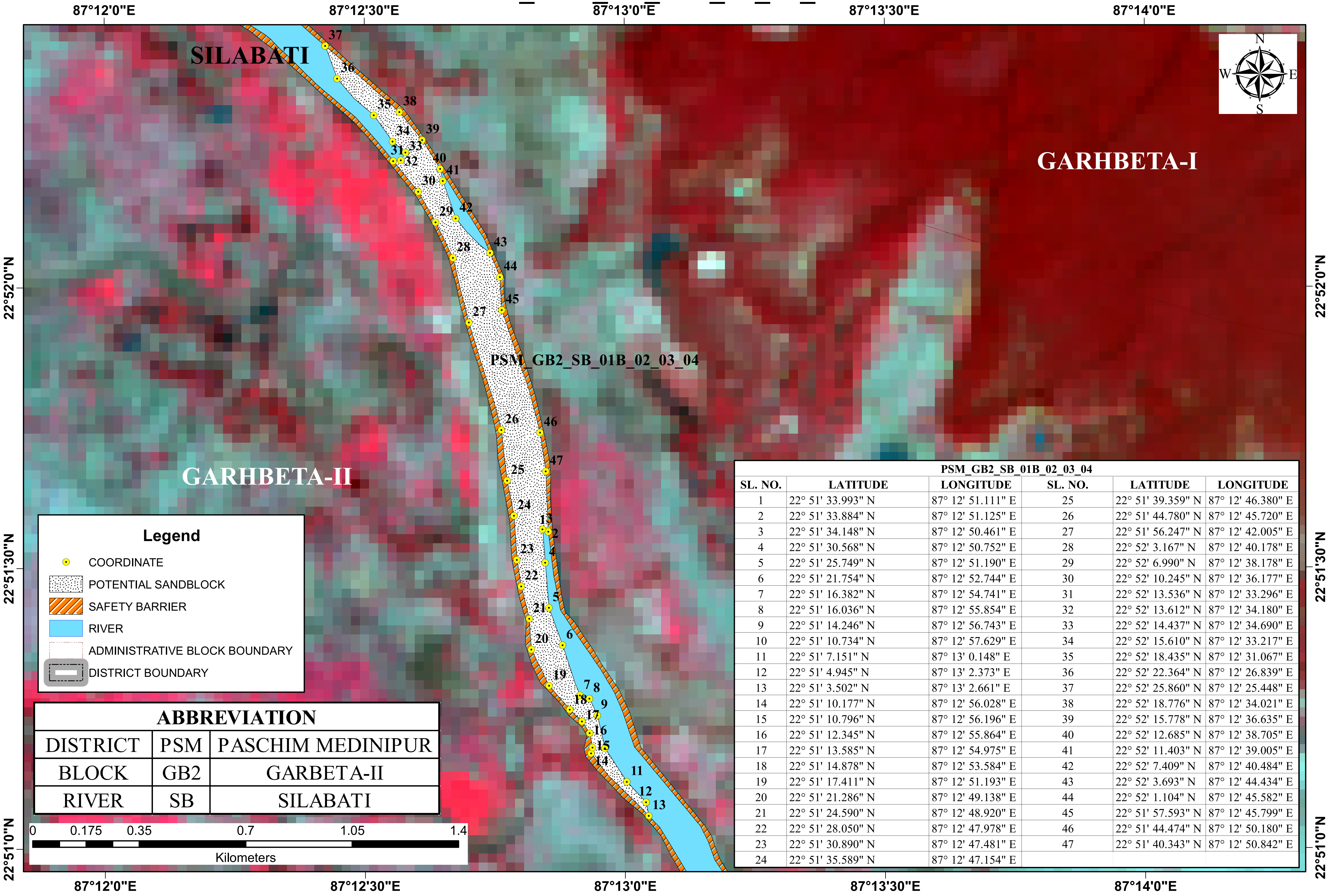
POTENTIAL BLOCK PSM_GB2_SB_01B OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB2	GARBETA-II
RIVER	SB	SILABATI

PSM_GB2_SB_01B		
SL. NO.	LATITUDE	LONGITUDE
1	22° 52' 28.291" N	87° 12' 21.054" E
2	22° 52' 25.258" N	87° 12' 24.466" E
3	22° 52' 20.299" N	87° 12' 26.910" E
4	22° 52' 20.039" N	87° 12' 26.626" E
5	22° 52' 25.748" N	87° 12' 19.996" E
6	22° 52' 26.610" N	87° 12' 19.143" E
7	22° 52' 35.067" N	87° 12' 5.343" E
8	22° 52' 35.605" N	87° 12' 7.990" E
9	22° 52' 28.775" N	87° 12' 19.569" E

POTENTIAL BLOCK PSM_GB2_SB_01B_02_03_04 OF SILABATI RIVER

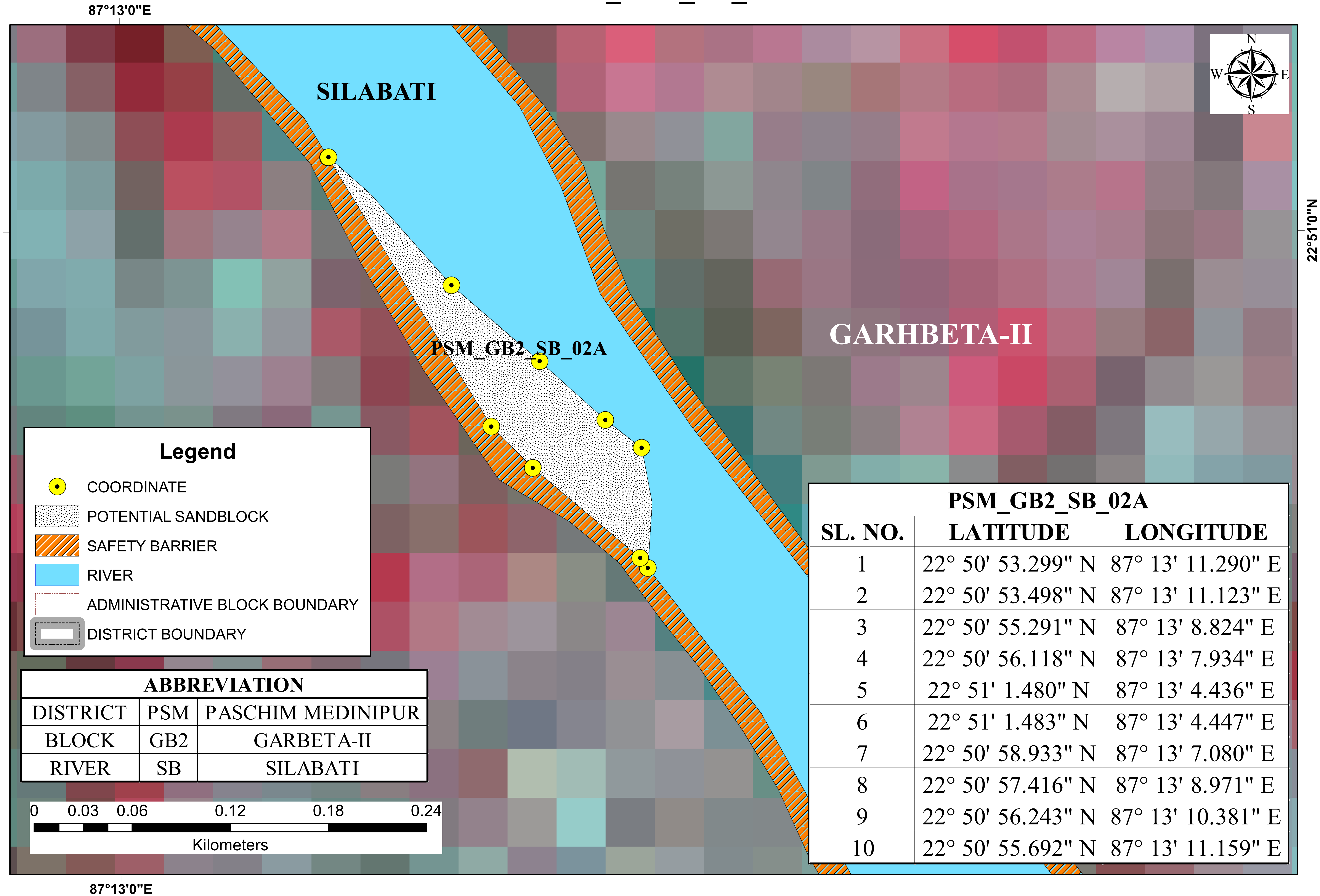


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB2	GARBETA-II
RIVER	SB	SILABATI

PSM_GB2_SB_01B_02_03_04

SL. NO.	LATITUDE	LONGITUDE	SL. NO.	LATITUDE	LONGITUDE
1	22° 51' 33.993" N	87° 12' 51.111" E	25	22° 51' 39.359" N	87° 12' 46.380" E
2	22° 51' 33.884" N	87° 12' 51.125" E	26	22° 51' 44.780" N	87° 12' 45.720" E
3	22° 51' 34.148" N	87° 12' 50.461" E	27	22° 51' 56.247" N	87° 12' 42.005" E
4	22° 51' 30.568" N	87° 12' 50.752" E	28	22° 52' 3.167" N	87° 12' 40.178" E
5	22° 51' 25.749" N	87° 12' 51.190" E	29	22° 52' 6.990" N	87° 12' 38.178" E
6	22° 51' 21.754" N	87° 12' 52.744" E	30	22° 52' 10.245" N	87° 12' 36.177" E
7	22° 51' 16.382" N	87° 12' 54.741" E	31	22° 52' 13.536" N	87° 12' 33.296" E
8	22° 51' 16.036" N	87° 12' 55.854" E	32	22° 52' 13.612" N	87° 12' 34.180" E
9	22° 51' 14.246" N	87° 12' 56.743" E	33	22° 52' 14.437" N	87° 12' 34.690" E
10	22° 51' 10.734" N	87° 12' 57.629" E	34	22° 52' 15.610" N	87° 12' 33.217" E
11	22° 51' 7.151" N	87° 13' 0.148" E	35	22° 52' 18.435" N	87° 12' 31.067" E
12	22° 51' 4.945" N	87° 13' 2.373" E	36	22° 52' 22.364" N	87° 12' 26.839" E
13	22° 51' 3.502" N	87° 13' 2.661" E	37	22° 52' 25.860" N	87° 12' 25.448" E
14	22° 51' 10.177" N	87° 12' 56.028" E	38	22° 52' 18.776" N	87° 12' 34.021" E
15	22° 51' 10.796" N	87° 12' 56.196" E	39	22° 52' 15.778" N	87° 12' 36.635" E
16	22° 51' 12.345" N	87° 12' 55.864" E	40	22° 52' 12.685" N	87° 12' 38.705" E
17	22° 51' 13.585" N	87° 12' 54.975" E	41	22° 52' 11.403" N	87° 12' 39.005" E
18	22° 51' 14.878" N	87° 12' 53.584" E	42	22° 52' 7.409" N	87° 12' 40.484" E
19	22° 51' 17.411" N	87° 12' 51.193" E	43	22° 52' 3.693" N	87° 12' 44.434" E
20	22° 51' 21.286" N	87° 12' 49.138" E	44	22° 52' 1.104" N	87° 12' 45.582" E
21	22° 51' 24.590" N	87° 12' 48.920" E	45	22° 51' 57.593" N	87° 12' 45.799" E
22	22° 51' 28.050" N	87° 12' 47.978" E	46	22° 51' 44.474" N	87° 12' 50.180" E
23	22° 51' 30.890" N	87° 12' 47.481" E	47	22° 51' 40.343" N	87° 12' 50.842" E
24	22° 51' 35.589" N	87° 12' 47.154" E			

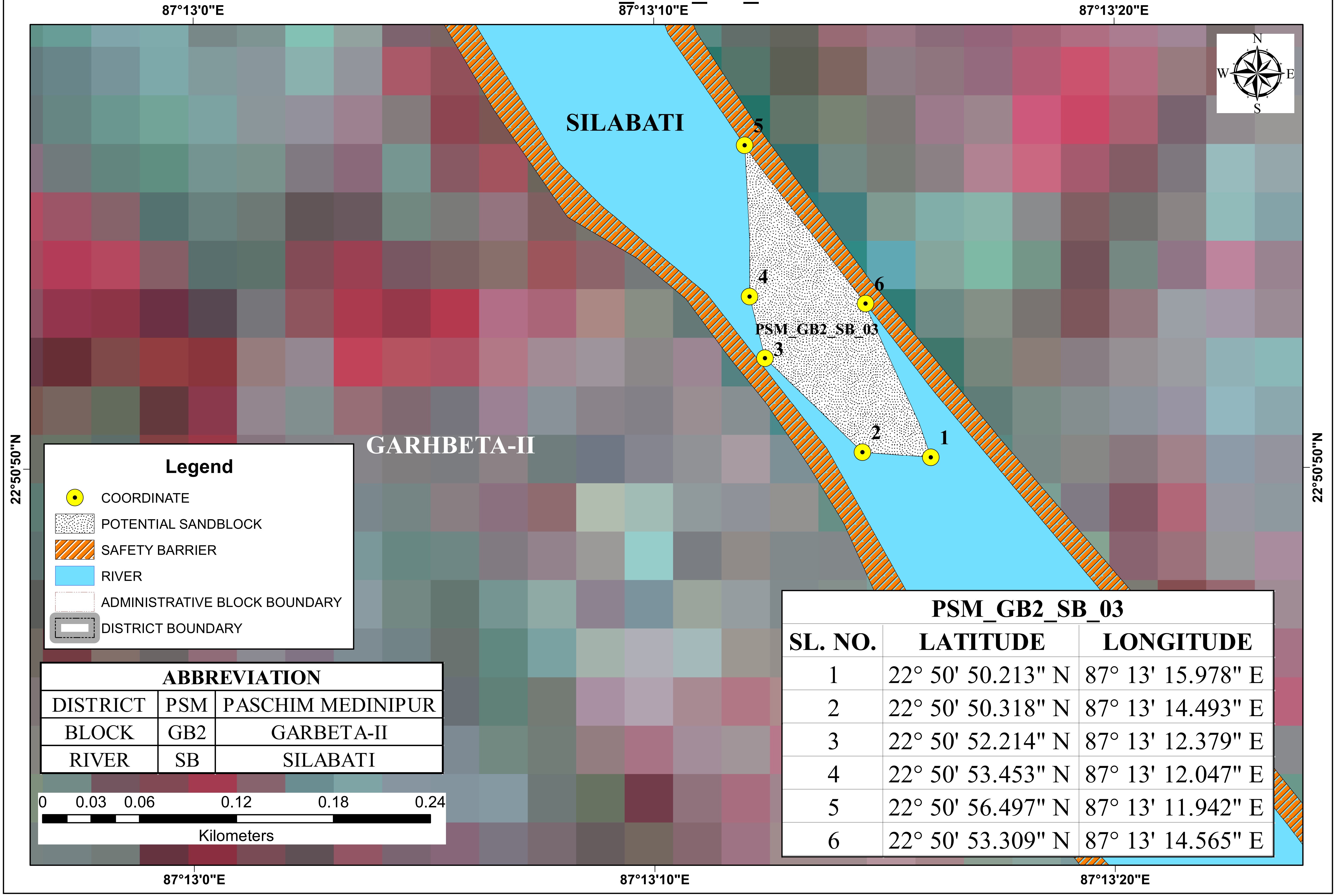
POTENTIAL BLOCK PSM_GB2_SB_02A OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB2	GARBETA-II
RIVER	SB	SILABATI

PSM_GB2_SB_02A		
SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 53.299" N	87° 13' 11.290" E
2	22° 50' 53.498" N	87° 13' 11.123" E
3	22° 50' 55.291" N	87° 13' 8.824" E
4	22° 50' 56.118" N	87° 13' 7.934" E
5	22° 51' 1.480" N	87° 13' 4.436" E
6	22° 51' 1.483" N	87° 13' 4.447" E
7	22° 50' 58.933" N	87° 13' 7.080" E
8	22° 50' 57.416" N	87° 13' 8.971" E
9	22° 50' 56.243" N	87° 13' 10.381" E
10	22° 50' 55.692" N	87° 13' 11.159" E

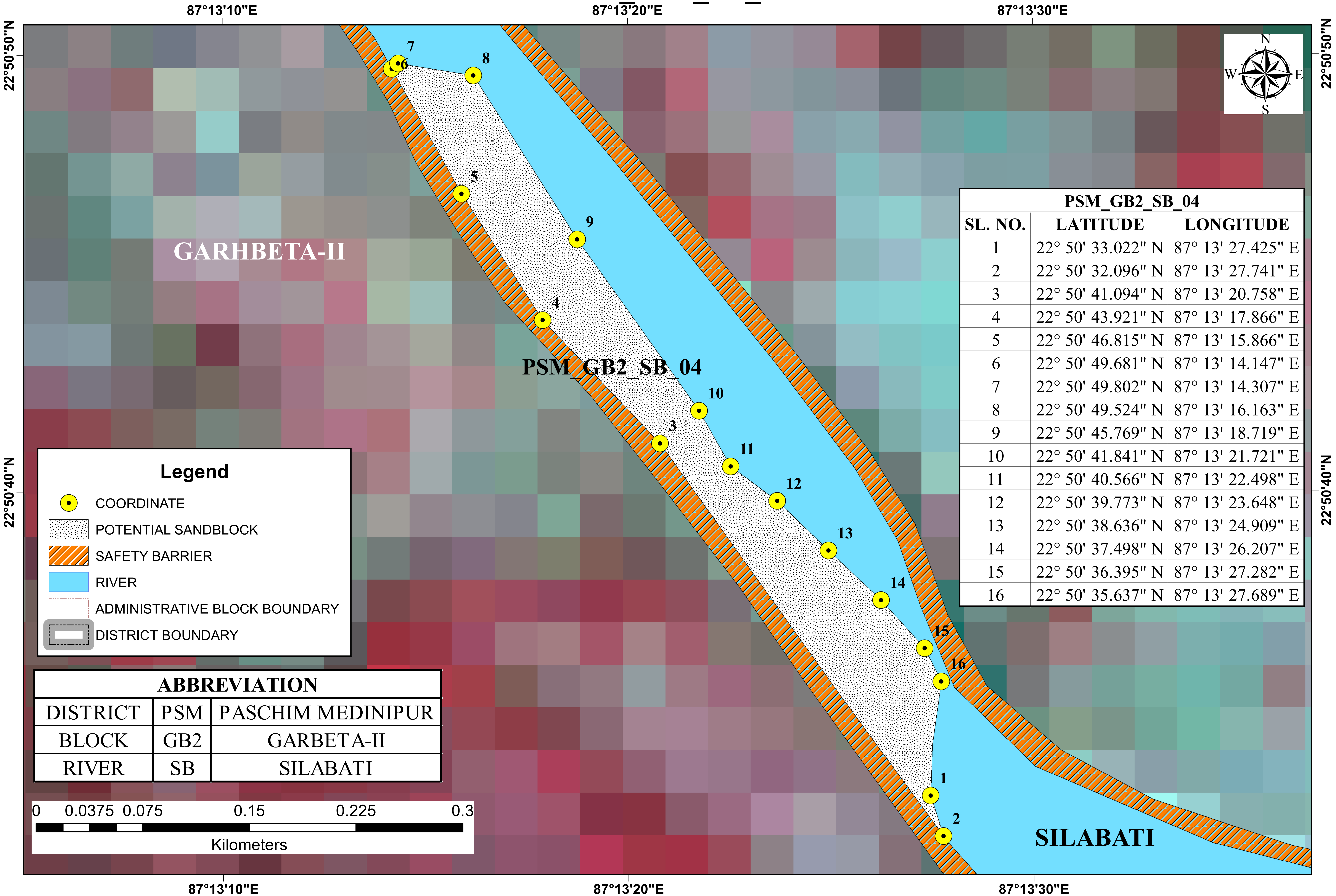
POTENTIAL BLOCK PSM_GB2_SB_03 OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB2	GARBETA-II
RIVER	SB	SILABATI

PSM_GB2_SB_03		
SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 50.213" N	87° 13' 15.978" E
2	22° 50' 50.318" N	87° 13' 14.493" E
3	22° 50' 52.214" N	87° 13' 12.379" E
4	22° 50' 53.453" N	87° 13' 12.047" E
5	22° 50' 56.497" N	87° 13' 11.942" E
6	22° 50' 53.309" N	87° 13' 14.565" E

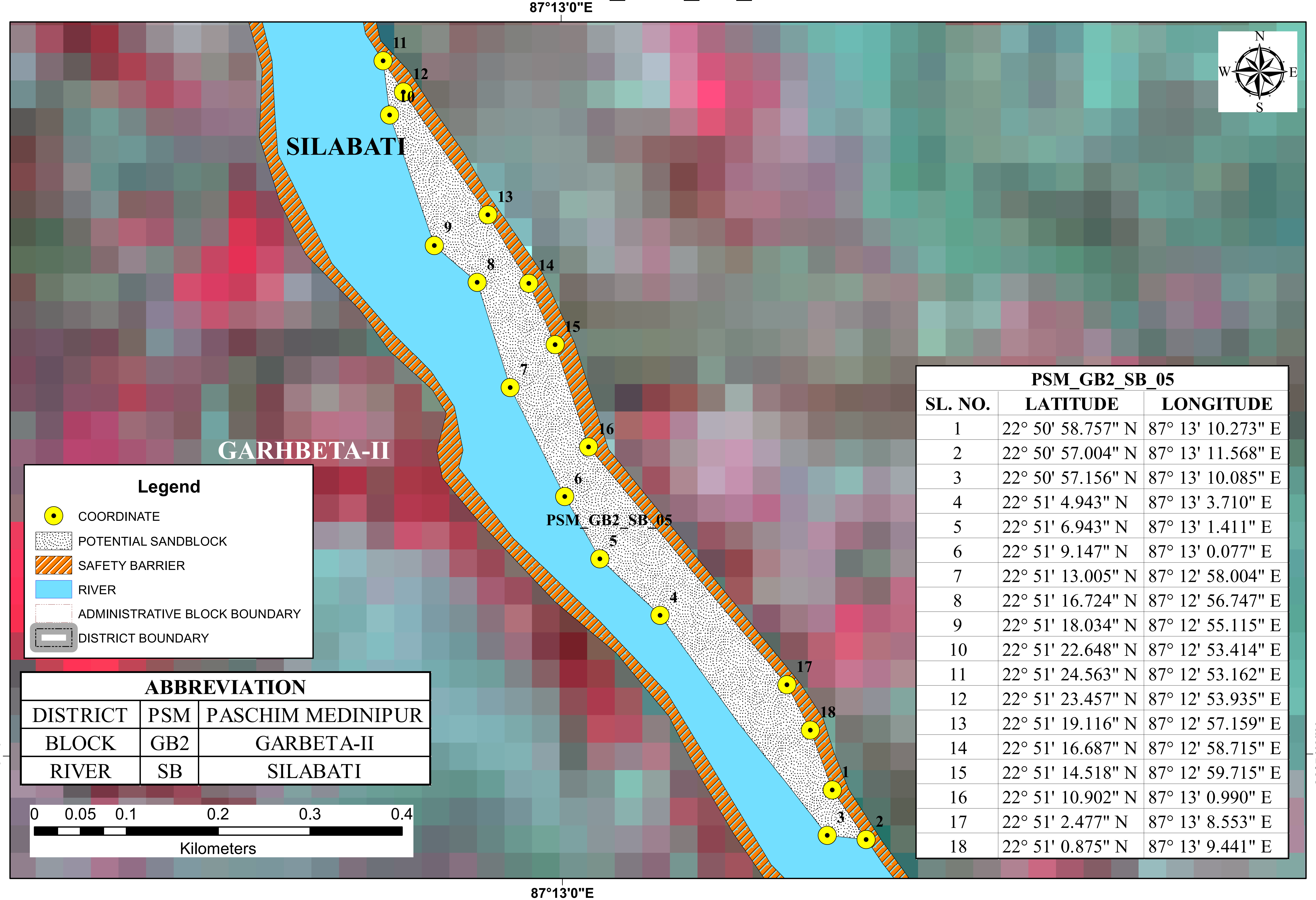
POTENTIAL BLOCK PSM_GB2_SB_04 OF SILABATI RIVER



PSM_GB2_SB_04		
SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 33.022" N	87° 13' 27.425" E
2	22° 50' 32.096" N	87° 13' 27.741" E
3	22° 50' 41.094" N	87° 13' 20.758" E
4	22° 50' 43.921" N	87° 13' 17.866" E
5	22° 50' 46.815" N	87° 13' 15.866" E
6	22° 50' 49.681" N	87° 13' 14.147" E
7	22° 50' 49.802" N	87° 13' 14.307" E
8	22° 50' 49.524" N	87° 13' 16.163" E
9	22° 50' 45.769" N	87° 13' 18.719" E
10	22° 50' 41.841" N	87° 13' 21.721" E
11	22° 50' 40.566" N	87° 13' 22.498" E
12	22° 50' 39.773" N	87° 13' 23.648" E
13	22° 50' 38.636" N	87° 13' 24.909" E
14	22° 50' 37.498" N	87° 13' 26.207" E
15	22° 50' 36.395" N	87° 13' 27.282" E
16	22° 50' 35.637" N	87° 13' 27.689" E

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB2	GARBETA-II
RIVER	SB	SILABATI

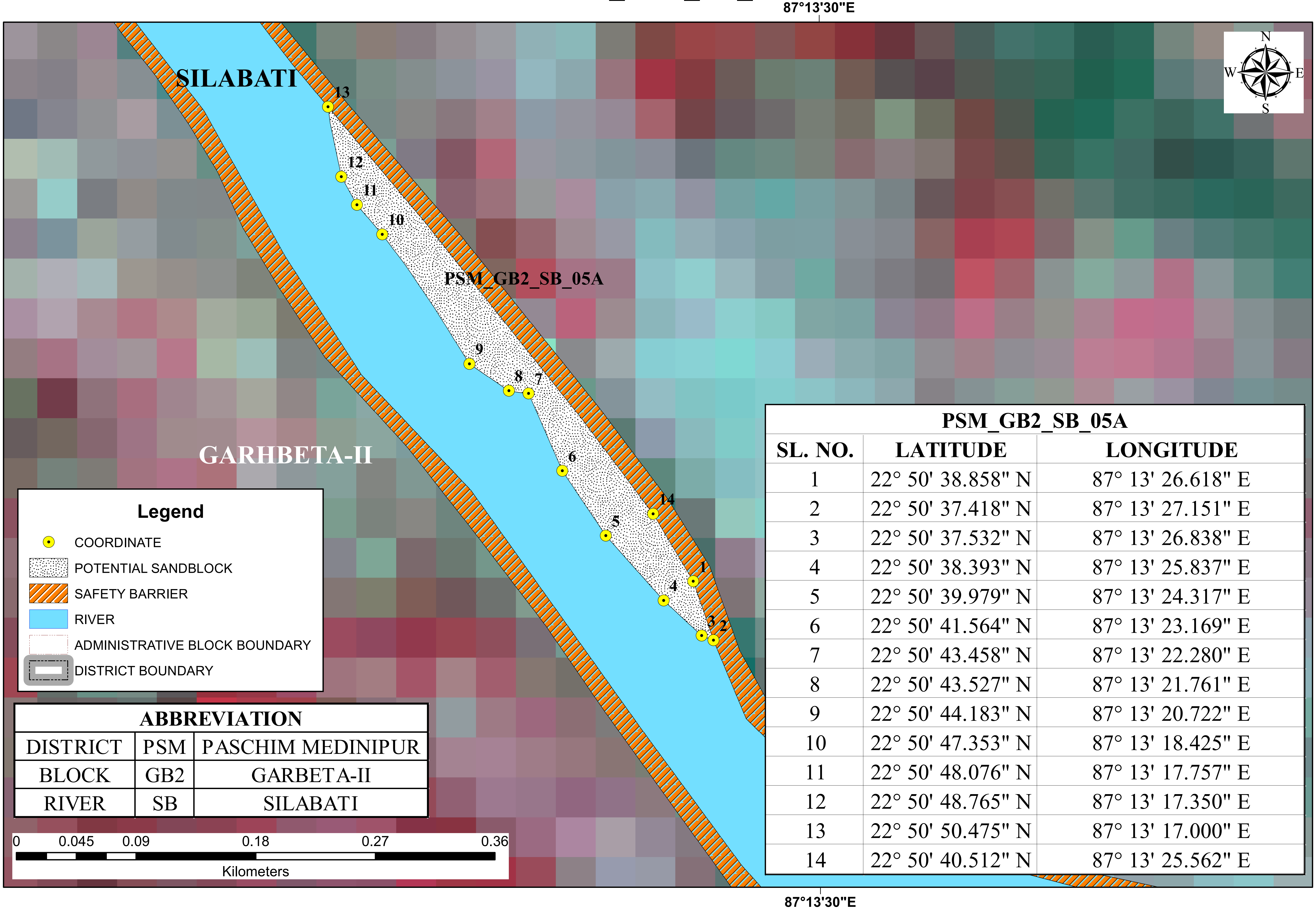
POTENTIAL BLOCK PSM_GB2_SB_05 OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB2	GARBETA-II
RIVER	SB	SILABATI

PSM_GB2_SB_05		
SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 58.757" N	87° 13' 10.273" E
2	22° 50' 57.004" N	87° 13' 11.568" E
3	22° 50' 57.156" N	87° 13' 10.085" E
4	22° 51' 4.943" N	87° 13' 3.710" E
5	22° 51' 6.943" N	87° 13' 1.411" E
6	22° 51' 9.147" N	87° 13' 0.077" E
7	22° 51' 13.005" N	87° 12' 58.004" E
8	22° 51' 16.724" N	87° 12' 56.747" E
9	22° 51' 18.034" N	87° 12' 55.115" E
10	22° 51' 22.648" N	87° 12' 53.414" E
11	22° 51' 24.563" N	87° 12' 53.162" E
12	22° 51' 23.457" N	87° 12' 53.935" E
13	22° 51' 19.116" N	87° 12' 57.159" E
14	22° 51' 16.687" N	87° 12' 58.715" E
15	22° 51' 14.518" N	87° 12' 59.715" E
16	22° 51' 10.902" N	87° 13' 0.990" E
17	22° 51' 2.477" N	87° 13' 8.553" E
18	22° 51' 0.875" N	87° 13' 9.441" E

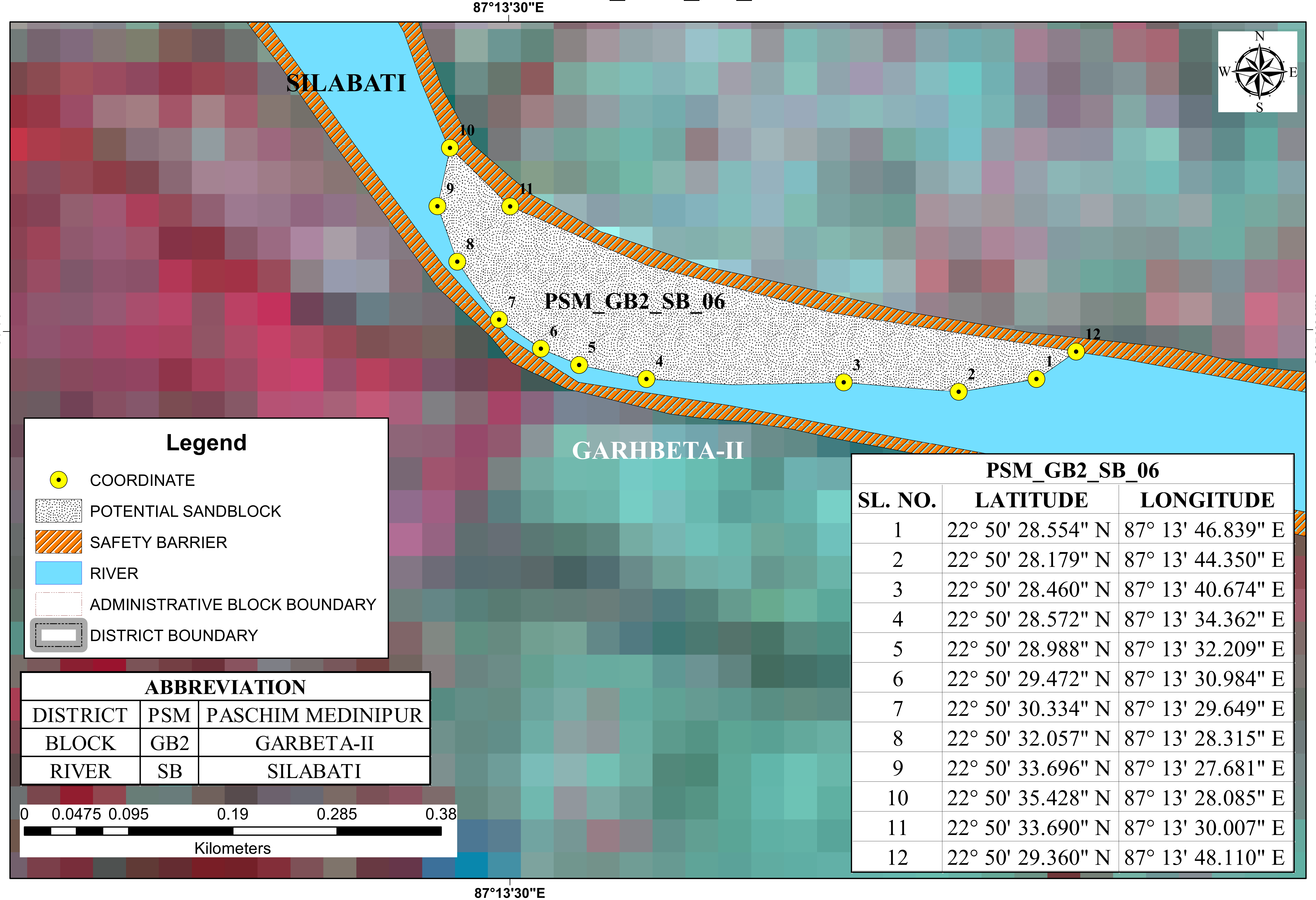
POTENTIAL BLOCK PSM_GB2_SB_05A OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB2	GARBETA-II
RIVER	SB	SILABATI

PSM_GB2_SB_05A		
SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 38.858" N	87° 13' 26.618" E
2	22° 50' 37.418" N	87° 13' 27.151" E
3	22° 50' 37.532" N	87° 13' 26.838" E
4	22° 50' 38.393" N	87° 13' 25.837" E
5	22° 50' 39.979" N	87° 13' 24.317" E
6	22° 50' 41.564" N	87° 13' 23.169" E
7	22° 50' 43.458" N	87° 13' 22.280" E
8	22° 50' 43.527" N	87° 13' 21.761" E
9	22° 50' 44.183" N	87° 13' 20.722" E
10	22° 50' 47.353" N	87° 13' 18.425" E
11	22° 50' 48.076" N	87° 13' 17.757" E
12	22° 50' 48.765" N	87° 13' 17.350" E
13	22° 50' 50.475" N	87° 13' 17.000" E
14	22° 50' 40.512" N	87° 13' 25.562" E

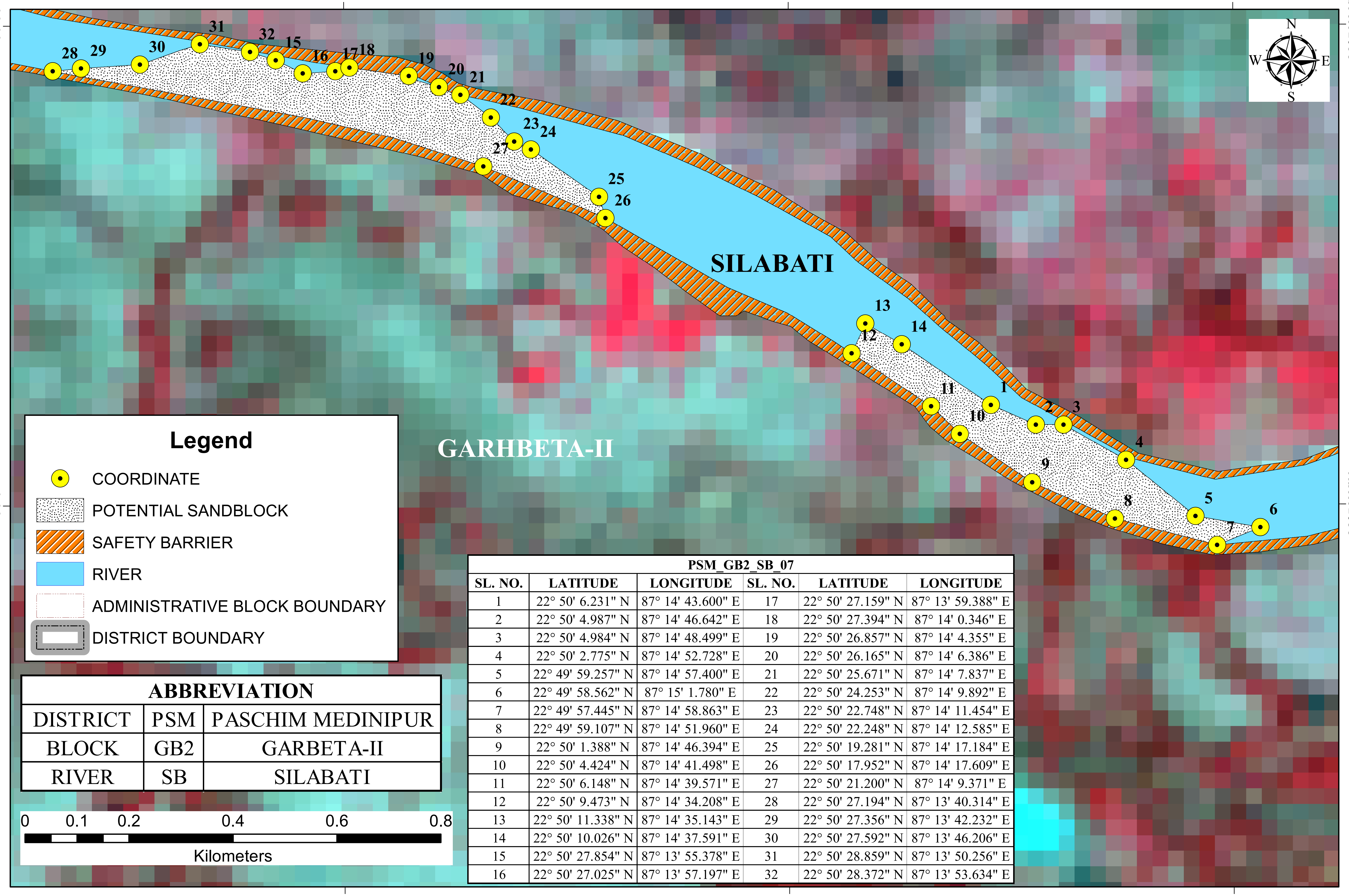
POTENTIAL BLOCK PSM_GB2_SB_06 OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB2	GARBETA-II
RIVER	SB	SILABATI

PSM_GB2_SB_06		
SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 28.554" N	87° 13' 46.839" E
2	22° 50' 28.179" N	87° 13' 44.350" E
3	22° 50' 28.460" N	87° 13' 40.674" E
4	22° 50' 28.572" N	87° 13' 34.362" E
5	22° 50' 28.988" N	87° 13' 32.209" E
6	22° 50' 29.472" N	87° 13' 30.984" E
7	22° 50' 30.334" N	87° 13' 29.649" E
8	22° 50' 32.057" N	87° 13' 28.315" E
9	22° 50' 33.696" N	87° 13' 27.681" E
10	22° 50' 35.428" N	87° 13' 28.085" E
11	22° 50' 33.690" N	87° 13' 30.007" E
12	22° 50' 29.360" N	87° 13' 48.110" E

POTENTIAL BLOCK PSM_GB2_SB_07 OF SILABATI RIVER

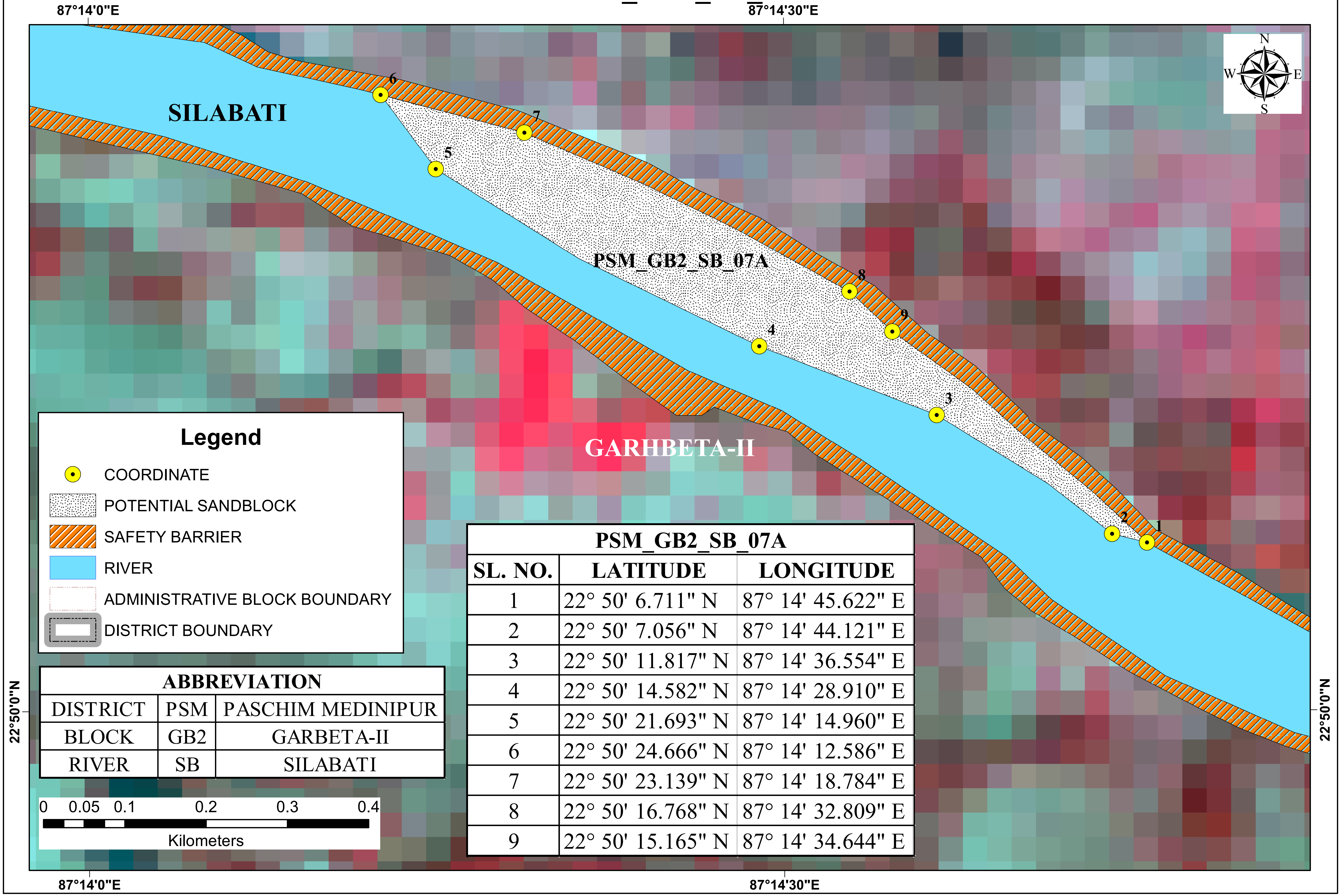


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB2	GARBETA-II
RIVER	SB	SILABATI

