



# राज्य स्तरीय पर्यावरण समाघात निर्धारण प्राधिकरण, म.प्र.

(पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार)

पर्यावरण नियोजन एवं समन्वय संगठन

पर्यावरण परिसर, ई-5, अरेरा कॉलोनी

भोपाल-462016 (म.प्र.)

वेबसाइट- <http://www.mpseiaa.nic.in>

दूरभाष नं. - 0755-2466970, 2466859

फैक्स नं. - 0755-2462136

No: 222 / SEIAA/2021

Date: 25/4/22

प्रति,

कलेक्टर,

जिला शिवपुरी (म.प्र.)

विषय :- नवीन जिला सर्वेक्षण रिपोर्ट - जिला शिवपुरी के अनुमोदन बावत्।

संदर्भ :- आपका पत्र क्र. 752 दिनांक 12.04.2022।


उपरोक्त विषयान्तर्गत संदर्भित पत्र के संबंध में लेख है कि SEIAA द्वारा 719वी बैठक दिनांक 21.04.2022 में जिला शिवपुरी की नवीन जिला सर्वेक्षण रिपोर्ट अनुमोदन हेतु निम्नानुसार निर्णय लिया गया .....

".....कार्यालय कलेक्टर (खनिज शाखा) जिला शिवपुरी से ई-मेल दिनांक 12.04.2022 के माध्यम से कलेक्टर शिवपुरी का पत्र क्र. 752 दिनांक 12.04.2022 द्वारा अवगत कराया गया है कि जिला सर्वेक्षण रिपोर्ट को 21 दिवस के लिये जिला पोर्टल पर दिनांक 21.03.2022 को रखा गया था जिसमें 21 दिवस के अंदर दो आवेदन प्राप्त हुए जिनका निराकरण कराया गया एवं प्राप्त सुझावों के निराकरण उपरांत जिला सर्वेक्षण रिपोर्ट अग्रिम कार्यवाही हेतु SEIAA को प्रेषित की गई है।

SEIAA की 711वी बैठक दिनांक 09.03.2022 में नवीन जिला सर्वेक्षण रिपोर्ट हेतु लिये गये नीतिगत निर्णय के अनुसार भारत सरकार के पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय द्वारा जारी अधिसूचना दिनांक 15 जनवरी 2016 एवं 25 जुलाई 2018 तथा Sustainable Sand Mining Guidelines 2016 तथा Enforcement and Monitoring Guidelines for Sand 2020 के परिपालन के साथ ही माननीय NGT (स्पेशल बेंच) नई दिल्ली के आदेश दिनांक 22.02.2022 एवं तदोपरांत माननीय NGT (CZ) के द्वारा ओ.ए. नम्बर 10/2022 में पारित आदेश दिनांक 04.03.2022 में दिये गये दिशा निर्देशों के परिपालन में प्राधिकरण द्वारा विस्तृत विचार विमर्श एवं परीक्षण उपरांत कार्यालय कलेक्टर (खनिज शाखा) जिला शिवपुरी द्वारा गठित जिला स्तरीय/उप-संभागीय समिति के परीक्षण एवं अनुशंसा, जिला पोर्टल पर निर्धारित अवधि तक रखे जाने के उपरांत प्राप्त सुझावों के समावेश किये जाने तथा SEAC की 562वी बैठक दिनांक 29.03.2022 की अनुशंसा को मान्य करते हुए सर्व सम्मति से नवीन जिला सर्वेक्षण रिपोर्ट शिवपुरी का अनुमोदन किया जाता है। तदानुसार जिला कलेक्टर, शिवपुरी एवं संचालक भौमिकी तथा खनिकर्म को सूचित किया जाये।

उपरोक्त निर्णयानुसार के परिपालन में कृपया प्राधिकरण द्वारा अनुमोदित नवीन जिला सर्वेक्षण रिपोर्ट को शिवपुरी जिले के जिला पोर्टल पर अपलोड करने का कष्ट करें। सुलभ संदर्भ हेतु अनुमोदित नवीन जिला सर्वेक्षण रिपोर्ट की साफ्टकॉपी ई-मेल के माध्यम से आपकी ओर dmshivpuri@mp.gov.in पर प्रेषित है।

(सदस्य सचिव, SEIAA द्वारा निर्देशित)

  
(आलोक नायक)  
प्रभारी अधिकारी

क्र..

/SEIAA/2022

भोपाल दिनांक

प्रतिलिपि :-

1. संचालक, प्रशासन/तकनीकी, संचालनालय, भौमिकी तथा खनिकर्म, 29-ए, खनिज भवन, अरेरा हिल्स, भोपाल (म.प्र.) की ओर सूचनार्थ।

प्रभारी अधिकारी

कार्यालय कलेक्टर (खनिज शाखा) जिला शिवपुरी म0प्र0

क्रमांक 3-6/खनि/ 752 /2022

शिवपुरी,दिनांक 12-4-2022

प्रति,

सदस्य सचिव

SEIAA / SEAC

ई-5, पर्यावरण परिसर, अरेरा कॉलोनी भोपाल

विषय:- जिला सर्वे रिपोर्ट के संबंध में प्राप्त सुझावों का निराकरण करने बावत्।

संदर्भ:- इस कार्यालय का पत्र क्रमांक 619 दिनांक 22/03/2022

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उपरोक्त विषयान्तर्गत लेख है कि संदर्भित पत्र के माध्यम से शिवपुरी जिले की जिला सर्वे रिपोर्ट समिति से अनुमोदन उपरांत भेजी गई साथ ही 21 दिन के लिये जिले के पोर्टल Shivpuri.nic.in पर सुझाव हेतु दिनांक 21/03/2022 को रखी गई। 21 दिन के भीतर दो आवेदन प्राप्त हुए जिनका निराकरण कराया गया।

अतः प्राप्त सुझावों के निराकरण उपरांत जिला सर्वे रिपोर्ट के साथ अग्रिम आवश्यक कार्यवाही हेतु सादर प्रस्तुत है।

संलग्न :- जिला सर्वे रिपोर्ट

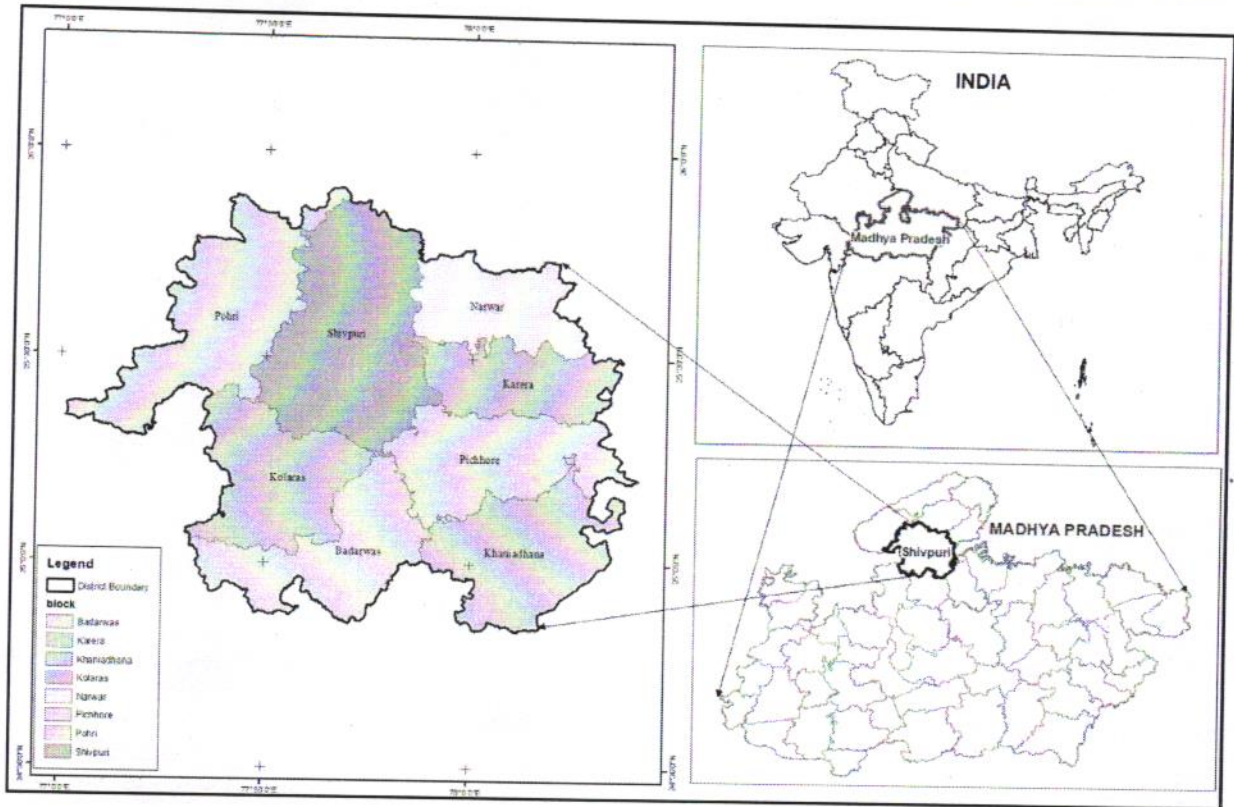
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जिला शिवपुरी म0प्र0

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(EPCO)

Receipt No. 101

Date 12/4/22

# DSR: DISTRICT SHIVPURI, M.P.



## In Situ Enviro Care


**In Situ Enviro Care**  
**E-7/829, Shahpura,**  
**Arera Colony,**  
**Bhopal 462016**  
**(M.P.)**


**QCI Accredited**  
**Consultant**

**QCI/NABET/ENV**  
**/ACO/22/2255**

**15/03/2022**

In pursuance to the Gazette Notification, Ministry of Environment, Forest and Climate Change (MoEF& CC), the Government of India Notification No S.O. 141 (E) Appendix- X, Dated 15.01.2016 & S.O. 3611 (E) New Delhi, 25th July 2018 laid procedure for preparation of District Survey Report of sand mining or river bed mining keeping in mind the "Sustainable Sand Management Guidelines 2016" which focuses on the Management of Sand Mining in the Country and "Enforcement & Monitoring Guidelines for Sand Mining-2020" which focus on prevention of illegal mining in the country.