PSM_GB2_SB_07

SL. NO.	LATITUDE	LONGITUDE	SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 6.231" N	87° 14' 43.600" E	17	22° 50' 27.159" N	87° 13' 59.388" E
2	22° 50' 4.987" N	87° 14' 46.642" E	18	22° 50' 27.394" N	87° 14' 0.346" E
3	22° 50' 4.984" N	87° 14' 48.499" E	19	22° 50' 26.857" N	87° 14' 4.355" E
4	22° 50' 2.775" N	87° 14' 52.728" E	20	22° 50' 26.165" N	87° 14' 6.386" E
5	22° 49' 59.257" N	87° 14' 57.400" E	21	22° 50' 25.671" N	87° 14' 7.837" E
6	22° 49' 58.562" N	87° 15' 1.780" E	22	22° 50' 24.253" N	87° 14' 9.892" E
7	22° 49' 57.445" N	87° 14' 58.863" E	23	22° 50' 22.748" N	87° 14' 11.454" E
8	22° 49' 59.107" N	87° 14' 51.960" E	24	22° 50' 22.248" N	87° 14' 12.585" E
9	22° 50' 1.388" N	87° 14' 46.394" E	25	22° 50' 19.281" N	87° 14' 17.184" E
10	22° 50' 4.424" N	87° 14' 41.498" E	26	22° 50' 17.952" N	87° 14' 17.609" E
11	22° 50' 6.148" N	87° 14' 39.571" E	27	22° 50' 21.200" N	87° 14' 9.371" E
12	22° 50' 9.473" N	87° 14' 34.208" E	28	22° 50' 27.194" N	87° 13' 40.314" E
13	22° 50' 11.338" N	87° 14' 35.143" E	29	22° 50' 27.356" N	87° 13' 42.232" E
14	22° 50' 10.026" N	87° 14' 37.591" E	30	22° 50' 27.592" N	87° 13' 46.206" E
15	22° 50' 27.854" N	87° 13' 55.378" E	31	22° 50' 28.859" N	87° 13' 50.256" E
16	22° 50' 27.025" N	87° 13' 57.197" E	32	22° 50' 28.372" N	87° 13' 53.634" E

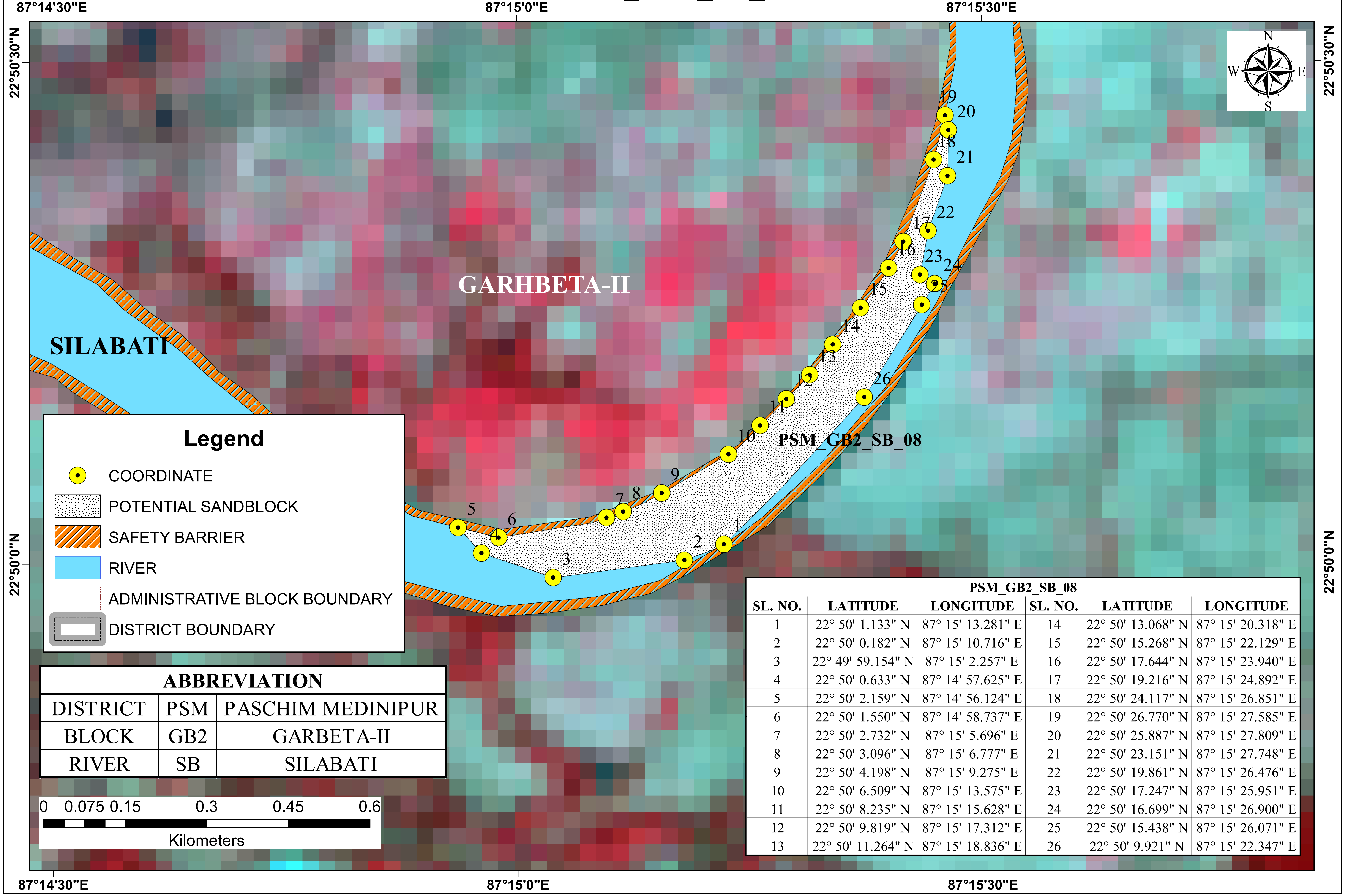
POTENTIAL BLOCK PSM_GB2_SB_07A OF SILABATI RIVER



PSM_GB2_SB_07A		
SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 6.711" N	87° 14' 45.622" E
2	22° 50' 7.056" N	87° 14' 44.121" E
3	22° 50' 11.817" N	87° 14' 36.554" E
4	22° 50' 14.582" N	87° 14' 28.910" E
5	22° 50' 21.693" N	87° 14' 14.960" E
6	22° 50' 24.666" N	87° 14' 12.586" E
7	22° 50' 23.139" N	87° 14' 18.784" E
8	22° 50' 16.768" N	87° 14' 32.809" E
9	22° 50' 15.165" N	87° 14' 34.644" E

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB2	GARBETA-II
RIVER	SB	SILABATI

POTENTIAL BLOCK PSM_GB2_SB_08 OF SILABATI RIVER

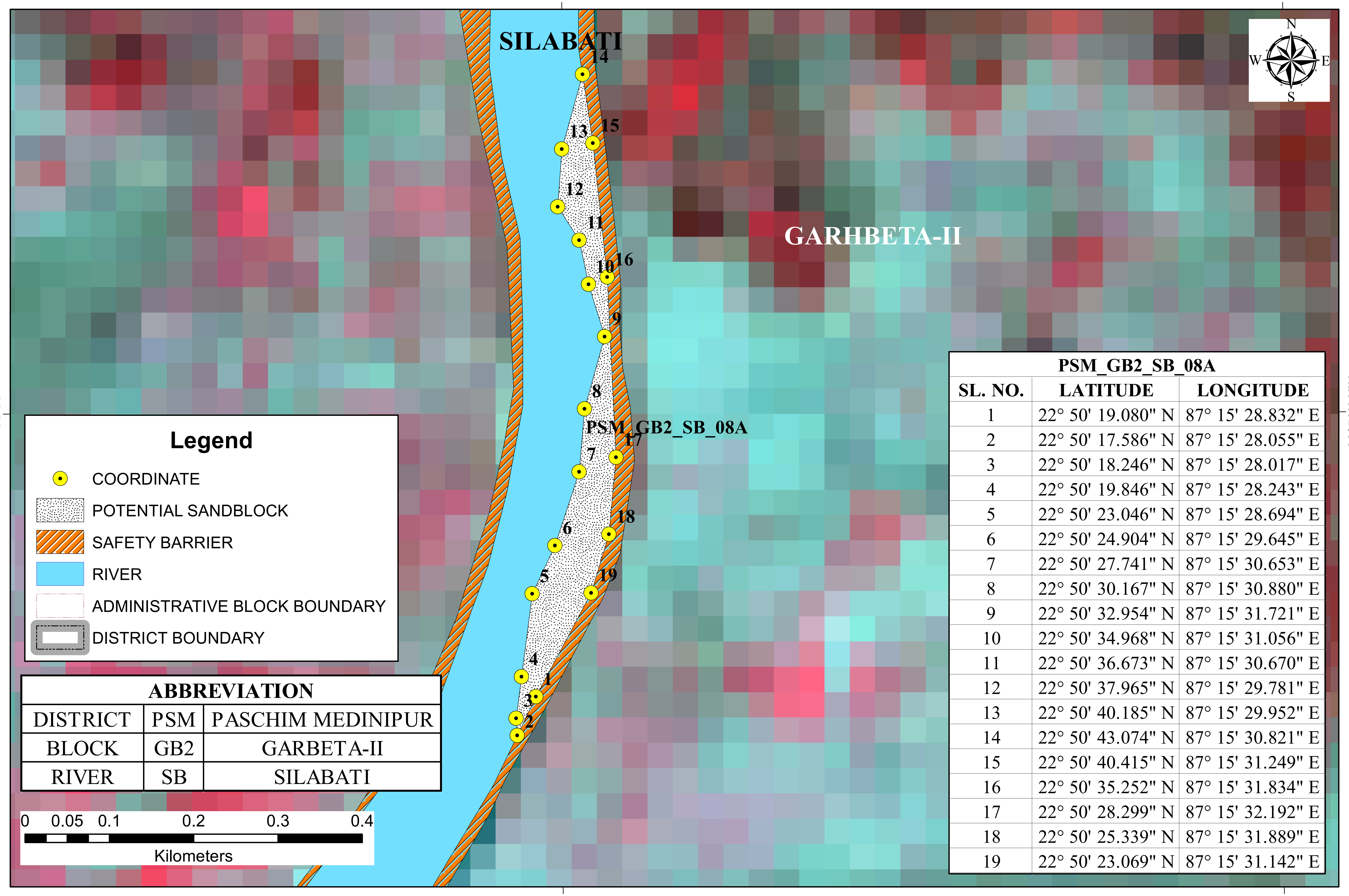


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB2	GARBETA-II
RIVER	SB	SILABATI

PSM_GB2_SB_08

SL. NO.	LATITUDE	LONGITUDE	SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 1.133" N	87° 15' 13.281" E	14	22° 50' 13.068" N	87° 15' 20.318" E
2	22° 50' 0.182" N	87° 15' 10.716" E	15	22° 50' 15.268" N	87° 15' 22.129" E
3	22° 49' 59.154" N	87° 15' 2.257" E	16	22° 50' 17.644" N	87° 15' 23.940" E
4	22° 50' 0.633" N	87° 14' 57.625" E	17	22° 50' 19.216" N	87° 15' 24.892" E
5	22° 50' 2.159" N	87° 14' 56.124" E	18	22° 50' 24.117" N	87° 15' 26.851" E
6	22° 50' 1.550" N	87° 14' 58.737" E	19	22° 50' 26.770" N	87° 15' 27.585" E
7	22° 50' 2.732" N	87° 15' 5.696" E	20	22° 50' 25.887" N	87° 15' 27.809" E
8	22° 50' 3.096" N	87° 15' 6.777" E	21	22° 50' 23.151" N	87° 15' 27.748" E
9	22° 50' 4.198" N	87° 15' 9.275" E	22	22° 50' 19.861" N	87° 15' 26.476" E
10	22° 50' 6.509" N	87° 15' 13.575" E	23	22° 50' 17.247" N	87° 15' 25.951" E
11	22° 50' 8.235" N	87° 15' 15.628" E	24	22° 50' 16.699" N	87° 15' 26.900" E
12	22° 50' 9.819" N	87° 15' 17.312" E	25	22° 50' 15.438" N	87° 15' 26.071" E
13	22° 50' 11.264" N	87° 15' 18.836" E	26	22° 50' 9.921" N	87° 15' 22.347" E

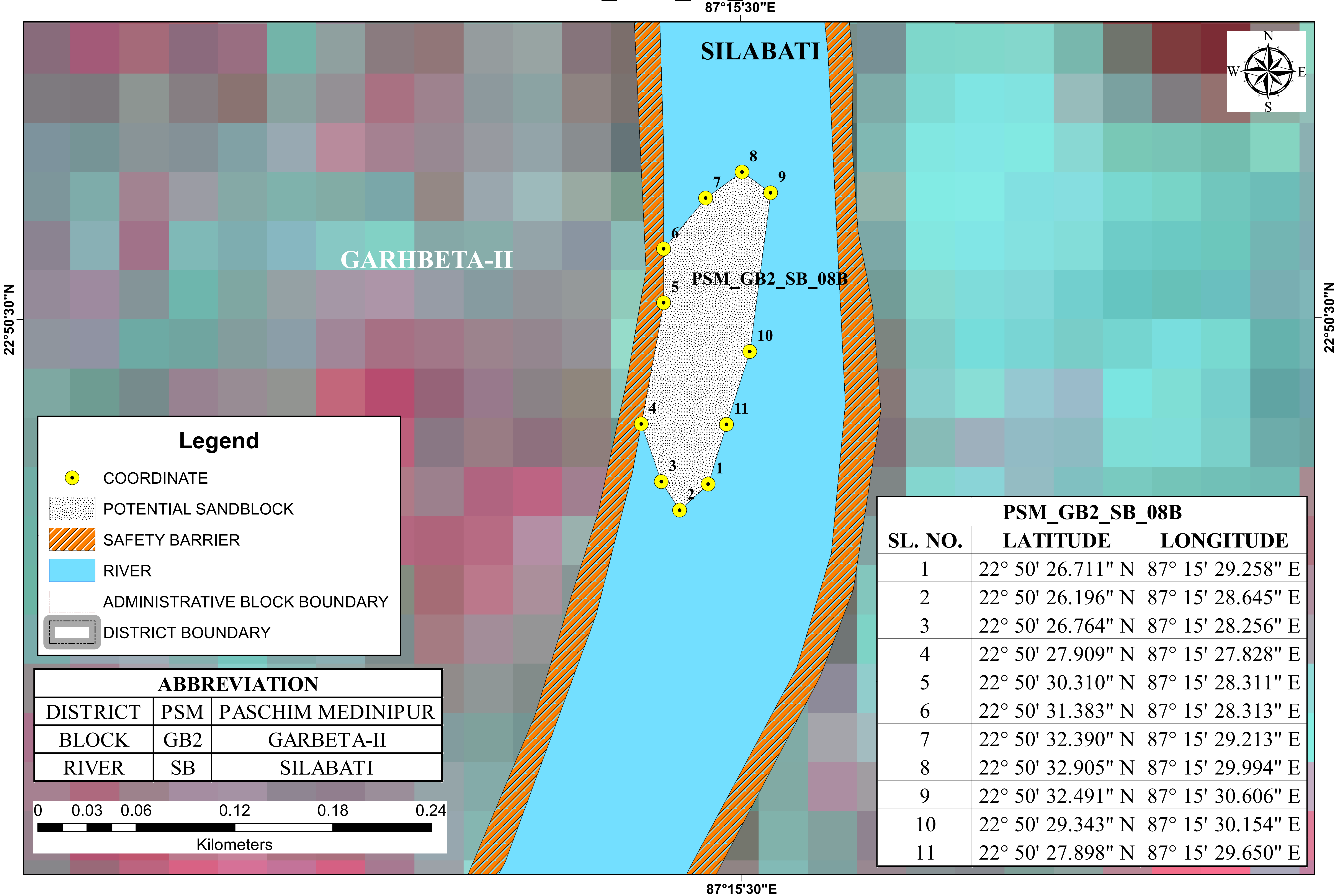
POTENTIAL BLOCK PSM_GB2_SB_08A OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB2	GARBETA-II
RIVER	SB	SILABATI

PSM_GB2_SB_08A		
SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 19.080" N	87° 15' 28.832" E
2	22° 50' 17.586" N	87° 15' 28.055" E
3	22° 50' 18.246" N	87° 15' 28.017" E
4	22° 50' 19.846" N	87° 15' 28.243" E
5	22° 50' 23.046" N	87° 15' 28.694" E
6	22° 50' 24.904" N	87° 15' 29.645" E
7	22° 50' 27.741" N	87° 15' 30.653" E
8	22° 50' 30.167" N	87° 15' 30.880" E
9	22° 50' 32.954" N	87° 15' 31.721" E
10	22° 50' 34.968" N	87° 15' 31.056" E
11	22° 50' 36.673" N	87° 15' 30.670" E
12	22° 50' 37.965" N	87° 15' 29.781" E
13	22° 50' 40.185" N	87° 15' 29.952" E
14	22° 50' 43.074" N	87° 15' 30.821" E
15	22° 50' 40.415" N	87° 15' 31.249" E
16	22° 50' 35.252" N	87° 15' 31.834" E
17	22° 50' 28.299" N	87° 15' 32.192" E
18	22° 50' 25.339" N	87° 15' 31.889" E
19	22° 50' 23.069" N	87° 15' 31.142" E

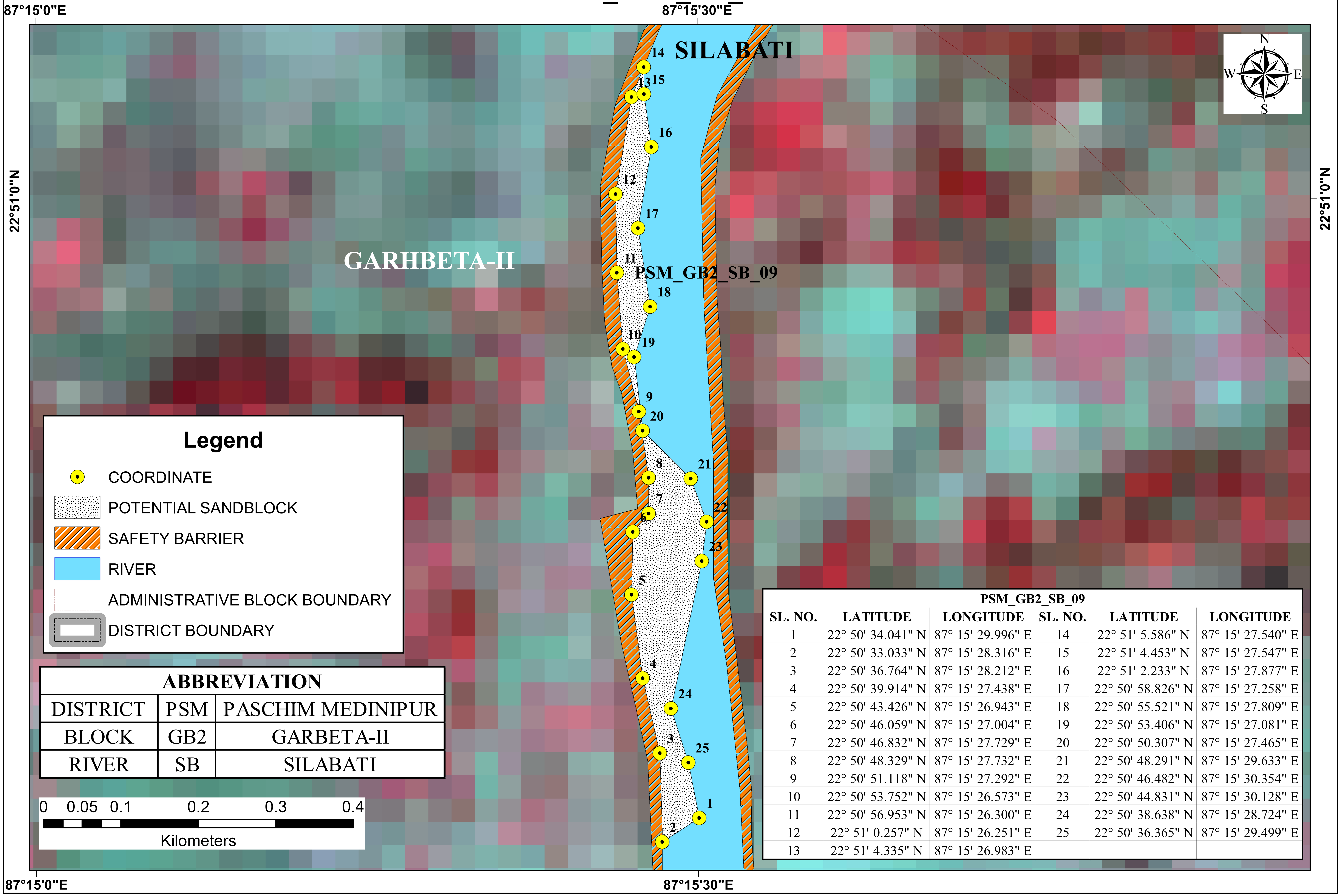
POTENTIAL BLOCK PSM_GB2_SB_08B OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB2	GARBETA-II
RIVER	SB	SILABATI

PSM_GB2_SB_08B		
SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 26.711" N	87° 15' 29.258" E
2	22° 50' 26.196" N	87° 15' 28.645" E
3	22° 50' 26.764" N	87° 15' 28.256" E
4	22° 50' 27.909" N	87° 15' 27.828" E
5	22° 50' 30.310" N	87° 15' 28.311" E
6	22° 50' 31.383" N	87° 15' 28.313" E
7	22° 50' 32.390" N	87° 15' 29.213" E
8	22° 50' 32.905" N	87° 15' 29.994" E
9	22° 50' 32.491" N	87° 15' 30.606" E
10	22° 50' 29.343" N	87° 15' 30.154" E
11	22° 50' 27.898" N	87° 15' 29.650" E

POTENTIAL BLOCK PSM_GB2_SB_09 OF SILABATI RIVER

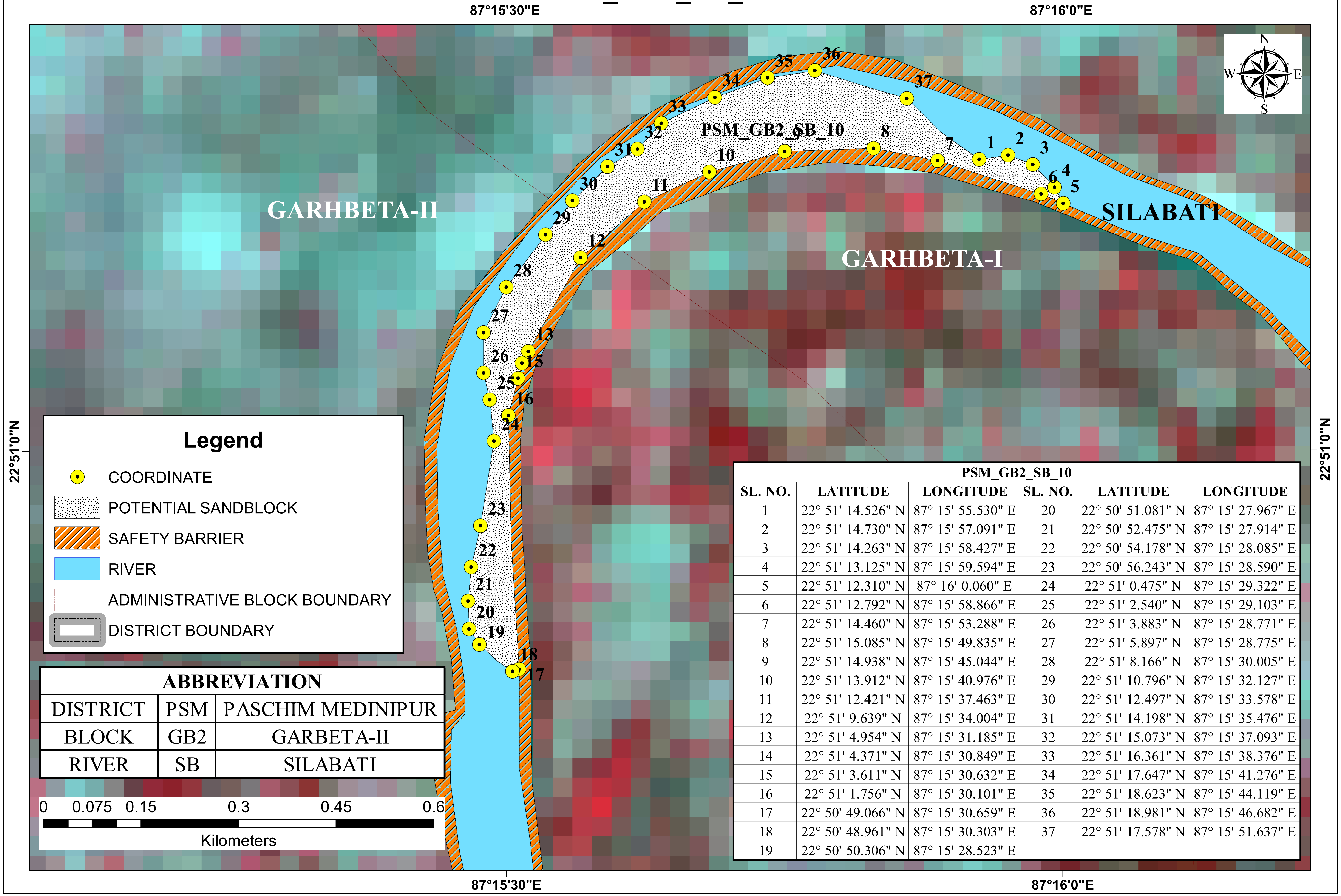


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB2	GARBETA-II
RIVER	SB	SILABATI

PSM_GB2_SB_09

SL. NO.	LATITUDE	LONGITUDE	SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 34.041" N	87° 15' 29.996" E	14	22° 51' 5.586" N	87° 15' 27.540" E
2	22° 50' 33.033" N	87° 15' 28.316" E	15	22° 51' 4.453" N	87° 15' 27.547" E
3	22° 50' 36.764" N	87° 15' 28.212" E	16	22° 51' 2.233" N	87° 15' 27.877" E
4	22° 50' 39.914" N	87° 15' 27.438" E	17	22° 50' 58.826" N	87° 15' 27.258" E
5	22° 50' 43.426" N	87° 15' 26.943" E	18	22° 50' 55.521" N	87° 15' 27.809" E
6	22° 50' 46.059" N	87° 15' 27.004" E	19	22° 50' 53.406" N	87° 15' 27.081" E
7	22° 50' 46.832" N	87° 15' 27.729" E	20	22° 50' 50.307" N	87° 15' 27.465" E
8	22° 50' 48.329" N	87° 15' 27.732" E	21	22° 50' 48.291" N	87° 15' 29.633" E
9	22° 50' 51.118" N	87° 15' 27.292" E	22	22° 50' 46.482" N	87° 15' 30.354" E
10	22° 50' 53.752" N	87° 15' 26.573" E	23	22° 50' 44.831" N	87° 15' 30.128" E
11	22° 50' 56.953" N	87° 15' 26.300" E	24	22° 50' 38.638" N	87° 15' 28.724" E
12	22° 51' 0.257" N	87° 15' 26.251" E	25	22° 50' 36.365" N	87° 15' 29.499" E
13	22° 51' 4.335" N	87° 15' 26.983" E			

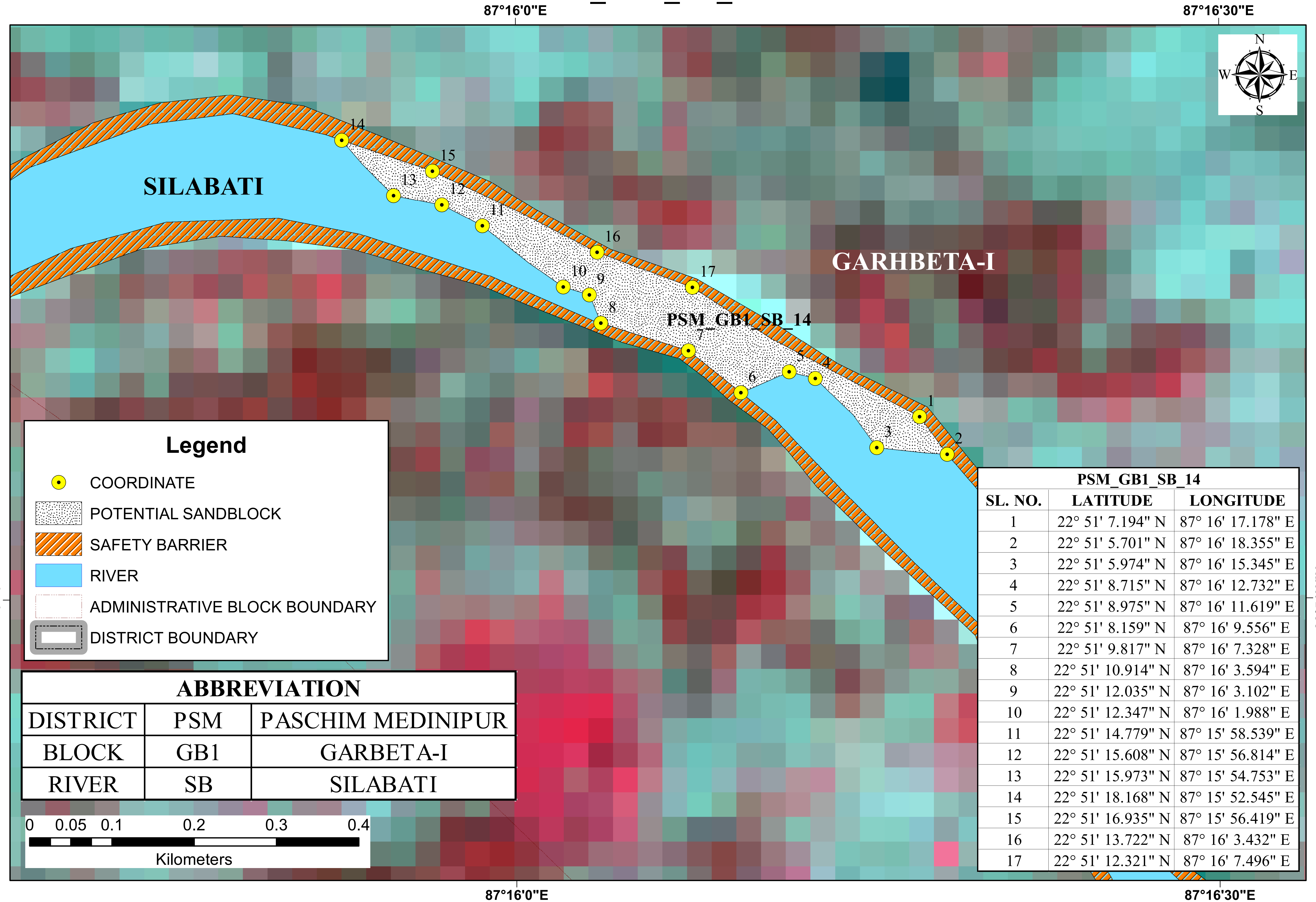
POTENTIAL BLOCK PSM_GB2_SB_10 OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB2	GARBETA-II
RIVER	SB	SILABATI

PSM_GB2_SB_10					
SL. NO.	LATITUDE	LONGITUDE	SL. NO.	LATITUDE	LONGITUDE
1	22° 51' 14.526" N	87° 15' 55.530" E	20	22° 50' 51.081" N	87° 15' 27.967" E
2	22° 51' 14.730" N	87° 15' 57.091" E	21	22° 50' 52.475" N	87° 15' 27.914" E
3	22° 51' 14.263" N	87° 15' 58.427" E	22	22° 50' 54.178" N	87° 15' 28.085" E
4	22° 51' 13.125" N	87° 15' 59.594" E	23	22° 50' 56.243" N	87° 15' 28.590" E
5	22° 51' 12.310" N	87° 16' 0.060" E	24	22° 51' 0.475" N	87° 15' 29.322" E
6	22° 51' 12.792" N	87° 15' 58.866" E	25	22° 51' 2.540" N	87° 15' 29.103" E
7	22° 51' 14.460" N	87° 15' 53.288" E	26	22° 51' 3.883" N	87° 15' 28.771" E
8	22° 51' 15.085" N	87° 15' 49.835" E	27	22° 51' 5.897" N	87° 15' 28.775" E
9	22° 51' 14.938" N	87° 15' 45.044" E	28	22° 51' 8.166" N	87° 15' 30.005" E
10	22° 51' 13.912" N	87° 15' 40.976" E	29	22° 51' 10.796" N	87° 15' 32.127" E
11	22° 51' 12.421" N	87° 15' 37.463" E	30	22° 51' 12.497" N	87° 15' 33.578" E
12	22° 51' 9.639" N	87° 15' 34.004" E	31	22° 51' 14.198" N	87° 15' 35.476" E
13	22° 51' 4.954" N	87° 15' 31.185" E	32	22° 51' 15.073" N	87° 15' 37.093" E
14	22° 51' 4.371" N	87° 15' 30.849" E	33	22° 51' 16.361" N	87° 15' 38.376" E
15	22° 51' 3.611" N	87° 15' 30.632" E	34	22° 51' 17.647" N	87° 15' 41.276" E
16	22° 51' 1.756" N	87° 15' 30.101" E	35	22° 51' 18.623" N	87° 15' 44.119" E
17	22° 50' 49.066" N	87° 15' 30.659" E	36	22° 51' 18.981" N	87° 15' 46.682" E
18	22° 50' 48.961" N	87° 15' 30.303" E	37	22° 51' 17.578" N	87° 15' 51.637" E
19	22° 50' 50.306" N	87° 15' 28.523" E			

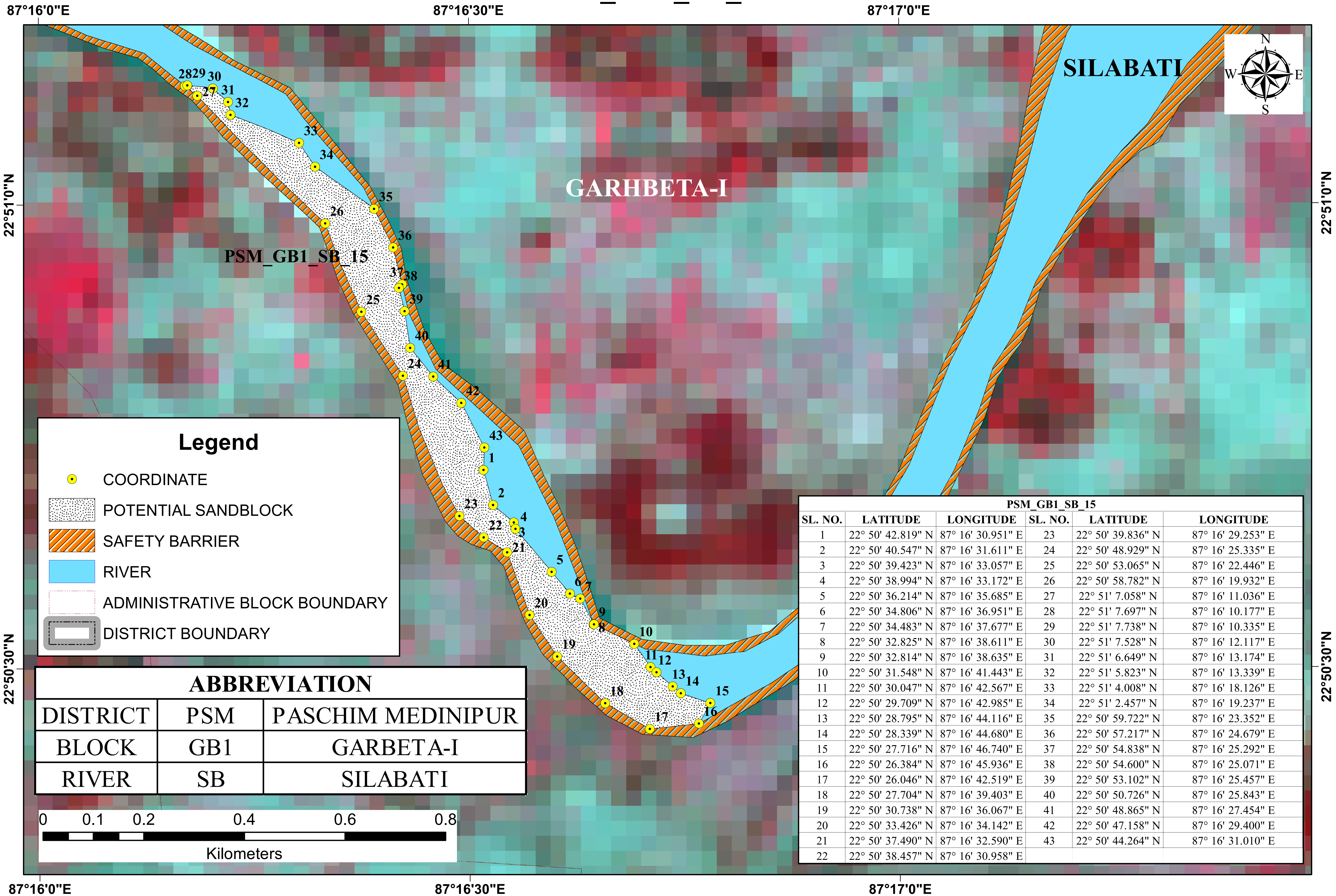
POTENTIAL BLOCK PSM_GB1_SB_14 OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_14		
SL. NO.	LATITUDE	LONGITUDE
1	22° 51' 7.194" N	87° 16' 17.178" E
2	22° 51' 5.701" N	87° 16' 18.355" E
3	22° 51' 5.974" N	87° 16' 15.345" E
4	22° 51' 8.715" N	87° 16' 12.732" E
5	22° 51' 8.975" N	87° 16' 11.619" E
6	22° 51' 8.159" N	87° 16' 9.556" E
7	22° 51' 9.817" N	87° 16' 7.328" E
8	22° 51' 10.914" N	87° 16' 3.594" E
9	22° 51' 12.035" N	87° 16' 3.102" E
10	22° 51' 12.347" N	87° 16' 1.988" E
11	22° 51' 14.779" N	87° 15' 58.539" E
12	22° 51' 15.608" N	87° 15' 56.814" E
13	22° 51' 15.973" N	87° 15' 54.753" E
14	22° 51' 18.168" N	87° 15' 52.545" E
15	22° 51' 16.935" N	87° 15' 56.419" E
16	22° 51' 13.722" N	87° 16' 3.432" E
17	22° 51' 12.321" N	87° 16' 7.496" E

POTENTIAL BLOCK PSM_GB1_SB_15 OF SILABATI RIVER

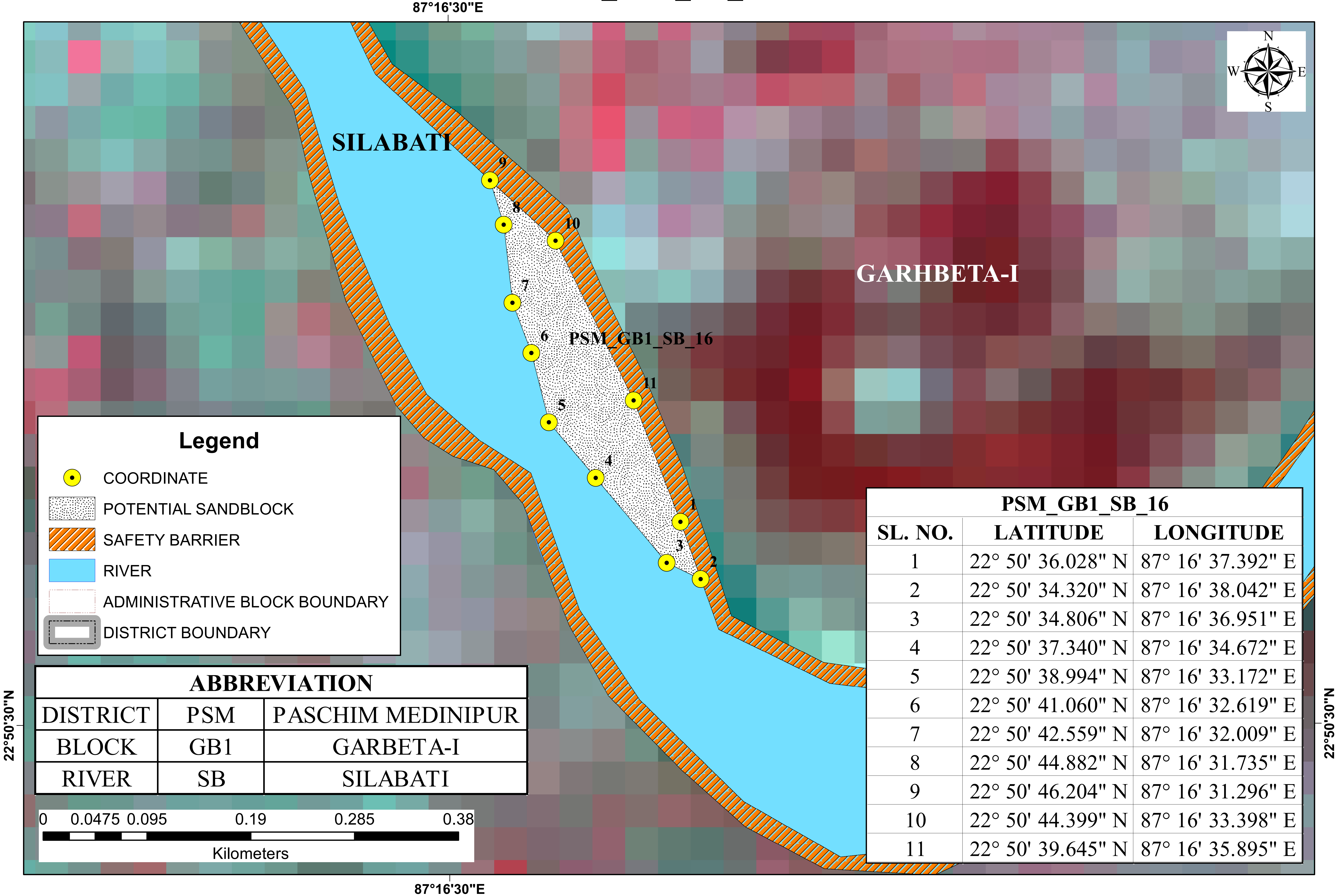


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_15

SL. NO.	LATITUDE	LONGITUDE	SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 42.819" N	87° 16' 30.951" E	23	22° 50' 39.836" N	87° 16' 29.253" E
2	22° 50' 40.547" N	87° 16' 31.611" E	24	22° 50' 48.929" N	87° 16' 25.335" E
3	22° 50' 39.423" N	87° 16' 33.057" E	25	22° 50' 53.065" N	87° 16' 22.446" E
4	22° 50' 38.994" N	87° 16' 33.172" E	26	22° 50' 58.782" N	87° 16' 19.932" E
5	22° 50' 36.214" N	87° 16' 35.685" E	27	22° 51' 7.058" N	87° 16' 11.036" E
6	22° 50' 34.806" N	87° 16' 36.951" E	28	22° 51' 7.697" N	87° 16' 10.177" E
7	22° 50' 34.483" N	87° 16' 37.677" E	29	22° 51' 7.738" N	87° 16' 10.335" E
8	22° 50' 32.825" N	87° 16' 38.611" E	30	22° 51' 7.528" N	87° 16' 12.117" E
9	22° 50' 32.814" N	87° 16' 38.635" E	31	22° 51' 6.649" N	87° 16' 13.174" E
10	22° 50' 31.548" N	87° 16' 41.443" E	32	22° 51' 5.823" N	87° 16' 13.339" E
11	22° 50' 30.047" N	87° 16' 42.567" E	33	22° 51' 4.008" N	87° 16' 18.126" E
12	22° 50' 29.709" N	87° 16' 42.985" E	34	22° 51' 2.457" N	87° 16' 19.237" E
13	22° 50' 28.795" N	87° 16' 44.116" E	35	22° 50' 59.722" N	87° 16' 23.352" E
14	22° 50' 28.339" N	87° 16' 44.680" E	36	22° 50' 57.217" N	87° 16' 24.679" E
15	22° 50' 27.716" N	87° 16' 46.740" E	37	22° 50' 54.838" N	87° 16' 25.292" E
16	22° 50' 26.384" N	87° 16' 45.936" E	38	22° 50' 54.600" N	87° 16' 25.071" E
17	22° 50' 26.046" N	87° 16' 42.519" E	39	22° 50' 53.102" N	87° 16' 25.457" E
18	22° 50' 27.704" N	87° 16' 39.403" E	40	22° 50' 50.726" N	87° 16' 25.843" E
19	22° 50' 30.738" N	87° 16' 36.067" E	41	22° 50' 48.865" N	87° 16' 27.454" E
20	22° 50' 33.426" N	87° 16' 34.142" E	42	22° 50' 47.158" N	87° 16' 29.400" E
21	22° 50' 37.490" N	87° 16' 32.590" E	43	22° 50' 44.264" N	87° 16' 31.010" E
22	22° 50' 38.457" N	87° 16' 30.958" E			

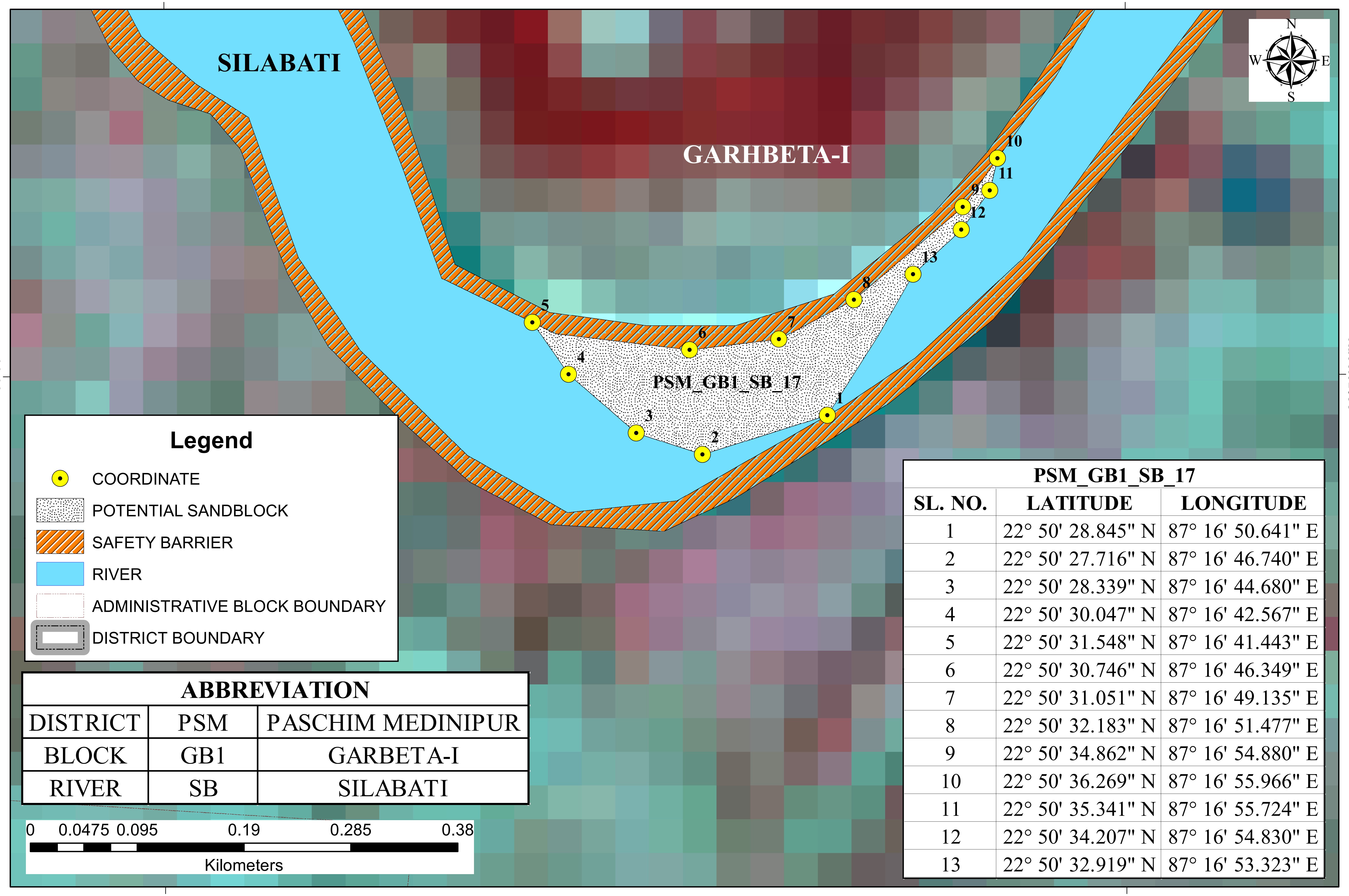
POTENTIAL BLOCK PSM_GB1_SB_16 OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_16		
SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 36.028" N	87° 16' 37.392" E
2	22° 50' 34.320" N	87° 16' 38.042" E
3	22° 50' 34.806" N	87° 16' 36.951" E
4	22° 50' 37.340" N	87° 16' 34.672" E
5	22° 50' 38.994" N	87° 16' 33.172" E
6	22° 50' 41.060" N	87° 16' 32.619" E
7	22° 50' 42.559" N	87° 16' 32.009" E
8	22° 50' 44.882" N	87° 16' 31.735" E
9	22° 50' 46.204" N	87° 16' 31.296" E
10	22° 50' 44.399" N	87° 16' 33.398" E
11	22° 50' 39.645" N	87° 16' 35.895" E

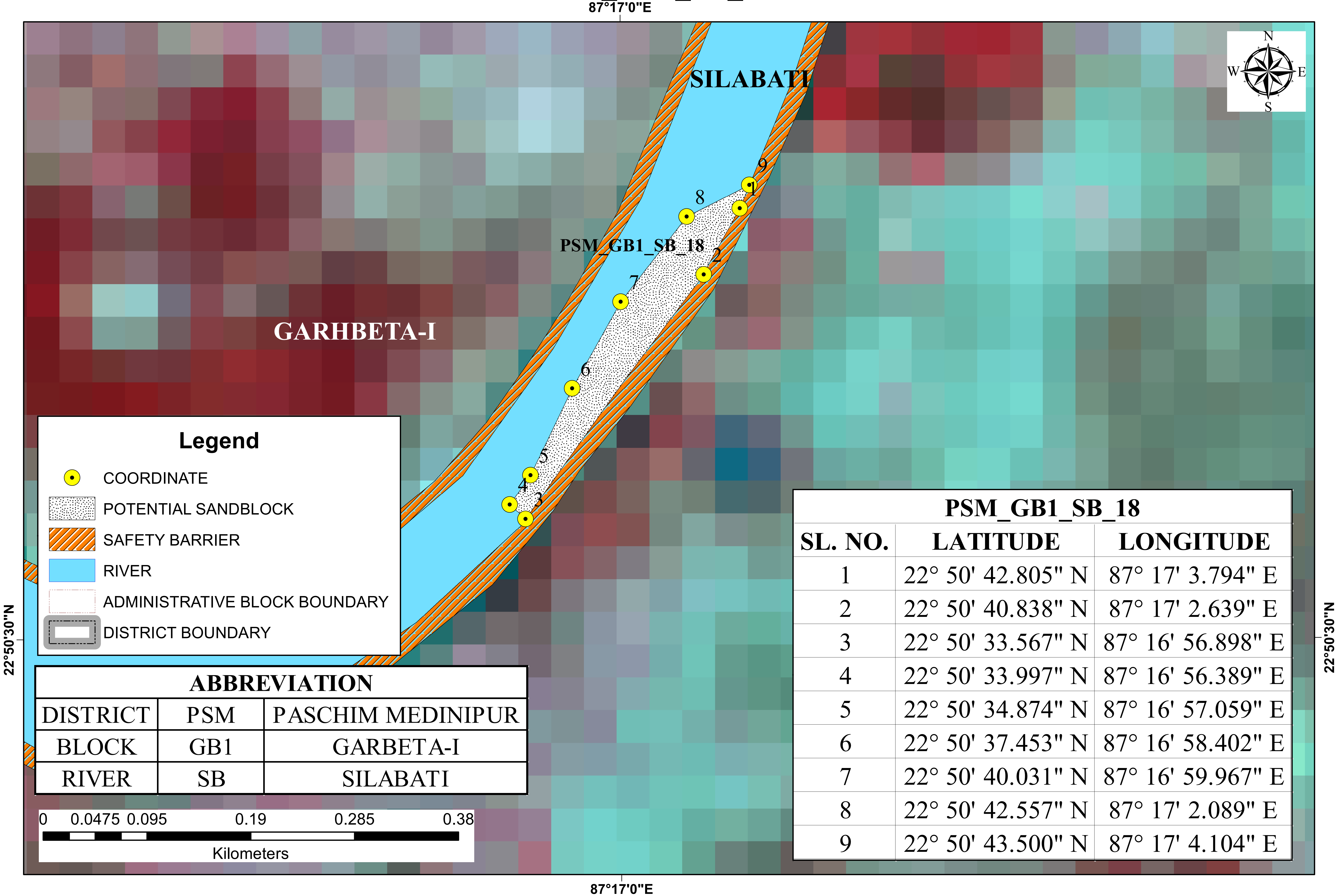
POTENTIAL BLOCK PSM_GB1_SB_17 OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_17		
SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 28.845" N	87° 16' 50.641" E
2	22° 50' 27.716" N	87° 16' 46.740" E
3	22° 50' 28.339" N	87° 16' 44.680" E
4	22° 50' 30.047" N	87° 16' 42.567" E
5	22° 50' 31.548" N	87° 16' 41.443" E
6	22° 50' 30.746" N	87° 16' 46.349" E
7	22° 50' 31.051" N	87° 16' 49.135" E
8	22° 50' 32.183" N	87° 16' 51.477" E
9	22° 50' 34.862" N	87° 16' 54.880" E
10	22° 50' 36.269" N	87° 16' 55.966" E
11	22° 50' 35.341" N	87° 16' 55.724" E
12	22° 50' 34.207" N	87° 16' 54.830" E
13	22° 50' 32.919" N	87° 16' 53.323" E

POTENTIAL BLOCK PSM_GB1_SB_18 OF SILABATI RIVER



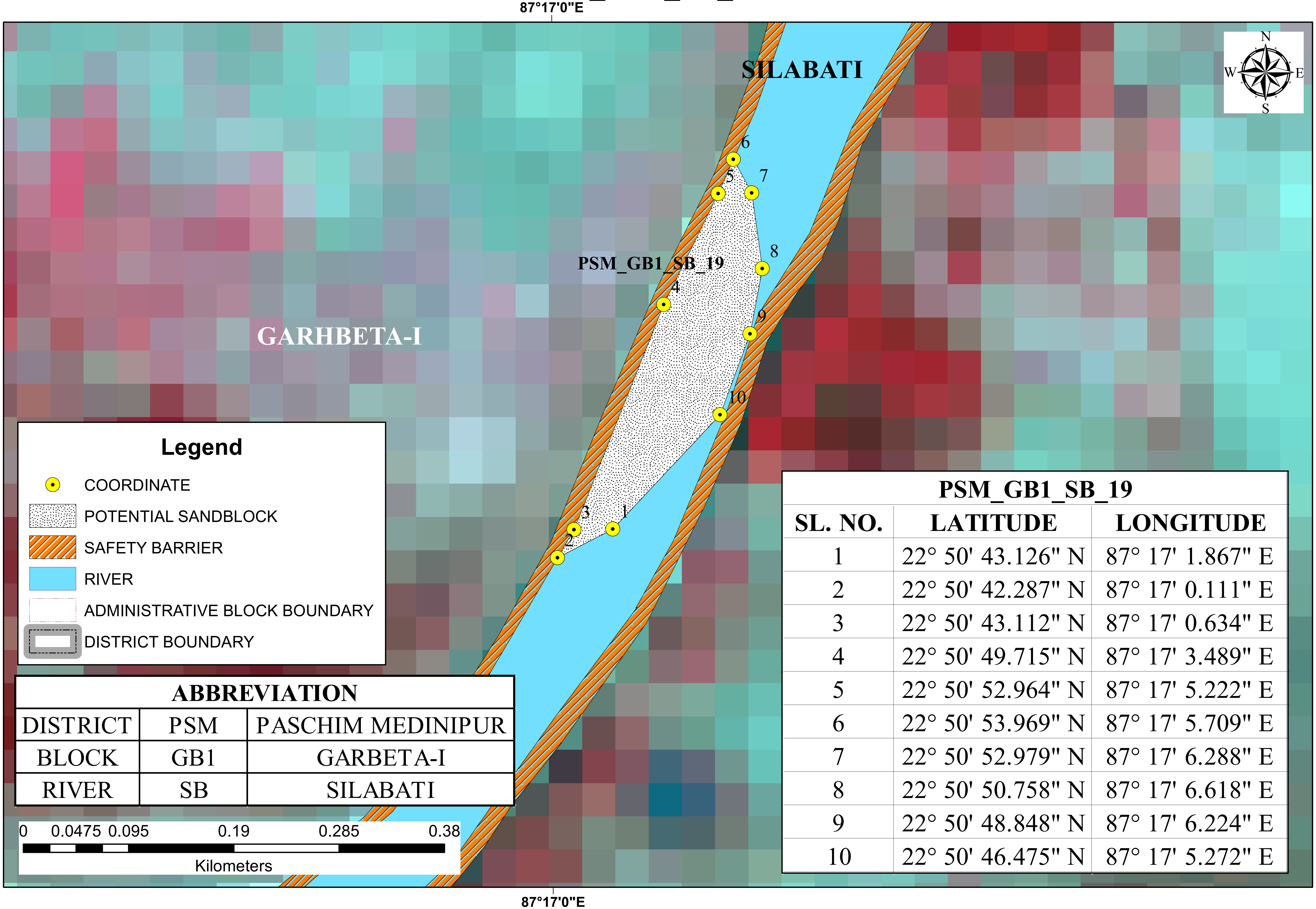
ABBREVIATION

DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_18

SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 42.805" N	87° 17' 3.794" E
2	22° 50' 40.838" N	87° 17' 2.639" E
3	22° 50' 33.567" N	87° 16' 56.898" E
4	22° 50' 33.997" N	87° 16' 56.389" E
5	22° 50' 34.874" N	87° 16' 57.059" E
6	22° 50' 37.453" N	87° 16' 58.402" E
7	22° 50' 40.031" N	87° 16' 59.967" E
8	22° 50' 42.557" N	87° 17' 2.089" E
9	22° 50' 43.500" N	87° 17' 4.104" E

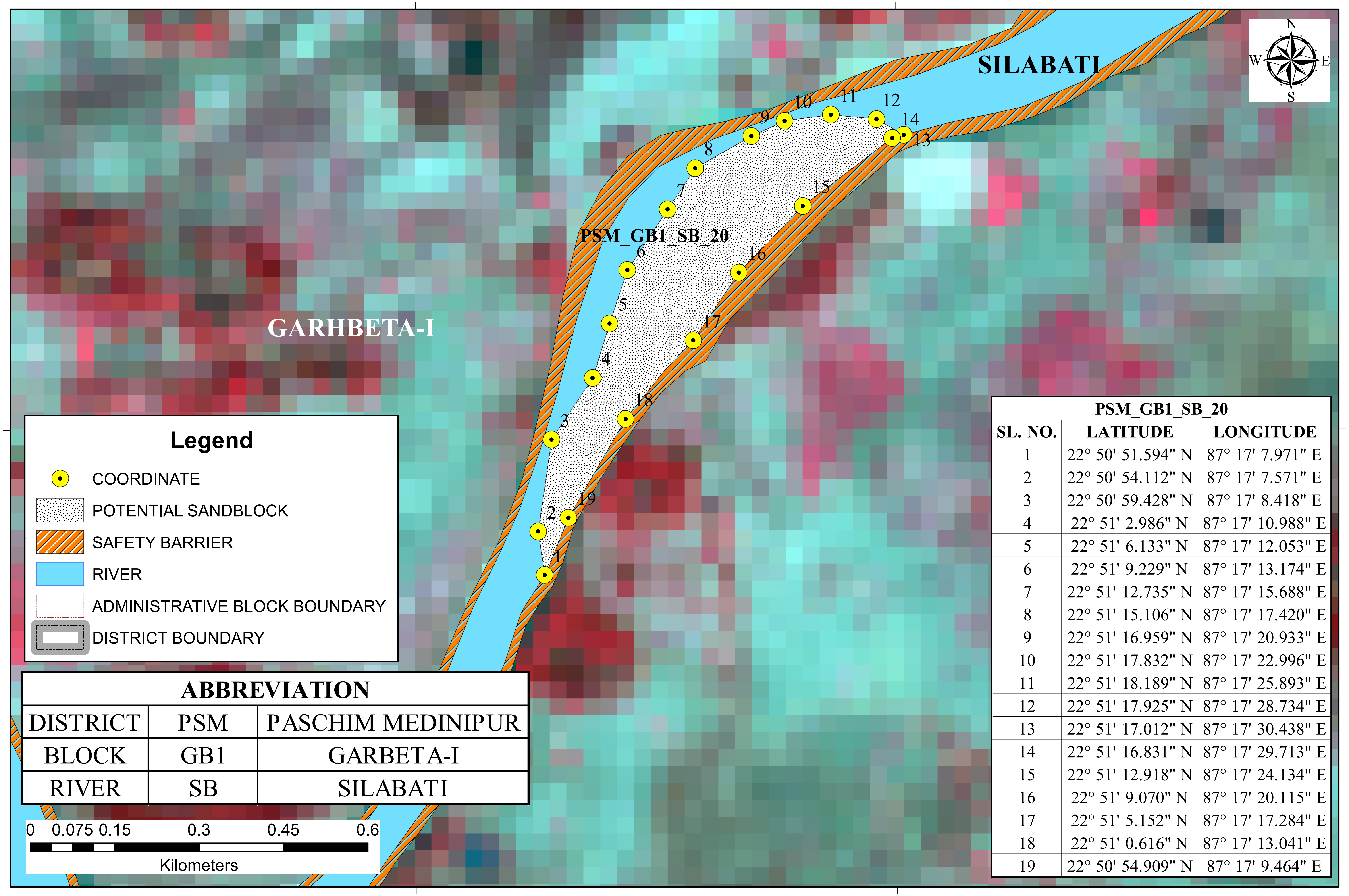
POTENTIAL BLOCK PSM_GB1_SB_19 OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_19		
SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 43.126" N	87° 17' 1.867" E
2	22° 50' 42.287" N	87° 17' 0.111" E
3	22° 50' 43.112" N	87° 17' 0.634" E
4	22° 50' 49.715" N	87° 17' 3.489" E
5	22° 50' 52.964" N	87° 17' 5.222" E
6	22° 50' 53.969" N	87° 17' 5.709" E
7	22° 50' 52.979" N	87° 17' 6.288" E
8	22° 50' 50.758" N	87° 17' 6.618" E
9	22° 50' 48.848" N	87° 17' 6.224" E
10	22° 50' 46.475" N	87° 17' 5.272" E

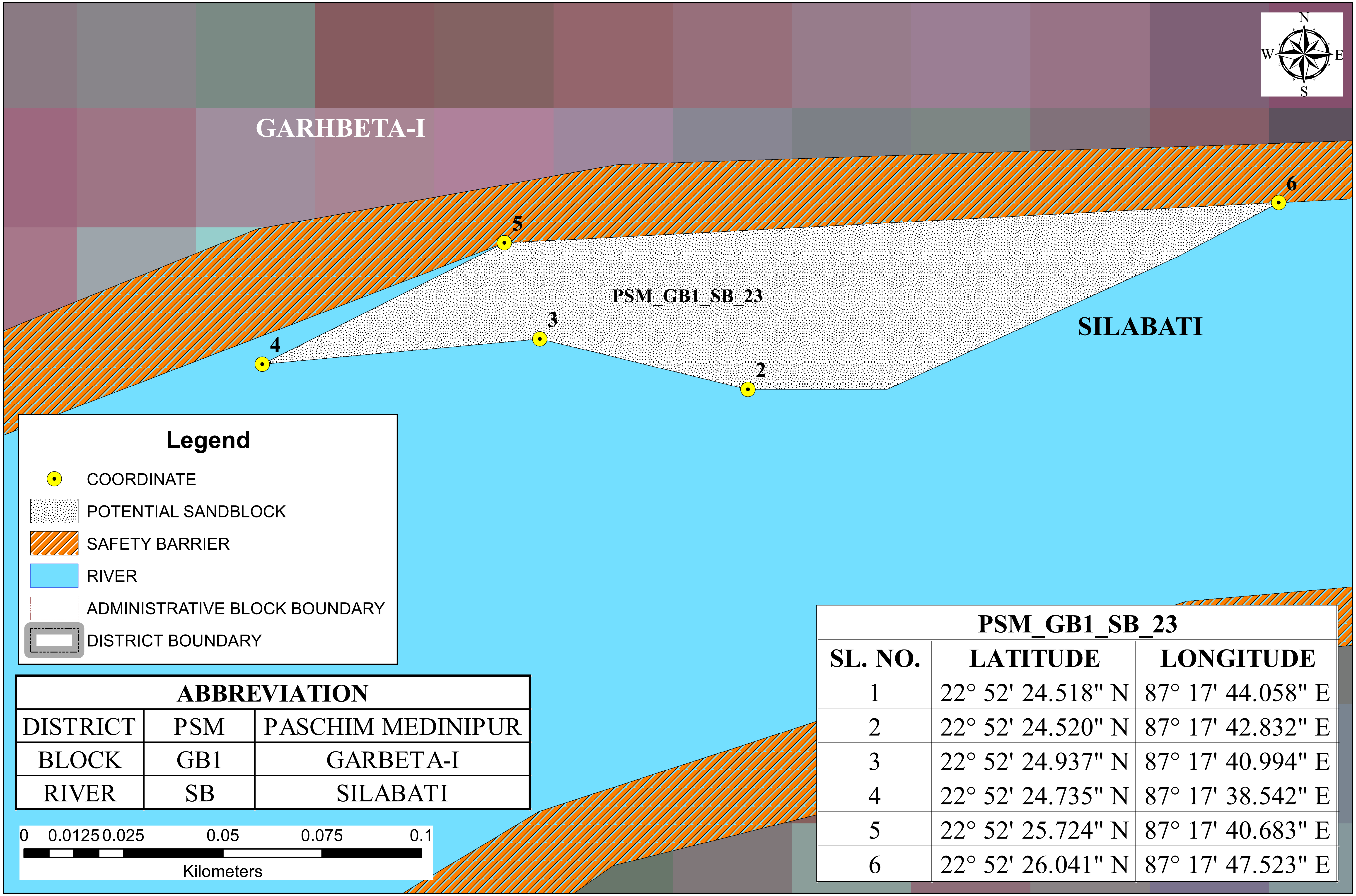
POTENTIAL BLOCK PSM_GB1_SB_20 OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_20		
SL. NO.	LATITUDE	LONGITUDE
1	22° 50' 51.594" N	87° 17' 7.971" E
2	22° 50' 54.112" N	87° 17' 7.571" E
3	22° 50' 59.428" N	87° 17' 8.418" E
4	22° 51' 2.986" N	87° 17' 10.988" E
5	22° 51' 6.133" N	87° 17' 12.053" E
6	22° 51' 9.229" N	87° 17' 13.174" E
7	22° 51' 12.735" N	87° 17' 15.688" E
8	22° 51' 15.106" N	87° 17' 17.420" E
9	22° 51' 16.959" N	87° 17' 20.933" E
10	22° 51' 17.832" N	87° 17' 22.996" E
11	22° 51' 18.189" N	87° 17' 25.893" E
12	22° 51' 17.925" N	87° 17' 28.734" E
13	22° 51' 17.012" N	87° 17' 30.438" E
14	22° 51' 16.831" N	87° 17' 29.713" E
15	22° 51' 12.918" N	87° 17' 24.134" E
16	22° 51' 9.070" N	87° 17' 20.115" E
17	22° 51' 5.152" N	87° 17' 17.284" E
18	22° 51' 0.616" N	87° 17' 13.041" E
19	22° 50' 54.909" N	87° 17' 9.464" E

POTENTIAL BLOCK PSM_GB1_SB_23 OF SILABATI RIVER

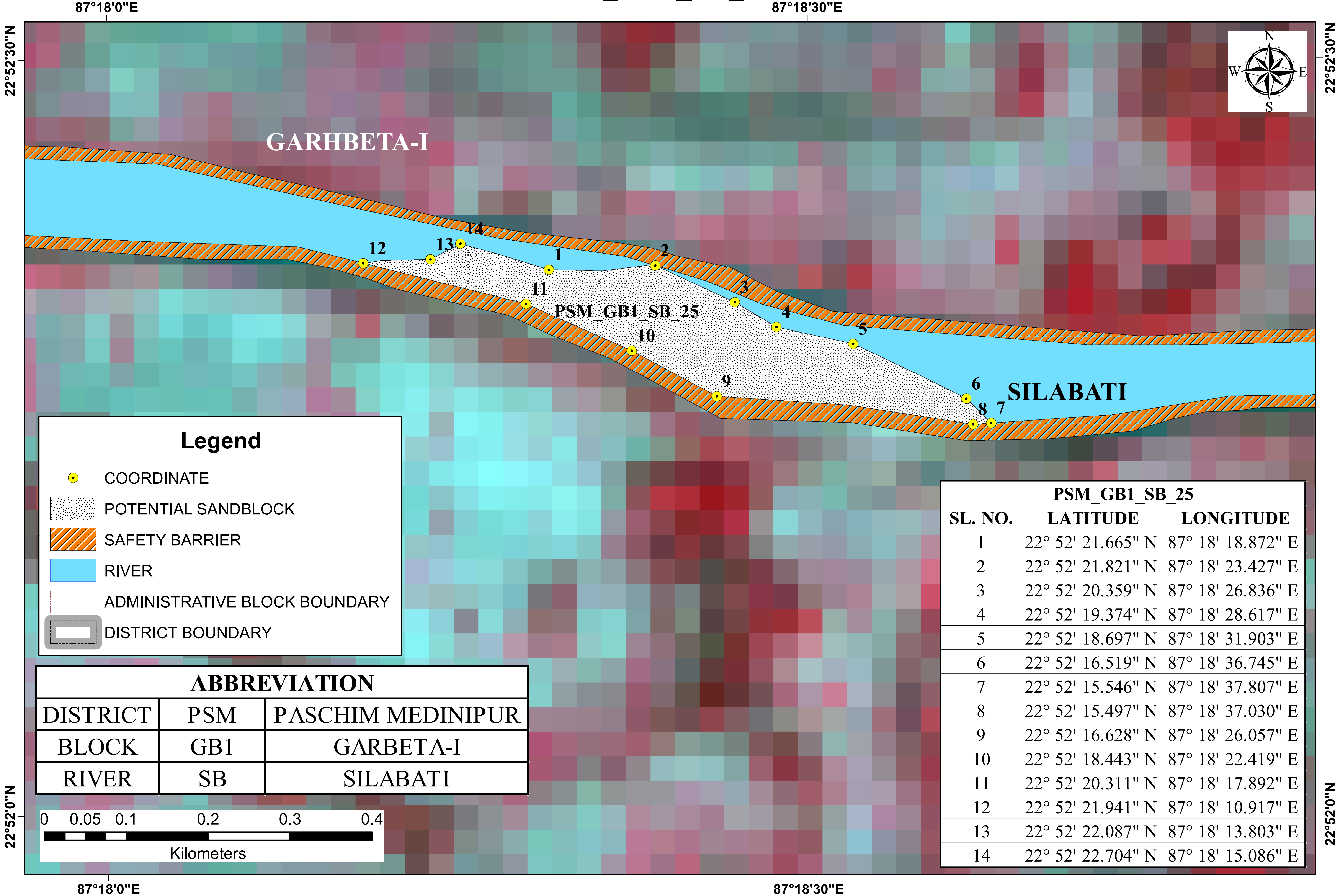


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_23

SL. NO.	LATITUDE	LONGITUDE
1	22° 52' 24.518" N	87° 17' 44.058" E
2	22° 52' 24.520" N	87° 17' 42.832" E
3	22° 52' 24.937" N	87° 17' 40.994" E
4	22° 52' 24.735" N	87° 17' 38.542" E
5	22° 52' 25.724" N	87° 17' 40.683" E
6	22° 52' 26.041" N	87° 17' 47.523" E

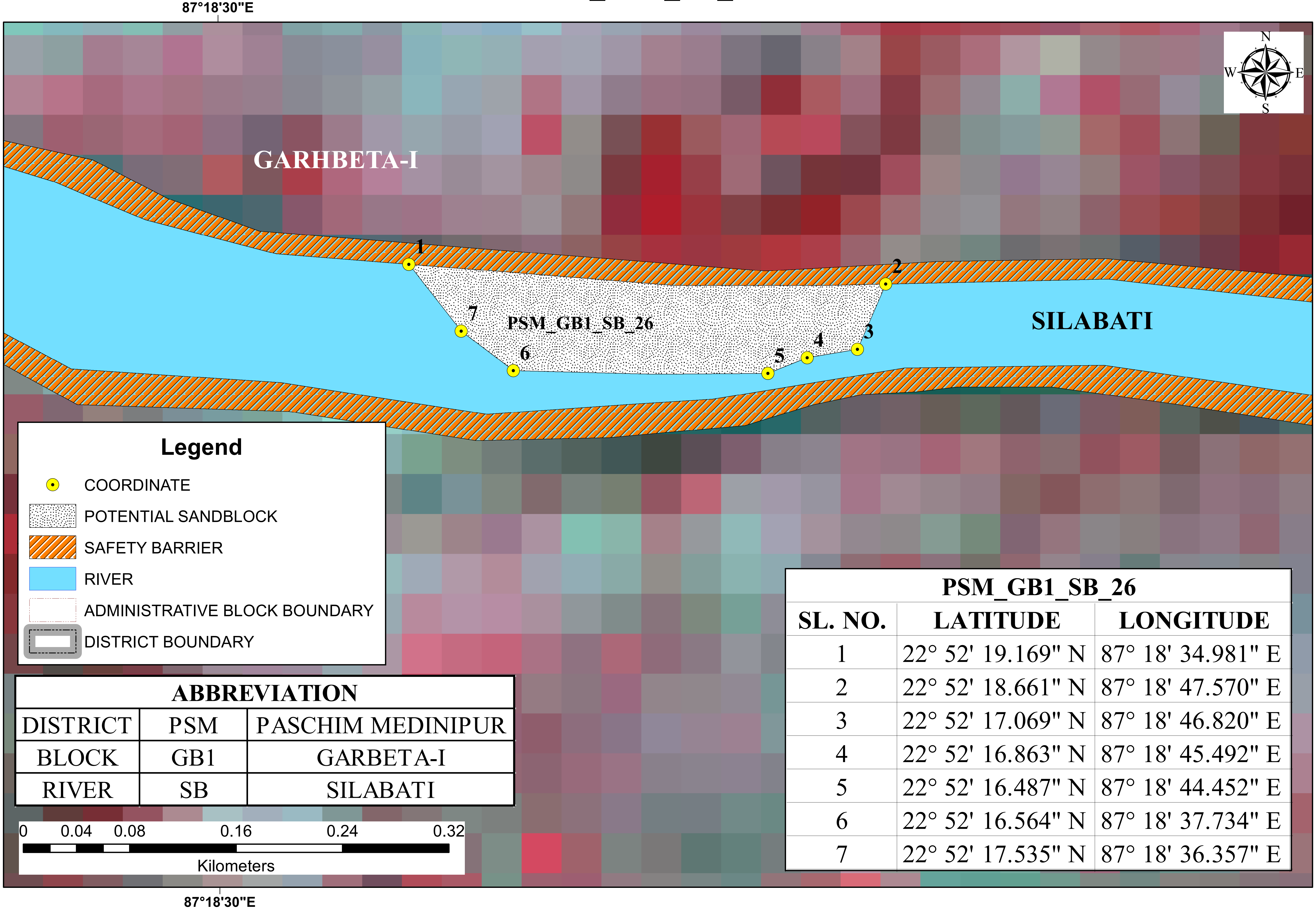
POTENTIAL BLOCK PSM_GB1_SB_25 OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_25		
SL. NO.	LATITUDE	LONGITUDE
1	22° 52' 21.665" N	87° 18' 18.872" E
2	22° 52' 21.821" N	87° 18' 23.427" E
3	22° 52' 20.359" N	87° 18' 26.836" E
4	22° 52' 19.374" N	87° 18' 28.617" E
5	22° 52' 18.697" N	87° 18' 31.903" E
6	22° 52' 16.519" N	87° 18' 36.745" E
7	22° 52' 15.546" N	87° 18' 37.807" E
8	22° 52' 15.497" N	87° 18' 37.030" E
9	22° 52' 16.628" N	87° 18' 26.057" E
10	22° 52' 18.443" N	87° 18' 22.419" E
11	22° 52' 20.311" N	87° 18' 17.892" E
12	22° 52' 21.941" N	87° 18' 10.917" E
13	22° 52' 22.087" N	87° 18' 13.803" E
14	22° 52' 22.704" N	87° 18' 15.086" E

POTENTIAL BLOCK PSM_GB1_SB_26 OF SILABATI RIVER

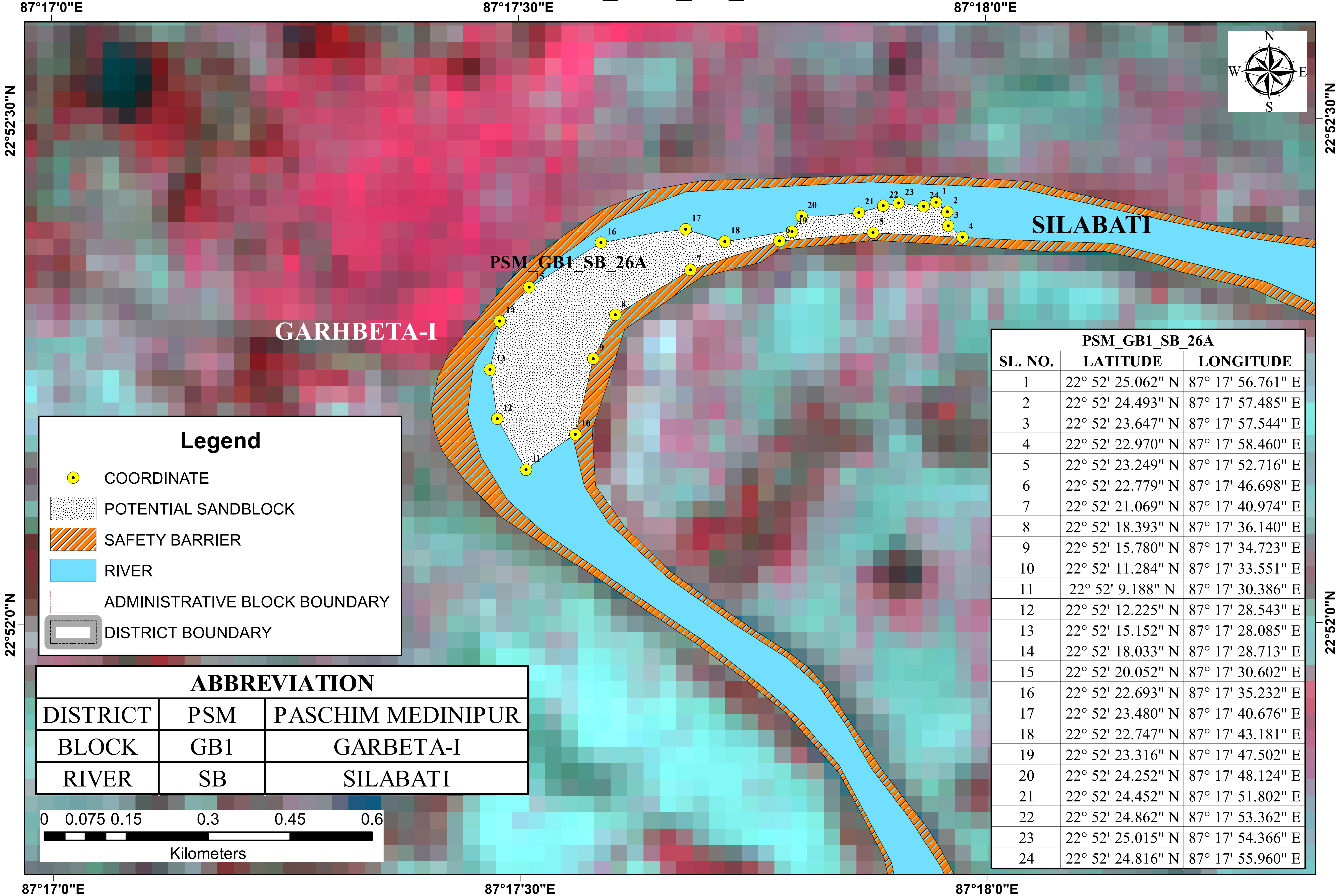


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_26

SL. NO.	LATITUDE	LONGITUDE
1	22° 52' 19.169" N	87° 18' 34.981" E
2	22° 52' 18.661" N	87° 18' 47.570" E
3	22° 52' 17.069" N	87° 18' 46.820" E
4	22° 52' 16.863" N	87° 18' 45.492" E
5	22° 52' 16.487" N	87° 18' 44.452" E
6	22° 52' 16.564" N	87° 18' 37.734" E
7	22° 52' 17.535" N	87° 18' 36.357" E