  
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**(EPCO)**  
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**E-5, Arera Colony, Bhopal (M.P.)**

  
**खनिज अधिकारी**  
**जिला शिवपुरी (म.प्र.)**

# District Survey Report: Shivpuri

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## District Survey Report: Shivpuri

### 1 Introduction


In pursuance to the Gazette Notification, Ministry of Environment, Forest and Climate Change (MoEF& CC), the **Government of India Notification NoS.O. 141 (E) Appendix-X, Dated 15.01.2016 & S.O. 3611 (E) New Delhi, 25<sup>th</sup> July 2018** laid procedure for preparation of District Survey Report of sand mining or river bed mining. The main purpose of preparation of District Survey Report (DSR) is to identify the Sand resources and developing the sand mining activities along with other relevant data of the District.

The process of making a DSR includes:

- Collection of baseline data from the department
- Development of related maps from satellite and secondary sources
- Understanding river flows and sedimentation vis-à-vis sand mining
- Tabulation and mapping of existing sand mining locations and yield
- Correlation with satellite data for pre and post monsoon sand yield
- Suggesting new locations for sand mining approvals
- Design and Development of DSR as per MoEF guidelines
- Interaction with line department for data / document ownership

For the first time, the Ministry of Environment, Forests and Climate Change (MoEF&CC) has released guidelines to monitor and check illegal sand mining in the country.

- Sustainable Sand Management Guidelines (SSMG), 2016 focuses on the management of sand mining, but there was a need to have guidelines for effective enforcement of regulatory provisions and their monitoring.
- The 2020 guidelines are to be enforced simultaneously with the SSMG, 2016, in case of conflict; the new set will hold legal precedence. The Mines and Minerals (Development and Regulation) Act, 1957 has empowered state governments to make rules to prevent illegal mining, transportation and storage of minerals.
- However, there were a large number of illegal mining cases in the country and in some cases, many of the officers lost their lives while executing their duties to curb illegal mining.

  
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- Illegal and uncontrolled illegal mining also leads to loss of revenue to the State and degradation of the environment.

The fair and rapid advancement of technology in country has enabled surveillance and remote monitoring in the field of mining for the effective monitoring of the mining activities, particularly, sand mining. States are now utilizing remote sensing to prevent illegal mining. Rules have been made to prevent 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. Thus, an effective policy for monitoring of sand mining in the Country has been enforced focusing on the effective monitoring of the sand mining since from the identification of sand mineral sources to its dispatch and end-use by consumers and the general public.

- Source to Destination Monitoring: The new set of guidelines focuses on the effective monitoring of sand mining from the identification of sand mineral sources to its dispatch and end-use by consumers and the general public and look at a uniform protocol for the whole country.
- Constantly monitor mining with drones and night surveillance of mining activity through night-vision drones.
- Audits: States to carry out river audits and put detailed survey reports of all mining areas in the public domain.
- Transparency: Online sales and purchase of sand and other riverbed materials (RBM) for transparency in the process.
- Enforcement: It gives directions to states to set up dedicated task forces at district levels.

In cases where rivers become district boundaries or state boundaries, the districts or states sharing the boundary shall constitute the combined task force for monitoring of mined materials, mining activity and participate in the preparation of District Survey Reports (DSR) by providing appropriate inputs.

- Sustainability: Conduct replenishment study for river bed sand in order to nullify the adverse impacts arising due to excessive sand extraction.

  
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- While the Sustainable Sand Mining Guidelines, 2016, require the preparation of District Survey Reports (DSR), which is an important initial step before grant of mining lease, the government has found that the DSRs carried out by state and district administrations are often not comprehensive enough, allowing space for illegal mining.

**Location and Boundaries:** Shivpuri is situated at approximately 25.43° north latitude and 77.65° east longitude. By road, Shivpuri is approximately 120 km (74.5 mi) south of Gwalior and 96 km (59.6 mi) west of Jhansi. Shivpuri has an average elevation of approximately 462 meters (1,516 ft). The city is a tourist destination in the monsoon season as it has a number of waterfalls like Bhura kho and Tunda Bharkha kho. Lakes in Shivpuri include Chandpatha Jheel, Jadhav Sagar jheel, and other small lakes. It is known for its greenery, forests and also as the former summer capital of the Scindia family who at one time ruled the Gwalior.

The district is bounded on the North by Morena, Gwalior and Datia districts, on the East by Jhansi district of U.P, on the West by Kota district of Rajasthan and on the South by Guna district. The district headquarter Shivpuri is located on NH-46 at 113 Km from Gwalior and 98 Km from Guna. The district is mostly laid out over small hill tops covered with deciduous forests where the slope is gentle with verdant vegetation and good forests round about, the landscape is generally pleasing.

**History:** Most of present-day Shivpuri District formed Narwar District of the erstwhile princely state of Gwalior, with Shivpuri as administrative headquarters of the district. After India's independence in 1947, the princely states acceded to the Government of India, and Shivpuri District acquired its present boundaries with the addition of the small princely state of Khaniadhana in the southeast of the district, portions of Datia state in the northeast, and most of Pauri estate in the northwest. Shivpuri District became part of the new state of Madhya Bharat, which was merged into Madhya Pradesh in 1956.

  
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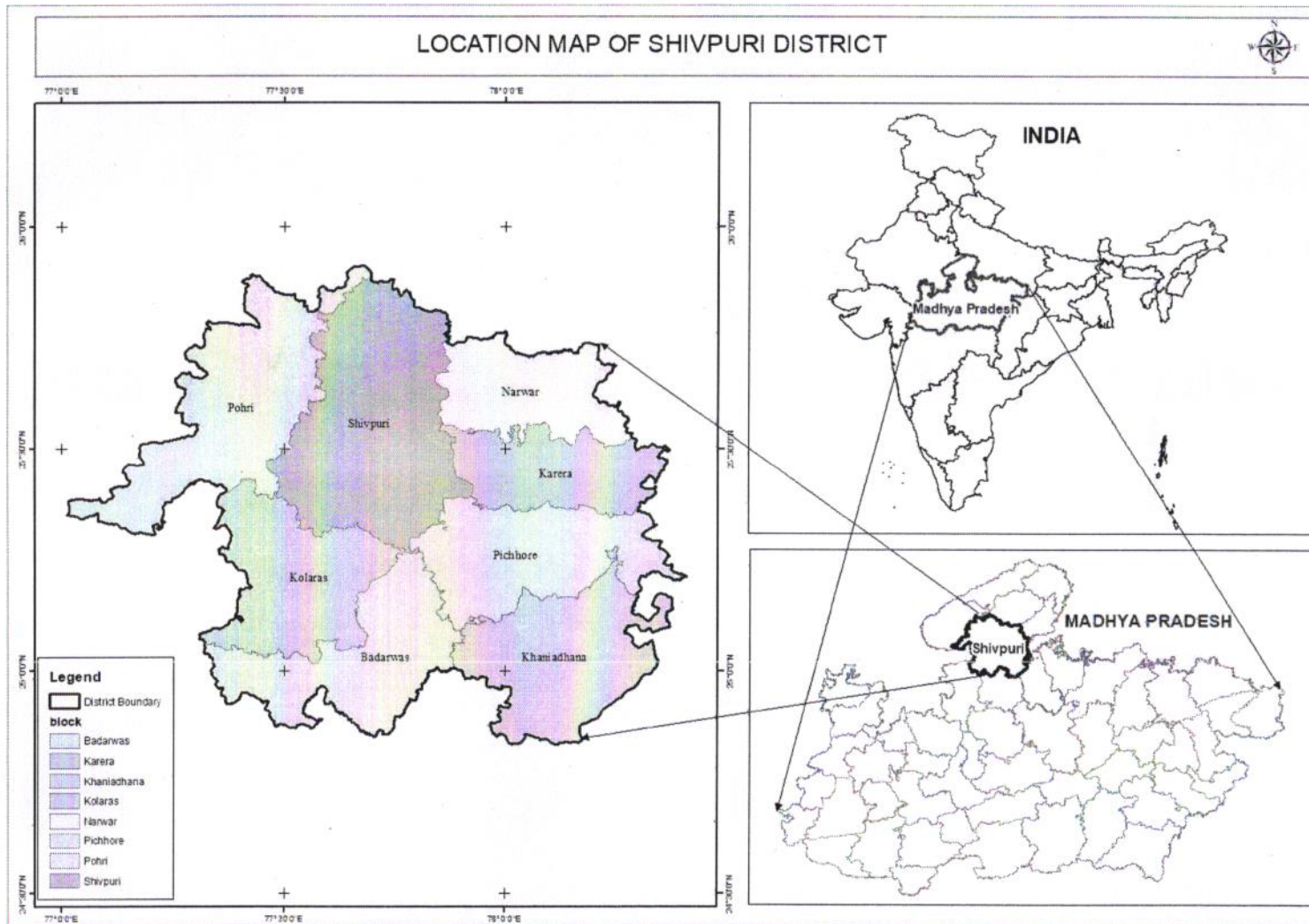
# District Survey Report: Shivpuri

## 1.1 General Features

Table 1 Administrative Setup of the District

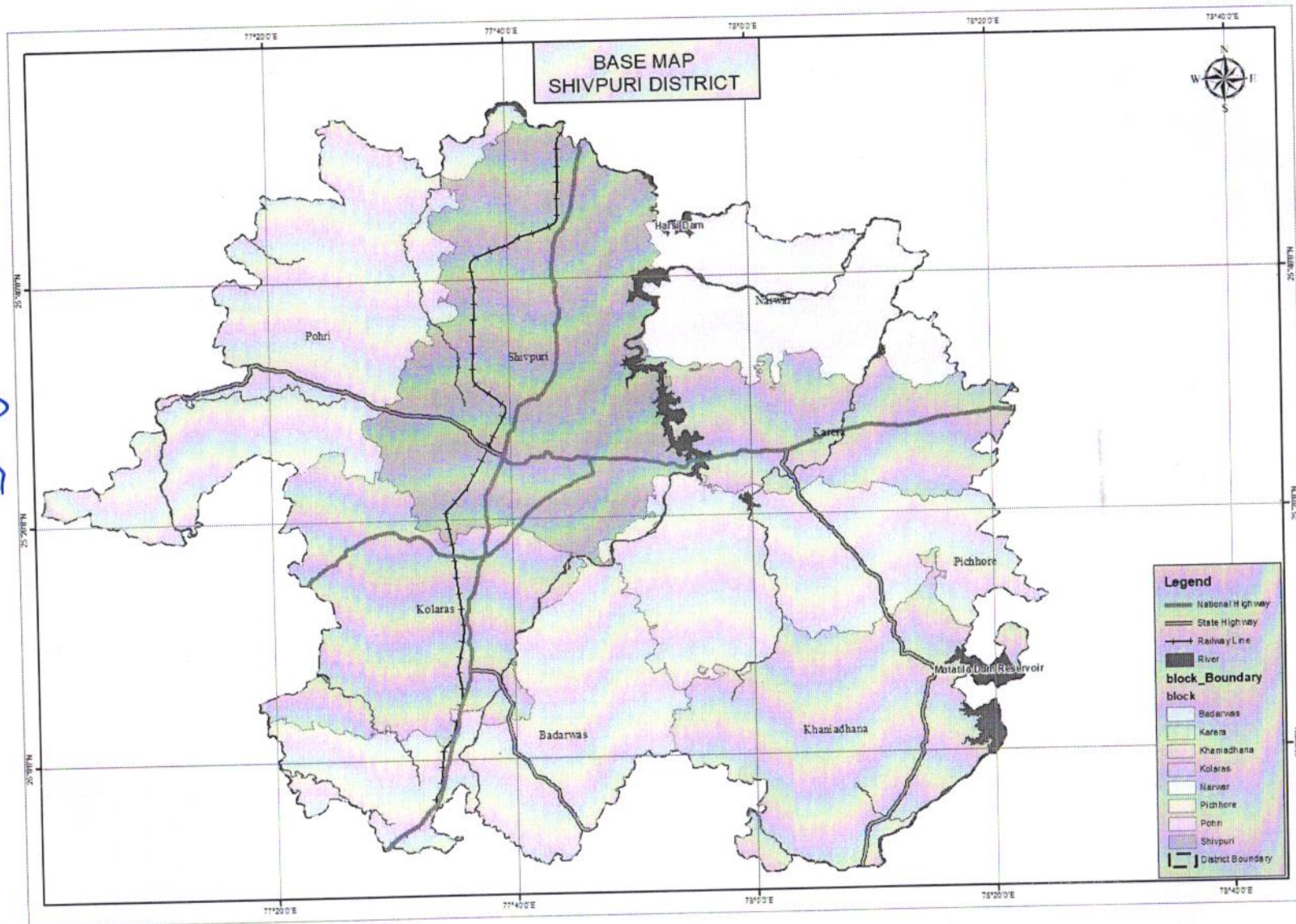
DISTRICT	BLOCK	REVENUE VILLAGES
Shivpuri	Shivpuri	190
	Kolaras	778
	Badarwas	145
	Karera	134
	Narwar	147
	Pichhore	125
	Khaniyadhana	173
	Pohari	234
<b>Total</b>		<b>1326</b>

1.2 Location of the District



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Figure 1 Location Map of the District



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Figure 2 Base Map of the District

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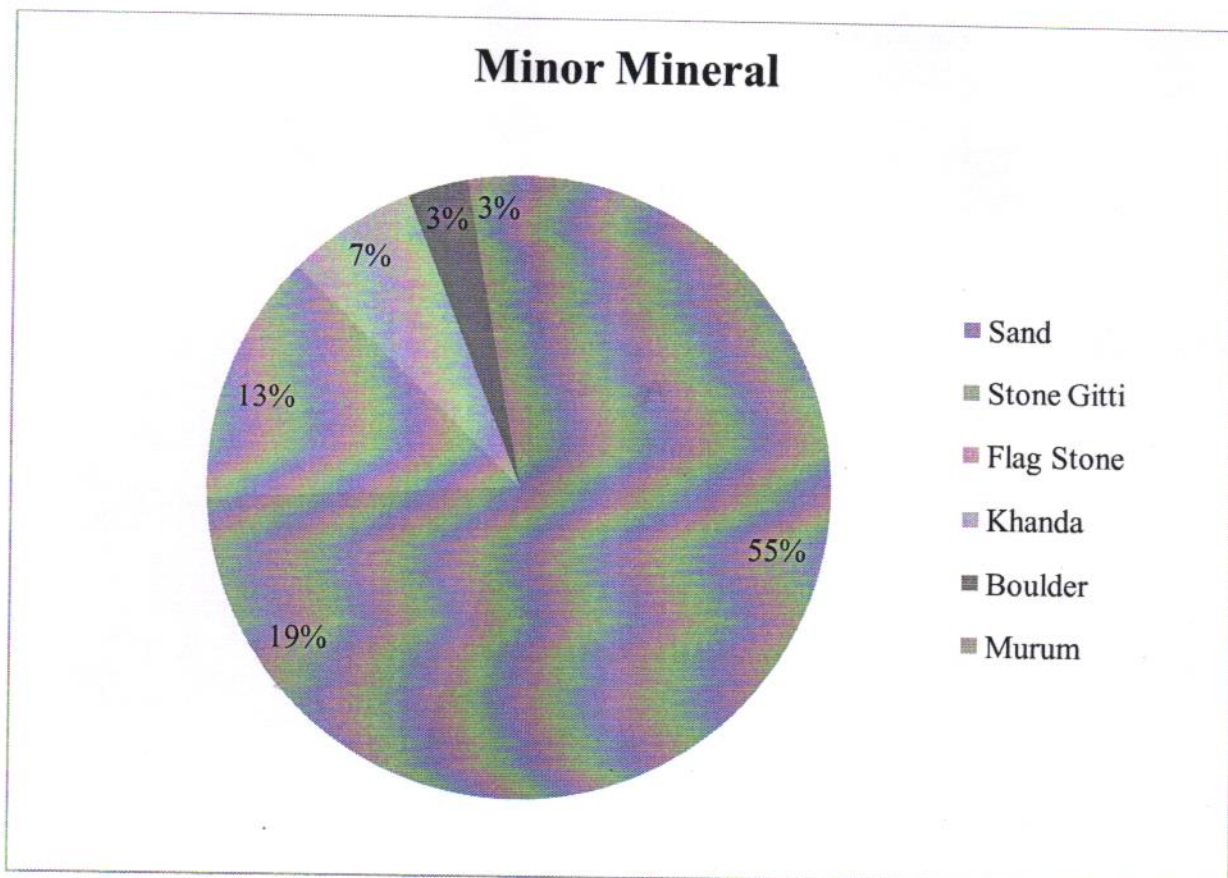
## 2 Overview of Mining Activity in the District

The mineral found in Shivpuri include Crusher Stone, Flagstone etc. The other minerals found in district are diaspore, barite, granite and pyrophyllite and Red Ochre. Major productions in the district are Sand, Stone Gitti, Flagstone, Khanda, Boulder and Murum.

**Table 2 Mineral Production in the District**

Sr. No.	Mineral	Production
<b>Major Mineral</b>		
1.	Diaspore/ Pyrophyllite	7,232M. tonne
2.	Red Ocher	16,428M. tonne
<b>Minor Mineral</b>		
3.	Sand	1,27,559 Cu. Mt.
4.	Stone Gitti	10,48,373 Cu. Mt.
5.	Flag stone	27,063 Cu. Mt.
6.	Khanda	42,957 Cu. Mt..
7.	Boulder	5674 Cu. Mt.
8.	Murum	8335 Cu. Mt..