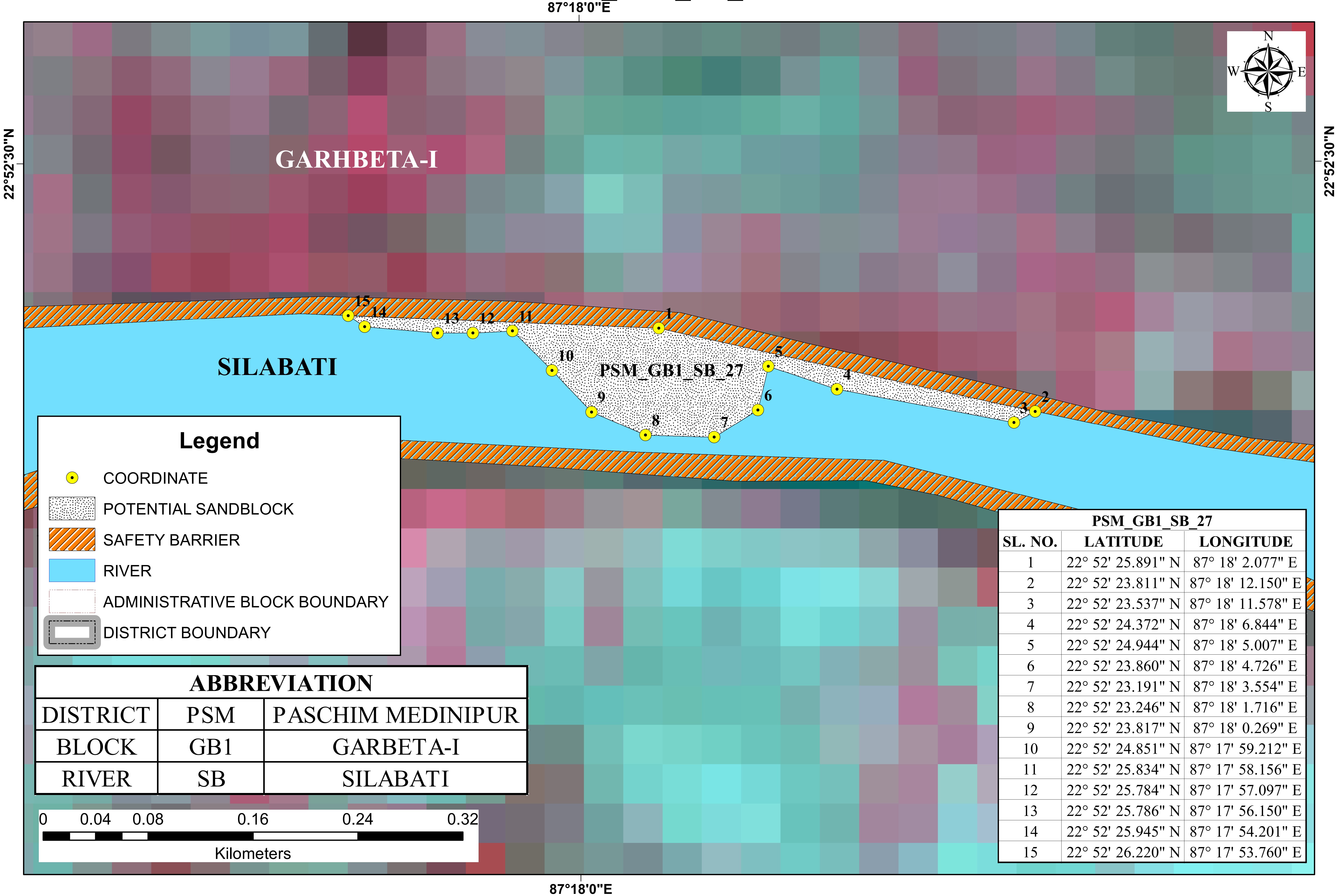
POTENTIAL BLOCK PSM_GB1_SB_26A OF SILABATI RIVER



PSM_GB1_SB_26A		
SL. NO.	LATITUDE	LONGITUDE
1	22° 52' 25.062" N	87° 17' 56.761" E
2	22° 52' 24.493" N	87° 17' 57.485" E
3	22° 52' 23.647" N	87° 17' 57.544" E
4	22° 52' 22.970" N	87° 17' 58.460" E
5	22° 52' 23.249" N	87° 17' 52.716" E
6	22° 52' 22.779" N	87° 17' 46.698" E
7	22° 52' 21.069" N	87° 17' 40.974" E
8	22° 52' 18.393" N	87° 17' 36.140" E
9	22° 52' 15.780" N	87° 17' 34.723" E
10	22° 52' 11.284" N	87° 17' 33.551" E
11	22° 52' 9.188" N	87° 17' 30.386" E
12	22° 52' 12.225" N	87° 17' 28.543" E
13	22° 52' 15.152" N	87° 17' 28.085" E
14	22° 52' 18.033" N	87° 17' 28.713" E
15	22° 52' 20.052" N	87° 17' 30.602" E
16	22° 52' 22.693" N	87° 17' 35.232" E
17	22° 52' 23.480" N	87° 17' 40.676" E
18	22° 52' 22.747" N	87° 17' 43.181" E
19	22° 52' 23.316" N	87° 17' 47.502" E
20	22° 52' 24.252" N	87° 17' 48.124" E
21	22° 52' 24.452" N	87° 17' 51.802" E
22	22° 52' 24.862" N	87° 17' 53.362" E
23	22° 52' 25.015" N	87° 17' 54.366" E
24	22° 52' 24.816" N	87° 17' 55.960" E

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

POTENTIAL BLOCK PSM_GB1_SB_27 OF SILABATI RIVER

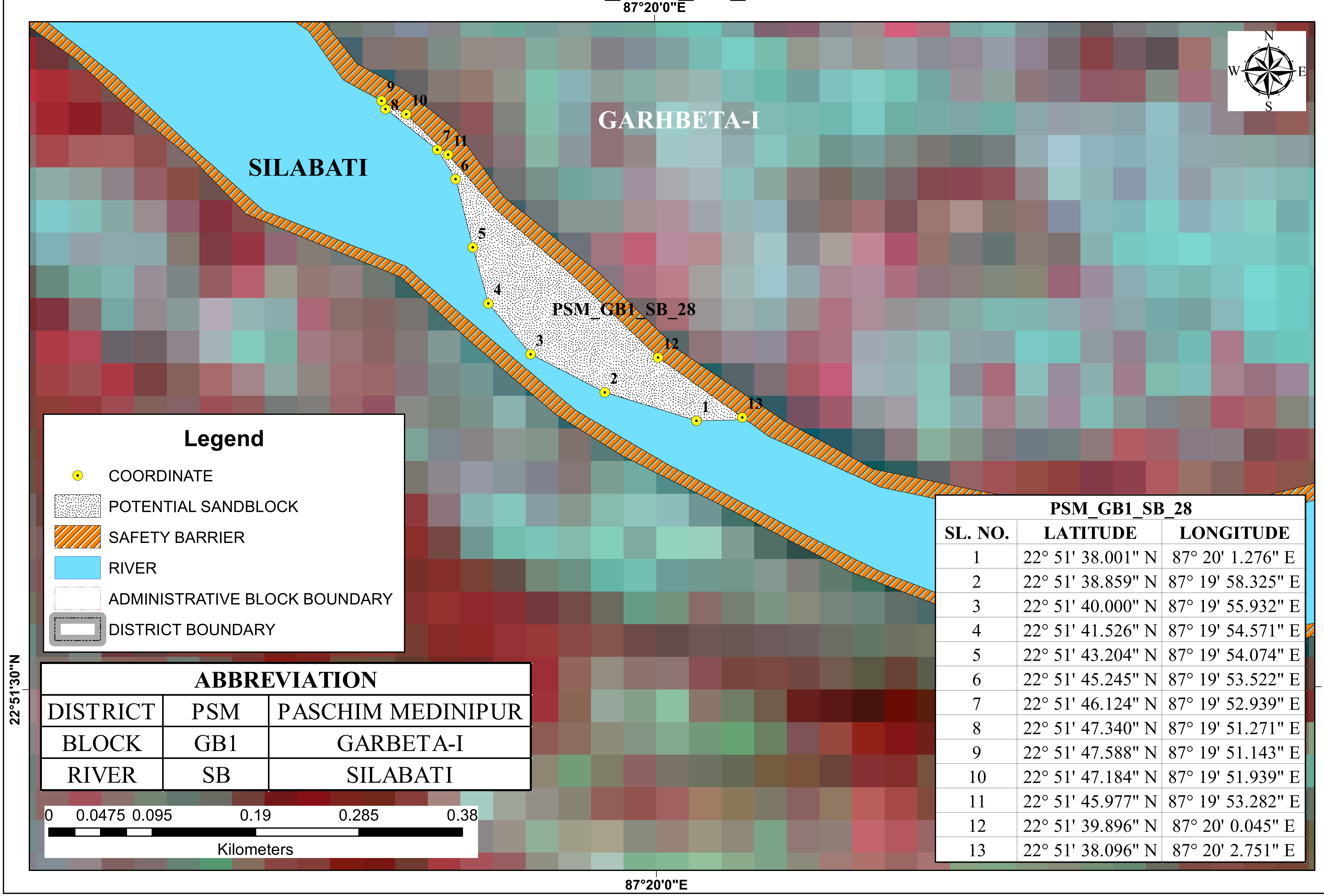


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_27

SL. NO.	LATITUDE	LONGITUDE
1	22° 52' 25.891" N	87° 18' 2.077" E
2	22° 52' 23.811" N	87° 18' 12.150" E
3	22° 52' 23.537" N	87° 18' 11.578" E
4	22° 52' 24.372" N	87° 18' 6.844" E
5	22° 52' 24.944" N	87° 18' 5.007" E
6	22° 52' 23.860" N	87° 18' 4.726" E
7	22° 52' 23.191" N	87° 18' 3.554" E
8	22° 52' 23.246" N	87° 18' 1.716" E
9	22° 52' 23.817" N	87° 18' 0.269" E
10	22° 52' 24.851" N	87° 17' 59.212" E
11	22° 52' 25.834" N	87° 17' 58.156" E
12	22° 52' 25.784" N	87° 17' 57.097" E
13	22° 52' 25.786" N	87° 17' 56.150" E
14	22° 52' 25.945" N	87° 17' 54.201" E
15	22° 52' 26.220" N	87° 17' 53.760" E

POTENTIAL BLOCK PSM_GB1_SB_28 OF SILABATI RIVER

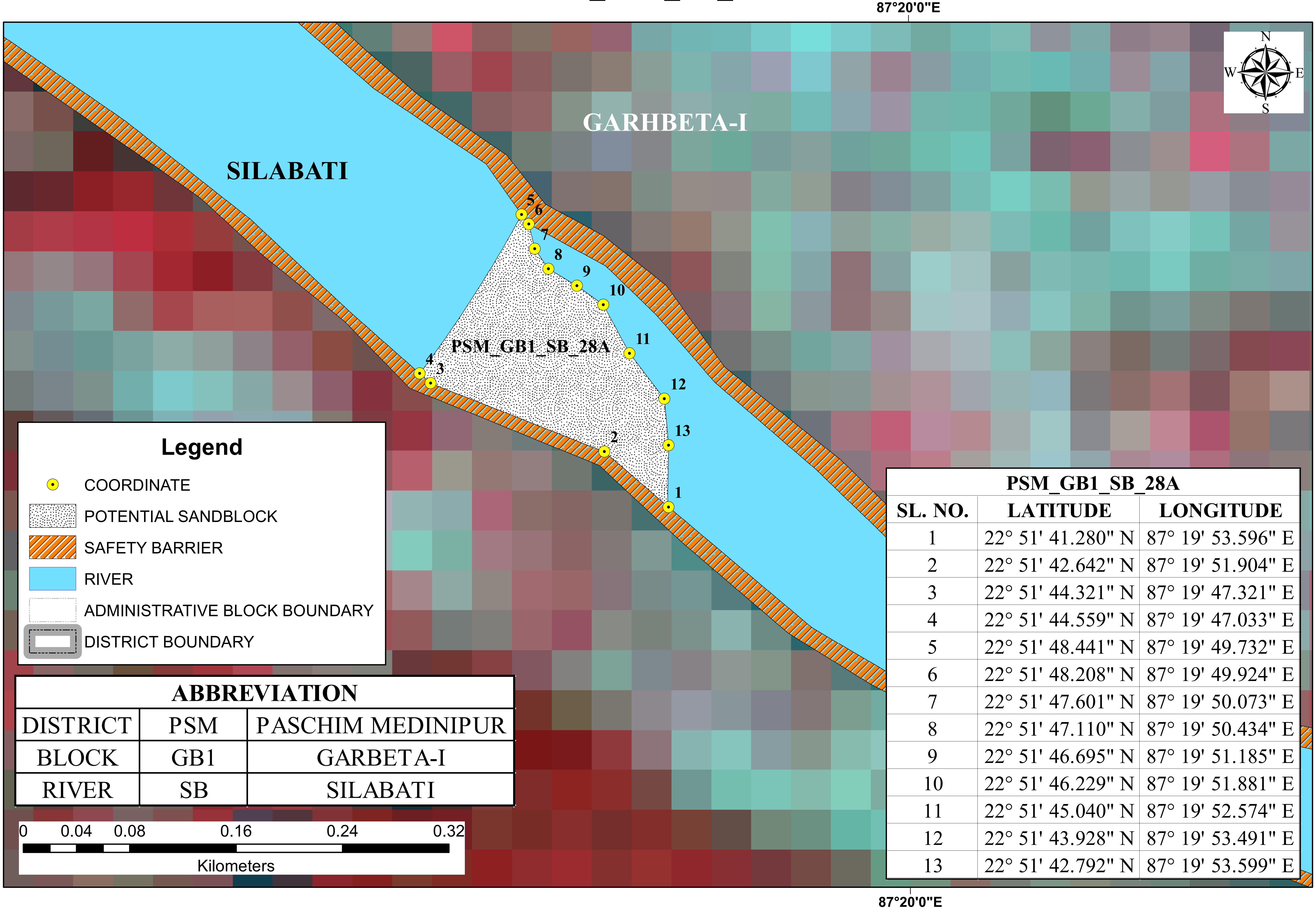


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_28

SL. NO.	LATITUDE	LONGITUDE
1	22° 51' 38.001" N	87° 20' 1.276" E
2	22° 51' 38.859" N	87° 19' 58.325" E
3	22° 51' 40.000" N	87° 19' 55.932" E
4	22° 51' 41.526" N	87° 19' 54.571" E
5	22° 51' 43.204" N	87° 19' 54.074" E
6	22° 51' 45.245" N	87° 19' 53.522" E
7	22° 51' 46.124" N	87° 19' 52.939" E
8	22° 51' 47.340" N	87° 19' 51.271" E
9	22° 51' 47.588" N	87° 19' 51.143" E
10	22° 51' 47.184" N	87° 19' 51.939" E
11	22° 51' 45.977" N	87° 19' 53.282" E
12	22° 51' 39.896" N	87° 20' 0.045" E
13	22° 51' 38.096" N	87° 20' 2.751" E

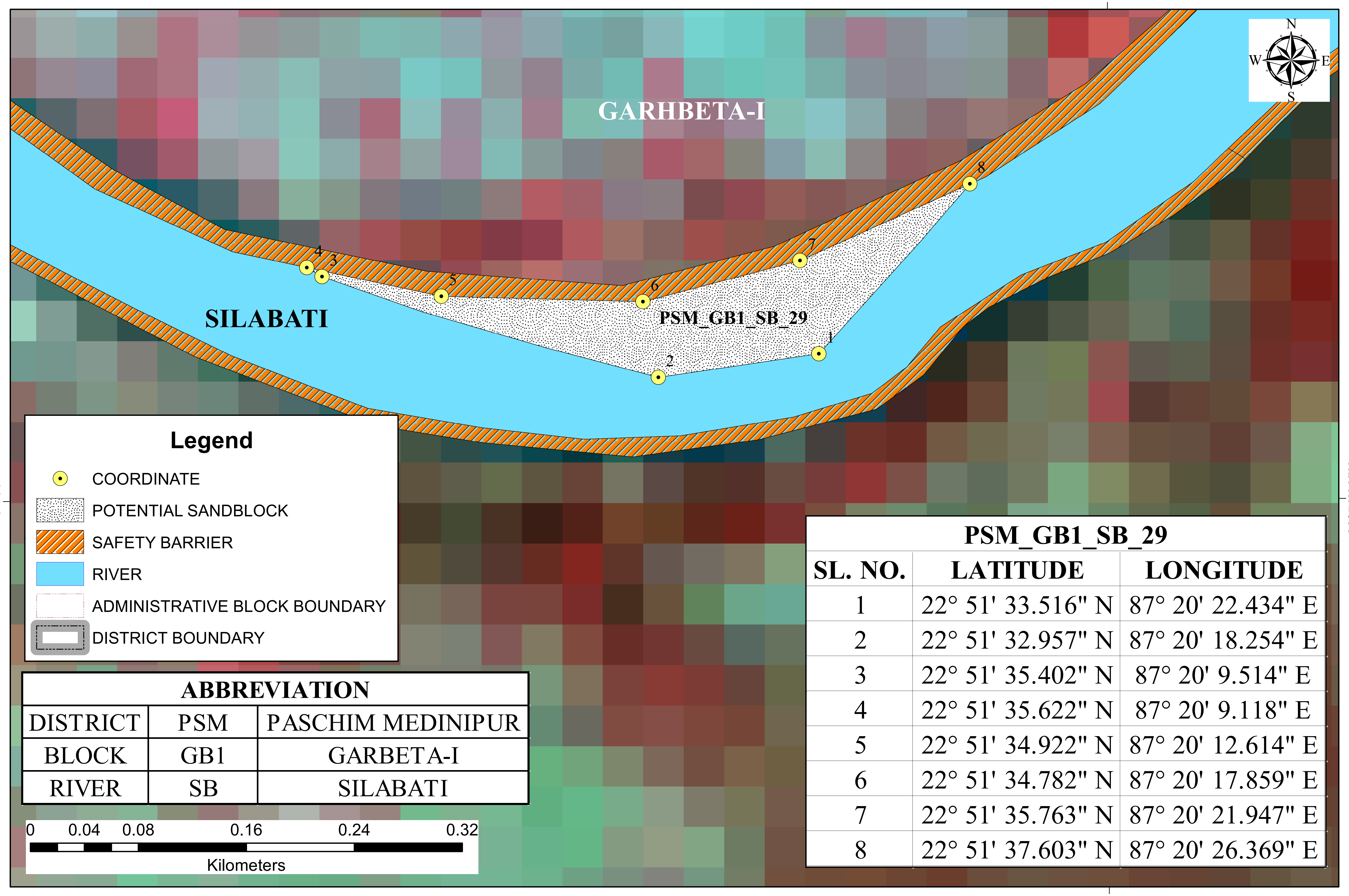
POTENTIAL BLOCK PSM_GB1_SB_28A OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_28A		
SL. NO.	LATITUDE	LONGITUDE
1	22° 51' 41.280" N	87° 19' 53.596" E
2	22° 51' 42.642" N	87° 19' 51.904" E
3	22° 51' 44.321" N	87° 19' 47.321" E
4	22° 51' 44.559" N	87° 19' 47.033" E
5	22° 51' 48.441" N	87° 19' 49.732" E
6	22° 51' 48.208" N	87° 19' 49.924" E
7	22° 51' 47.601" N	87° 19' 50.073" E
8	22° 51' 47.110" N	87° 19' 50.434" E
9	22° 51' 46.695" N	87° 19' 51.185" E
10	22° 51' 46.229" N	87° 19' 51.881" E
11	22° 51' 45.040" N	87° 19' 52.574" E
12	22° 51' 43.928" N	87° 19' 53.491" E
13	22° 51' 42.792" N	87° 19' 53.599" E

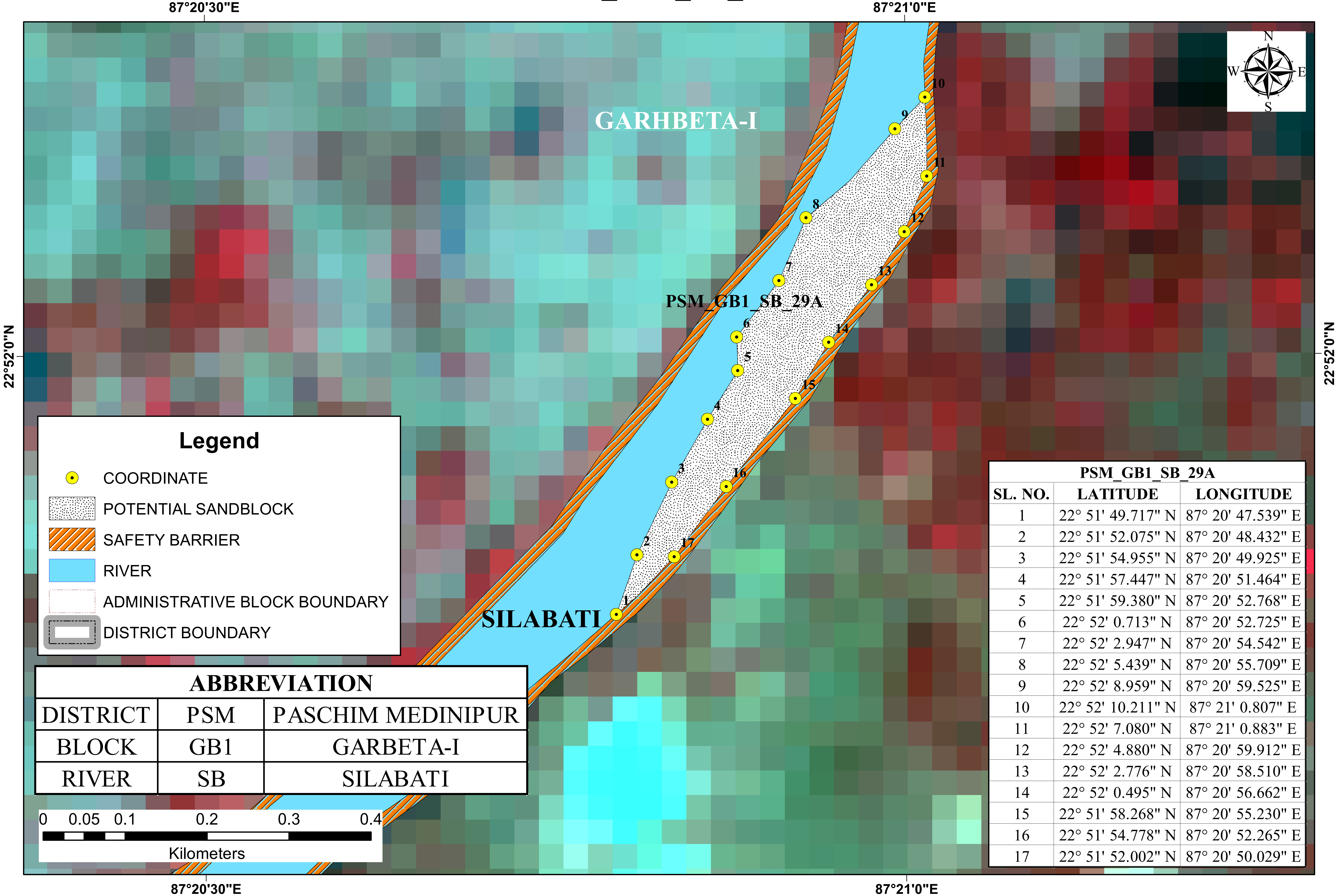
POTENTIAL BLOCK PSM_GB1_SB_29 OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_29		
SL. NO.	LATITUDE	LONGITUDE
1	22° 51' 33.516" N	87° 20' 22.434" E
2	22° 51' 32.957" N	87° 20' 18.254" E
3	22° 51' 35.402" N	87° 20' 9.514" E
4	22° 51' 35.622" N	87° 20' 9.118" E
5	22° 51' 34.922" N	87° 20' 12.614" E
6	22° 51' 34.782" N	87° 20' 17.859" E
7	22° 51' 35.763" N	87° 20' 21.947" E
8	22° 51' 37.603" N	87° 20' 26.369" E

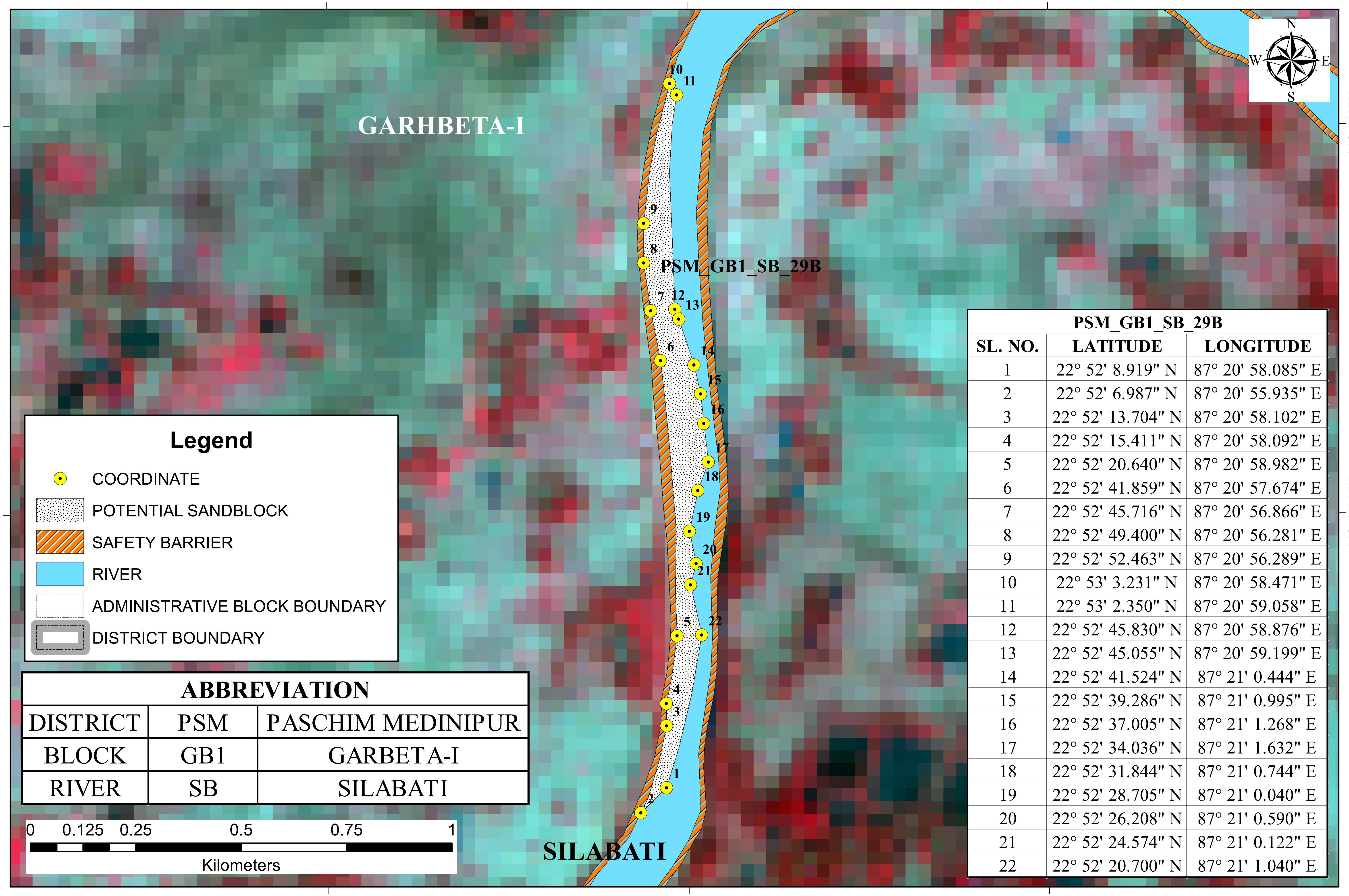
POTENTIAL BLOCK PSM_GB1_SB_29A OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_29A		
SL. NO.	LATITUDE	LONGITUDE
1	22° 51' 49.717" N	87° 20' 47.539" E
2	22° 51' 52.075" N	87° 20' 48.432" E
3	22° 51' 54.955" N	87° 20' 49.925" E
4	22° 51' 57.447" N	87° 20' 51.464" E
5	22° 51' 59.380" N	87° 20' 52.768" E
6	22° 52' 0.713" N	87° 20' 52.725" E
7	22° 52' 2.947" N	87° 20' 54.542" E
8	22° 52' 5.439" N	87° 20' 55.709" E
9	22° 52' 8.959" N	87° 20' 59.525" E
10	22° 52' 10.211" N	87° 21' 0.807" E
11	22° 52' 7.080" N	87° 21' 0.883" E
12	22° 52' 4.880" N	87° 20' 59.912" E
13	22° 52' 2.776" N	87° 20' 58.510" E
14	22° 52' 0.495" N	87° 20' 56.662" E
15	22° 51' 58.268" N	87° 20' 55.230" E
16	22° 51' 54.778" N	87° 20' 52.265" E
17	22° 51' 52.002" N	87° 20' 50.029" E

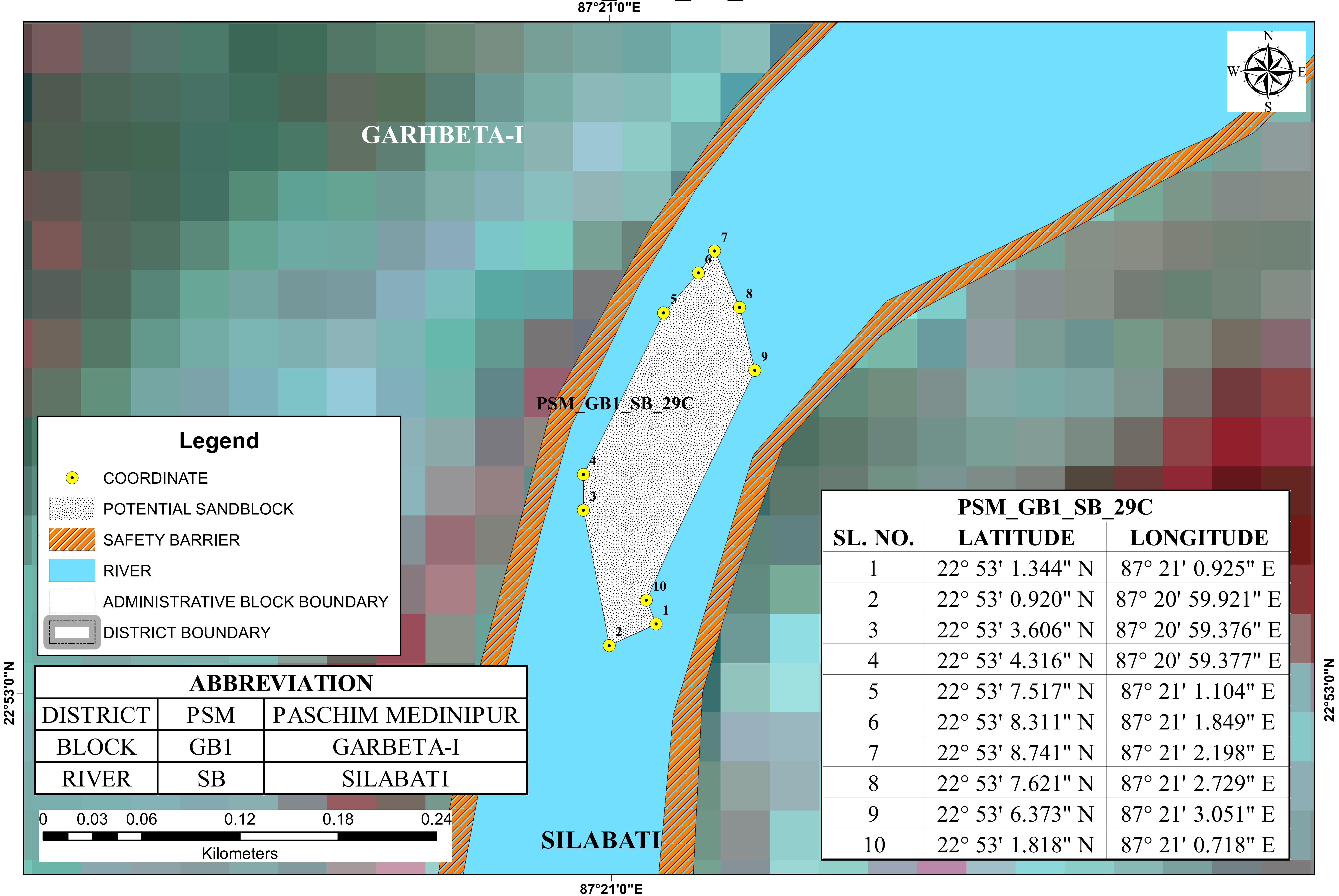
POTENTIAL BLOCK PSM_GB1_SB_29B OF SILABATI RIVER



PSM_GB1_SB_29B		
SL. NO.	LATITUDE	LONGITUDE
1	22° 52' 8.919" N	87° 20' 58.085" E
2	22° 52' 6.987" N	87° 20' 55.935" E
3	22° 52' 13.704" N	87° 20' 58.102" E
4	22° 52' 15.411" N	87° 20' 58.092" E
5	22° 52' 20.640" N	87° 20' 58.982" E
6	22° 52' 41.859" N	87° 20' 57.674" E
7	22° 52' 45.716" N	87° 20' 56.866" E
8	22° 52' 49.400" N	87° 20' 56.281" E
9	22° 52' 52.463" N	87° 20' 56.289" E
10	22° 53' 3.231" N	87° 20' 58.471" E
11	22° 53' 2.350" N	87° 20' 59.058" E
12	22° 52' 45.830" N	87° 20' 58.876" E
13	22° 52' 45.055" N	87° 20' 59.199" E
14	22° 52' 41.524" N	87° 21' 0.444" E
15	22° 52' 39.286" N	87° 21' 0.995" E
16	22° 52' 37.005" N	87° 21' 1.268" E
17	22° 52' 34.036" N	87° 21' 1.632" E
18	22° 52' 31.844" N	87° 21' 0.744" E
19	22° 52' 28.705" N	87° 21' 0.040" E
20	22° 52' 26.208" N	87° 21' 0.590" E
21	22° 52' 24.574" N	87° 21' 0.122" E
22	22° 52' 20.700" N	87° 21' 1.040" E

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

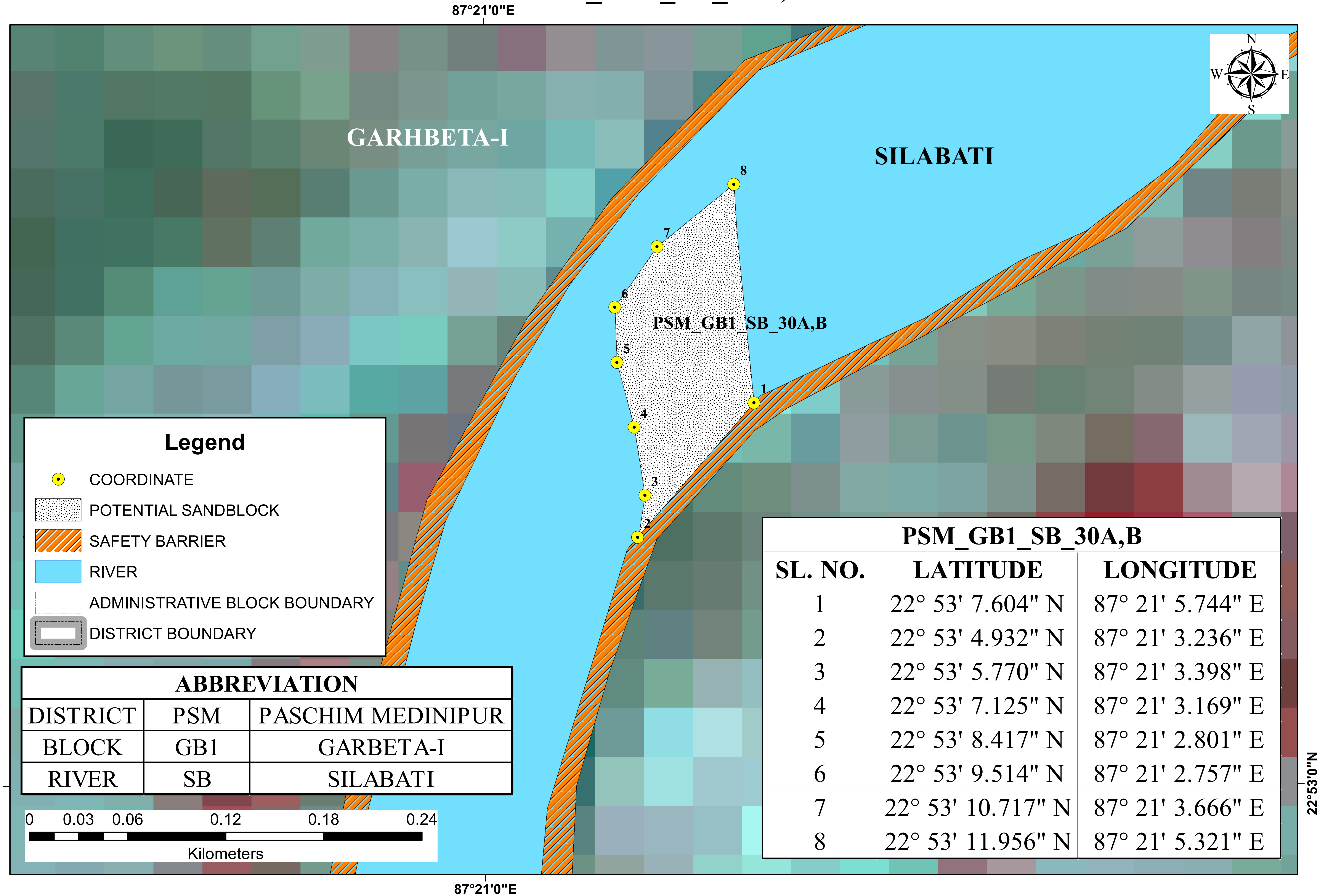
POTENTIAL BLOCK PSM_GB1_SB_29C OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_29C		
SL. NO.	LATITUDE	LONGITUDE
1	22° 53' 1.344" N	87° 21' 0.925" E
2	22° 53' 0.920" N	87° 20' 59.921" E
3	22° 53' 3.606" N	87° 20' 59.376" E
4	22° 53' 4.316" N	87° 20' 59.377" E
5	22° 53' 7.517" N	87° 21' 1.104" E
6	22° 53' 8.311" N	87° 21' 1.849" E
7	22° 53' 8.741" N	87° 21' 2.198" E
8	22° 53' 7.621" N	87° 21' 2.729" E
9	22° 53' 6.373" N	87° 21' 3.051" E
10	22° 53' 1.818" N	87° 21' 0.718" E

POTENTIAL BLOCK PSM_GB1_SB_30A,B OF SILABATI RIVER

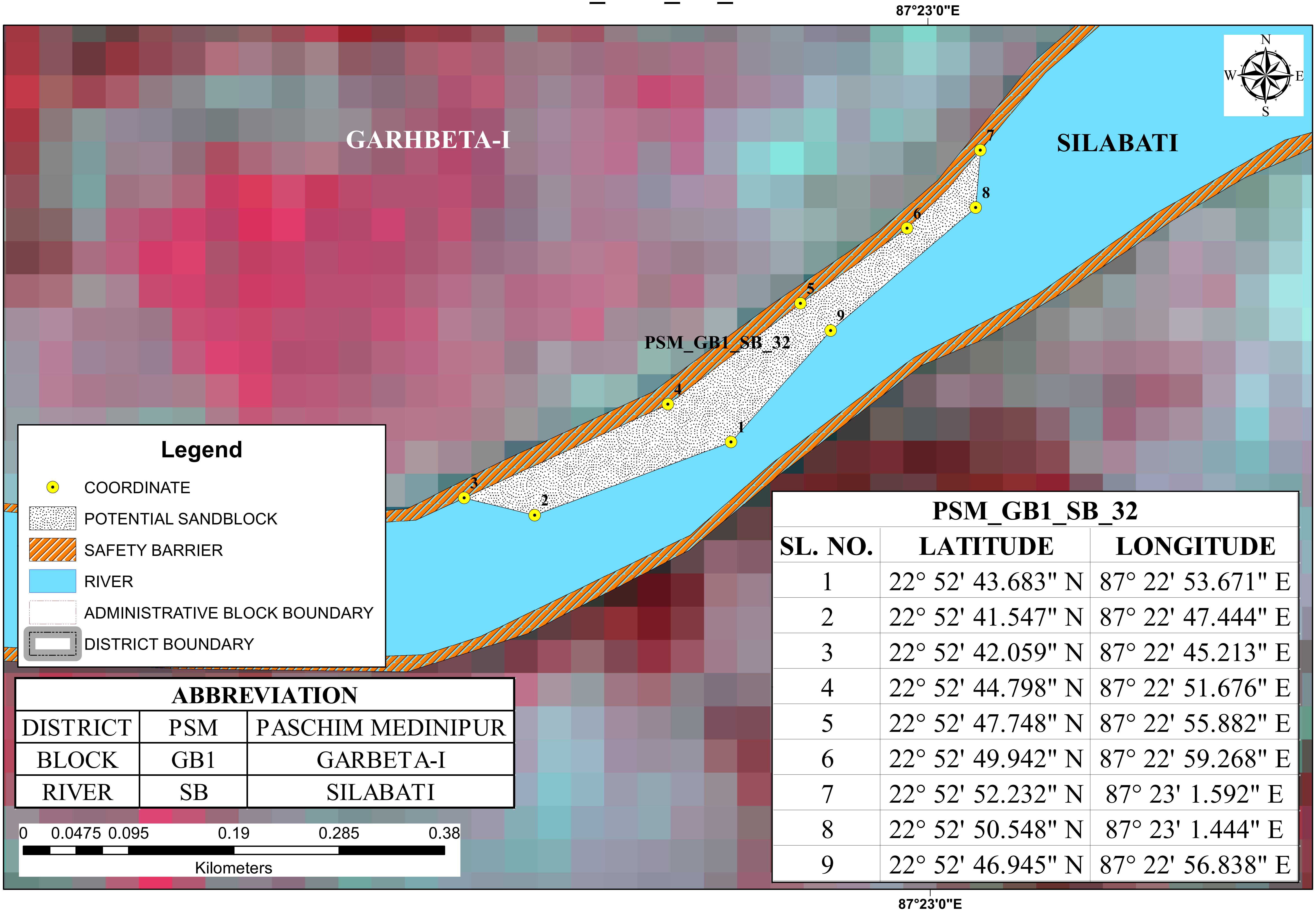


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_30A,B

SL. NO.	LATITUDE	LONGITUDE
1	22° 53' 7.604" N	87° 21' 5.744" E
2	22° 53' 4.932" N	87° 21' 3.236" E
3	22° 53' 5.770" N	87° 21' 3.398" E
4	22° 53' 7.125" N	87° 21' 3.169" E
5	22° 53' 8.417" N	87° 21' 2.801" E
6	22° 53' 9.514" N	87° 21' 2.757" E
7	22° 53' 10.717" N	87° 21' 3.666" E
8	22° 53' 11.956" N	87° 21' 5.321" E