  
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**Figure 3** Production of Minor Mineral Mining in the District

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**Table 3 Sand Deposits in the District**

S. N	Village/ Town	Name of the Lease	Khasra Number	Area in ha	Name of the River	Tehsil	Operationa I/ Non-Operationa I	Estimated Capacity of Sand mine	Validity of the lease	Lat/Long
1.	Sirsona	Sirsona	157,158	5.3	Barua nala	Karera	Operated by Contractor, Validity: 31.03.2020	35, 000	31.03.20	25°23'53.1"N 78°06'02.2"E 25°23'22.3"N 78°06'24.5"E
2.	Chhitipur	Chhitipur	181	5.1	Bilrau	Karera	Non-Operational	10,000	Nil	25°23'11.02"N 78°14'33.04"E 25°22'00.06"N 78°14'17.01"E
3.	Kalyanpur	Kalyanpur "A"	1	4.8	Sindh River	Karera	Non-Operational	45000	Nil	25°44'16.06"N 78°10'30.8"E 25°44'17.4"N 78°10'30.3"E 25°44'19.2"N 78°10'45.2"E 25°44'21.5"N 78°10'44.3"E
4.	Kumhroa	Kumhroa	30,559	6.33	Bilrau	Karera	Non-Operational	10000	Nil	25°25'28.69"N 78°12'54.00"E 25°25'27.77"N

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										78°12'54.91"E 25°24'52.46"N 78°12'46.85"E 25°24'51.50"N 78°12'45.30"E
5.	Machhwali	Machhawali	1645	3.50	Bilrau	Karera	Non-Operational	7500	Nil	25°31'19.74"N 78°11'49.95"E 25°31'18.57"N 78°11'48.14"E 25°31'35.31"N 78°11'49.19"E 25°31'35.26"N 78°11'51.58"E
6.	Pananehr	Pananehr	1	8.05	Parvati River	Narwar	Newly declared	10000	Nil	25°44'59.66"N 77°57'49.97"E 25°45'3.08"N 77°57'46.92"E 25°45'11.20"N 77°58'14.52"E 25°45'8.86"N 77°58'16.01"E
7.	Kerua	Kerua	852	3.85	Parvati River	Narwar	Newly Declared	10000	Nil	25°44'41.58"N 77°57'29.24"E

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										25°44'41.07"N 77°57'32.35"E 25°44'52.08"N 77°57'42.24"E 25°44'53.77"N 77°57'40.95"E
8	Khiriya Sunwai	Khiriya Sunwai	1	3.20	Parvati River	Narwar	Newly Declared	15000	Nil	25°45'37.37"N 77°58'40.86"E 25°45'39.29"N 77°58'38.71"E 25°45'47.09"N 77°58'49.71"E 25°45'45.27"N 77°58'50.98"E
9.	Mahowadamron	Mahowadamron	1488	12.65	Pichhore	Pichhore	Non-Operational	20,000	Nil	25°23'53.1"N 78°06'02.2"E 25°23'22.3"N 78°06'24.5"E
10	Sinaval Kalan	Sinaval Kalan	1572, 1614, 1712,1	5.56	Domda Nala	Khaniya Dhana	Operated by Contractor, Validity: 31.03.2020	36,000	31.03.20	25°04'40.8"N 78°05'36.3"E 25°03'56.4"N 78°07'05.2"E

  
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### 3 List of the Letter of the Intent Holder and Details of the existing Lease in the District

Table 4 Crusher Gitti Stone Mines

S.No	Name of the Lessee and Address	Name of the mineral	Name of Mines	Tehsil	SurveyNo.	Area in Hectare	Validity	Acceptance Order No./Date	Contract Date
1	Gopal Shran Goyal S/o Shri Shiv Narayan Goyal N/o Denida Road Karera	Crusher Gitti	Bamour	Badarvas	1688, 1695, 1696	1	25-01-2012 to 24-01-2022	150-153 dated 11-01-2012	25-0-2012
2	Shri Vinod Kumar Gupta S/o Shri Harbhajan Lal Gupta R/o Pichor	Crusher Gitti	Kalothra	Karera	124	4	26-08-2012 to 25-08-2022	338-343 dated 14-02-2012	26-08-2012
3	M/s Balaji Stone Crusher Partner Shri Vishnu Singal	Crusher Gitti	Dinara	Karera	1063/1/1	4	30-12-2015 to 29-12-2025	05-09-11 dated 04-04-2016	30-12-2015
4	Shri Vinod Kumar Gupta S/o Shri Babulal Soni (Gupta) R/o Karera	Crusher Gitti	Saleiya	Karera	268	3.5	26-08-2013 to 25-08-2023	806 dated 10- 06-2015	26-08-2013
5	Shri Raghvendra Singh Tomar S/o Shri Pratap singh Tomar R/o Shivpuri	Crusher Gitti	Bamour	Badarvas	1582	2	03-12-2015 to 02-12-2025	1552 dated 23-10-2015	03-12-2015

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6	Shri Yogendra Singh Yadav S/o Shri Chandra Bhan Singh Yadav R/o Ajvara Tehsil Badarvas	Crusher Gitti	Kulhadi	Badarvas	209	4	26-03-2013 to 25-03-2023	2323-26 dated 08-02-2016	26-03-2013
7	Shri Sunil Kumar Shukla S/o Shri R.D. Shukla R/o Gwalior/ Shri Brajednra Singh Bhadoriya	Crusher Gitti	Ghuwai	Badarvas	45/1, 45/2	1.95	29-01-2016 to 28-01-2026	2000-01 dated 29-01-2016	29-01-2016
8	M/s Shri Shyam Baba Minerals Company R/o New Anupam Nagar Extention 2 City Center Gwalior	Crusher Gitti	Envara	Badarvas	268	4	21-07-2016 to 20-07-2026	578-579 dated 16-06-2016	21-07-2016
9	Om Crusher Stone Partner Shri Ved Prakash Sharma R/o Shivpuri	Crusher Gitti	Bamour	Badarvas	1761/1, 1761/2, 1762/1, 1762/2, 1762/3	2	30-08-2016 to 29-08-2016	846-847dated 27-07-2016	30-08-2016
10	Kuldeep Ravat S/o Shri Uttam Singh Ravat R/o Gram Bansgadh	Crusher Gitti	Hateda	Narvar	1516/1	3.5	24-06-2016 to 23-06-2026	5136-39 dated 04-04-2016	24-06-2016
11	Vaishnavi Telicom Baid Kumar Singh R/o	Crusher Gitti	Atalpur	Badarvas	734-13	2	24-06-2016 to 30-03-2016	4836-39 dated 30-03-2016	24-06-2016

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	Gwalior						23-06-2026		
12	Shri Neeraj Khtik S/o Shri Om Prakash Khtik R/o Shivpuri	Crusher Gitti	Bamour	Badarvas	1624/1, 1624/2, 1624/3, 1624/4, 1624/5, 1624/6, 1624/7	3.17	03-10-2016 to 02-10-2026	704-705 dated 04-07-206	03-10-2016
13	Devraj Associates Partner Shri Sunil Kumar Jain R/o Shivpuri	Crusher Gitti	Bamour	Badarvas	1643, 1644, 1645, 1664, 1665, 1666, 1667, 1735	4	24-09-2016 to 23-09-2026	844-845 dated 27-07-2016	24-09-2016
14	Jay Sidh Baba Stone Crusher Partner Shri Pavan Dhakad R/o Gram Mohra Tehsil Kolaras	Crusher Gitti	Bamour	Badarvas	1722, 1725, 1726	1.8	03-08-2017 to 02-08-2027	12673-75 dated 13-06-2017	03-08-2017
15	Shri Girraj Stone Crusher Partner Shri Ashay Gupta R/o Mahal Colony Shivpuri	Crusher Gitti	Pariccha Kirar	Pohri	1104	4	14-03-2017 to 13-03-2028	1639-1641 dated 19-12-2017	14-03-2017
16	Shri Raj Narayan Ghargav S/o Shri Mahesh Prasad Bhargav	Crusher Gitti	Bamour	Badarvas	1729/1- 1729/3, 1737-1740,	3.16	27-12-2017 to 26-12-2027	1408-1409 dated 28-11-2017	27-12-2017

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	R/o Kolaras				1742				
17	Shri shubham Bansal R/o Gotam Bihar Colony Shivpuri M.P.	Crusher Gitti	Khudavali	Karera	1780/3/1	4	16-03-2018 to 15-03-2028	515-518 dated 12-03-2018	16-03-2018
18	Shrimati Shashi Drivedi W/o Shri Arun Drivedi R/o 96 Balbant Nagar Gandhi Road Gwalior District Gwalior	Crusher Gitti	Atalpur	Badarvas	734/9/1	2	01-12-2017 to 30-11-2027	1213-1214 dated 28-09-2016	01-12-2017
19	Shri Ganesh Dhakad S/o Shri Kalyan Singh Dhakad R/o Gram Kerai Tehsil Kolaras District Shivpuri	Crusher Gitti	Atalpur	Badarvas	746-11	2	28-10-2017 to 27-10-2027	14809-815 dated 19-07-2017	28-10-2017
20	Shri Mahesh Prasad Bhargav S/o Shri Badri Prasad Bhargav R/o Gram Bhdota Tehsil Kolaras District Shivpuri	Crusher Gitti	Envara	Badarvas	268	4	27-12-2017 to 26-12-2027	10707-709 dated 29-05-2017	27-12-2017
21	Shri Deepak Sharma S/o Shri Bedprakash Sharma R/o Gotam Bihar Colony Shivpuri	Crusher Gitti	Dabara Dinara	Karera	213/2, 213/Min-3, 215	4	14-06-2018 to 13-06-2028	1231-1233 dated 02-06-2018	14-06-2018