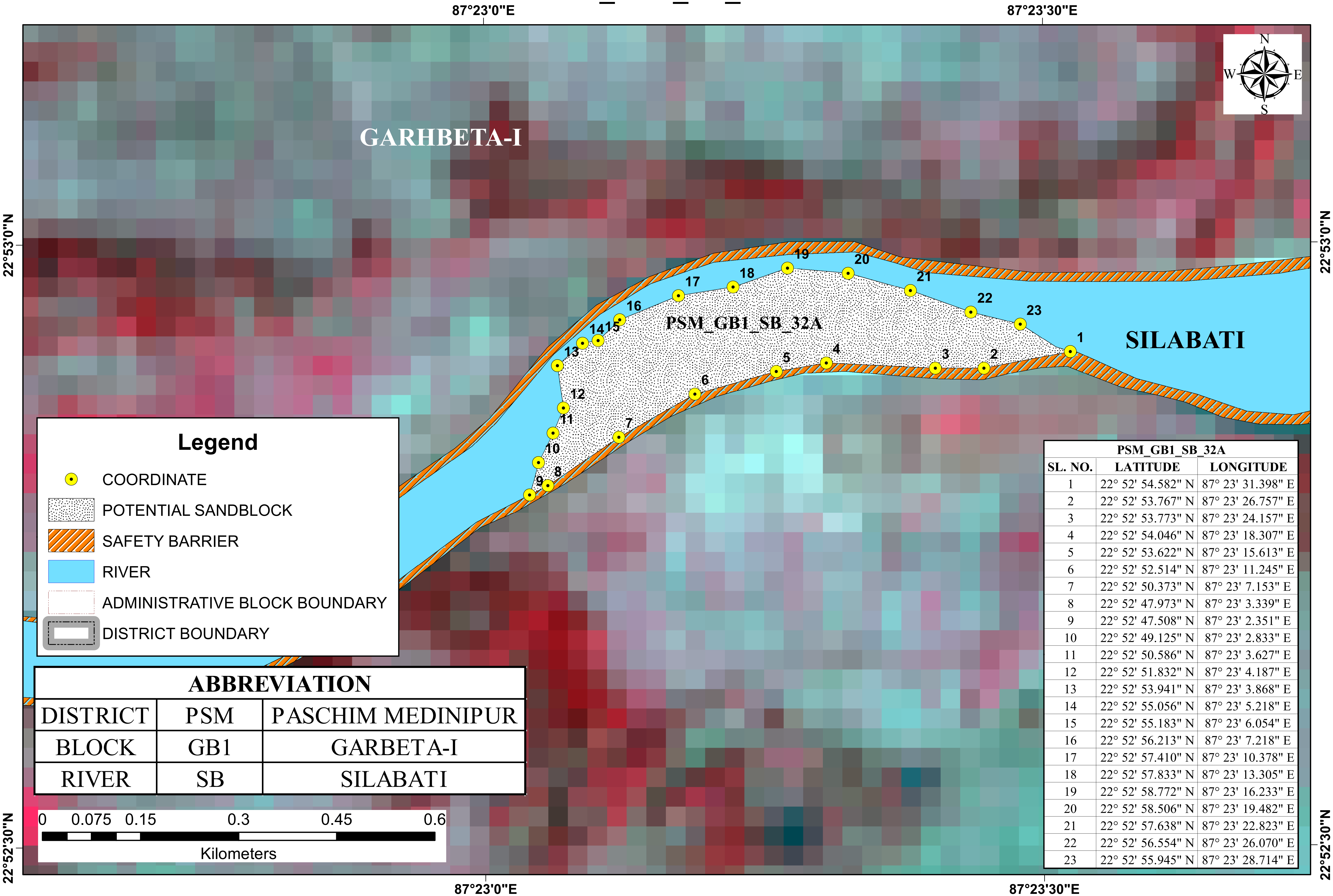
POTENTIAL BLOCK PSM_GB1_SB_32 OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_32		
SL. NO.	LATITUDE	LONGITUDE
1	22° 52' 43.683" N	87° 22' 53.671" E
2	22° 52' 41.547" N	87° 22' 47.444" E
3	22° 52' 42.059" N	87° 22' 45.213" E
4	22° 52' 44.798" N	87° 22' 51.676" E
5	22° 52' 47.748" N	87° 22' 55.882" E
6	22° 52' 49.942" N	87° 22' 59.268" E
7	22° 52' 52.232" N	87° 23' 1.592" E
8	22° 52' 50.548" N	87° 23' 1.444" E
9	22° 52' 46.945" N	87° 22' 56.838" E

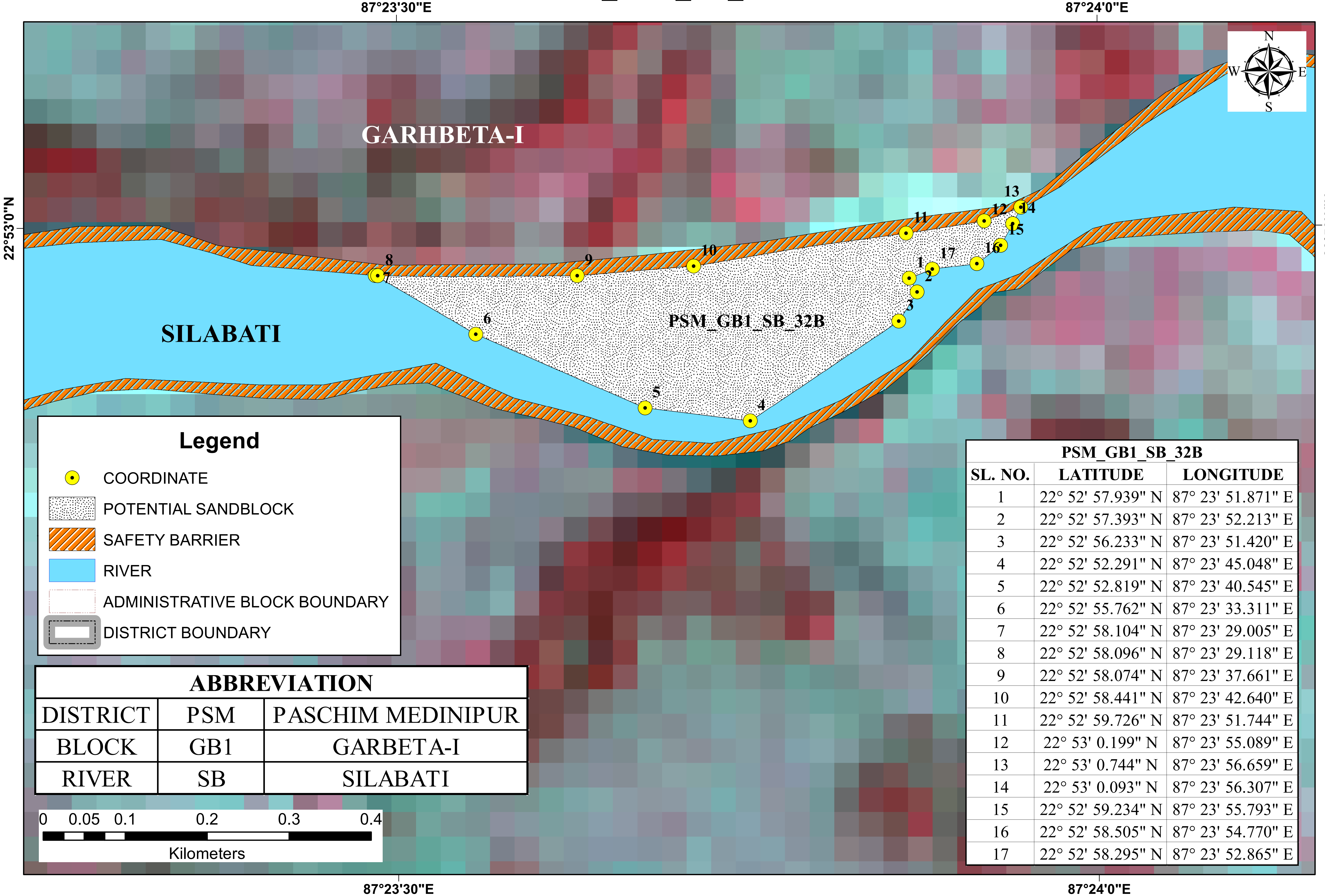
POTENTIAL BLOCK PSM_GB1_SB_32A OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_32A		
SL. NO.	LATITUDE	LONGITUDE
1	22° 52' 54.582" N	87° 23' 31.398" E
2	22° 52' 53.767" N	87° 23' 26.757" E
3	22° 52' 53.773" N	87° 23' 24.157" E
4	22° 52' 54.046" N	87° 23' 18.307" E
5	22° 52' 53.622" N	87° 23' 15.613" E
6	22° 52' 52.514" N	87° 23' 11.245" E
7	22° 52' 50.373" N	87° 23' 7.153" E
8	22° 52' 47.973" N	87° 23' 3.339" E
9	22° 52' 47.508" N	87° 23' 2.351" E
10	22° 52' 49.125" N	87° 23' 2.833" E
11	22° 52' 50.586" N	87° 23' 3.627" E
12	22° 52' 51.832" N	87° 23' 4.187" E
13	22° 52' 53.941" N	87° 23' 3.868" E
14	22° 52' 55.056" N	87° 23' 5.218" E
15	22° 52' 55.183" N	87° 23' 6.054" E
16	22° 52' 56.213" N	87° 23' 7.218" E
17	22° 52' 57.410" N	87° 23' 10.378" E
18	22° 52' 57.833" N	87° 23' 13.305" E
19	22° 52' 58.772" N	87° 23' 16.233" E
20	22° 52' 58.506" N	87° 23' 19.482" E
21	22° 52' 57.638" N	87° 23' 22.823" E
22	22° 52' 56.554" N	87° 23' 26.070" E
23	22° 52' 55.945" N	87° 23' 28.714" E

POTENTIAL BLOCK PSM_GB1_SB_32B OF SILABATI RIVER

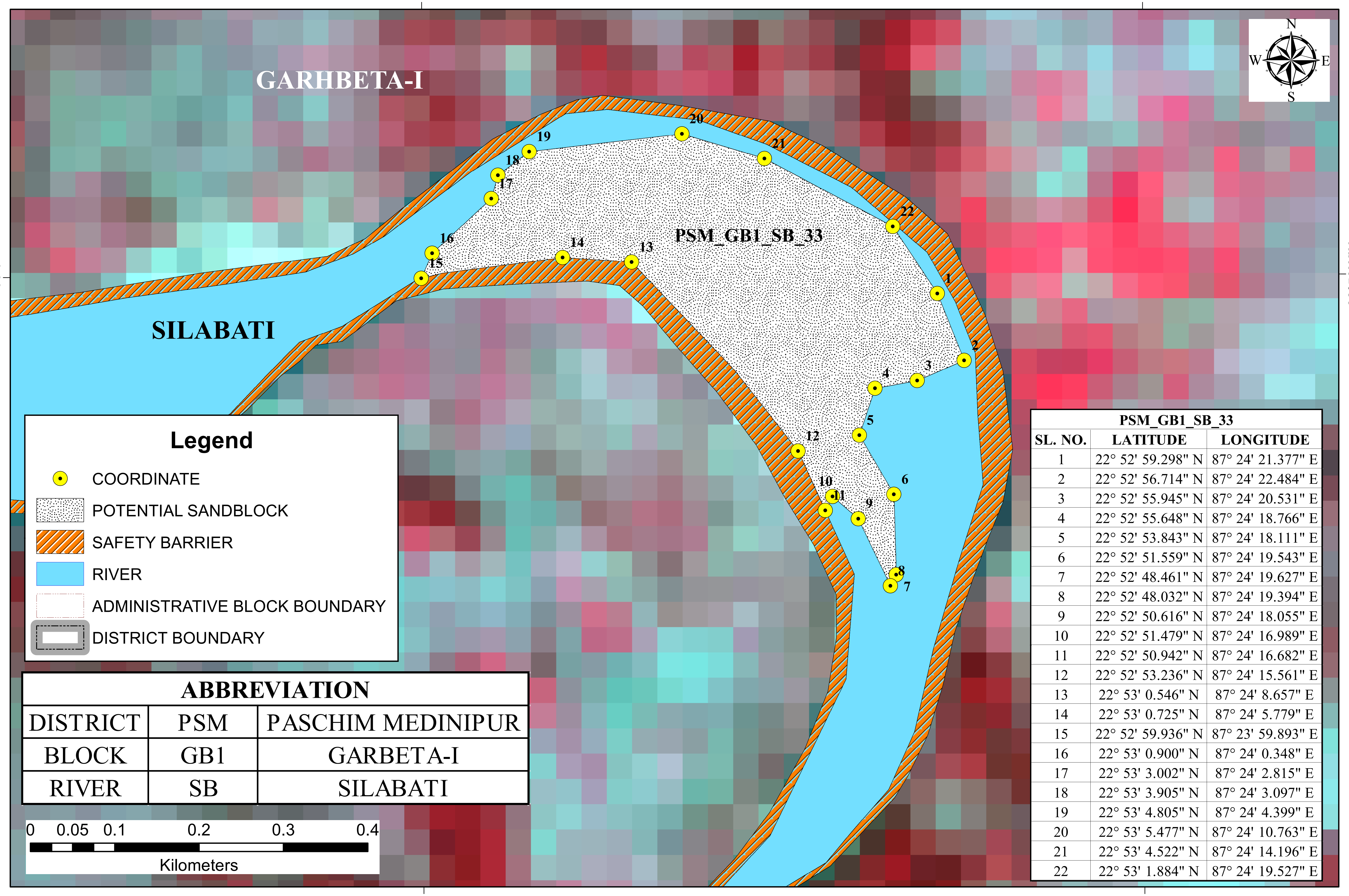


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_32B

SL. NO.	LATITUDE	LONGITUDE
1	22° 52' 57.939" N	87° 23' 51.871" E
2	22° 52' 57.393" N	87° 23' 52.213" E
3	22° 52' 56.233" N	87° 23' 51.420" E
4	22° 52' 52.291" N	87° 23' 45.048" E
5	22° 52' 52.819" N	87° 23' 40.545" E
6	22° 52' 55.762" N	87° 23' 33.311" E
7	22° 52' 58.104" N	87° 23' 29.005" E
8	22° 52' 58.096" N	87° 23' 29.118" E
9	22° 52' 58.074" N	87° 23' 37.661" E
10	22° 52' 58.441" N	87° 23' 42.640" E
11	22° 52' 59.726" N	87° 23' 51.744" E
12	22° 53' 0.199" N	87° 23' 55.089" E
13	22° 53' 0.744" N	87° 23' 56.659" E
14	22° 53' 0.093" N	87° 23' 56.307" E
15	22° 52' 59.234" N	87° 23' 55.793" E
16	22° 52' 58.505" N	87° 23' 54.770" E
17	22° 52' 58.295" N	87° 23' 52.865" E

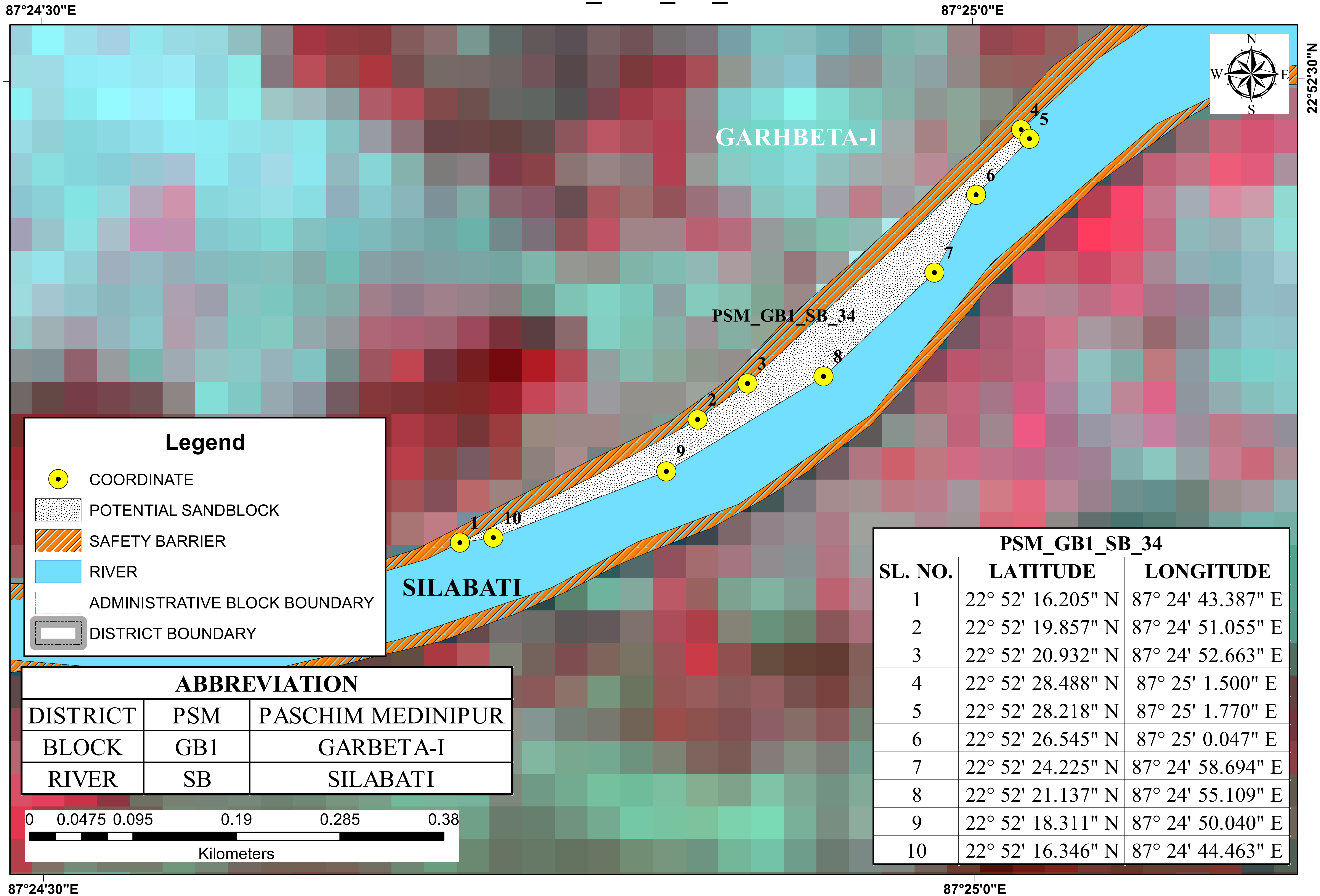
POTENTIAL BLOCK PSM_GB1_SB_33 OF SILABATI RIVER



PSM_GB1_SB_33		
SL. NO.	LATITUDE	LONGITUDE
1	22° 52' 59.298" N	87° 24' 21.377" E
2	22° 52' 56.714" N	87° 24' 22.484" E
3	22° 52' 55.945" N	87° 24' 20.531" E
4	22° 52' 55.648" N	87° 24' 18.766" E
5	22° 52' 53.843" N	87° 24' 18.111" E
6	22° 52' 51.559" N	87° 24' 19.543" E
7	22° 52' 48.461" N	87° 24' 19.627" E
8	22° 52' 48.032" N	87° 24' 19.394" E
9	22° 52' 50.616" N	87° 24' 18.055" E
10	22° 52' 51.479" N	87° 24' 16.989" E
11	22° 52' 50.942" N	87° 24' 16.682" E
12	22° 52' 53.236" N	87° 24' 15.561" E
13	22° 53' 0.546" N	87° 24' 8.657" E
14	22° 53' 0.725" N	87° 24' 5.779" E
15	22° 52' 59.936" N	87° 23' 59.893" E
16	22° 53' 0.900" N	87° 24' 0.348" E
17	22° 53' 3.002" N	87° 24' 2.815" E
18	22° 53' 3.905" N	87° 24' 3.097" E
19	22° 53' 4.805" N	87° 24' 4.399" E
20	22° 53' 5.477" N	87° 24' 10.763" E
21	22° 53' 4.522" N	87° 24' 14.196" E
22	22° 53' 1.884" N	87° 24' 19.527" E

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

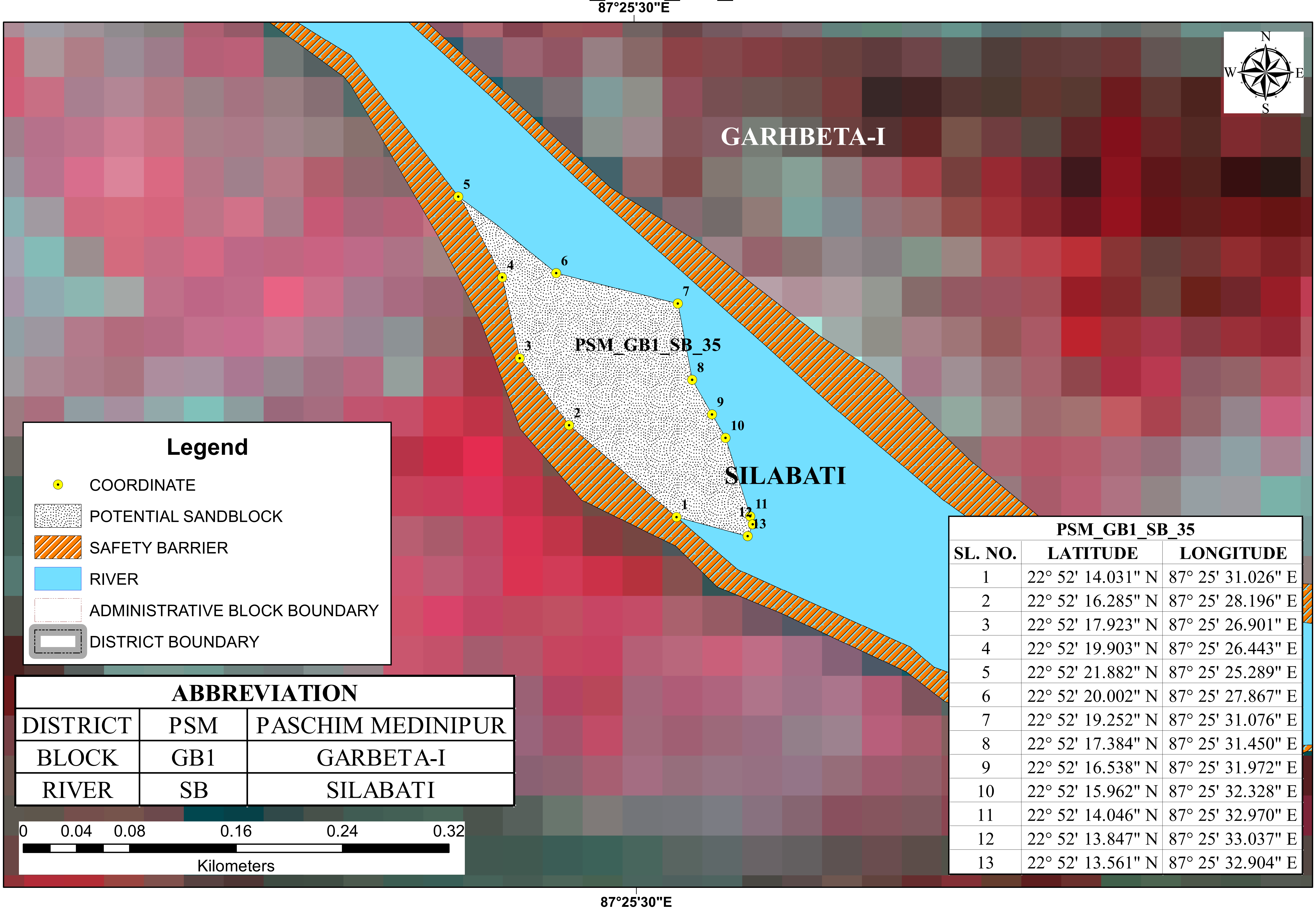
POTENTIAL BLOCK PSM_GB1_SB_34 OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_34		
SL. NO.	LATITUDE	LONGITUDE
1	22° 52' 16.205" N	87° 24' 43.387" E
2	22° 52' 19.857" N	87° 24' 51.055" E
3	22° 52' 20.932" N	87° 24' 52.663" E
4	22° 52' 28.488" N	87° 25' 1.500" E
5	22° 52' 28.218" N	87° 25' 1.770" E
6	22° 52' 26.545" N	87° 25' 0.047" E
7	22° 52' 24.225" N	87° 24' 58.694" E
8	22° 52' 21.137" N	87° 24' 55.109" E
9	22° 52' 18.311" N	87° 24' 50.040" E
10	22° 52' 16.346" N	87° 24' 44.463" E

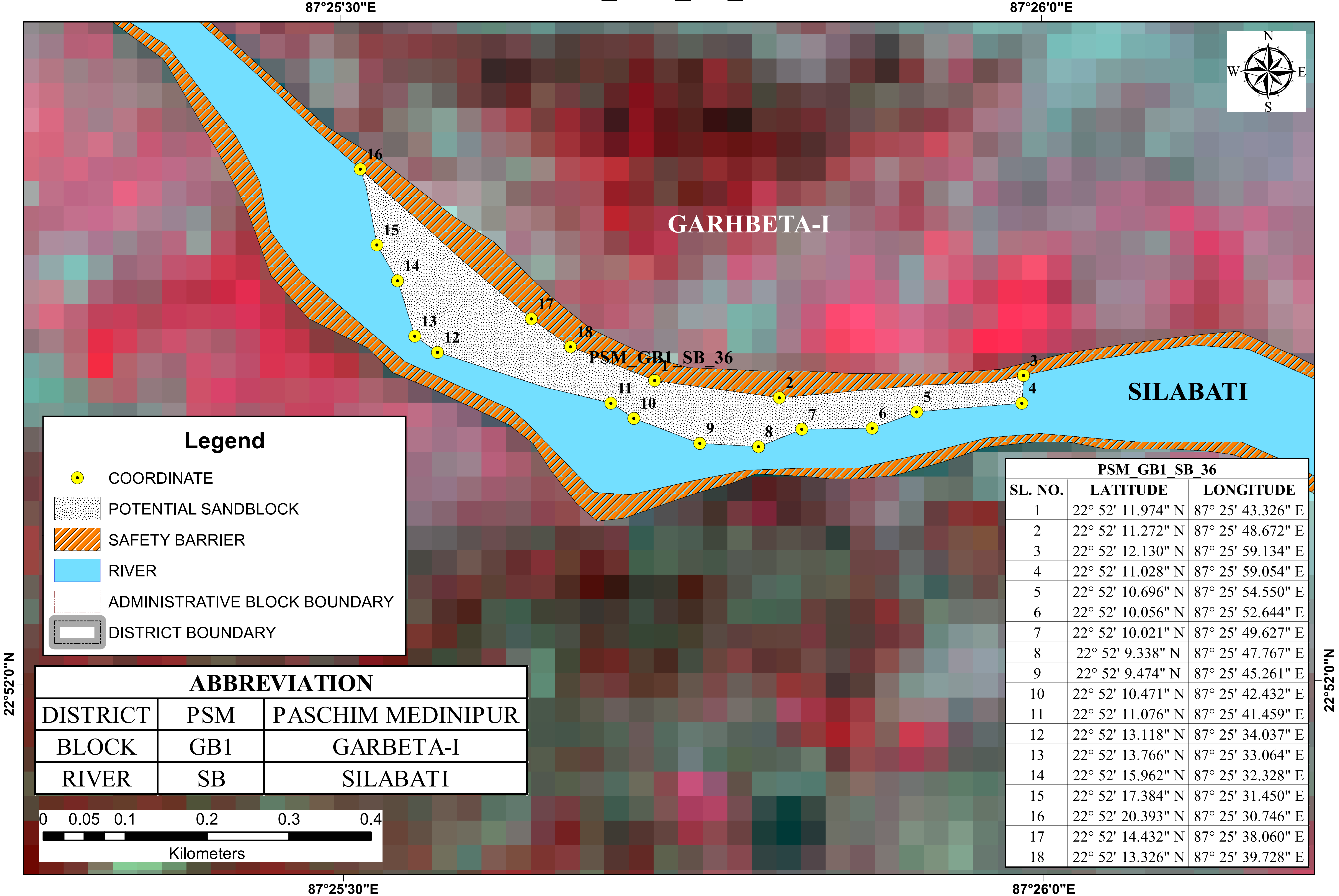
POTENTIAL BLOCK PSM_GB1_SB_35 OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_35		
SL. NO.	LATITUDE	LONGITUDE
1	22° 52' 14.031" N	87° 25' 31.026" E
2	22° 52' 16.285" N	87° 25' 28.196" E
3	22° 52' 17.923" N	87° 25' 26.901" E
4	22° 52' 19.903" N	87° 25' 26.443" E
5	22° 52' 21.882" N	87° 25' 25.289" E
6	22° 52' 20.002" N	87° 25' 27.867" E
7	22° 52' 19.252" N	87° 25' 31.076" E
8	22° 52' 17.384" N	87° 25' 31.450" E
9	22° 52' 16.538" N	87° 25' 31.972" E
10	22° 52' 15.962" N	87° 25' 32.328" E
11	22° 52' 14.046" N	87° 25' 32.970" E
12	22° 52' 13.847" N	87° 25' 33.037" E
13	22° 52' 13.561" N	87° 25' 32.904" E

POTENTIAL BLOCK PSM_GB1_SB_36 OF SILABATI RIVER

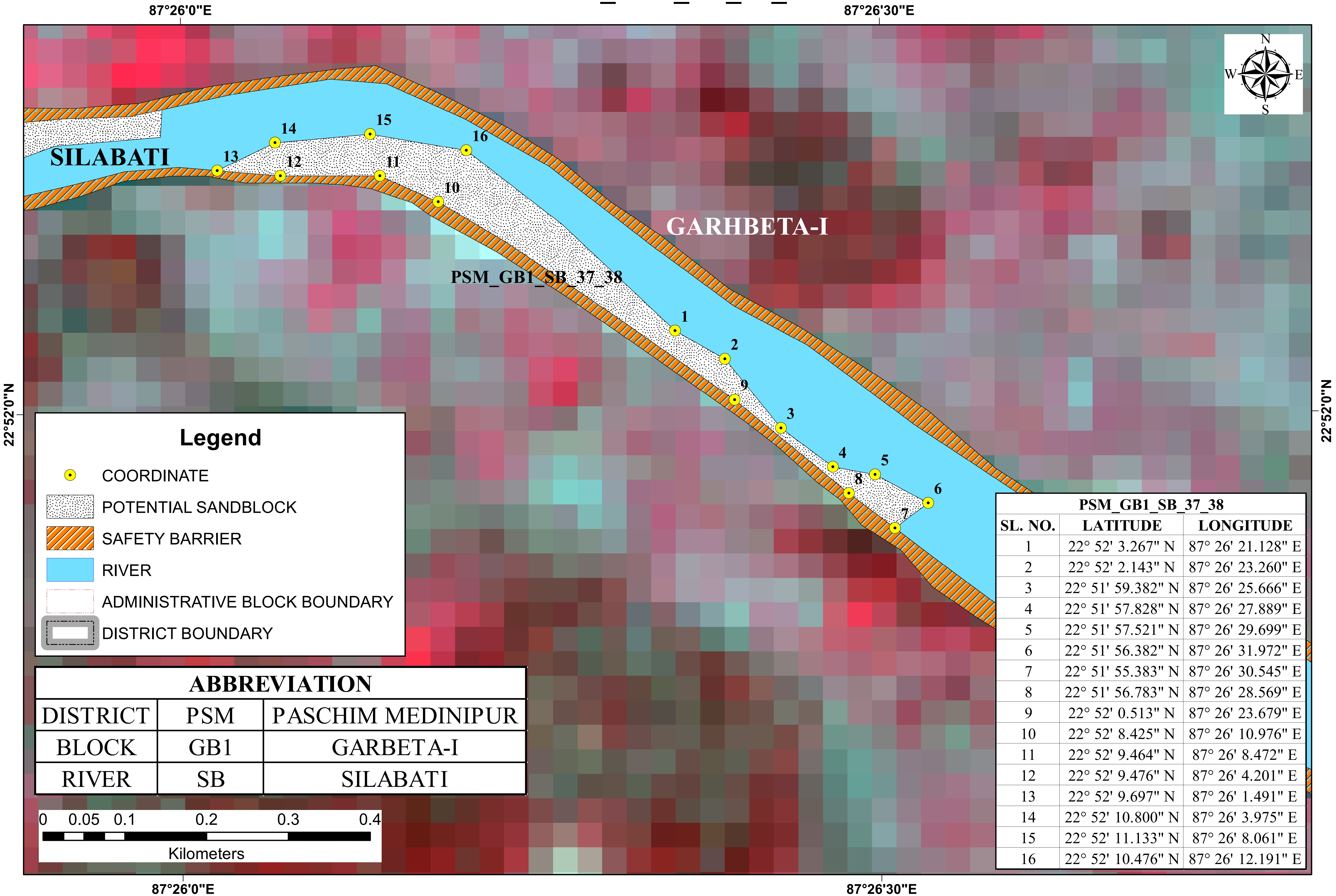


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_36

SL. NO.	LATITUDE	LONGITUDE
1	22° 52' 11.974" N	87° 25' 43.326" E
2	22° 52' 11.272" N	87° 25' 48.672" E
3	22° 52' 12.130" N	87° 25' 59.134" E
4	22° 52' 11.028" N	87° 25' 59.054" E
5	22° 52' 10.696" N	87° 25' 54.550" E
6	22° 52' 10.056" N	87° 25' 52.644" E
7	22° 52' 10.021" N	87° 25' 49.627" E
8	22° 52' 9.338" N	87° 25' 47.767" E
9	22° 52' 9.474" N	87° 25' 45.261" E
10	22° 52' 10.471" N	87° 25' 42.432" E
11	22° 52' 11.076" N	87° 25' 41.459" E
12	22° 52' 13.118" N	87° 25' 34.037" E
13	22° 52' 13.766" N	87° 25' 33.064" E
14	22° 52' 15.962" N	87° 25' 32.328" E
15	22° 52' 17.384" N	87° 25' 31.450" E
16	22° 52' 20.393" N	87° 25' 30.746" E
17	22° 52' 14.432" N	87° 25' 38.060" E
18	22° 52' 13.326" N	87° 25' 39.728" E

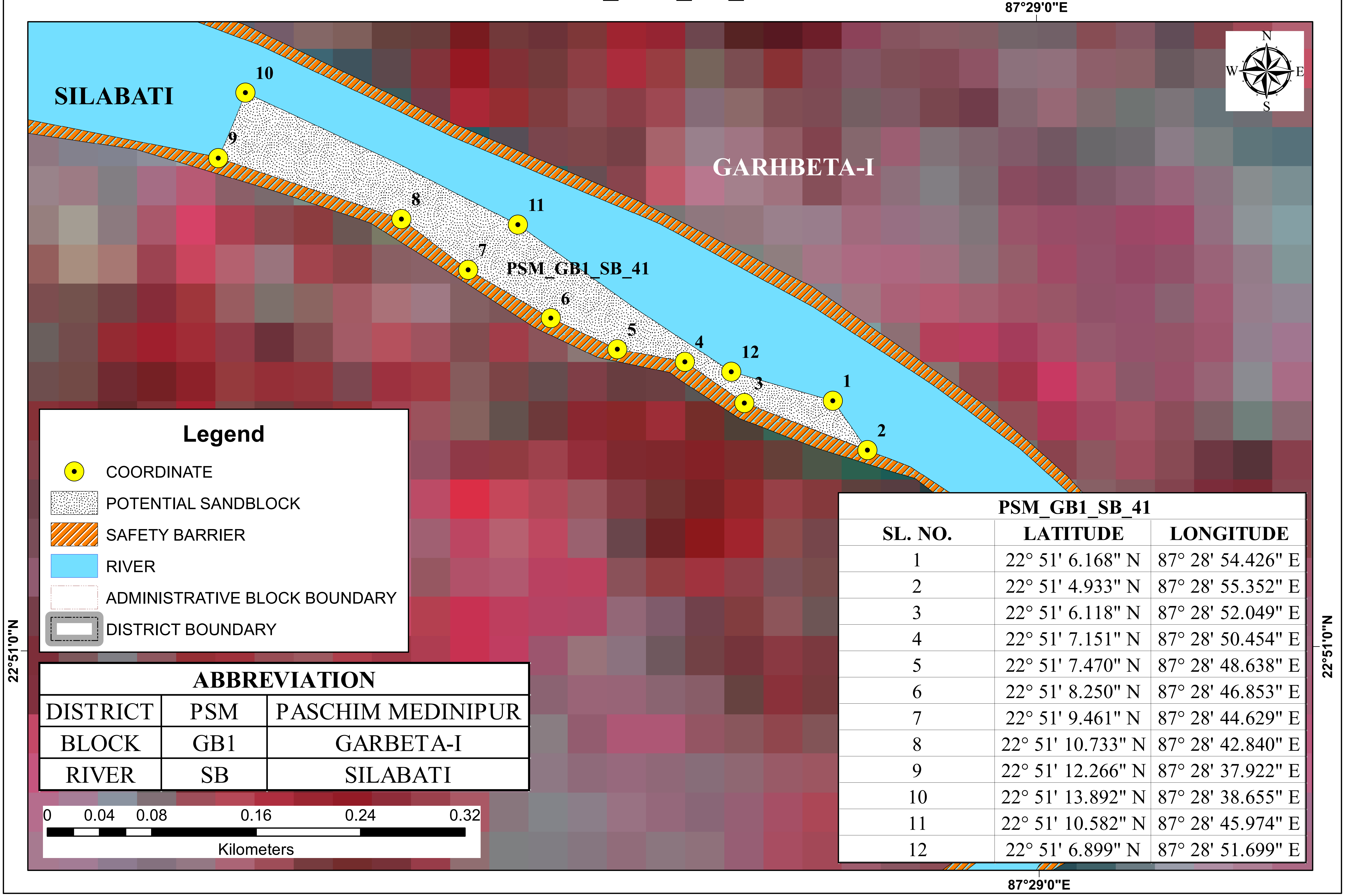
POTENTIAL BLOCK PSM_GB1_SB_37_38 OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_37_38		
SL. NO.	LATITUDE	LONGITUDE
1	22° 52' 3.267" N	87° 26' 21.128" E
2	22° 52' 2.143" N	87° 26' 23.260" E
3	22° 51' 59.382" N	87° 26' 25.666" E
4	22° 51' 57.828" N	87° 26' 27.889" E
5	22° 51' 57.521" N	87° 26' 29.699" E
6	22° 51' 56.382" N	87° 26' 31.972" E
7	22° 51' 55.383" N	87° 26' 30.545" E
8	22° 51' 56.783" N	87° 26' 28.569" E
9	22° 52' 0.513" N	87° 26' 23.679" E
10	22° 52' 8.425" N	87° 26' 10.976" E
11	22° 52' 9.464" N	87° 26' 8.472" E
12	22° 52' 9.476" N	87° 26' 4.201" E
13	22° 52' 9.697" N	87° 26' 1.491" E
14	22° 52' 10.800" N	87° 26' 3.975" E
15	22° 52' 11.133" N	87° 26' 8.061" E
16	22° 52' 10.476" N	87° 26' 12.191" E