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22	Shrimati Gulabi Damor W/o Shri Arnel Damor R/o Ward No. 6 Megh Nagar Naka Chetanya Marg Jhabua	Crusher Gitti	Atalpur	Badarpur	746-11	4	20-02-2018 to 19-02-2028	1126-27 dated 23-01-2018	20-02-2018
23	Shri Deepak Sharma S/o Shri Bedprakash Sharma R/o Gotam Bihar Colony Shivpuri	Crusher Gitti	Digodh	Kolaras	106	2.5	11-05-2018 to 10-05-2028	872-874 dated 28-04-2018	11-05-2018
24	M/s Sadguru Sai Granite Partner Shri Chandra Bhan Singh Yadav R/o R/o 301 Satyam Nagar, Thatipur Gwalior	Crusher Gitti	Thnara	Karera	2842/2	1.84	27-03-2018 to 26-03-2028	1658 dated 19-12-2017	27-03-2018
25	M/s Sadguru Sai Grenite Partner Shri Chandra Bhan Singh Yadav R/o 301 Satyam Nagar, Thatipur Gwalior	Crusher Gitti	Thnara	Karera	2846	2.53	27-03-2018 to 26-03-2028	1674-1675 dated 19-12-2017	27-03-2018
26	Shri Yogendra Singh Shrivastava S/o Late Shri Ram Swaroop Srivastava R/o Balaji Factory ke	Crusher Gitti	Bhangadh	Pohri	778/1	4	29-09-2018 to 28-09-2028	1387-1390 dated 22-06-2018	29-09-2018


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	same Shanti Nagar Shivpuri								
27	Shri Chandra Bhan Singh Sisodiya S/o Shri Hotam Singh R/o Karera District Shivpuri	Crusher Gitti	Sillarpur	Karera	293, 300 to 307	1.75	15-09-2018 to 14-09-2028	1425-1428 dated 26-06-2018	15-09-2018
28	Shri Mahendra Singh Yadav S/o Shri Hukum Singh Yadav R/o Fatehpur Road Shivpuri District Shivpuri	Crusher Gitti	Dargava	Kolaras	520	2	20-08-2018 to 19-08-2028	9281-84 dated 31-08-2018	20-08-2018
29	Shrimati Gendarani Yadav W/o Prahlad Singh Yadav	Crusher Gitti	Garetha	Pichora	856	2	29-04-2018 to 28-04-2028	1762-64 dated 07-08-2018	29-04-2018
30	Shri Ankit Bhsin S/o Shri Suraj Prakash Bhsin R/o Indra Nagar Shivpuri	Crusher Gitti	Pariccha Kirar	Pohri	736-2	4	31-03-2018 to 30-03-2028	4535-38 dated 30-03-2028	31-03-2018
31	Shrimati Nita Godh S/o Shri Bhagvan Das Godh R/o Gram Jagatpur Tehsil Kolaras	Crusher Gitti	Atalpur	Badarvas	734/13	1.6	10-09-2018 to 09-09-2028	1655 dated 29-11-2016	10-09-2018
32	Shrimati Ranjana Singh Tomar W/o Shri Amar	Crusher Gitti	Magroni	Berad	2	3.92	21-06-2019 to	14299-300 dated	14-08-2019



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	Singh Tomar R/o Vinay Nagar Sector 4 Gwalior						20-06-2029	06-09-2029	
33	Shrimati Pushpa Rajput W/o Shri Lokendra Singh Rajput R/o Kante Sahab Ka Baag Shabd Pratap Ashram Gwalior	Crusher Gitti	Barkheda Khurd	Badarvas	67/1/6	4	10-08-2018 to 09-08-2028	8773-76 dated 25-05-2018	10-08-2018
34	Shri Nilesh Pathak S/o Shri Banvari Lal Pathak R/o Pichor District Shivpuri	Crusher Gitti	Dabra Dinara	Karera	1352/4	1.6	15-09-2013 to 14-09-2023	14645-46 dated 17-09-2018	07-23-2019
35	Shri Rameshwar Gupta S/o Shri Ram Bhrose Gupta R/o Approach Road Kolaras	Crusher Gitti	Bamour	Badarvas	1767, 1768, 1769, 1770/1, 1771/1, 1796/1, 1797	2.87	15-07-2020 to 14-07-2030	5726-30 dated 25-06-2020	24-07-2020
36	Shri Jitendra Singh Gurjar S/o Shri Jandel Singh Gurjar R/o Lakhangava Tehsil and District Shivpuri	Crusher Gitti	Devrikhurd	Narvar	228/1	4	15-02-2019 to 14-02-2029	1458-2-1458- 4 dated 02-07-2018	06-01-2021
37	Shri Rajiv Singhal S/o Shri Vishnu Singhal R/o	Crusher Gitti	Devrikhurd	Pichor	228/1	4	15-02-2019 to	1433-1436 dated	

  
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	Siddeswar Colony Shivpuri						14-02-2029	26-06-2018	
38	Shri Mukesh Kumar Bhargav R/o Gram Bhdota Tehsil Kolaras District Shivpuri	Crusher Gitti	Bedmau	Badarvas	384	2	01-09-2018 to 31-08-2028	725 dated 06- 04-2018	01-09-2018

**Table 5 Flagstone Mines**

S.No	Name of the Lessee and Address	Name of the mineral	Name of Mines	Tehsil	SurveyNo.	Area in Hectare	Validity	Acceptance Order No./Date	Contract Date
1	Krishna Pal Singh Chouhan S/o Shri Rajendra Singh R/o Karera	Flag Stone	Bhdora	Pichor	1266/2	1	13-04-2012 to 12-04-2022	1974-76 dated 03-02-2012	13-04-2012
2	Shrimati Santosh Sachdeva W/o Shri Brajmohan Sachdeva R/o Shivpuri	Flag Stone	Bhdora	Pichor	1333	2.5	28-10-2014 to 27-10-2024	474-475 dated 30-04-2015	28-10-2014
3	Shri Kamal Rathor S/o Shri Mittulal Rathor R/o Gram Mohna District Gwalior	Flag Stone	Bamhari	Shivpuri	908	1	05-05-2018 to 04-05-2028	7081-84 dated 25-04-2018	05-05-2018

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4	Shri Rajesh Mishra S/o Shri Jwala Prasad Mishra R/o Haat Bazar ke samne Babina Kent District Jhanshi	Flag Stone	Lakhari	Khniyadhana	354, 355, 414	1	04-09-2018 to 03-09-2028	10754-56 dated 26-06-2018	04-09-2018
5	Shri Satish Varma S/o Shri Gulab Singh Varma R/o Sanjay Colony Shivpuri	Flag Stone	Dabiya	Shivpuri	433, 436, 437, 438, 439	1.01	07-03-2019 to 06-03-2029	2314 dated 11-10-2018	03-11-2019
6	Shri Bihari Lal Gupta S/o Shri Sukh Nandan Gupta Gram Bhonti Tehsil Pichor	Flag Stone	Dogri	Shivpuri	212	2	22-06-2019 to 21-06-2029	2823-24 dated 15-02-2019	07-19-2019
7	M/s Baba Cut Stone Prop. Shrimati Vijay Laxmi Upadhyay R/o Vivekanand Colony Shivpuri	Flag Stone	Dogri	Shivpuri	217, 219	1	21-06-2019 to 20-06-2029	2820-21 dated 15-02-2019	07-10-2019
8	Shri Ravindra Singh Chouhan S/o Shri Noneraja Chouhan R/o Gram Musahib Mohalla Khniyadhana	Flag Stone	Khdela	Pichor	39, 43, 45	4	25-01-2019 to 24-01-2029	13642-43 dated 24-08-2018	01-25-2019

  
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9	Shri manna Singh Yadav S/o Shri Gajraj Singh Yadav R/o Gram Bedmau	Flag Stone	Bedmau	Rannod	191, 192, 193, 496	2	23-11-2019 to 22-11-2029	5957 dated 17-08-2020	16-10-2020
10	Shri Naresh Singh Gurjar S/o Shri Harkanth Singh Gurjar R/o Jagrati Nagar Lashkar Gwalior	Flag Stone	Dogri	Shivpuri	236	1.1	16-10-2019 to 15-10-2029	3878-79 dated 05-03-2019	10-16-2019
11	Shri Ghanshyam Ojha S/o Shri Chranu Ojha R/o Fatehpur Road Shivpuri	Flag Stone	Kenvah	Pichor	18, 28, 29	1	14-05-2020 to 13-05-2030	7536-39dated 24-02-2021	05-03-2021
12	M/s Dhanno Cut Stone Prop. Shri Ashok Sharma R/o Gram Subhashpura Tehsil Shivpuri	Flag Stone	Bamhari	Shivpuri	929	2.25	13-06-2018 to 12-06-2028	7874-76 dated 08-05-2018	27-07-2018

**Table 6 Murum Mines**

S.No	Name of the Lessee and Address	Name of the mineral	Name of Mines	Tehsil	SurveyNo.	Area in Hectare	Validity	Acceptance Order No./Date	Contract Date
									

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1	Shrimati Rani Jatav W/o Shri Hargyan Jatav R/o Gram Tharra Darroni District Shivpuri	Murum	Kakarvaya	Shivpuri	585/Min.1 585/Min.2	3	27-05-2020 to 26-05-2030	5359-62 dated 22-02-2020	05-27-2020
2	Jaypal Singh Bundela S/o Shri Narayan Singh Bundela R/o Sinaival Kala Tehsil Khniyadhana	Murum	Jera	Khniyadhara	29	2	05-03-2021 to 04-03-2031	7313-17 dated 19-01-2021	15-03-2021

**Table 7 Red Ochre Mine**

S.No	Name of the Lessee and Address	Name of the mineral	Name of Mines	Tehsil	Survey No.	Area in Hectare	Validity	Acceptance Order No./Date	Contract Date
1.	Shri Sudama Bansal S/o Shri V. P. Bansal R/o Thane ke samne Sabalgadh Haal R/o Shivpuri	Red Ochre	Bilokala	Shivpuri	1211-4	4	07-03-2019 to 06-03-2049	3-5/201812/1 dated 23/08/2018	03/07/2019