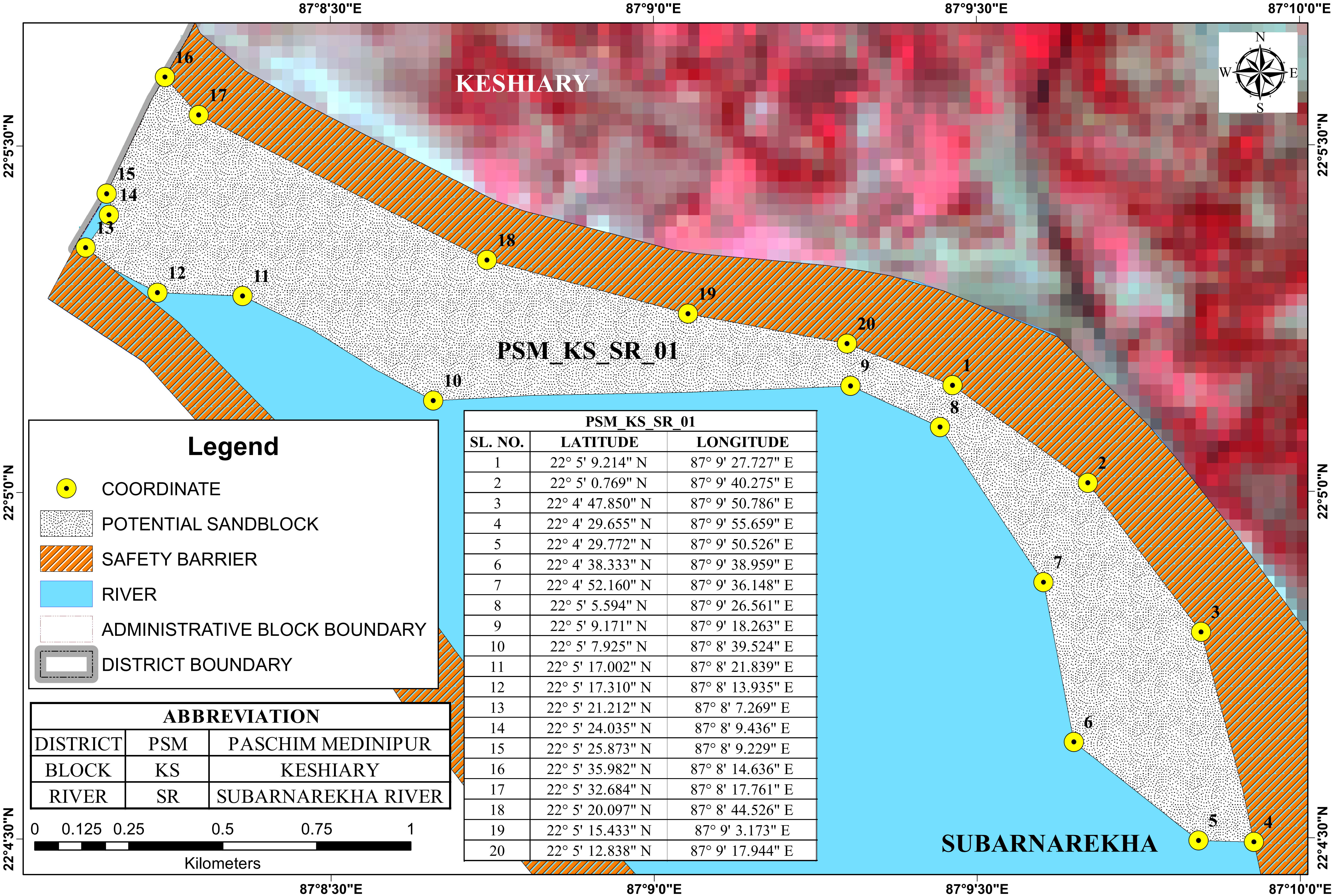
POTENTIAL BLOCK PSM_GB1_SB_41 OF SILABATI RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	GB1	GARBETA-I
RIVER	SB	SILABATI

PSM_GB1_SB_41		
SL. NO.	LATITUDE	LONGITUDE
1	22° 51' 6.168" N	87° 28' 54.426" E
2	22° 51' 4.933" N	87° 28' 55.352" E
3	22° 51' 6.118" N	87° 28' 52.049" E
4	22° 51' 7.151" N	87° 28' 50.454" E
5	22° 51' 7.470" N	87° 28' 48.638" E
6	22° 51' 8.250" N	87° 28' 46.853" E
7	22° 51' 9.461" N	87° 28' 44.629" E
8	22° 51' 10.733" N	87° 28' 42.840" E
9	22° 51' 12.266" N	87° 28' 37.922" E
10	22° 51' 13.892" N	87° 28' 38.655" E
11	22° 51' 10.582" N	87° 28' 45.974" E
12	22° 51' 6.899" N	87° 28' 51.699" E

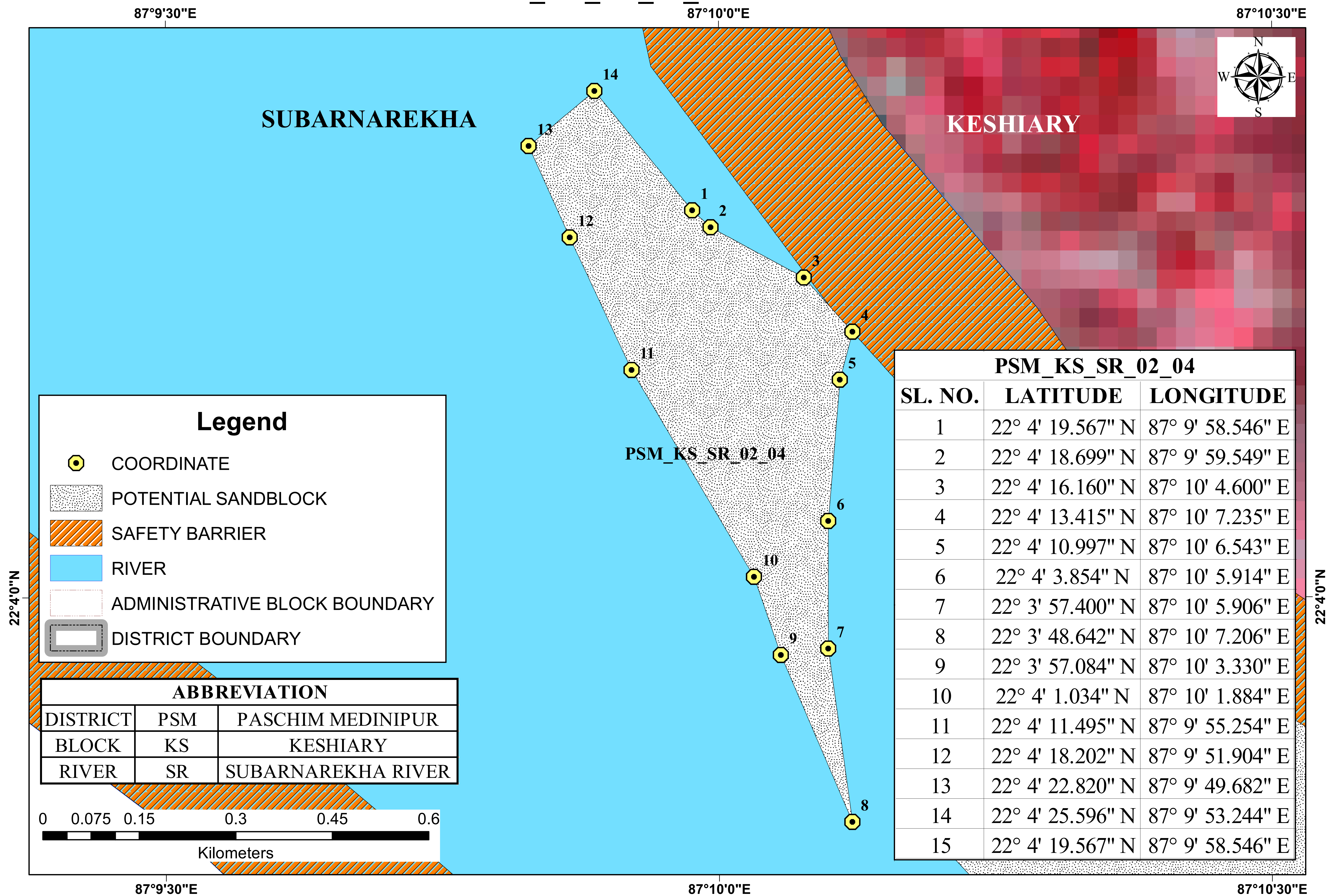
POTENTIAL BLOCK PSM_KS_SR_01 OF SUBARNAREKHA RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KS	KESHIARY
RIVER	SR	SUBARNAREKHA RIVER

PSM_KS_SR_01		
SL. NO.	LATITUDE	LONGITUDE
1	22° 5' 9.214" N	87° 9' 27.727" E
2	22° 5' 0.769" N	87° 9' 40.275" E
3	22° 4' 47.850" N	87° 9' 50.786" E
4	22° 4' 29.655" N	87° 9' 55.659" E
5	22° 4' 29.772" N	87° 9' 50.526" E
6	22° 4' 38.333" N	87° 9' 38.959" E
7	22° 4' 52.160" N	87° 9' 36.148" E
8	22° 5' 5.594" N	87° 9' 26.561" E
9	22° 5' 9.171" N	87° 9' 18.263" E
10	22° 5' 7.925" N	87° 8' 39.524" E
11	22° 5' 17.002" N	87° 8' 21.839" E
12	22° 5' 17.310" N	87° 8' 13.935" E
13	22° 5' 21.212" N	87° 8' 7.269" E
14	22° 5' 24.035" N	87° 8' 9.436" E
15	22° 5' 25.873" N	87° 8' 9.229" E
16	22° 5' 35.982" N	87° 8' 14.636" E
17	22° 5' 32.684" N	87° 8' 17.761" E
18	22° 5' 20.097" N	87° 8' 44.526" E
19	22° 5' 15.433" N	87° 9' 3.173" E
20	22° 5' 12.838" N	87° 9' 17.944" E

POTENTIAL BLOCK PSM_KS_SR_02_04 OF SUBARNAREKHA RIVER

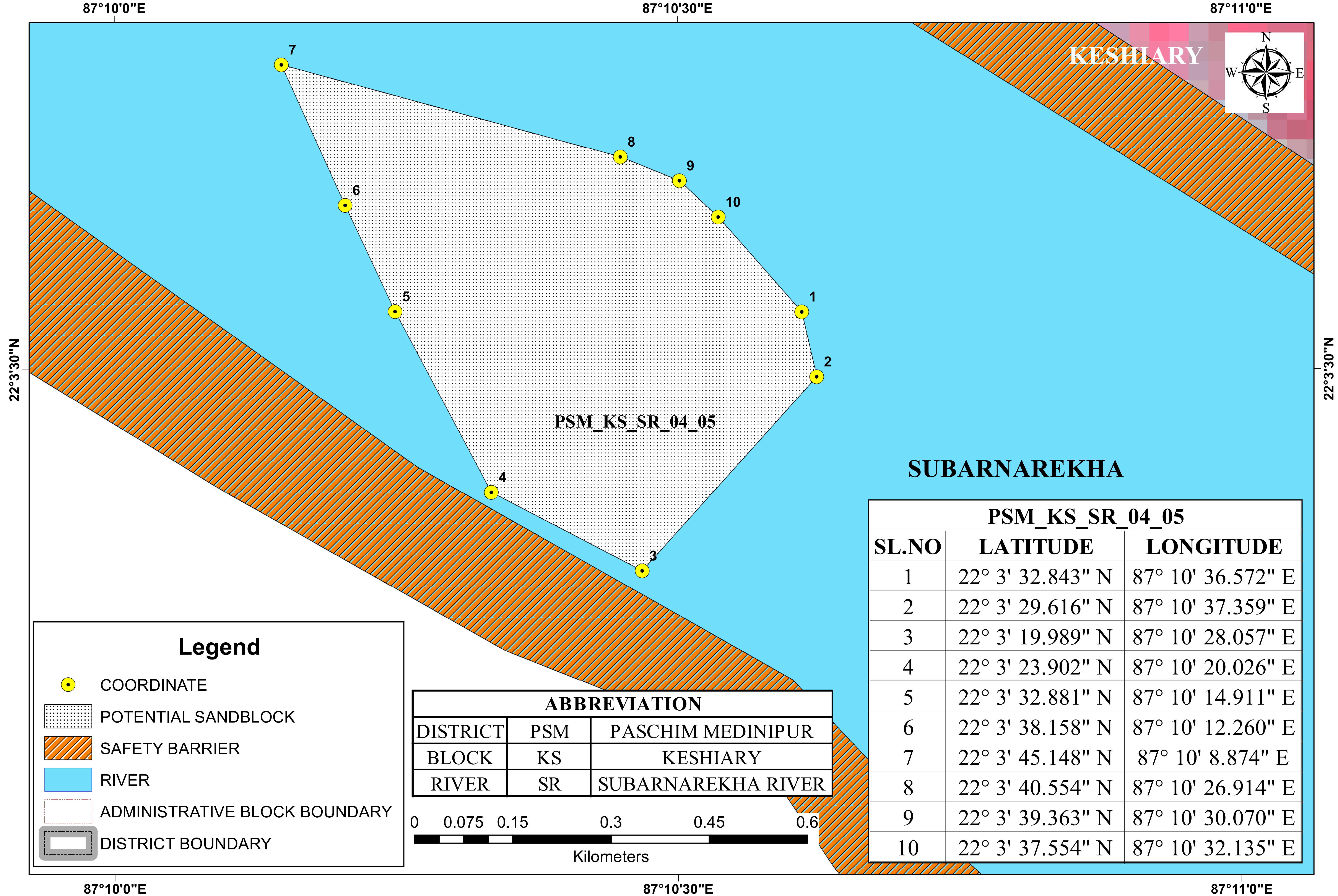


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KS	KESHIARY
RIVER	SR	SUBARNAREKHA RIVER

PSM_KS_SR_02_04

SL. NO.	LATITUDE	LONGITUDE
1	22° 4' 19.567" N	87° 9' 58.546" E
2	22° 4' 18.699" N	87° 9' 59.549" E
3	22° 4' 16.160" N	87° 10' 4.600" E
4	22° 4' 13.415" N	87° 10' 7.235" E
5	22° 4' 10.997" N	87° 10' 6.543" E
6	22° 4' 3.854" N	87° 10' 5.914" E
7	22° 3' 57.400" N	87° 10' 5.906" E
8	22° 3' 48.642" N	87° 10' 7.206" E
9	22° 3' 57.084" N	87° 10' 3.330" E
10	22° 4' 1.034" N	87° 10' 1.884" E
11	22° 4' 11.495" N	87° 9' 55.254" E
12	22° 4' 18.202" N	87° 9' 51.904" E
13	22° 4' 22.820" N	87° 9' 49.682" E
14	22° 4' 25.596" N	87° 9' 53.244" E
15	22° 4' 19.567" N	87° 9' 58.546" E

POTENTIAL BLOCK PSM_KS_SR_04_05 OF SUBARNAREKHA RIVER

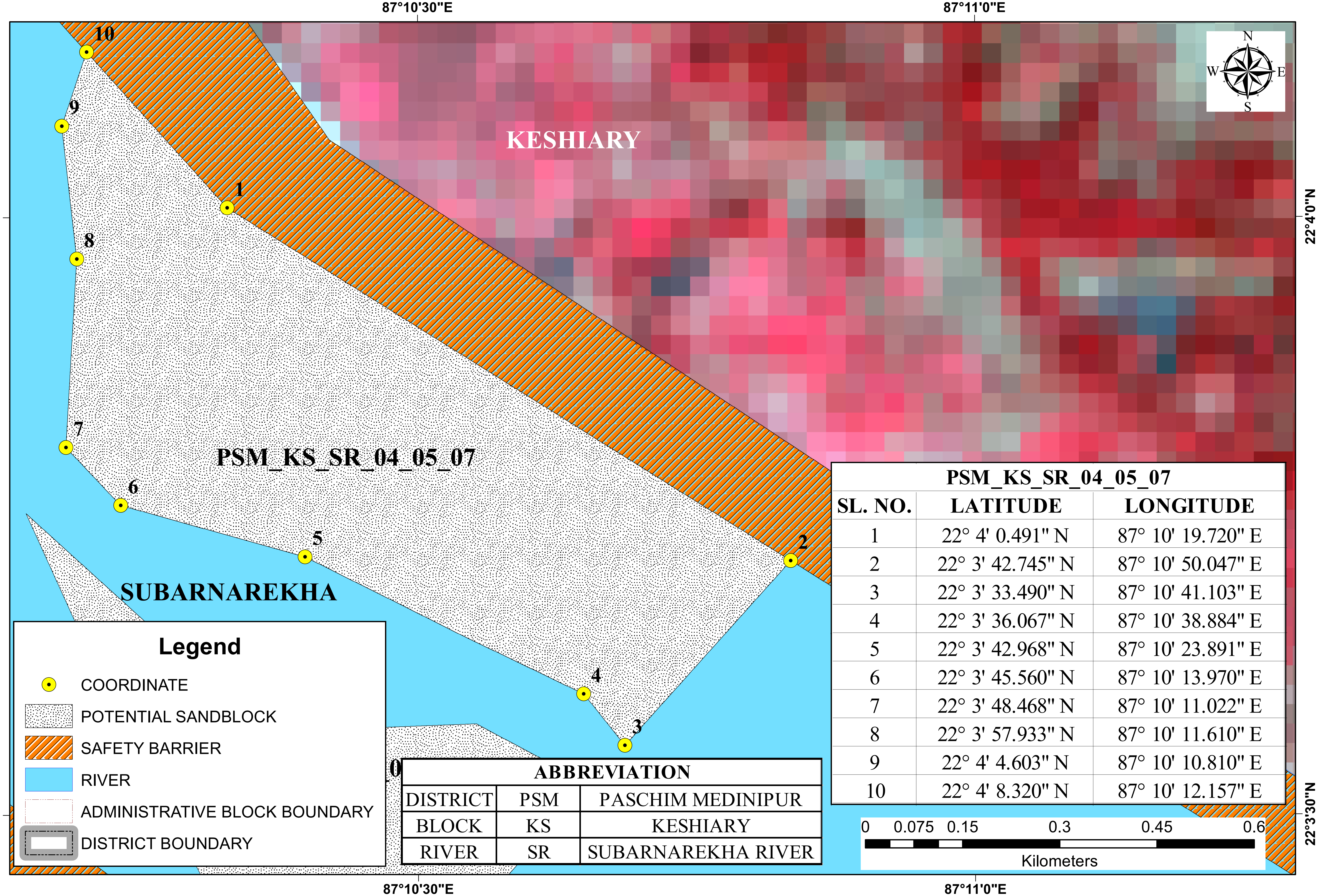


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KS	KESHIARY
RIVER	SR	SUBARNAREKHA RIVER

PSM_KS_SR_04_05

SL.NO	LATITUDE	LONGITUDE
1	22° 3' 32.843" N	87° 10' 36.572" E
2	22° 3' 29.616" N	87° 10' 37.359" E
3	22° 3' 19.989" N	87° 10' 28.057" E
4	22° 3' 23.902" N	87° 10' 20.026" E
5	22° 3' 32.881" N	87° 10' 14.911" E
6	22° 3' 38.158" N	87° 10' 12.260" E
7	22° 3' 45.148" N	87° 10' 8.874" E
8	22° 3' 40.554" N	87° 10' 26.914" E
9	22° 3' 39.363" N	87° 10' 30.070" E
10	22° 3' 37.554" N	87° 10' 32.135" E

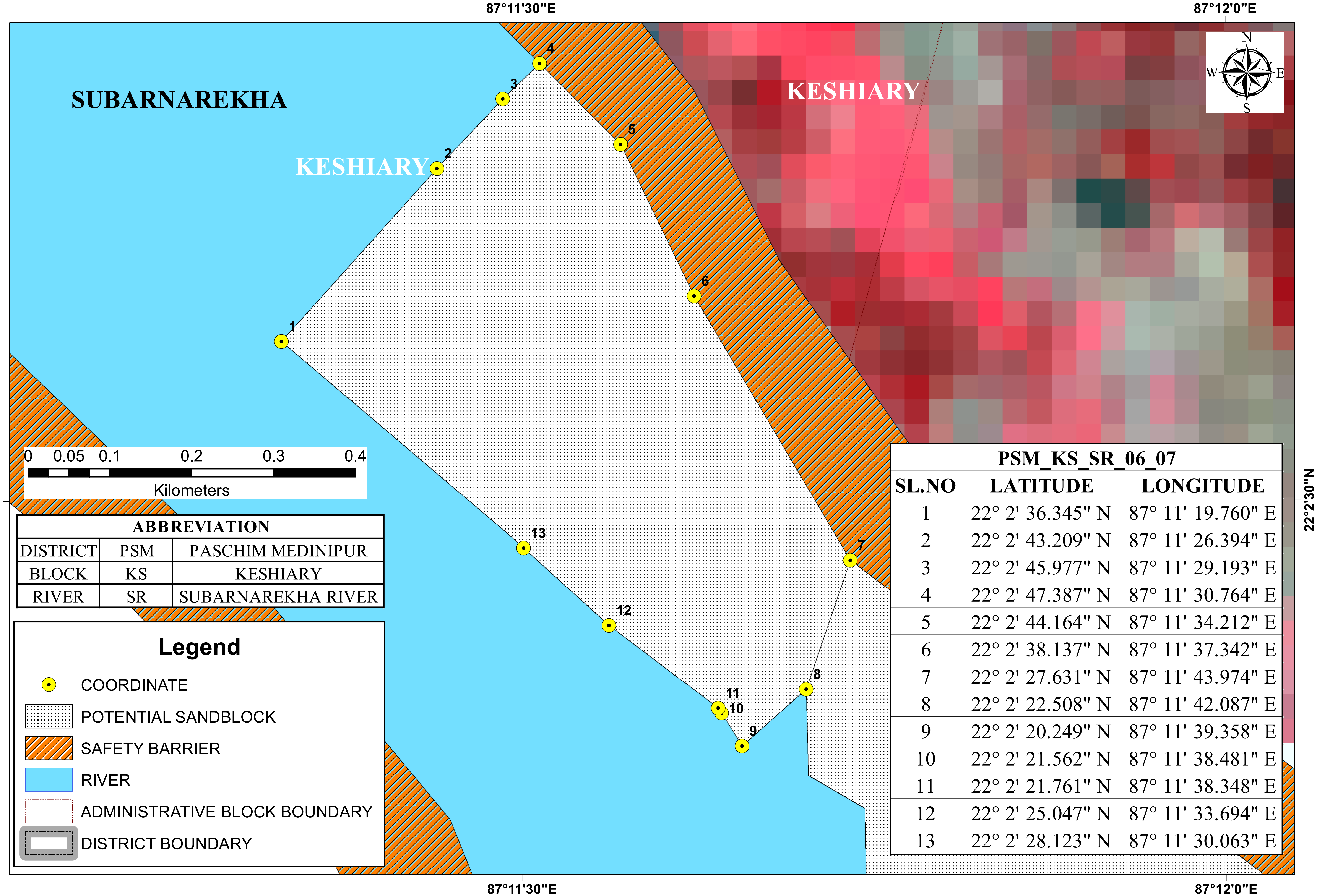
POTENTIAL BLOCK PSM_KS_SR_04_05_07 OF SUBARNAREKHA RIVER



PSM_KS_SR_04_05_07		
SL. NO.	LATITUDE	LONGITUDE
1	22° 4' 0.491" N	87° 10' 19.720" E
2	22° 3' 42.745" N	87° 10' 50.047" E
3	22° 3' 33.490" N	87° 10' 41.103" E
4	22° 3' 36.067" N	87° 10' 38.884" E
5	22° 3' 42.968" N	87° 10' 23.891" E
6	22° 3' 45.560" N	87° 10' 13.970" E
7	22° 3' 48.468" N	87° 10' 11.022" E
8	22° 3' 57.933" N	87° 10' 11.610" E
9	22° 4' 4.603" N	87° 10' 10.810" E
10	22° 4' 8.320" N	87° 10' 12.157" E

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KS	KESHIARY
RIVER	SR	SUBARNAREKHA RIVER

POTENTIAL BLOCK PSM_KS_SR_06_07 OF SUBARNAREKHA RIVER

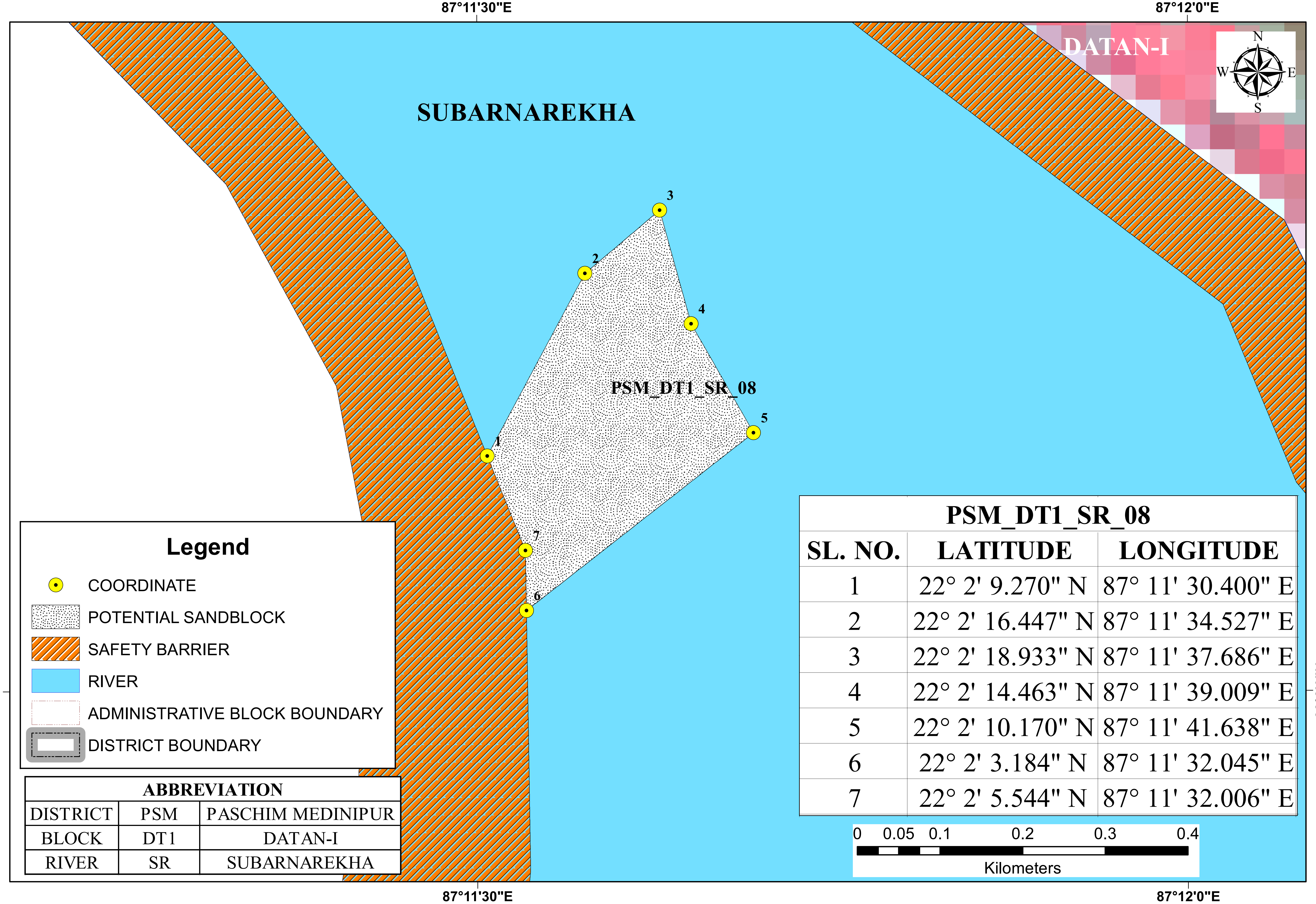


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	KS	KESHIARY
RIVER	SR	SUBARNAREKHA RIVER

PSM_KS_SR_06_07

SL.NO	LATITUDE	LONGITUDE
1	22° 2' 36.345" N	87° 11' 19.760" E
2	22° 2' 43.209" N	87° 11' 26.394" E
3	22° 2' 45.977" N	87° 11' 29.193" E
4	22° 2' 47.387" N	87° 11' 30.764" E
5	22° 2' 44.164" N	87° 11' 34.212" E
6	22° 2' 38.137" N	87° 11' 37.342" E
7	22° 2' 27.631" N	87° 11' 43.974" E
8	22° 2' 22.508" N	87° 11' 42.087" E
9	22° 2' 20.249" N	87° 11' 39.358" E
10	22° 2' 21.562" N	87° 11' 38.481" E
11	22° 2' 21.761" N	87° 11' 38.348" E
12	22° 2' 25.047" N	87° 11' 33.694" E
13	22° 2' 28.123" N	87° 11' 30.063" E

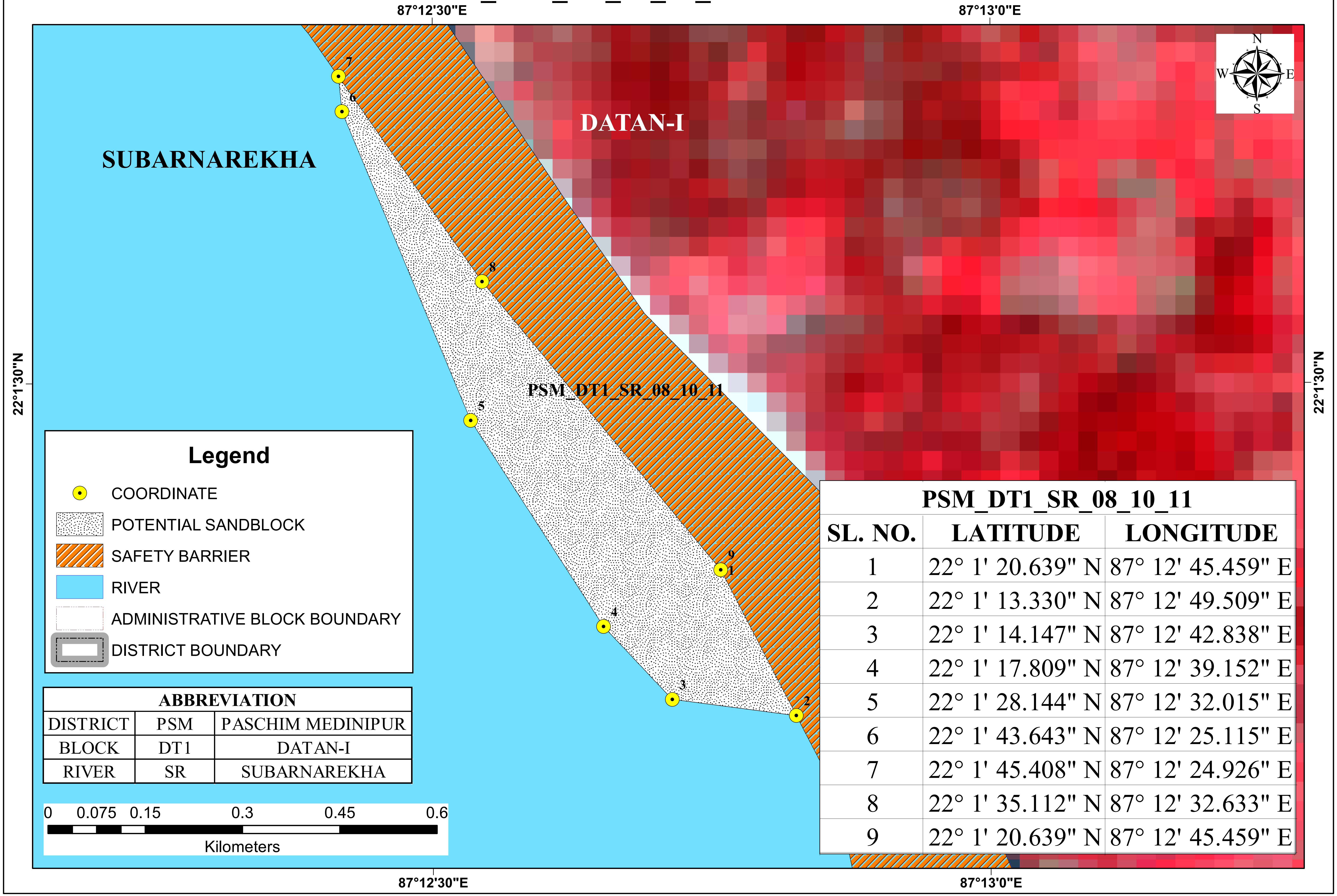
POTENTIAL BLOCK PSM_DT1_SR_08 OF SUBARNAREKHA RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DT1	DATAN-I
RIVER	SR	SUBARNAREKHA

PSM_DT1_SR_08		
SL. NO.	LATITUDE	LONGITUDE
1	22° 2' 9.270" N	87° 11' 30.400" E
2	22° 2' 16.447" N	87° 11' 34.527" E
3	22° 2' 18.933" N	87° 11' 37.686" E
4	22° 2' 14.463" N	87° 11' 39.009" E
5	22° 2' 10.170" N	87° 11' 41.638" E
6	22° 2' 3.184" N	87° 11' 32.045" E
7	22° 2' 5.544" N	87° 11' 32.006" E

POTENTIAL BLOCK PSM_DT1_SR_08_10_11 OF SUBARNAREKHA RIVER



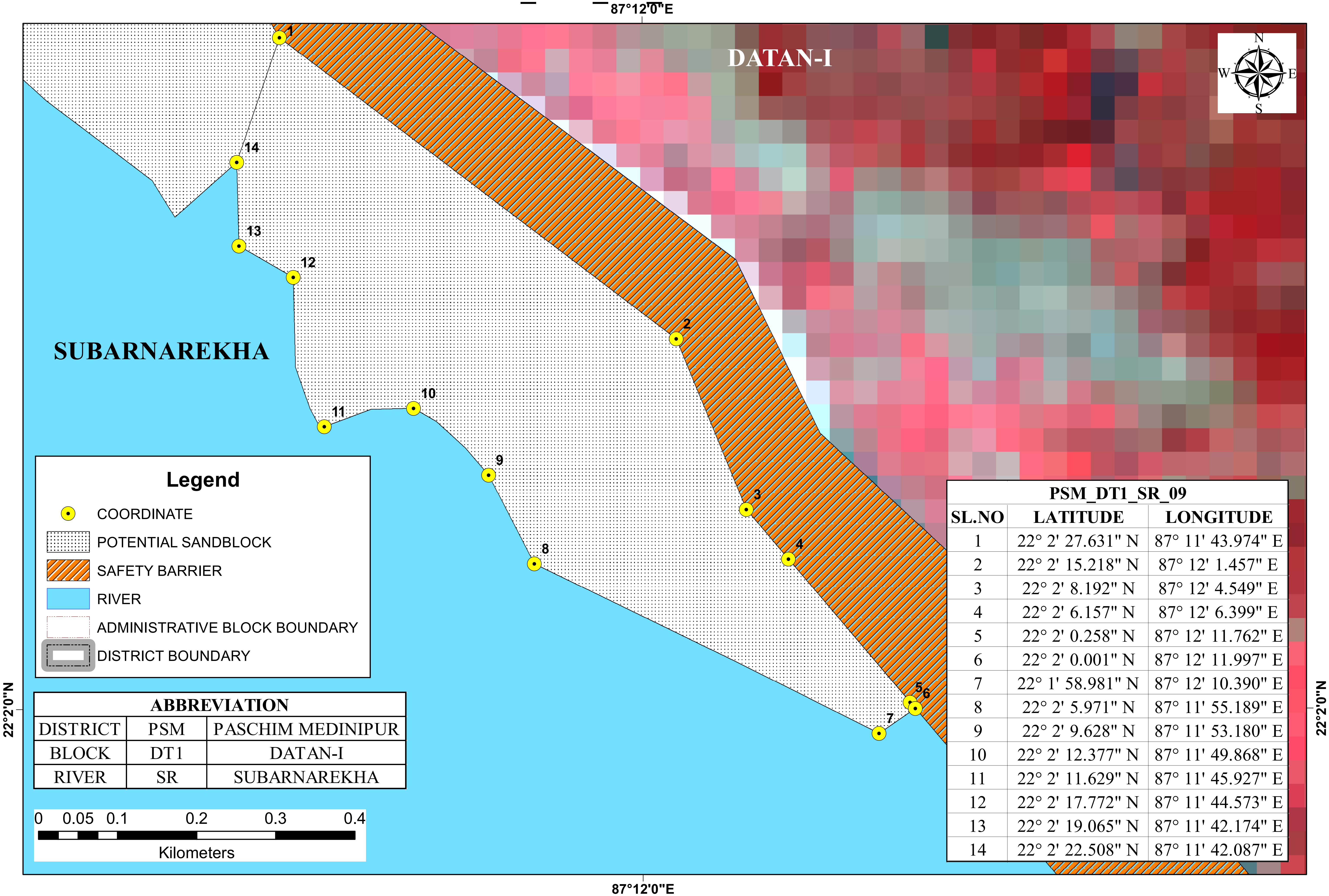
Legend

- COORDINATE
- POTENTIAL SANDBLOCK
- SAFETY BARRIER
- RIVER
- ADMINISTRATIVE BLOCK BOUNDARY
- DISTRICT BOUNDARY

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DT1	DATAN-I
RIVER	SR	SUBARNAREKHA

PSM_DT1_SR_08_10_11		
SL. NO.	LATITUDE	LONGITUDE
1	22° 1' 20.639" N	87° 12' 45.459" E
2	22° 1' 13.330" N	87° 12' 49.509" E
3	22° 1' 14.147" N	87° 12' 42.838" E
4	22° 1' 17.809" N	87° 12' 39.152" E
5	22° 1' 28.144" N	87° 12' 32.015" E
6	22° 1' 43.643" N	87° 12' 25.115" E
7	22° 1' 45.408" N	87° 12' 24.926" E
8	22° 1' 35.112" N	87° 12' 32.633" E
9	22° 1' 20.639" N	87° 12' 45.459" E

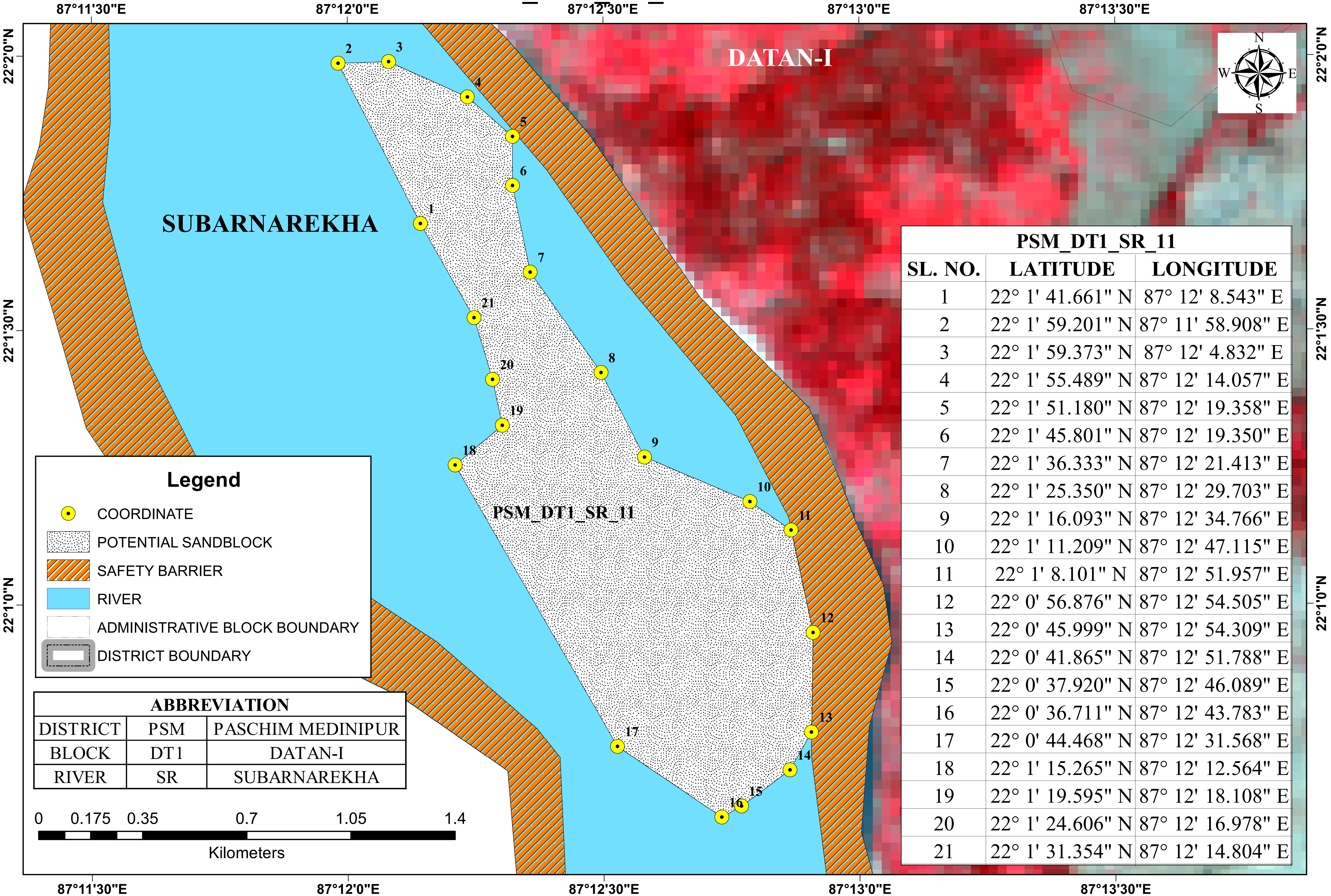
POTENTIAL BLOCK PSM_DT1_SR_09 OF SUBARNAREKHA RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DT1	DATAN-I
RIVER	SR	SUBARNAREKHA

PSM_DT1_SR_09		
SL.NO	LATITUDE	LONGITUDE
1	22° 2' 27.631" N	87° 11' 43.974" E
2	22° 2' 15.218" N	87° 12' 1.457" E
3	22° 2' 8.192" N	87° 12' 4.549" E
4	22° 2' 6.157" N	87° 12' 6.399" E
5	22° 2' 0.258" N	87° 12' 11.762" E
6	22° 2' 0.001" N	87° 12' 11.997" E
7	22° 1' 58.981" N	87° 12' 10.390" E
8	22° 2' 5.971" N	87° 11' 55.189" E
9	22° 2' 9.628" N	87° 11' 53.180" E
10	22° 2' 12.377" N	87° 11' 49.868" E
11	22° 2' 11.629" N	87° 11' 45.927" E
12	22° 2' 17.772" N	87° 11' 44.573" E
13	22° 2' 19.065" N	87° 11' 42.174" E
14	22° 2' 22.508" N	87° 11' 42.087" E