**Table 8 Pyrophyllite Diaspore Mines**

S.No	Name of the Lessee and Address	Name of the mineral	Name of Mines	Tehsil	Survey No.	Area in Hectare	Validity	Acceptance Order No./Date	Contract Date
1.	M/s Eshvar Mining	Pyrophyllite	Khurai	Pichor	479	17	06-02-2019 to	3196-3199	08-21-2019

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Industries Pvt Ltd New Delhi	Dyspore					05-02-2029	dated 01-02-2019
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**Table 9 List of Mines having Temporary Permission**

S.No	Name of Contractor	Name of the mineral	Gram	Tehsil	Survey No.	Hectare	Validity	Accepted Order No. And Date
1.	M/S Sarthi Construction 102 Dreem Apartment 369 Jivaji Nagar Thatipur Gwalior	Gitti Patthar	Kali Pahadi	Khniyadhana	82	4	22-05-2022	4588-91 03/10/2019
2.	M/S Sarthi Construction 102 Dreem Apartment 369 Jivaji Nagar Thatipur Gwalior	Gitti Patthar	Keroda	Khniyadhana	915	1.41	22-05-2022	4584-87 03-10-2019
3.	M/s Jagdish Prasad Bansal, A Class Thekedar Gotam Bihar Colony Shivpuri	Gitti Patthar and Muram	Gahloni	Shivpuri	735	2	17-03-2022	1851-54 01-06-2021
4.	M/s Osho Associates, 30 Satyadev Nagar Gandhi road Gwalior	Gitti Patthar	Panihara	Khniyadhana	42	3.02		7043-46 09-11-2020
5.	M/s R.K. Jain Infra Project Pvt Ltd Hariyana	Gitti Patthar	Banskhedi	Shivpuri	643	4.98	20-12-2020	1819-22 24-05-2021
6.	M/s  Diamond	Gitti Patthar	Shajapur	Pichor	488, 490	2.42		7581 19-03-2021


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	Construction Company, Kethal Hariyana							
7.	M/s Gavard Construction Ltd Gudgaon Hariyana	Gitti Patthar	Sehor	Narvar	2602	2.5		1904 03-06-2021
8.	M/s Chambal Devlopers Santosh Sikarvar, District Murena	Gitti Patthar	Keruwa	Narvar	1380	3.53	30-06-2021	5965-68 18-08-2020
9.	M/s Chambal Devlopers Santosh Sikarvar, District Murena	Mitti/Muram	Keruwa	Narvar	551/2	4	30-06-2021	7262-64 12-01-2021

**Table 10 List Mines with Temporary Permission**

S.No	Name of Contractor	Name of the mineral	Gram	Tehsil	Survey No.	Hectare	Theoretical Order No. And Date
1.	M/s Osho Associates, 30 Satyadev Nagar Gandhi Road Gwalior	Gitti Patthar	Jargva Abbal	Karera	508, 52/1, 518, 522	4	6038-41 dated 25-09-2020
2.	M/s R.K. Jain Infra Project Pvt Ltd Hariyana	Mitti/Muram	Magrora	Shivpuri	239, 246, 244, 245	4	6022-25 dated 01-09-2020

  
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3.	M/s R.K. Jain Infra Project Pvt Ltd Hariyana	Gitti Patthar	Golakot	Khniyadhana	236/2	4	4579-82 dated 01-10-2019
4.	M/s R.K. Jain Infra Project Pvt Ltd Hariyana	Gitti Patthar	Maheshpur	Shivpuri	03. 04	4	4681-84 dated 26-10-2019
5.	M/s Daimond Construction Company Kethal Hariyana	Mitti/Muram	Imlavada	Kolaras	362	2	7377-80 dated 27-03-2021
6.	M/s R. K. Jain Infra Project Pvt Ltd Hariyana	Mitti/Muram	Kali Pahadi	Narvar	1488	2	4350-53 dated 08-08-2019
7.	M/s Tomar Builder and Contractor Pvt. Ltd. Vinay nagar Gwalior	Gitti Patthar	Mangroli	Berad	2	2	2361-64 dated 07-10-2021

**Table 11 Granite Mines in District**

S.No	Name of the Lessee and Address	Name of the mineral	Village	Tehsil	Survey Number	Hectare	Approval Order Date	Validity
1.	Shri Amit Dhakad S/o Shri Dhananjay Dhakad R/o City Center Colony Shivpuri	Granite	Silanagar	Karera	2425/1	2	7757-60 dated 16-03-2021	20-08-2020 to 19-08-2022
2.	Shri Abhay Singh Kushwah S/o Shri Dharmaveer Singh Kushwah R/o Hathikhana Shivpuri	Granite	Vichi	Narvar	608/1	3	5498-5500 dated 13-03-2020	13-03-2020 to 12-03-2022

  
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## District Survey Report: Shivpuri

3.	Smt. Sudha Soni W/o Shri Ramnivas Soni R/o Dabra District Gwalior	Granite	Fhulpur	Narvar	1267,1268	3.08	1860-64 Dated.28.08.2018	
4.	Shri Aditya Savita S/o Mishrilal Savita R/o Shikchak Colony Dabra District Gwalior	Granite	Fhulpur	Narvar	1265, 1266	1	2064 dated 15-07-2021	15-07-2021 to 14-07-2023

  
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**4 Details of Royalty and Revenue received in last three years for Sand and Minor Mineral Mine lease (2018-19, 2019-2020 and 2020-2021):**

**Table 12 Revenue received in last three years for Sand Mine lease**

Year	Revenue(In Rs.)
2018 – 2019	1,74,59,762
2019– 2020	1,76,53,500
2020-2021	1,59,44,875

**Table 13 Revenue received in last three years for Minor Mineral Mine lease**

s. no.	Name of Mineral	Year	Revenue(In Rs.)
1	Gitti	2018-19	2,24,25,963
		2019-20	4,52,14,200
		2020-21	10,48,37,312
2	Flagstone	2018-19	1,83,95,191
		2019-20	1,14,88,500
		2020-21	81,18,894
3	Boulder /Stone	2018-19	0
		2019-20	0
		2020-21	2,83,675
4	Murram	2018-19	8,05,400
		2019-20	0
		2020-21	4,16,772
5	Khanda /Dhoka	2018-19	0
		2019-20	217
		2020-21	12,71,916
6	/Diaspore hyllitePyrop	2018-19	12,80,001
		2019-20	29,50,200
		2020-21	14,46,381
7	RedOcher	2018-19	0

# District Survey Report: Shivpuri

		2019-20	0
		2020-21	2,95,700

## 5 Details of Sand and Minor Mineral Production in last 3 years (2018-19, 2019-2020 and 2020-2021):

**Table 14 Sand Production in last 3 years**

Year	Production(In Cu.Mt)
2018 - 2019	1,39,678
2019 - 2020	1,41,228
2020 - 2021	1,27,559

**Table 15 Minor Mineral Production in last 3 years**

s. no.	Name of Mineral	Year	Production(In Cu.Mt)
1	Gitti	2018-19	2,24,260
		2019-20	4,52,142
		2020-21	10,48,373
2	Flagstone	2018-19	61,317
		2019-20	38,295
		2020-21	27,063
3	Boulder /Stone	2018-19	0
		2019-20	0
		2020-21	5,674
4	Murram	2018-19	16,108
		2019-20	0
		2020-21	8,335
5	Khanda /Dhoka	2018-19	0
		2019-20	10,839
		2020-21	25438
6	/Diaspore hyllitePyrop	2018-19	6350
		2019-20	14751
		2020-21	7232

# District Survey Report: Shivpuri

7	RedOcher	2018-19	0
		2019-20	0
		2020-21	16428

## 6 Uses of Minerals

Major and Minor Minerals are mainly use for construction purpose. Minor Minerals' comprise of gravel, building stones, soil, ordinary clay, ordinary sand, and murrum. Other sand used for prescribed purposes, and any other mineral which the Central Government may, by notification in the Official Gazette, declare to be a minor mineral.

**Crushed stone (Gitti):** Angular crushed stone is the key material for macadam road construction, which depends on the interlocking of the individual stones' angular faces for its strength. Also use as rip rap, as railroad track ballast, as composite material (with a binder) in concrete, tarmac, and asphalt concrete.

**Sand:** Sand is used to give strength, bulk and other properties to construction materials like asphalt and concrete. In landscaping, it is used as a decorative material. A particular type of sand is used for glass manufacturing. Likewise, it is used for metal casting as a moulding material.

**Murrum:** It is a mixture of minerals, organic matters, gravels, rock particles etc. Murrum is used in plinth filling, road pavements, backfilling in trenches, footing pits, etc. Given that it doesn't contain any organic matters and can be compacted easily forming hard surfaces, it is a soil suitable in the field of construction.

**Soil:** Ordinary earth soil used for filling the embankment, roads, railways and building. Soil which is excavated from mine is also used for different purpose of construction.

**Brick Clay/Soil:** Brick clay/Soil is rich in alumina, silica, calcium, oxides of iron, magnesium and organic matter. These are low grade clays used most for the manufacturing of building bricks and similar clay products.

## 7 Formation of sand

Majority of rivers originate from mountains and as they continue their journey with force, through these mountains, the bigger rocks and boulders disintegrate slowly, and over a period of time, starts rolling down as fragments. These fragments become smaller and smaller due to

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weathering process by water, wind and other rocks. Thus, developed sand particles are transported, washed and stored and again transported during floods and deposited at river beds and largely on river shores. In case the sand deposits are mined / removed, cavities are formed in their place and again filled during next cycle(s) of deposition.

River sand is preferred as a source of sand because of the following factors:

- Cities tend to be located near rivers so transport costs are low, the energy in a river grinds rocks into gravels and sands
- Eliminating the costly step of mining, grinding, and sorting of rocks
- The material produced by rivers tends to consist of resilient minerals of angular shape that are preferred for construction.
- Also, offer the advantages of being naturally sorted by grain-size, easily accessible, and able to be transported inexpensively using barges. Despite plentiful supplies of desert sand (Aeolian), which produce materials unsuitable for making concrete.

A meandering stream has a single channel that winds snakelike through its valley. As water flows around these curves, the outer edge of water is moving faster than the inner edge. This creates an erosion surface on the outer edge (a cut bank) and a depositional surface on the inner edge (a point bar). Where the bends of two meanders meet, they bypass the curve of river, creating an oxbow lake which may then be in-filled with over wash sediment.

Meanders change position by eroding sideways and slightly downstream. The sideways movement occurs because the maximum velocity of the stream shifts toward the outside of the bend, causing erosion of the outer bank. At the same time the reduced current at the inside of the meander results in the deposition of coarse sediment, especially sand. Thus by eroding its outer bank and depositing material along its inner bank, a stream moves sideways without changing its channel size. Due to the slope of the channel, erosion is more effective on the downstream side of a meander.

The specific gravity of an aggregate is considered as the measure of strength or quality of the material. Specific gravity is defined as the ratio of weight of a given volume of aggregate to the weight of equal volume of water. Aggregates having low specific gravity are generally weaker than those with aggregates having high specific gravity. This property helps in a general identification of aggregates. The specific gravity of (sand) is considered to be around



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2.65 to 2.67. Sand particles composed of quartz have a specific gravity between 2.65 to 2.67. While inorganic clays generally range from 2.70 to 2.80. Soils with large amounts of organic matter or porous particles have specific gravity below 2.60 (Some range as low as 2.00).

## 7.1 Sources of sand

Sand is world's second most consumed natural resource after water. Rapid urbanization and global population growth have created unbound demand for this limited natural resource. With urbanization as key driving factor, construction industry has expanded considerably over the last few decades leading to overuse of river sand for construction purposes. This increasing discrepancy between the need for aggregates in the society and scarcity of natural sand due to exhaustion of resources and environmental considerations, has urged concrete manufacturers to look for a suitable and sustainable alternative fine aggregate. The economical and ecological alternative is manufactured sand.

### 7.1.1 Natural Sources

Natural sand is produced by natural forces, such as river sand and sea sand. Generally, sand found at foot of mountains is more weathered, containing more mud, organic impurities and light substances. Sea sand often contains shells and other impurities, and its components such as the chlorine, sulfate and magnesium salts may cause corrosion of steel bars. All the components will affect the performance of concrete. Sources of sand can be river bed material, de-siltation pits in reservoirs/dams, agricultural land etc. these can be broadly classifies as:

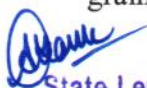
Following are the natural types of the sand:

- **Pit Sand**

This sand is found as deposits in soil and it is obtained by forming pits into soils. It is excavated from a depth of about 1 m to 2 m from ground level. The pit sand consists of sharp angular grains which are free from salts and it proves to be excellent material for mortar or concrete work. For making mortar, the clean pit sand free from organic matter and clay should only be used.

- **River Sand**

This sand is obtained from banks or beds of rivers. The river sand consists of fine rounded grains probably due to mutual attrition under the action of water current. The colour of river



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sand is almost white. As river sand is usually available in clean condition, it is widely used for all purposes.

- **Sea Sand**

This sand is obtained from sea shores. The sea sand, like river sand, consists of fine rounded grains. The colour of sea sand is light brown. The sea sand contains salts. These salts attract moisture from the atmosphere. Such absorption causes dampness, efflorescence and disintegration of work. The sea sand also retards the setting action of cement. Due to all such reasons, it is the general rule to avoid the use of sea sand for engineering purposes except for filling of basement, etc. It can however be used as a local material after being thoroughly washed to remove the salt.

## 7.1.2 Manufactured Sand

Manufactured sand (M-Sand) is artificial sand produced from crushing hard stones into small sand sized angular shaped particles (rock particles with a particle size of less than 4.75 mm and is made by artificial crushing and sieving after soil removal treatment), washed and finely graded to be used as construction aggregate. It is a superior alternative to River Sand for construction purpose. The main technical indicators of artificial sand are particle gradation, fineness modulus, stone powder content, void ratio, apparent density, bulk density, methylene blue value (MB), crushing value index, mica content, light-matter content, etc.

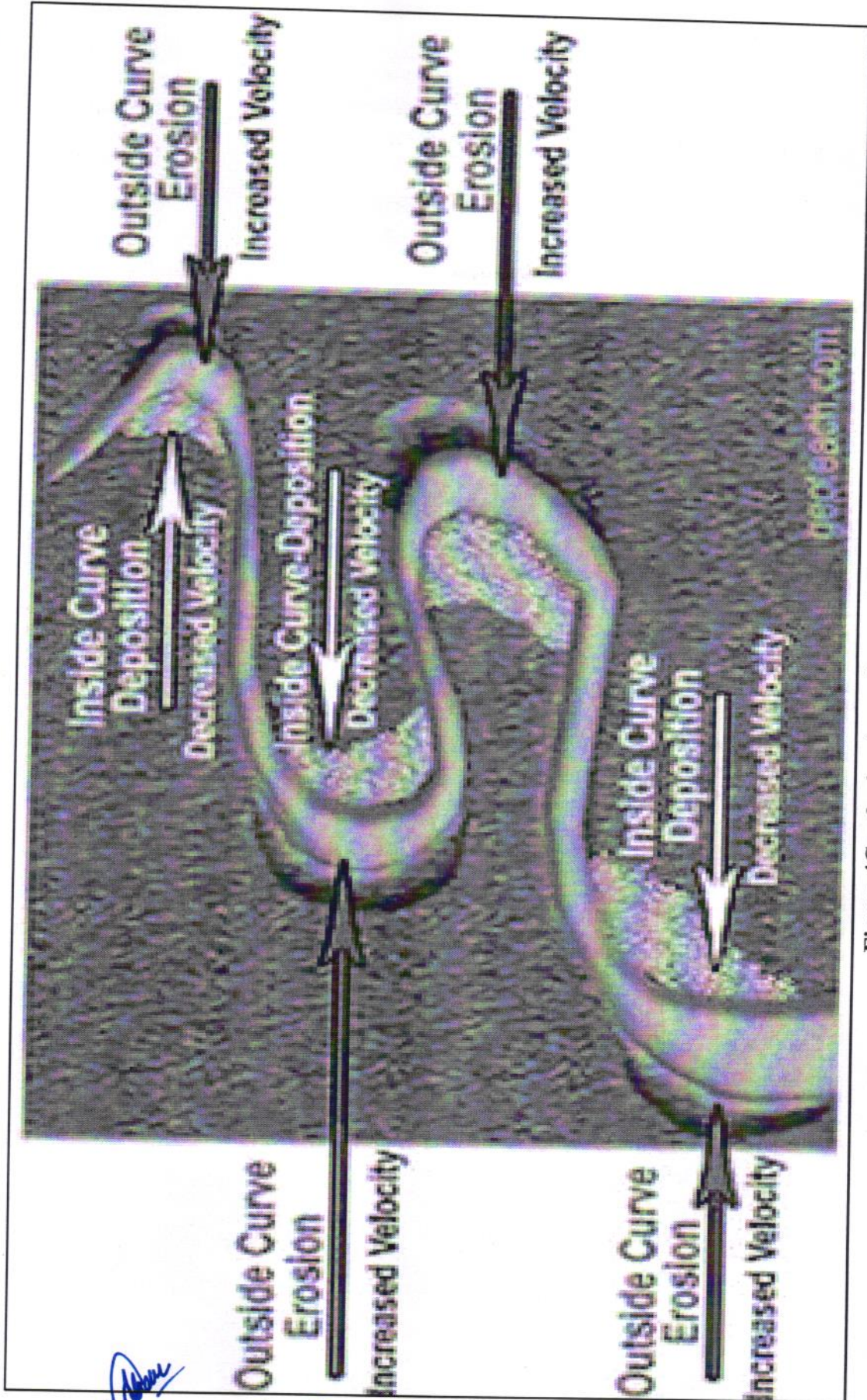


Figure 4 Conduive Areas for sand deposition



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## 7.2 Sand Mining

Sand Mining is an activity referring to the process of the removal of sand from rivers, streams and lakes.

- Sand is mined from beaches and dredged from river beds.
- There are no official figures for the amount of sand mined illegally, but in 2015-16, there were over 19,000 cases of illegal mining of minor minerals, which include sand, in the country.
- To stop illegal mining, the Ministry of Environment, Forest and Climate Change (MoEF) issued Enforcement and Monitoring Guidelines for Sand mining.
- These guidelines focus on the effective monitoring of the sand mining.

Following considerations shall be kept in mind for sand mining:

- Parts of the river reach that experience deposition or aggradations shall be identified. The Leaseholder/ Environmental Clearance holder may be allowed to extract the sand and gravel deposit in these locations to manage aggradations problem.
- Sand and gravel may be extracted across the entire active channel during the dry season.
- Abandoned stream channels on the terrace and inactive floodplains are to be preferred rather than active channels and their deltas and flood plains. The stream should not be diverted to form the inactive channel.
- Layers of sand which could be removed from the river bed shall depend on the width of the river and replenishment rate of the river.
- Sand shall not be allowed to be extracted where erosion may occur, such as at the concave bank.
- 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.
- Sand and gravel shall not be extracted up to a distance of 1 kilometer (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

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minimum of 250 meters on the upstream side and 500 meters on the downstream side.