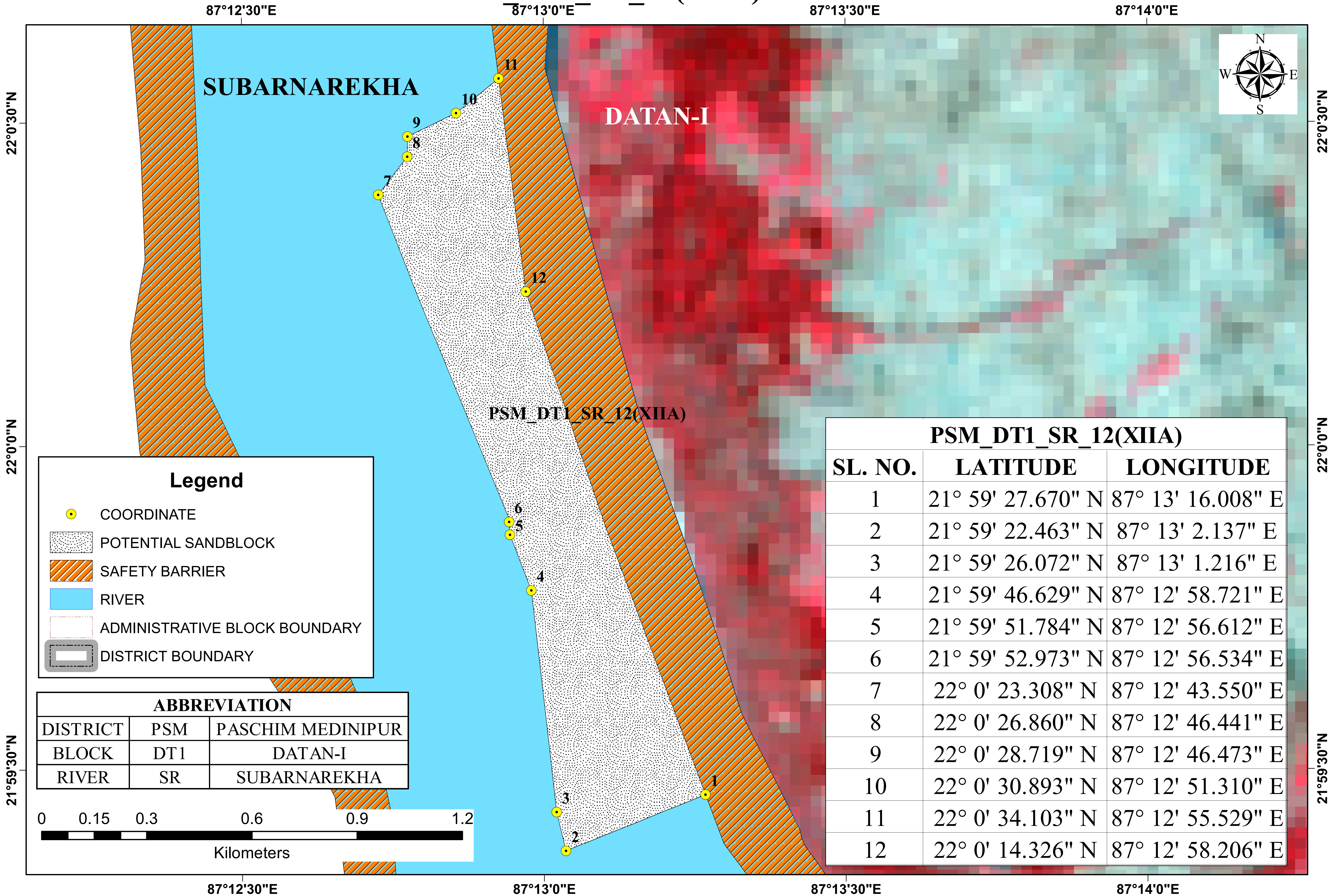
POTENTIAL BLOCK PSM_DT1_SR_11 OF SUBARNAREKHA RIVER



PSM_DT1_SR_11		
SL. NO.	LATITUDE	LONGITUDE
1	22° 1' 41.661" N	87° 12' 8.543" E
2	22° 1' 59.201" N	87° 11' 58.908" E
3	22° 1' 59.373" N	87° 12' 4.832" E
4	22° 1' 55.489" N	87° 12' 14.057" E
5	22° 1' 51.180" N	87° 12' 19.358" E
6	22° 1' 45.801" N	87° 12' 19.350" E
7	22° 1' 36.333" N	87° 12' 21.413" E
8	22° 1' 25.350" N	87° 12' 29.703" E
9	22° 1' 16.093" N	87° 12' 34.766" E
10	22° 1' 11.209" N	87° 12' 47.115" E
11	22° 1' 8.101" N	87° 12' 51.957" E
12	22° 0' 56.876" N	87° 12' 54.505" E
13	22° 0' 45.999" N	87° 12' 54.309" E
14	22° 0' 41.865" N	87° 12' 51.788" E
15	22° 0' 37.920" N	87° 12' 46.089" E
16	22° 0' 36.711" N	87° 12' 43.783" E
17	22° 0' 44.468" N	87° 12' 31.568" E
18	22° 1' 15.265" N	87° 12' 12.564" E
19	22° 1' 19.595" N	87° 12' 18.108" E
20	22° 1' 24.606" N	87° 12' 16.978" E
21	22° 1' 31.354" N	87° 12' 14.804" E

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DT1	DATAN-I
RIVER	SR	SUBARNAREKHA

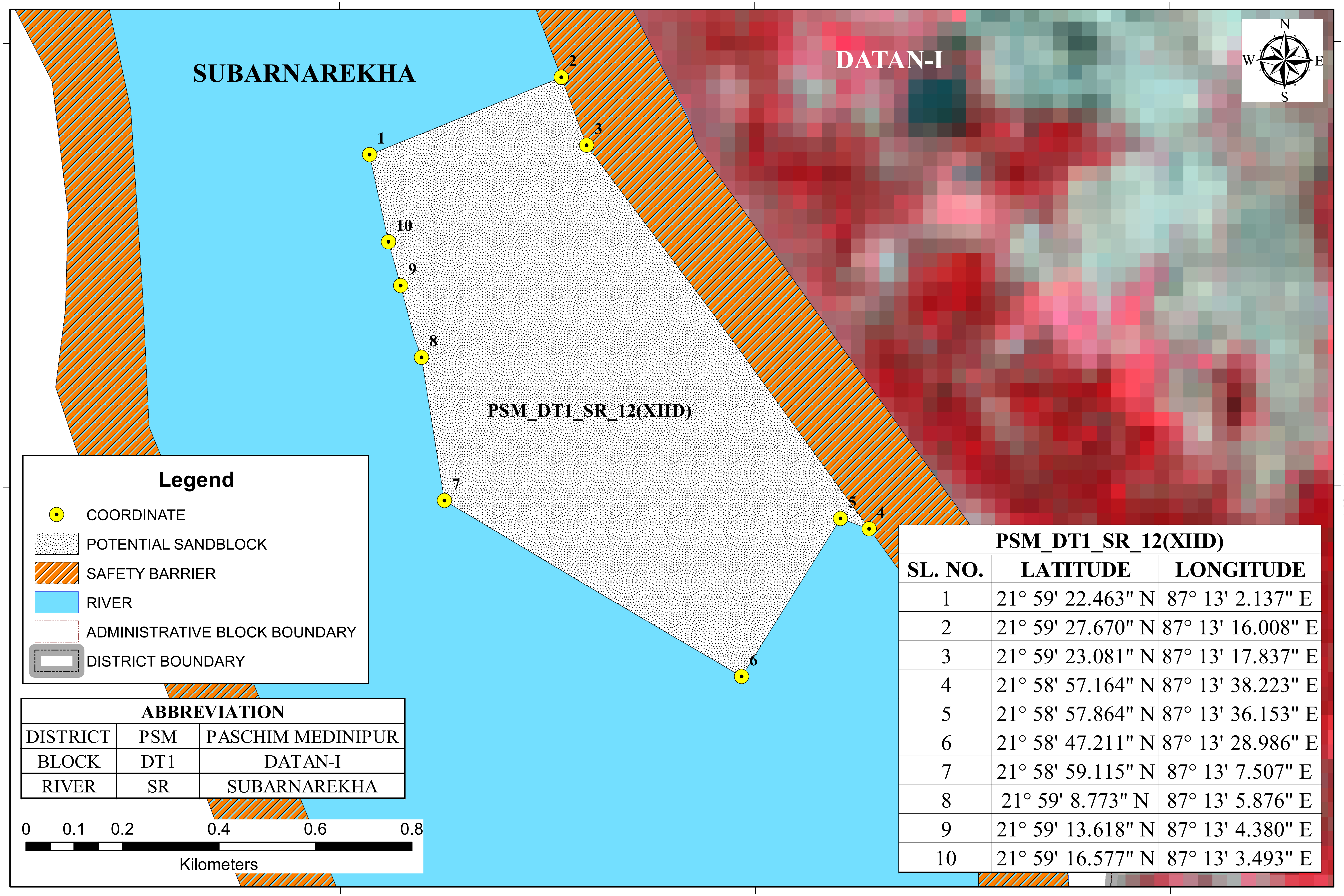
POTENTIAL BLOCK PSM_DT1_SR_12(XIIA) OF SUBARNAREKHA RIVER



PSM_DT1_SR_12(XIIA)		
SL. NO.	LATITUDE	LONGITUDE
1	21° 59' 27.670" N	87° 13' 16.008" E
2	21° 59' 22.463" N	87° 13' 2.137" E
3	21° 59' 26.072" N	87° 13' 1.216" E
4	21° 59' 46.629" N	87° 12' 58.721" E
5	21° 59' 51.784" N	87° 12' 56.612" E
6	21° 59' 52.973" N	87° 12' 56.534" E
7	22° 0' 23.308" N	87° 12' 43.550" E
8	22° 0' 26.860" N	87° 12' 46.441" E
9	22° 0' 28.719" N	87° 12' 46.473" E
10	22° 0' 30.893" N	87° 12' 51.310" E
11	22° 0' 34.103" N	87° 12' 55.529" E
12	22° 0' 14.326" N	87° 12' 58.206" E

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DT1	DATAN-I
RIVER	SR	SUBARNAREKHA

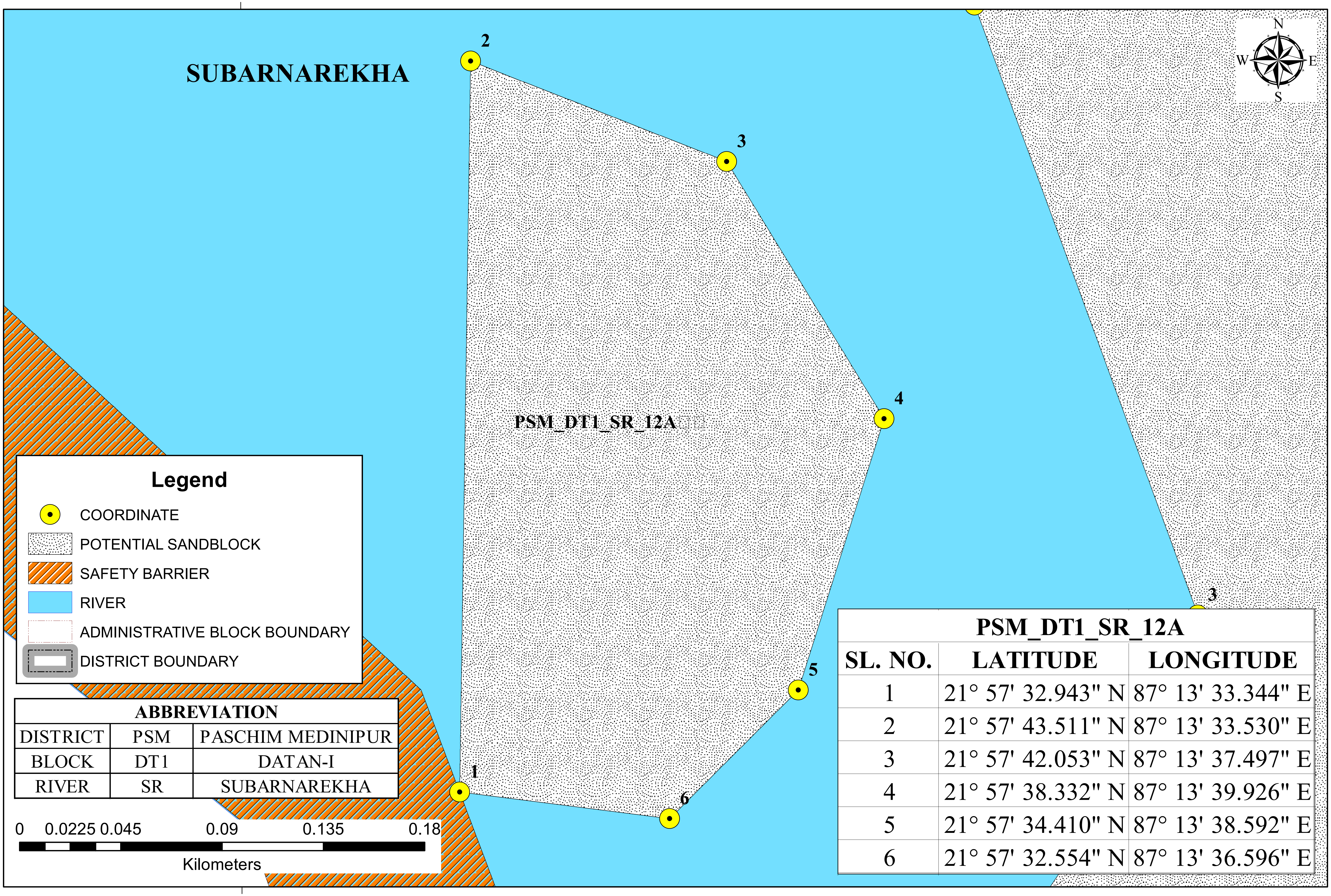
POTENTIAL BLOCK PSM_DT1_SR_12(XIID) OF SUBARNAREKHA RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DT1	DATAN-I
RIVER	SR	SUBARNAREKHA

PSM_DT1_SR_12(XIID)		
SL. NO.	LATITUDE	LONGITUDE
1	21° 59' 22.463" N	87° 13' 2.137" E
2	21° 59' 27.670" N	87° 13' 16.008" E
3	21° 59' 23.081" N	87° 13' 17.837" E
4	21° 58' 57.164" N	87° 13' 38.223" E
5	21° 58' 57.864" N	87° 13' 36.153" E
6	21° 58' 47.211" N	87° 13' 28.986" E
7	21° 58' 59.115" N	87° 13' 7.507" E
8	21° 59' 8.773" N	87° 13' 5.876" E
9	21° 59' 13.618" N	87° 13' 4.380" E
10	21° 59' 16.577" N	87° 13' 3.493" E

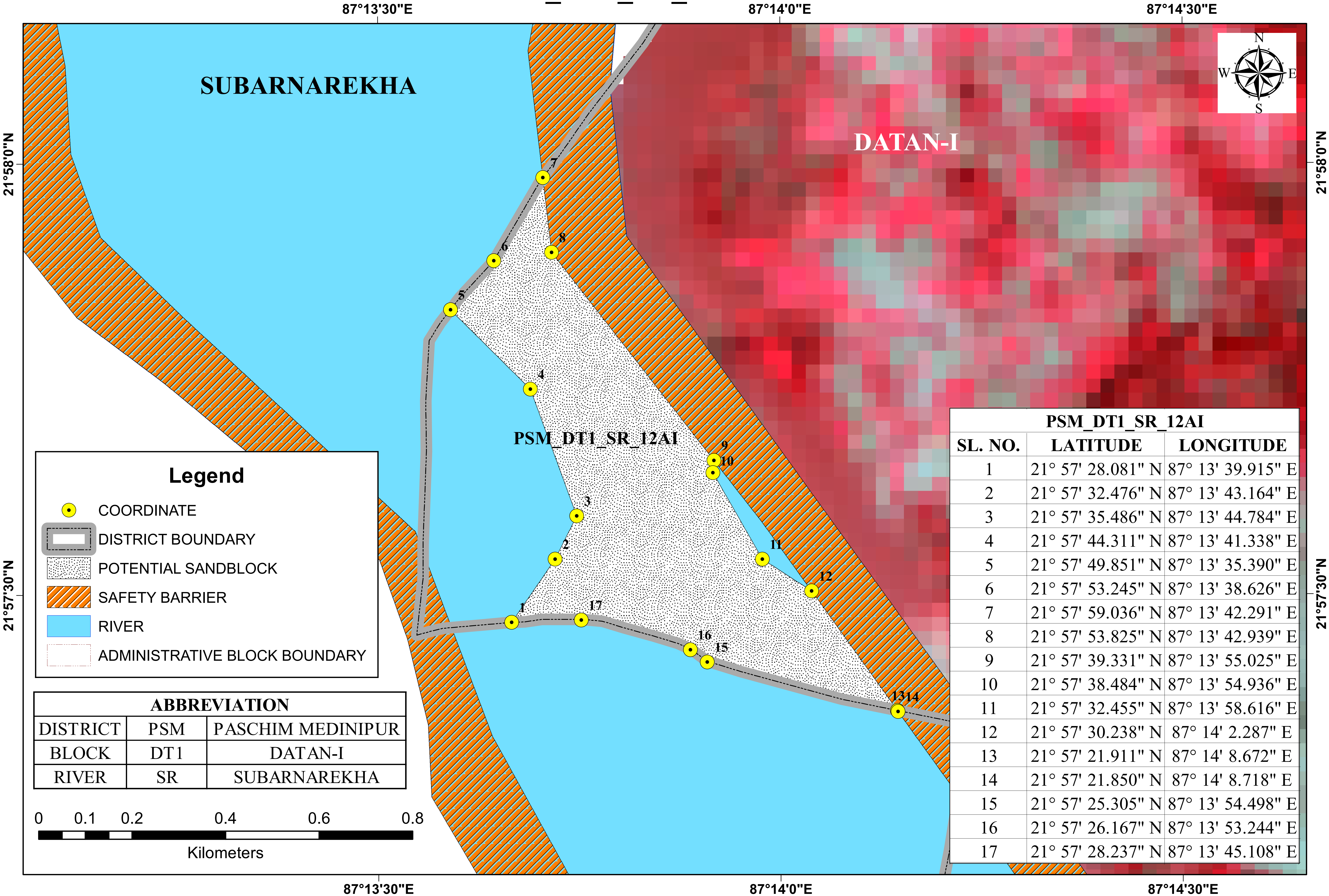
POTENTIAL BLOCK PSM_DT1_SR_12A OF SUBARNAREKHA RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DT1	DATAN-I
RIVER	SR	SUBARNAREKHA

PSM_DT1_SR_12A		
SL. NO.	LATITUDE	LONGITUDE
1	21° 57' 32.943" N	87° 13' 33.344" E
2	21° 57' 43.511" N	87° 13' 33.530" E
3	21° 57' 42.053" N	87° 13' 37.497" E
4	21° 57' 38.332" N	87° 13' 39.926" E
5	21° 57' 34.410" N	87° 13' 38.592" E
6	21° 57' 32.554" N	87° 13' 36.596" E

POTENTIAL BLOCK PSM_DT1_SR_12AI OF SUBARNAREKHA RIVER

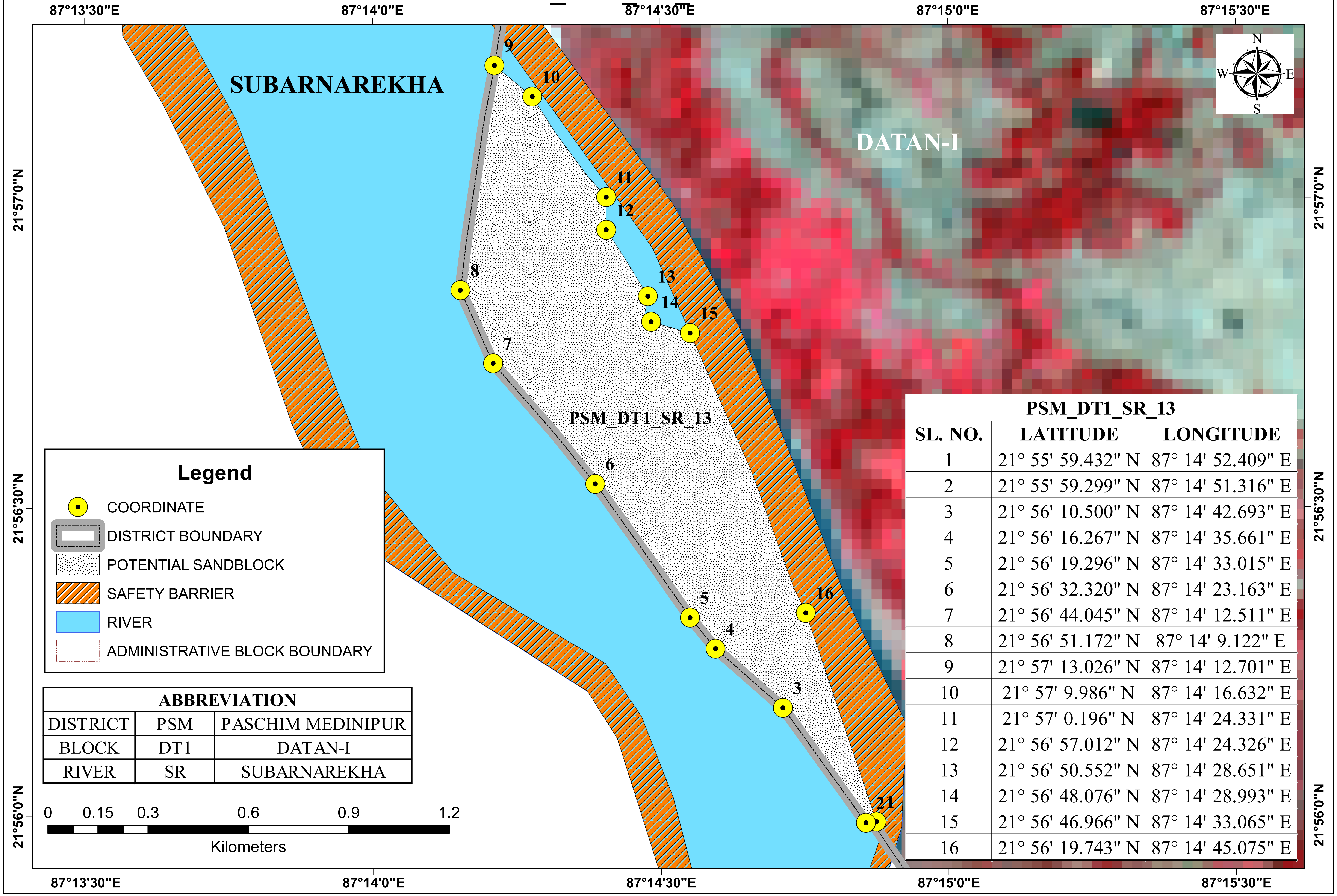


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DT1	DATAN-I
RIVER	SR	SUBARNAREKHA

PSM_DT1_SR_12AI

SL. NO.	LATITUDE	LONGITUDE
1	21° 57' 28.081" N	87° 13' 39.915" E
2	21° 57' 32.476" N	87° 13' 43.164" E
3	21° 57' 35.486" N	87° 13' 44.784" E
4	21° 57' 44.311" N	87° 13' 41.338" E
5	21° 57' 49.851" N	87° 13' 35.390" E
6	21° 57' 53.245" N	87° 13' 38.626" E
7	21° 57' 59.036" N	87° 13' 42.291" E
8	21° 57' 53.825" N	87° 13' 42.939" E
9	21° 57' 39.331" N	87° 13' 55.025" E
10	21° 57' 38.484" N	87° 13' 54.936" E
11	21° 57' 32.455" N	87° 13' 58.616" E
12	21° 57' 30.238" N	87° 14' 2.287" E
13	21° 57' 21.911" N	87° 14' 8.672" E
14	21° 57' 21.850" N	87° 14' 8.718" E
15	21° 57' 25.305" N	87° 13' 54.498" E
16	21° 57' 26.167" N	87° 13' 53.244" E
17	21° 57' 28.237" N	87° 13' 45.108" E

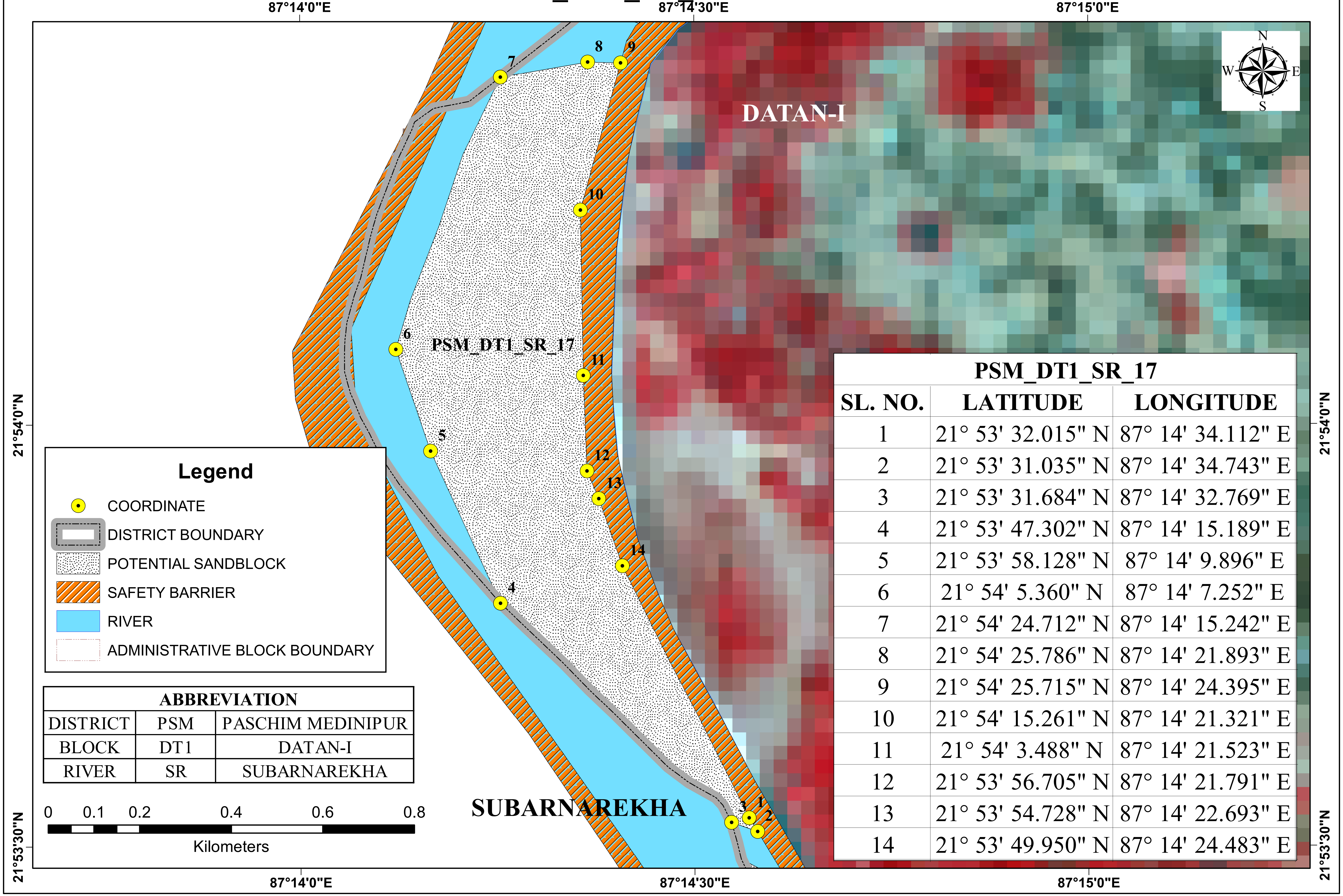
POTENTIAL BLOCK PSM_DT1_SR_13 OF SUBARNAREKHA RIVER



PSM_DT1_SR_13		
SL. NO.	LATITUDE	LONGITUDE
1	21° 55' 59.432" N	87° 14' 52.409" E
2	21° 55' 59.299" N	87° 14' 51.316" E
3	21° 56' 10.500" N	87° 14' 42.693" E
4	21° 56' 16.267" N	87° 14' 35.661" E
5	21° 56' 19.296" N	87° 14' 33.015" E
6	21° 56' 32.320" N	87° 14' 23.163" E
7	21° 56' 44.045" N	87° 14' 12.511" E
8	21° 56' 51.172" N	87° 14' 9.122" E
9	21° 57' 13.026" N	87° 14' 12.701" E
10	21° 57' 9.986" N	87° 14' 16.632" E
11	21° 57' 0.196" N	87° 14' 24.331" E
12	21° 56' 57.012" N	87° 14' 24.326" E
13	21° 56' 50.552" N	87° 14' 28.651" E
14	21° 56' 48.076" N	87° 14' 28.993" E
15	21° 56' 46.966" N	87° 14' 33.065" E
16	21° 56' 19.743" N	87° 14' 45.075" E

ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DT1	DATAN-I
RIVER	SR	SUBARNAREKHA

POTENTIAL BLOCK PSM_DT1_SR_17 OF SUBARNAREKHA RIVER

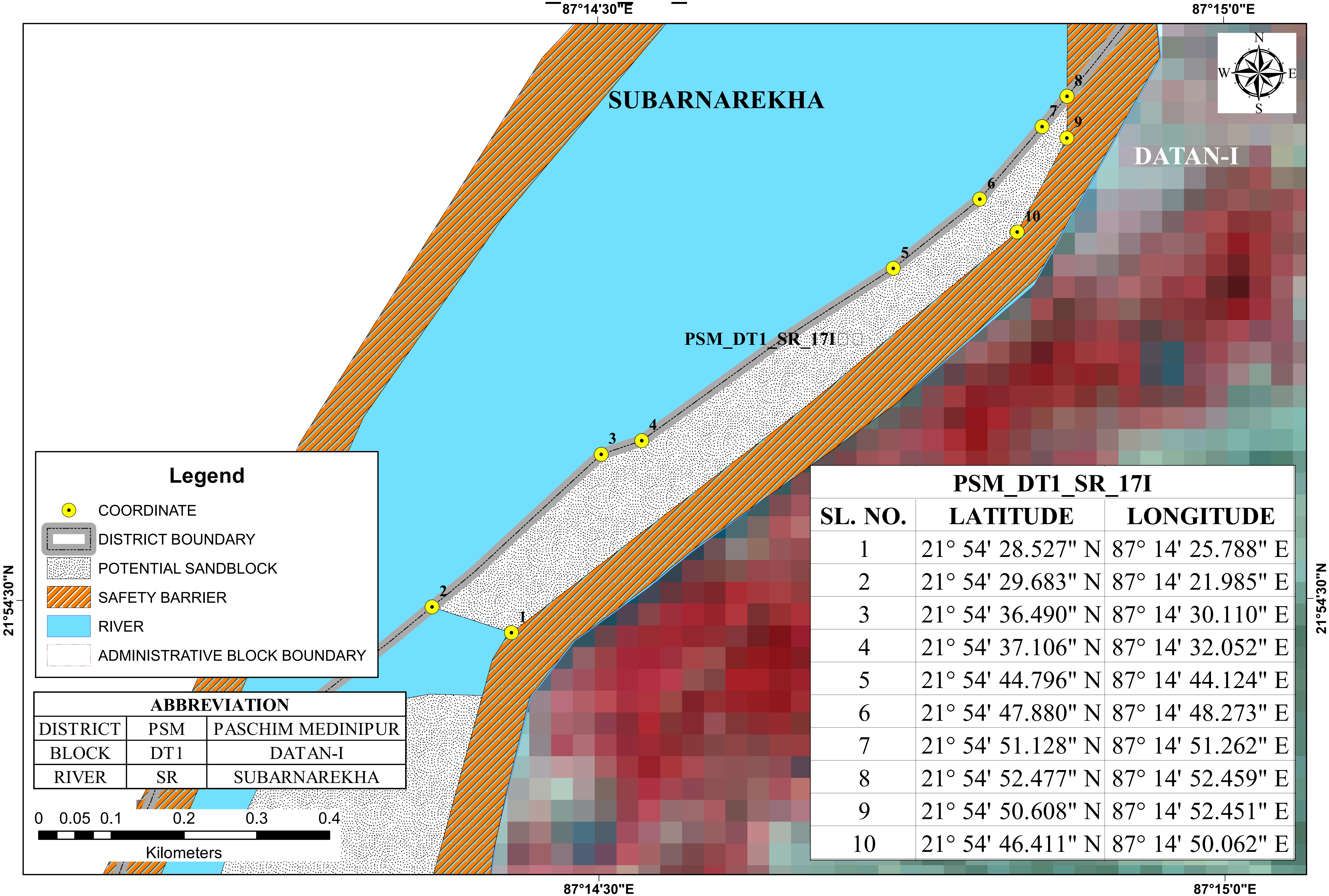


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DT1	DATAN-I
RIVER	SR	SUBARNAREKHA

PSM_DT1_SR_17

SL. NO.	LATITUDE	LONGITUDE
1	21° 53' 32.015" N	87° 14' 34.112" E
2	21° 53' 31.035" N	87° 14' 34.743" E
3	21° 53' 31.684" N	87° 14' 32.769" E
4	21° 53' 47.302" N	87° 14' 15.189" E
5	21° 53' 58.128" N	87° 14' 9.896" E
6	21° 54' 5.360" N	87° 14' 7.252" E
7	21° 54' 24.712" N	87° 14' 15.242" E
8	21° 54' 25.786" N	87° 14' 21.893" E
9	21° 54' 25.715" N	87° 14' 24.395" E
10	21° 54' 15.261" N	87° 14' 21.321" E
11	21° 54' 3.488" N	87° 14' 21.523" E
12	21° 53' 56.705" N	87° 14' 21.791" E
13	21° 53' 54.728" N	87° 14' 22.693" E
14	21° 53' 49.950" N	87° 14' 24.483" E

POTENTIAL BLOCK PSM_DT1_SR_17I OF SUBARNAREKHA RIVER

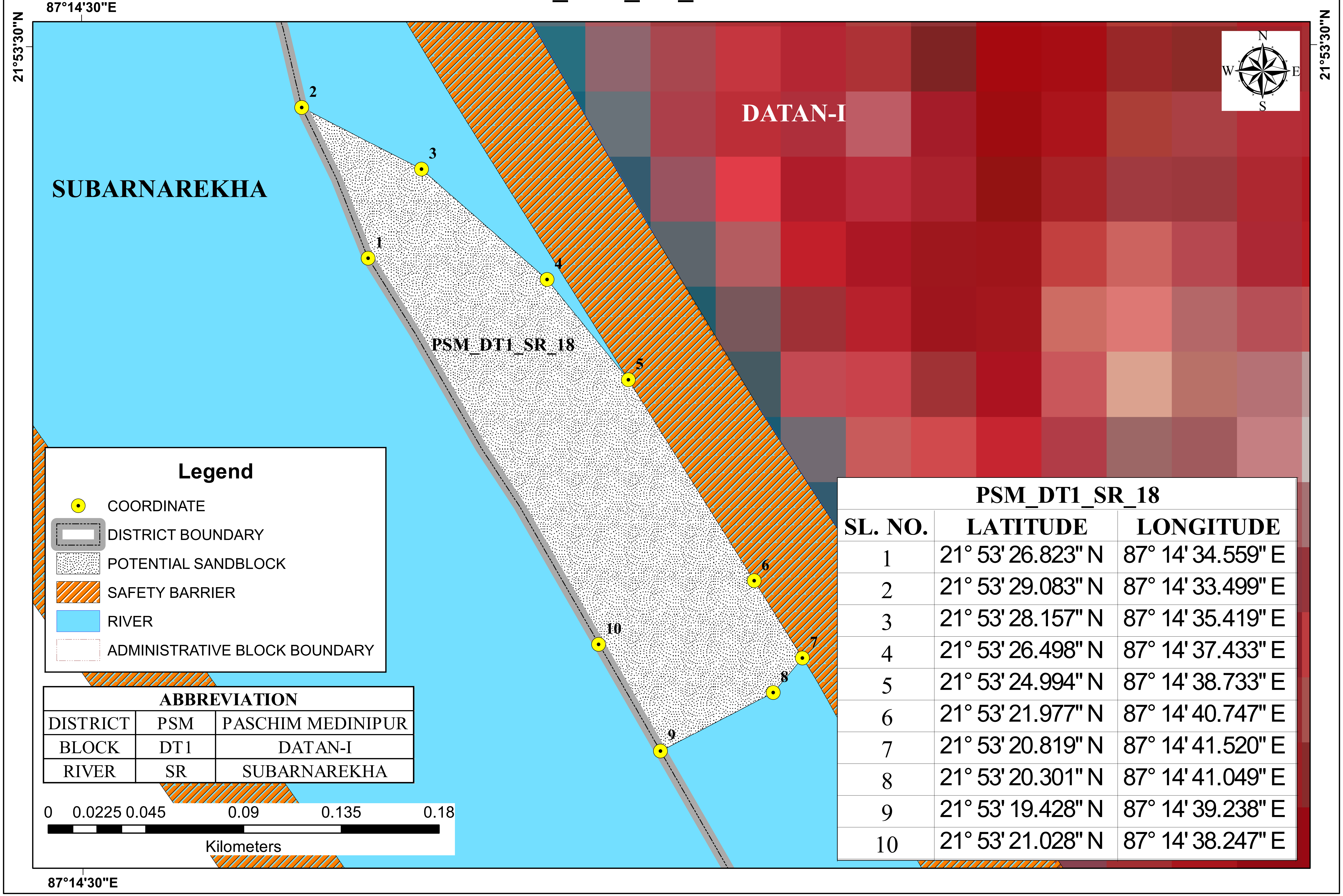


ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DT1	DATAN-I
RIVER	SR	SUBARNAREKHA

PSM_DT1_SR_17I

SL. NO.	LATITUDE	LONGITUDE
1	21° 54' 28.527" N	87° 14' 25.788" E
2	21° 54' 29.683" N	87° 14' 21.985" E
3	21° 54' 36.490" N	87° 14' 30.110" E
4	21° 54' 37.106" N	87° 14' 32.052" E
5	21° 54' 44.796" N	87° 14' 44.124" E
6	21° 54' 47.880" N	87° 14' 48.273" E
7	21° 54' 51.128" N	87° 14' 51.262" E
8	21° 54' 52.477" N	87° 14' 52.459" E
9	21° 54' 50.608" N	87° 14' 52.451" E
10	21° 54' 46.411" N	87° 14' 50.062" E

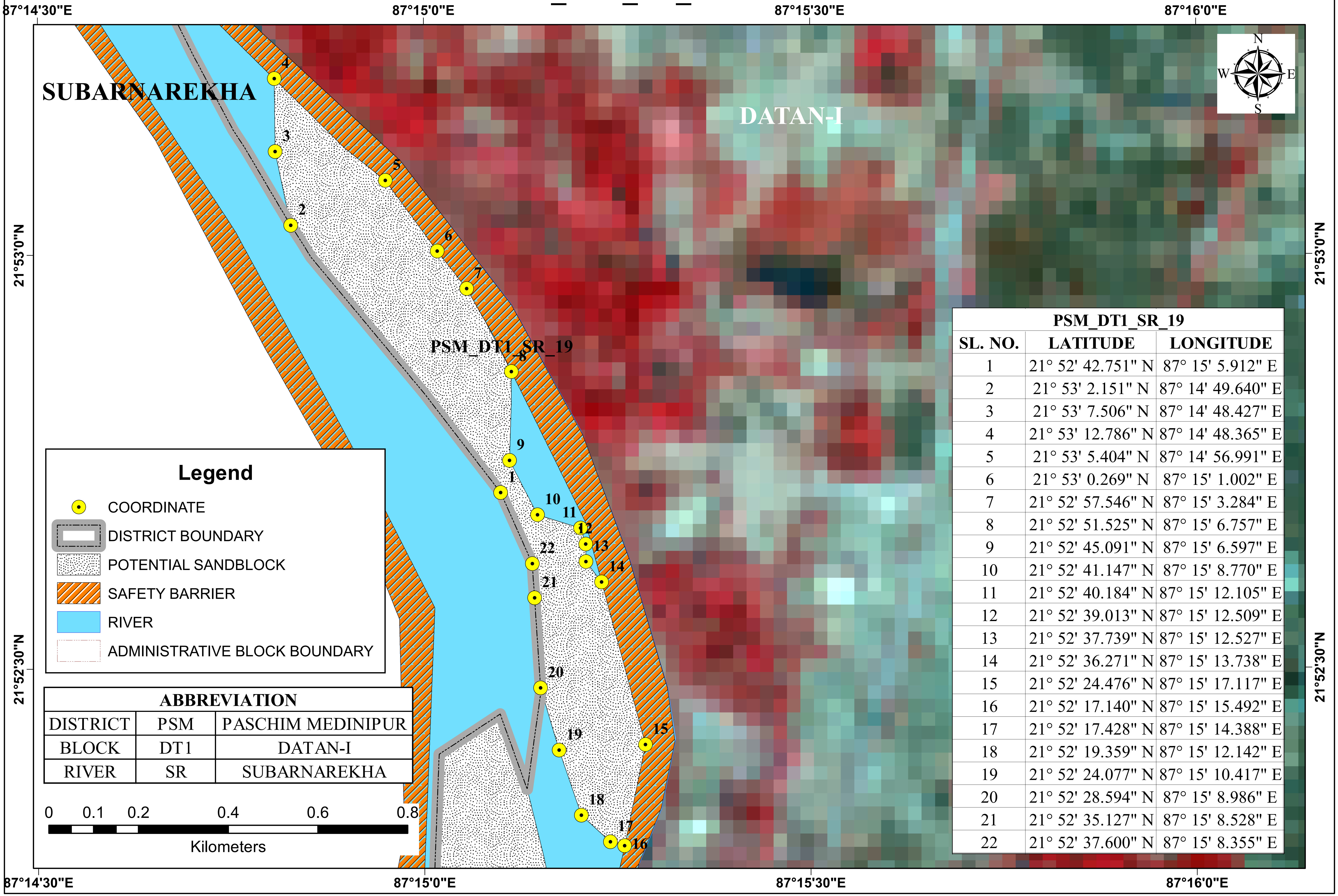
POTENTIAL BLOCK PSM_DT1_SR_18 OF SUBARNAREKHA RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DT1	DATAN-I
RIVER	SR	SUBARNAREKHA

PSM_DT1_SR_18		
SL. NO.	LATITUDE	LONGITUDE
1	21° 53' 26.823" N	87° 14' 34.559" E
2	21° 53' 29.083" N	87° 14' 33.499" E
3	21° 53' 28.157" N	87° 14' 35.419" E
4	21° 53' 26.498" N	87° 14' 37.433" E
5	21° 53' 24.994" N	87° 14' 38.733" E
6	21° 53' 21.977" N	87° 14' 40.747" E
7	21° 53' 20.819" N	87° 14' 41.520" E
8	21° 53' 20.301" N	87° 14' 41.049" E
9	21° 53' 19.428" N	87° 14' 39.238" E
10	21° 53' 21.028" N	87° 14' 38.247" E

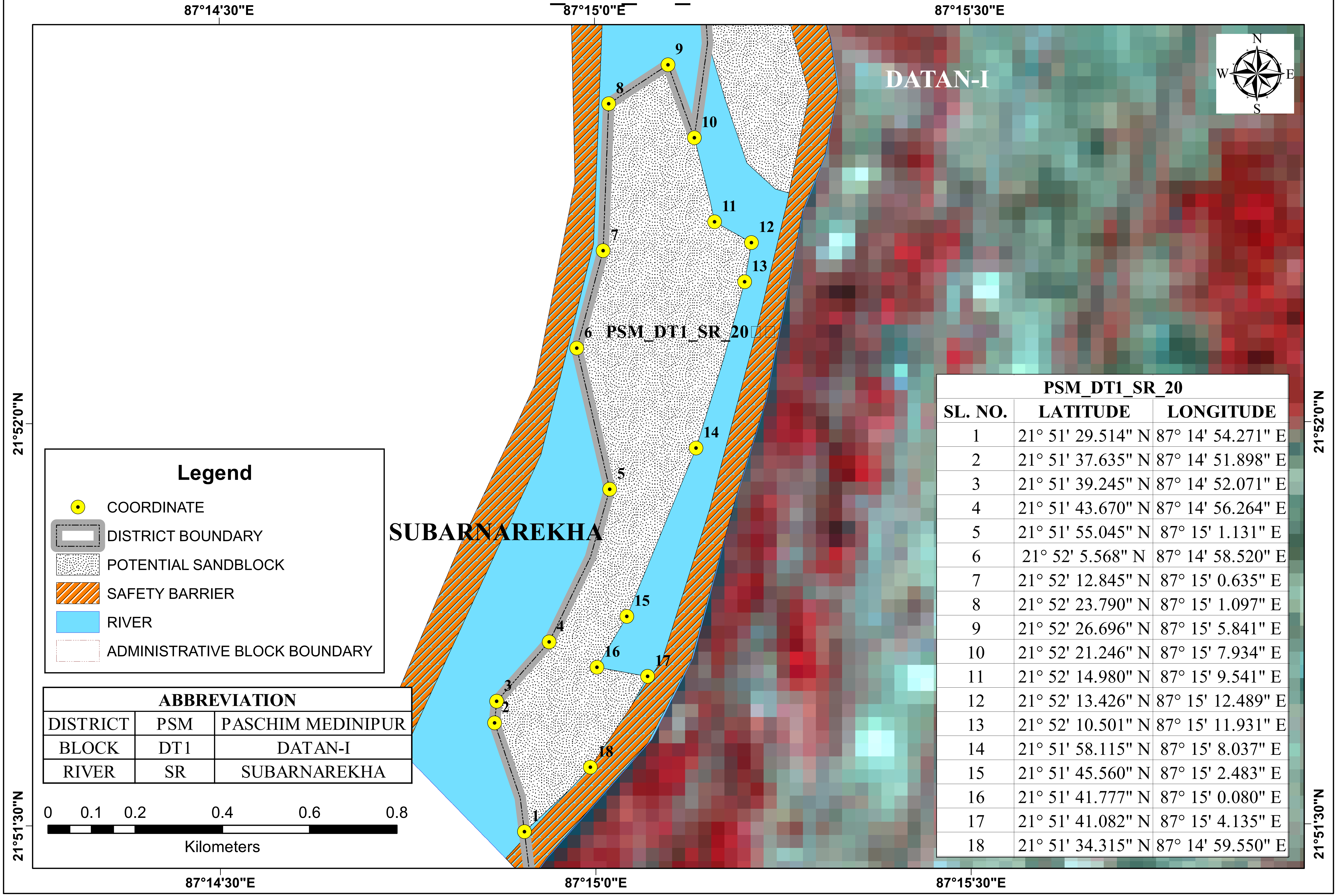
POTENTIAL BLOCK PSM_DT1_SR_19 OF SUBARNAREKHA RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DT1	DATAN-I
RIVER	SR	SUBARNAREKHA

PSM_DT1_SR_19		
SL. NO.	LATITUDE	LONGITUDE
1	21° 52' 42.751" N	87° 15' 5.912" E
2	21° 53' 2.151" N	87° 14' 49.640" E
3	21° 53' 7.506" N	87° 14' 48.427" E
4	21° 53' 12.786" N	87° 14' 48.365" E
5	21° 53' 5.404" N	87° 14' 56.991" E
6	21° 53' 0.269" N	87° 15' 1.002" E
7	21° 52' 57.546" N	87° 15' 3.284" E
8	21° 52' 51.525" N	87° 15' 6.757" E
9	21° 52' 45.091" N	87° 15' 6.597" E
10	21° 52' 41.147" N	87° 15' 8.770" E
11	21° 52' 40.184" N	87° 15' 12.105" E
12	21° 52' 39.013" N	87° 15' 12.509" E
13	21° 52' 37.739" N	87° 15' 12.527" E
14	21° 52' 36.271" N	87° 15' 13.738" E
15	21° 52' 24.476" N	87° 15' 17.117" E
16	21° 52' 17.140" N	87° 15' 15.492" E
17	21° 52' 17.428" N	87° 15' 14.388" E
18	21° 52' 19.359" N	87° 15' 12.142" E
19	21° 52' 24.077" N	87° 15' 10.417" E
20	21° 52' 28.594" N	87° 15' 8.986" E
21	21° 52' 35.127" N	87° 15' 8.528" E
22	21° 52' 37.600" N	87° 15' 8.355" E

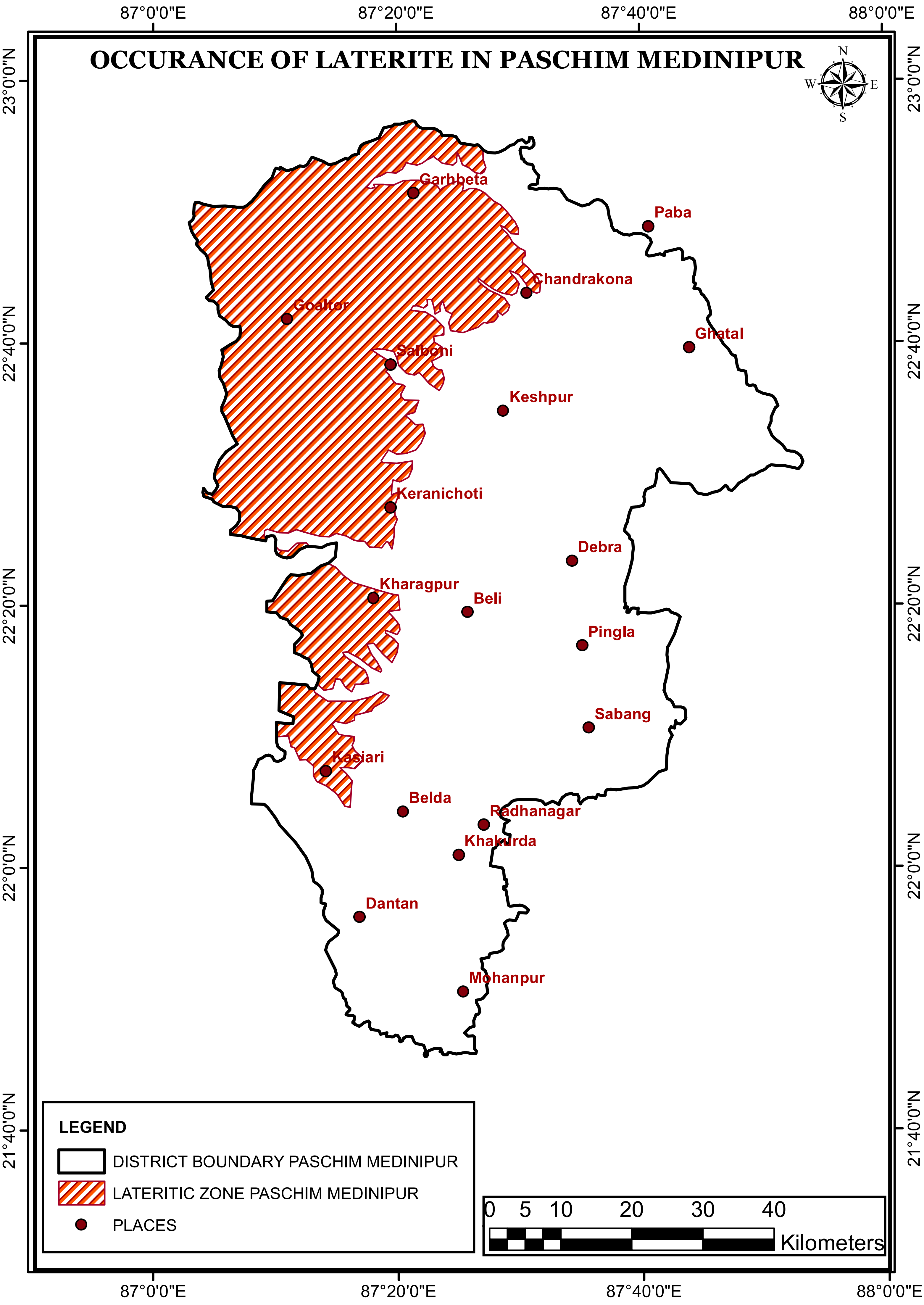
POTENTIAL BLOCK PSM_DT1_SR_20 OF SUBARNAREKHA RIVER



ABBREVIATION		
DISTRICT	PSM	PASCHIM MEDINIPUR
BLOCK	DT1	DATAN-I
RIVER	SR	SUBARNAREKHA

PSM_DT1_SR_20		
SL. NO.	LATITUDE	LONGITUDE
1	21° 51' 29.514" N	87° 14' 54.271" E
2	21° 51' 37.635" N	87° 14' 51.898" E
3	21° 51' 39.245" N	87° 14' 52.071" E
4	21° 51' 43.670" N	87° 14' 56.264" E
5	21° 51' 55.045" N	87° 15' 1.131" E
6	21° 52' 5.568" N	87° 14' 58.520" E
7	21° 52' 12.845" N	87° 15' 0.635" E
8	21° 52' 23.790" N	87° 15' 1.097" E
9	21° 52' 26.696" N	87° 15' 5.841" E
10	21° 52' 21.246" N	87° 15' 7.934" E
11	21° 52' 14.980" N	87° 15' 9.541" E
12	21° 52' 13.426" N	87° 15' 12.489" E
13	21° 52' 10.501" N	87° 15' 11.931" E
14	21° 51' 58.115" N	87° 15' 8.037" E
15	21° 51' 45.560" N	87° 15' 2.483" E
16	21° 51' 41.777" N	87° 15' 0.080" E
17	21° 51' 41.082" N	87° 15' 4.135" E
18	21° 51' 34.315" N	87° 14' 59.550" E

Annexure 5
Map showing In-situ mineral occurrences in Paschim Medinipur District


OCCURANCE OF LATERITE IN PASCHIM MEDINIPUR
87°0'0"E
87°20'0"E
87°40'0"E
88°0'0"E
23°0'0"N
22°40'0"N
22°20'0"N
22°0'0"N
21°40'0"N
N
S
E
W
Garhbeta
Paba
Chandrakona
Goaltor
Ghatal
Salboni
Keshpur
Keranichoti
Debra
Kharagpur
Beli
Pingla
Sabang
Kasiari
Belda
Radhanagar
Khakurda
Dantan
Mohanpur
LEGEND
DISTRICT BOUNDARY PASCHIM MEDINIPUR
LATERITIC ZONE PASCHIM MEDINIPUR
PLACES
0 5 10 20 30 40
Kilometers

Annexure 6

SEIAA 73rd Meeting (8th September, 2022) Minutes of Meeting

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State Environment Impact Assessment Authority
Pranisampad Bhawan, 5th Floor, Sector-III, Salt Lake, Kolkata - 700106
(West Bengal)
Minutes of SEIAA Meeting
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Subject:- 73rd meeting of SEIAA

Venue:- **Conference Room of Environment Department, Prani Sampad Bhavan, 5th Floor, LB Block, Sector III, Salt Lake, Kolkata 700106.**

From :- **08 September 2022**

To :- **08 September 2022**

1. Proposal No. :- **SIA/WB/IND2/152174/2020** File No- **EN/T-II-1/013/2020** Proposed Exploratory Drilling (10 wells) in NELP VII Block WB-ONN-2005/4, situated in North 24 Parganas and Nadia Districts, West Bengal by **M/s. Oil & Natural Gas Corporation Limited. HSE MBA Basin**	Type- EC

INTRODUCTION

The proponent made online application vide proposal no. **SIA/WB/IND2/152174/2020** dated **17 Jul 2020** along with copies of EIA/EMP seeking environment clearance under the provisions of the EIA Notification, 2006 for the above mentioned project. The proposed project activity is listed at SL.No. **1(b) Offshore and onshore oil and gas exploration, development & production**, under Category **"B2"** of EIA Notification 2006 and the proposal is appraised at State level.

SEAC recommended the proposed project for Environmental Clearance with the following additional condition:

1. Short term need-based activities to be identified and implemented. Name of the beneficiary should be displayed at site.

PROJECT DETAILS

The project of M/s **HSE MBA BASIN** located in as follows :

State of the project				
S. No.	**State**	**District**	**Tehsil**	**Village**
1.	West Bengal	Nadia	Ranaghat - I	Noapara
2.	West Bengal	Nadia	Ranaghat - II	Matikumra
3.	West Bengal	Nadia	Haringhata	Haringhata
4.	West Bengal	North 24 Parganas	Habra - I	Asokenagar
5.	West Bengal	North 24 Parganas	Habra - II	Beraberi

The production details / project configuration is as follows :

Project configuration/product details						
S. No.	**Project configuration/product details**	**Quantity**	**Unit**	**Other Unit**	**Mode of Transport/Transmission of Product**	**Other Mode of Transport**

The salient features of the project submitted by the project proponent is available at Report under online proposal no. **SIA/WB/IND/278173/2022**

DELIBERATION IN SEIAA

SEIAA considered the recommendation of SEAC and accepted the same.

RECOMMENDATIONS OF SEIAA

Approved extension of validity of Environmental Clearance.

Conclusion

Recommended

MISCELLANEOUS

1. Discussion on draft DSRs of **Purba Medinipur, Paschim Medinipur and Purba Bardhaman**.

   DSRs of Purba Medinipur, Paschim Medinipur and Purba Bardhaman are approved.

2. ToR application for the proposed Modification of "Aerotropolis Township" at Andal, Vill. – Tamla, Dhokinkhanda, Mahira, Khandra, Amloka, Banguli, Durgapur Taluk, District: Paschim Bardhhaman, West Bengal by **M/s. Bengal Aerotroplis project Limited**. Proposal No. **SIA/WB/MIS/80933/2022**.

   Background

   Earlier M/s. Bengal Aerotroplis project Limited had obtained EC from SEIAA, WB vide No. EN/2041/T-II-1/025/2009 dated 11.08.2011 for Greenfield Aerotropolis Township (Phase I) at Andal, Vill. – Tamla, Dhokinkhanda, Mahira, Khandra, Amloka, Banguli, Durgapur Taluk, District: Burdwan, West Bengal.

   Now the PP has applied for modification of "Aerotropolis Township" at Andal, Vill. – Tamla, Dhokinkhanda, Mahira, Khandra, Amloka, Banguli, Durgapur Taluk, District: Paschim Bardhhaman, West Bengal.

   The matter was placed in the 69th meeting of SEIAA held on 10.08.2022 and it was decided to request the project proponent to mention the exact distance of the project area from the municipal limits of Durgapur and also submit Google earth image showing the Lat-Long of the proposed project area along with the municipal limits of Durgapur since the location of the proposed project area appears to be close to Durgapur Municipal Corporation area, which is declared as a 'Severely Polluted Area'.

   The project proponent submitted reply vide their letter Ref No. BAPL/DGP/INFRA(PI)/L/MS-SEIAA/22-23/269 dated 29.08.2022 uploaded on 30.08.2022.

   SEIAA considered the reply submitted by the PP and in view of the O.M. No. 22-23/2018-IA.III[E115231] dated 05.07.2022 of MoEF&CC, the above project which is categorised as a 'B1' project is transferred to MoEF&CC for further necessary action.

Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment Authority (SEIAA), WEST BENGAL)
***

Minutes of 83rd meeting of SEIAA (Reconstituted on 17.05.2023) State Environment Impact Assessment Authority meeting held from 10/10/2025 to 10/10/2025

Date: 13/10/2025

MoM ID:	EC/MOM/SEIAA/110283/10/2025
Agenda ID:	EC/AGENDA/SEIAA/110283/10/2025
Meeting Venue:	Conference Room of the New Administrative Building of Environment Department, Govt. of West Bengal at IB-180, Sector-III, Salt Lake, Kolkata-700106.
Meeting Mode:	Hybrid

Date & Time:

10/10/2025	11:30 AM	05:30 PM

1. Opening remarks

SEIAA members greeted each other and started discussion point wise as per the agenda.

2. Confirmation of the minutes of previous meeting

Minutes of 82nd Meeting of SEIAA, WB is uploaded in the PARIVESH Portal and same is confirmed by SEIAA.

3. Details of proposals considered by the committee

Day 1 -10/10/2025

3.1. Agenda Item No 1:

3.1.1. Details of the proposal

Environmental Clearance for Proposed Expansion of Residential cum Institutional Complex by M/s Amba Highrise Private Limited by **AMBA HIGHRISE PRIVATE LIMITED** located at **KOLKATA,WEST BENGAL**

MISCELLANEOUS

1. Discussion on revised DSR of Jhargram and Paschim Medinipur Districts.

The SEAC, during its 84th meeting held on 10.09.2025, decided that the revised DSRs may be sent to SEIAA for their consideration and approval.

SEIAA considering the recommendation of SEAC approved the revised DSRs of Jhargram and Paschim Medinipur Districts.

Annexure 7

Reasons For DSR Modification

DSR AMENDMENT STATEMENT

Objectives for DSR Modification

- The primary need for Modification of DSR is to include in-situ minor mineral potential zones of the district. The government of West Bengal implemented a Policy of Mining of Minor Minerals in Private/ Raiyati Land in West Bengal. The minor mineral (Sand/ other than Sand) mining can only be possible if the potentiality is mentioned in the approved DSR, and then only environmental clearance of the mining block will be granted.
- Also, to in-corporate district boundary revision based on Survey of India database instead of district portal information.

Modifications:

1. Modified text part (Chapters) of the DSR to include both Sand and Other than Sand minerals resources of the district. Amendment DSR contain chapters in following manners.

Table 1: Distribution of chapters in the DSR

GENERAL PART	PART A- RIVERBED DEPOSITS	PART B- INSITU MINOR MINERAL DEPOSITS
General Profile of the District	Overview of mineral resources	In-situ Minerals Reserve and potentiality
Physiography of the District	Sand and other riverbed minerals	Mineral Development Prospect of the district
Land Use Pattern of The District	Drainage System	Existing Minor Mineral Leases of the District
Geology	Annual deposition of riverbed minerals	Exploration Requirement of the district
	Replenishment Study as per EMGSM guidelines 2020	Remedial measure to mitigate the impact of Mining
	Total potential of minor mineral in the river bed	Suggested reclamation plan for already mined out areas
	Overview Of Mining Activity in The District	Risk assessment & disaster management plan
	Details Of Revenue Generated from Mineral Sector During Last Five Years	

2. Modification in In-situ minor mineral potential resources. In-situ potential zones are demarcated based on the available Geological information from GSI and DMM. Wherever possible, potential blocks are also identified based on the LOI issued to various mine owners under West Bengal Raiyati policy.

3. Modification/ addition of potential in-situ zones in the DSR is the dynamic process and will be updated on regular basis due effectiveness of Raiyati Policy under which Raiyat are applying for mining leases. Therefore, the changes/ amendment will be made in the DSR on regular intervals to includes mining leases approved by authority.

4. District boundary modified in the amended DSR. Previously district boundary was collected from district portal and in the present DSR boundary was collected from Survey of India and it's verified from district authority for any modification.

5. Hyperlink of District boundary modification

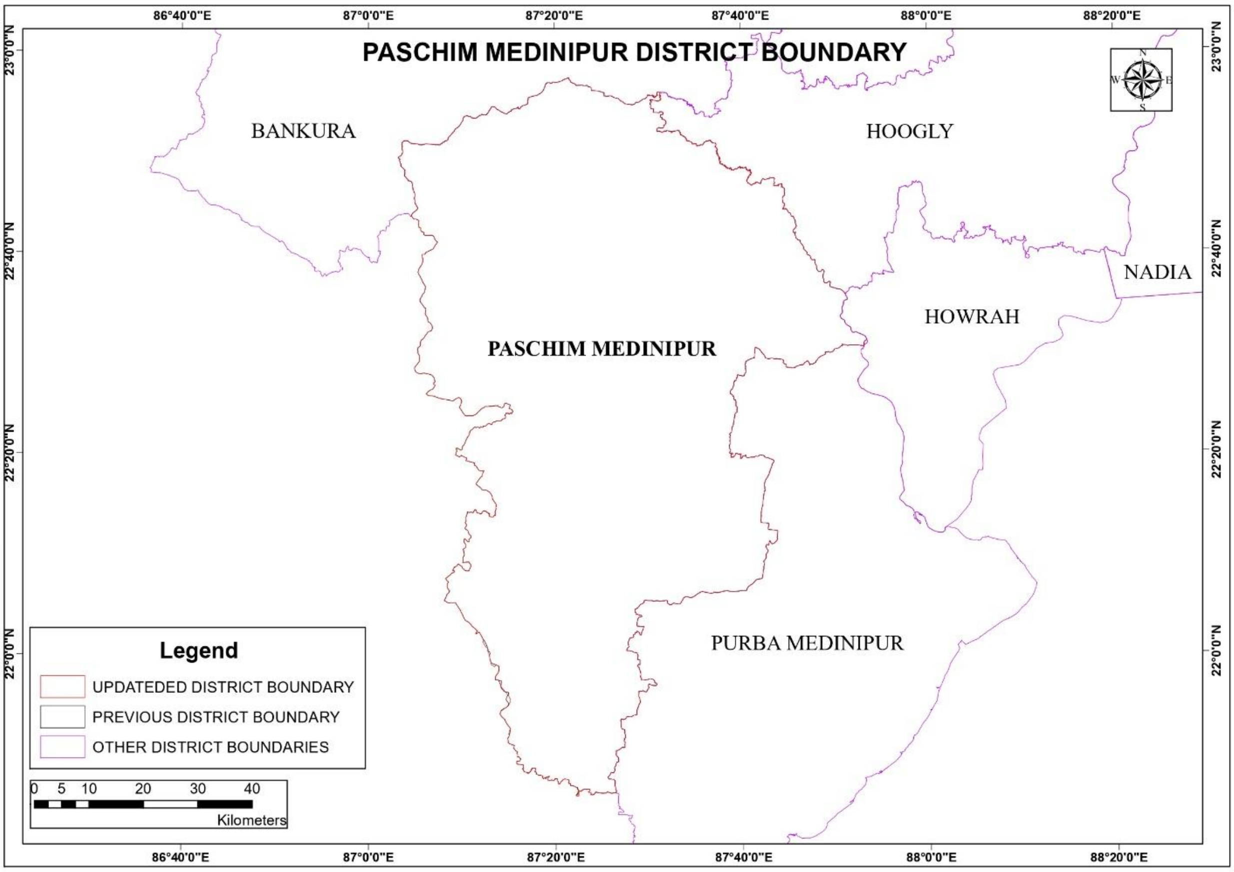
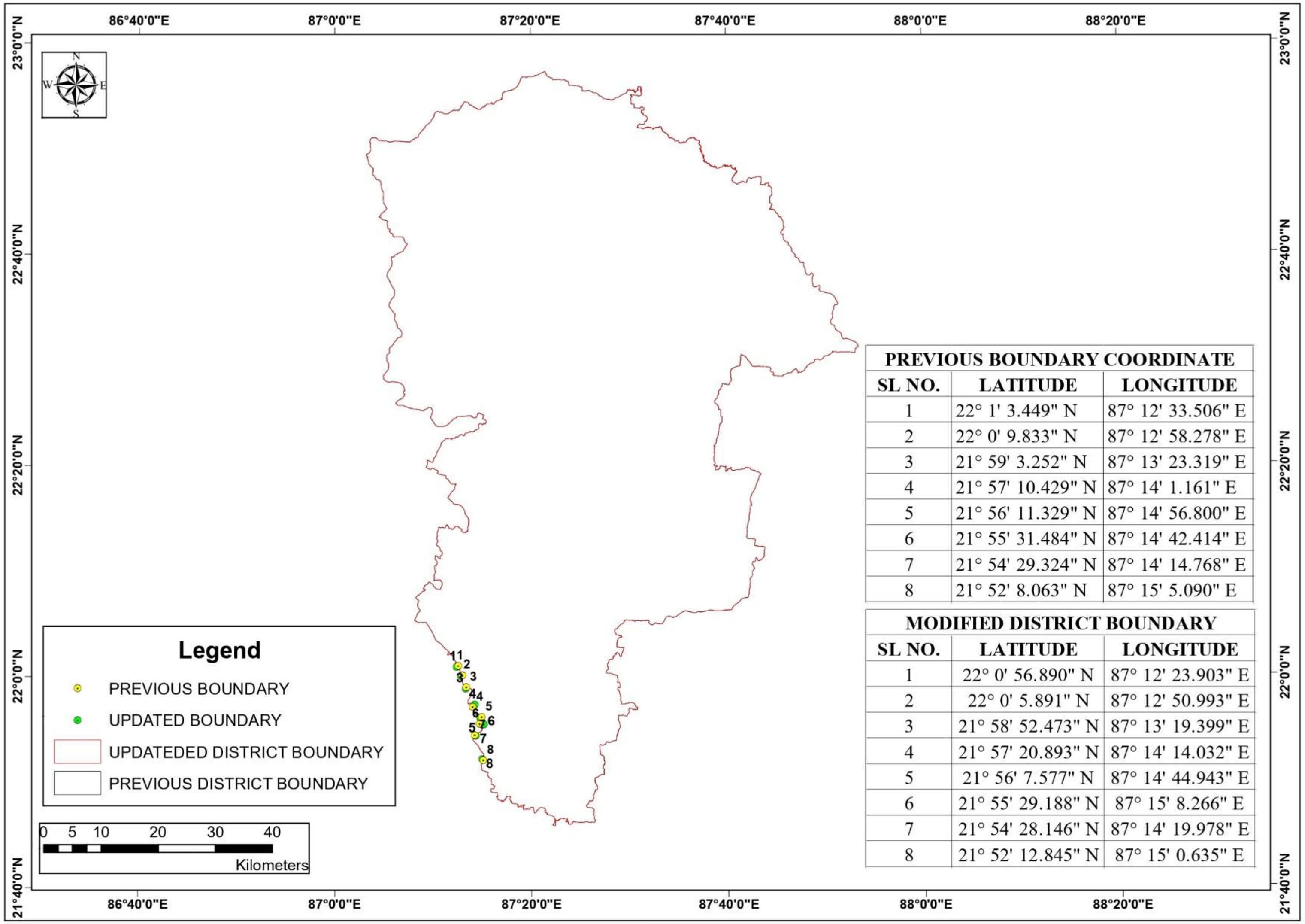


Figure 1: Map showing changes in district boundary



PREVIOUS BOUNDARY COORDINATE		
SL NO.	LATITUDE	LONGITUDE
1	22° 1' 3.449" N	87° 12' 33.506" E
2	22° 0' 9.833" N	87° 12' 58.278" E
3	21° 59' 3.252" N	87° 13' 23.319" E
4	21° 57' 10.429" N	87° 14' 1.161" E
5	21° 56' 11.329" N	87° 14' 56.800" E
6	21° 55' 31.484" N	87° 14' 42.414" E
7	21° 54' 29.324" N	87° 14' 14.768" E
8	21° 52' 8.063" N	87° 15' 5.090" E

MODIFIED DISTRICT BOUNDARY		
SL NO.	LATITUDE	LONGITUDE
1	22° 0' 56.890" N	87° 12' 23.903" E
2	22° 0' 5.891" N	87° 12' 50.993" E
3	21° 58' 52.473" N	87° 13' 19.399" E
4	21° 57' 20.893" N	87° 14' 14.032" E
5	21° 56' 7.577" N	87° 14' 44.943" E
6	21° 55' 29.188" N	87° 15' 8.266" E
7	21° 54' 28.146" N	87° 14' 19.978" E
8	21° 52' 12.845" N	87° 15' 0.635" E

Figure 2: Map showing major shifting in district boundary

6. Due to district boundary modification, potential sand bars also changed, and, in some cases, new sandbar added with respect to 2022 satellite images. Changes in sand resources are tabulated below.

Sl. No.	River or Stream	Considered Thickness (m)	Area recommended for mineral potential (as per approve DSR) (sq.km)	Mineable mineral potential (As per approve DSR) (million cubic meter)	Area recommended for mineral potential (as per modified DSR) (sq.km)	Mineable mineral potential (As per Modified DSR) (million cubic meter)	Resource modification (million cubic meter)
1	Kangsabati River	3.0	4.866063755	7.30	7.38	13.29	5.99
2	Shilabati River	2.5	0.902189964	1.35	2.53	3.79	2.44
3	Subarnarekha River	3.0	8.093242192	12.14	7.60	13.69	1.55

7. Sandbar addition/deletion are highlighted below:

SANDBAR AS PER MODIFIED DSR	SANDBAR AS PAER APPROVED DSR	REMARKS
PSM_MD_KS_01_03	PSM_MD_KS_01 PSM_MD_KS_03	PSM_MD_KS_01 and PSM_MD_KS_03 are marged into PSM_MD_KS_01_03
	PSM_MD_KS_04(IVA)	Discarded due to bridge buffer
PSM_MD_KS_07	PSM_MD_KS_07	No changes
PSM_MD_KS_08		Added based on 2023 satellite image
PSM_MD_KS_09		Added based on 2023 satellite image
PSM_MD_KS_10		Added based on 2023 satellite image
PSM_MD_KS_10_11_12	PSM_MD_KS_10(XA) PSM_MD_KS_10(XB) PSM_MD_KS_10(XC) PSM_MD_KS_11_10 PSM_MD_KS_12	PSM_MD_KS_10(XA), PSM_MD_KS_10(XB), PSM_MD_KS_10(XC), PSM_MD_KS_11_10 and PSM_MD_KS_12 are marged into PSM_MD_KS_10_11_12
PSM_MD_KS_13		Added based on 2023 satellite image
PSM_MD_KS_14	PSM_MD_KS_14	No changes
	PSM_MD_KS_15	Marged into PSM_MD_KS_18_II
	PSM_MD_KS_15_16	Marged into PSM_MD_KS_18_II
	PSM_MD_KS_16_18	Marged into PSM_MD_KS_18
PSM_MD_KS_18_I		Added based on 2023 satellite image
PSM_MD_KS_18_II		No changes
PSM_MD_KS_18	PSM_MD_KS_18	No changes
	PSM_MD_KS_18_19	Marged into PSM_MD_KS_18
	PSM_MD_KS_20	Discarded due to bridge buffer
PSM_MD_KS_20_20A		Added based on 2023 satellite image
PSM_MD_KS_20_20A_I		Added based on 2023 satellite image
PSM_MD_KS_21	PSM_MD_KS_21	No changes
PSM_MD_KS_22		Added based on 2023 satellite image

SANDBAR AS PER MODIFIED DSR	SANDBAR AS PAER APPROVED DSR	REMARKS
PSM_MD_KS_23	PSM_MD_KS_23	No changes
PSM_MD_KS_23A	PSM_MD_KS_23A	No changes
PSM_MD_KS_23B		Added based on 2023 satellite image
PSM_MD_KS_24		Added based on 2023 satellite image
PSM_MD_KS_25B		Added based on 2023 satellite image
PSM_MD_KS_25C		Added based on 2023 satellite image
PSM_MD_KS_26	PSM_MD_KS_26	No changes
PSM_MD_KS_26A		Added based on 2023 satellite image
PSM_MD_KS_26B		Added based on 2023 satellite image
PSM_KG2_KS_28	PSM_KG2_KS_28	No changes
PSM_MD_KS_29		Added based on 2023 satellite image
	PSM_MD_KS_30(XXXA)	Marged into PSM_MD_KS_30(XXXB)
PSM_MD_KS_30(XXXB)	PSM_MD_KS_30(XXXB)	No changes
PSM_KG2_KS_31		Added based on 2023 satellite image
PSM_MD_KS_32	PSM_MD_KS_32	No changes
PSM_KP_KS_33(XXXIIIA)	PSM_KP_KS_33(XXXIIIA)	No changes
PSM_KP_KS_33(XXXIIIB)		Added based on 2023 satellite image
PSM_KP_KS_34_35	PSM_KP_KS_34_35	No changes
PSM_KP_KS_36	PSM_KP_KS_36	No changes
PSM_KP_KS_37	PSM_KP_KS_37	No changes
PSM_KP_KS_40		Added based on 2023 satellite image
PSM_KP_KS_41		Added based on 2023 satellite image
PSM_KP_KS_43	PSM_KP_KS_43	No changes
PSM_KP_KS_44		Added based on 2023 satellite image
PSM_KP_KS_45		Added based on 2023 satellite image
PSM_KP_KS_48	PSM_KP_KS_48	No changes
PSM_DB_KS_48A		Added based on 2023 satellite image
PSM_DB_KS_48B		Added based on 2023 satellite image
PSM_KP_KS_49		Added based on 2023 satellite image
PSM_DB_KS_49A		Added based on 2023 satellite image
PSM_DB_KS_49E		Added based on 2023 satellite image
PSM_DB_KS_50		Added based on 2023 satellite image
PSM_DB_KS_51		Added based on 2023 satellite image
PSM_DB_KS_51A		Added based on 2023 satellite image
PSM_DB_KS_52_52A		Added based on 2023 satellite image
PSM_DB_KS_52B		Added based on 2023 satellite image
PSM_DB_KS_52C		Added based on 2023 satellite image
PSM_DB_KS_53		Added based on 2023 satellite image
PSM_DB_KS_54		Added based on 2023 satellite image
PSM_DB_KS_58	PSM_DB_KS_58	No changes
PSM_GB2_SB_01	PSM_GB2_SB_01	No changes
PSM_GB2_SB_01A	PSM_GB2_SB_01A	No changes
PSM_GB2_SB_01B	PSM_GB2_SB_01B	No changes

SANDBAR AS PER MODIFIED DSR	SANDBAR AS PAER APPROVED DSR	REMARKS
PSM_GB2_SB_01B_02_03_04	PSM_GB2_SB_02	PSM_GB2_SB_02 Marged into PSM_GB2_SB_01B_02_03_04
PSM_GB2_SB_02A		Added based on 2023 satellite image
PSM_GB2_SB_03	PSM_GB2_SB_03	No changes
PSM_GB2_SB_04	PSM_GB2_SB_04	No changes
PSM_GB2_SB_05		Added based on 2023 satellite image
PSM_GB2_SB_05A		Added based on 2023 satellite image
PSM_GB2_SB_06		Added based on 2023 satellite image
PSM_GB2_SB_07	PSM_GB2_SB_07	No changes
PSM_GB2_SB_07A		Added based on 2023 satellite image
PSM_GB2_SB_08	PSM_GB2_SB_08	No changes
PSM_GB2_SB_08A		Added based on 2023 satellite image
PSM_GB2_SB_08B		Added based on 2023 satellite image
PSM_GB2_SB_09	PSM_GB2_SB_09	No changes
PSM_GB2_SB_10		Added based on 2023 satellite image
PSM_GB1_SB_14		Added based on 2023 satellite image
PSM_GB1_SB_15		Added based on 2023 satellite image
PSM_GB1_SB_16		Added based on 2023 satellite image
PSM_GB1_SB_17		Added based on 2023 satellite image
PSM_GB1_SB_18		Added based on 2023 satellite image
PSM_GB1_SB_19	PSM_GB1_SB_19	No changes
PSM_GB1_SB_20		Added based on 2023 satellite image
	PSM_GB1_SB_22_23	Discarded due to bridge buffer
PSM_GB1_SB_23		Added based on 2023 satellite image
PSM_GB1_SB_25		Added based on 2023 satellite image
PSM_GB1_SB_26		Added based on 2023 satellite image
PSM_GB1_SB_26A		Added based on 2023 satellite image
PSM_GB1_SB_27		Added based on 2023 satellite image
PSM_GB1_SB_28		Added based on 2023 satellite image
PSM_GB1_SB_28A		Added based on 2023 satellite image
PSM_GB1_SB_29		Added based on 2023 satellite image
PSM_GB1_SB_29A	PSM_GB1_SB_29A	No changes
PSM_GB1_SB_29B	PSM_GB1_SB_29B	No changes
PSM_GB1_SB_29C		Added based on 2023 satellite image
PSM_GB1_SB_30A,B		Added based on 2023 satellite image
PSM_GB1_SB_32	PSM_GB1_SB_32	No changes
PSM_GB1_SB_32A	PSM_GB1_SB_32A	No changes
PSM_GB1_SB_32B	PSM_GB1_SB_32B	No changes
PSM_GB1_SB_33		Added based on 2023 satellite image
PSM_GB1_SB_34	PSM_GB1_SB_34	No changes
PSM_GB1_SB_35		Added based on 2023 satellite image
PSM_GB1_SB_36		Added based on 2023 satellite image
PSM_GB1_SB_37_38		Added based on 2023 satellite image

SANDBAR AS PER MODIFIED DSR	SANDBAR AS PAER APPROVED DSR	REMARKS
PSM_GB1_SB_41		Added based on 2023 satellite image
PSM_KS_SR_01	PSM_KS_SR_01(IA)	PSM_KS_SR_01(IA) and PSM_KS_SR_01(IB) Marged into PSM_KS_SR_01
	PSM_KS_SR_01(IB)	
PSM_KS_SR_02_04	PSM_KS_SR_02_04	PSM_KS_SR_02_04 and PSM_KS_SR_04Marged into PSM_KS_SR_02_04
	PSM_KS_SR_04	
PSM_KS_SR_04_05	PSM_KS_SR_04_05	No changes
PSM_KS_SR_04_05_07	PSM_KS_SR_05	PSM_KS_SR_04, PSM_KS_SR_05 and PSM_KS_SR_07 Marged into PSM_KS_SR_04_05_07
PSM_KS_SR_06_07	PSM_KS_SR_06	PSM_KS_SR_06 and PSM_KS_SR_07 Marged into PSM_KS_SR_06_07
	PSM_KS_SR_07	
PSM_DT1_SR_08	PSM_DT1_SR_08	No changes
PSM_DT1_SR_09		Added based on 2023 satellite image
	PSM_DT1_SR_08_10	Marged into PSM_DT1_SR_11
PSM_DT1_SR_08_10_11		PSM_DT1_SR_08_10 and PSM_DT1_SR_11Marged into PSM_DT1_SR_08_10_11
PSM_DT1_SR_11	PSM_DT1_SR_11	Area increased due to district boundary modification
PSM_DT1_SR_12(XIIA)	PSM_DT1_SR_12(XIIA)	Area increased due to district boundary modification
	PSM_DT1_SR_12(XIIB)	
	PSM_DT1_SR_12(XIIC)	
PSM_DT1_SR_12(XIID)	PSM_DT1_SR_12(XIID)	Area increased due to district boundary modification
PSM_DT1_SR_12AI	PSM_DT1_SR_12AI	PSM_DT1_SR_12AI and PSM_DT1_SR_12AII marged into PSM_DT1_SR_12AI
	PSM_DT1_SR_12AII	
PSM_DT1_SR_12A		Added based on 2023 satellite image
PSM_DT1_SR_13	PSM_DT1_SR_13	No changes
	PSM_DT1_SR_15	Discarded based on 2023 satellite image
PSM_DT1_SR_17I		Added based on 2023 satellite image
PR_PSM_DT1_SR_17	PSM_DT1_SR_17	PSM_DT1_SR_17 and PSM_DT1_SR_17A merged into PSM_DT1_SR_17
	PSM_DT1_SR_17A	
PSM_DT1_SR_18		Added based on 2023 satellite image
PSM_DT1_SR_19	PSM_DT1_SR_19	No changes
PR_PSM_DT1_SR_20	PSM_DT1_SR_20	Area increased due to district boundary modification