- 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.
- 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.
- The Piedmont Zone (Bhabhar area) particularly in the Himalayan foothills, where riverbed material is mined, and this sandy-gravelly track constitute excellent conduits and hold the greater potential for groundwater recharge. Mining in such areas should be preferred in locations selected away from the channel bank stretches.
- Mining depth should be restricted to 3 meters and distance from the bank should be  $\frac{1}{4}$ <sup>th</sup> or river width and should not be less than 7.5 meters.
- Demarcation of mining area with pillars and geo-referencing should be done prior to the start of mining.
- 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.
- River bed sand mining shall be restricted within the central  $\frac{3}{4}$ <sup>th</sup> 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.

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- The mining from the area outside river bed shall be permitted subject to the condition that a safety margin of two meters (2 m) shall be maintained above the groundwater table while undertaking mining and no mining operation shall be permissible below this level unless specific permission is obtained from the Competent Authority. Further, the mining should not exceed Three-meter (3 m) at any point in time.
- The permanent boundary pillars need to be erected after identification of an area of aggradations 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.

## 8 General Profile of the District

<b>1. Geographical Position</b>	It lies between N Latitude 26°05' and 24°40' and E longitude 77°01' and 78° 29' and falling in Survey of India toposheet numbers 54H, K & L.
<b>2. Area and Population</b>	<p>I. Geographical Area (Sq.Km) Total Area (Sq.Km): 10278 Km<sup>2</sup></p> <p>II. CENSUS 2011</p> <p>I. Population</p> <p>a) Total Population: 1,726,050 b) Male Population: 3,62,542 c) Female Population: 3,66,457</p> <p>II. Literates</p> <p>a) Total Literates: 900,846 b) Male: 573,242 c) Female: 327,604</p> <p>III. Main Workers (Census 2011)</p> <p>a) Total Workers: 759,281 b) Male Workers: 481,001 c) Female Workers: 278,280 d) Cultivators: 383,340 e) Agricultural Labourers: 220,440 f) Other Workers: 142,422</p> <p>V. Languages Spoken in the District</p>

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	Hindi and few people speak Urdu
<b>3. Temperature</b>	Mean – Maximum: 31.8°C Mean – Minimum: 17.9°C
<b>4. Rainfall (In mm)</b>	Normal – South West Monsoon: 816.3 mm Annual Rainfall: 842.5mm
<b>5. Agriculture</b>	a) Total Cultivated Area (Ha):4642.15 b) Net Area Sown (Ha): 3990.89 c) Area Sown more than once (Ha): 139.07
<b>6. Rivers, etc.</b>	Betwa & Sind Rivers flowing northerly forms the major drainage in the eastern and central parts and river Kuno is another major river in the western parts. The district falls in the Yamuna basin.
<b>7. Revenue Administrative Divisions</b>	Revenue Divisions: a. Revenue Blocks: 8 b. Revenue Villages: 1326
<b>8. Local Bodies</b>	a. Village Panchayats:587

## 8.1 Census Data 2011

Table 16 Census Data for year 2011

Description	2011
Actual Population	1,726,050
Male	919,795
Female	806,255
Population Growth	22.76%
Area Sq. km.	10,066
Density/Km <sup>2</sup>	171
Proportion to population of Madhya Pradesh	2.38%
Sex Ratio (Per 1000)	877
Child Sex Ratio (0-6 Age)	893
Average Literacy	62.55
Male Literacy	74.56
Female Literacy	48.79
Total Child Population (0-6 Age)	285,770
Male Population (0-6 Age)	150,950

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Female Population (0-6 Age)	134,820
Literates	900,846
Male Literates	573,242
Female Literates	327,604
Child Proportion (0-6 Age)	16.56%
Boys Proportion (0-6 Age)	16.41%
Girls Proportion (0-6 Age)	16.72%

## 9 Land utilization Pattern in the District: Forest, Agricultural, Mining, etc.,

Land use/land cover (LULC) changes are main issues of universal environment change. The Satellite remote sensing data with their monotonous nature have proved to be rather useful in mapping land use/land cover decorations and changes with time. Quantification of such changes is conceivable through GIS techniques even if the subsequent spatial datasets are of dissimilar scales or resolutions. Such studies have helped in considerate the dynamics of human happenings in space and time. Land use refers to man's activities.

**Table 17 Land Use Pattern of the Study Area**

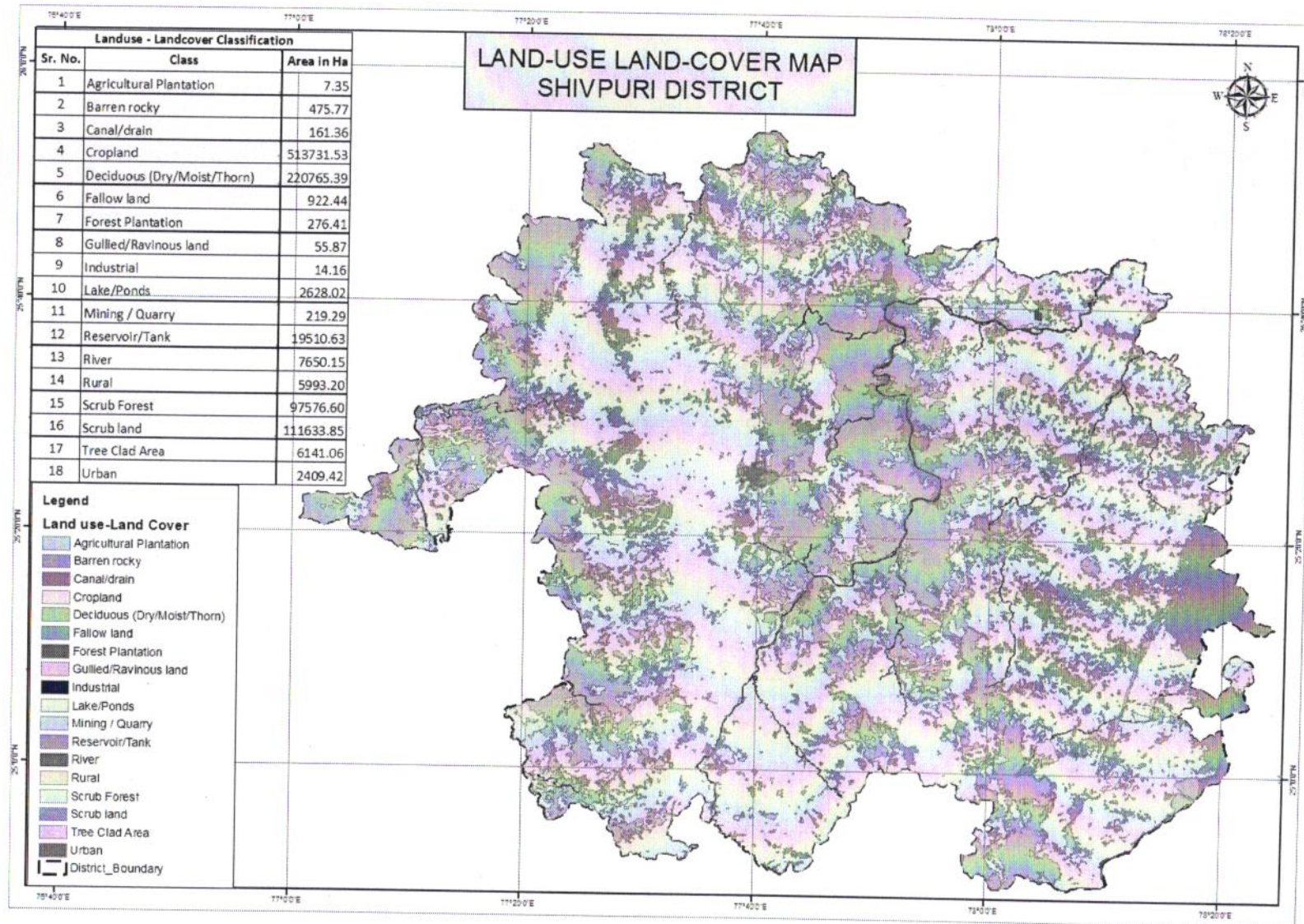
Sr. No.	Class	Area in Ha.	Percentage of coverage
1	Agricultural Plantation	7.35	0.000743%
2	Barren rocky	475.77	0.048049%
3	Canal/drain	161.36	0.016296%
4	Cropland	513731.53	51.88303%
5	Deciduous (Dry/Moist/Thorn)	220765.39	22.29565%
6	Fallow land	922.44	0.093159%
7	Forest Plantation	276.41	0.027916%
8	Gullied/Ravenous land	55.87	0.005643%
9	Industrial	14.16	0.001431%
10	Lake/Ponds	2628.02	0.26541%
11	Mining / Quarry	219.29	0.022146%
12	Reservoir/Tank	19510.63	1.970427%
13	River	7650.15	0.772608%
14	Rural	5993.20	0.605268%
15	Scrub Forest	97576.60	9.854505%
16	Scrub land	111633.85	11.27418%

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17	Tree Clad Area	6141.06	0.620201%
18	Urban	2409.42	0.243333%
	<b>Total</b>	<b>990172.51</b>	<b>100%</b>



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**Figure 5 Land Use and Land Cover Map of the District**

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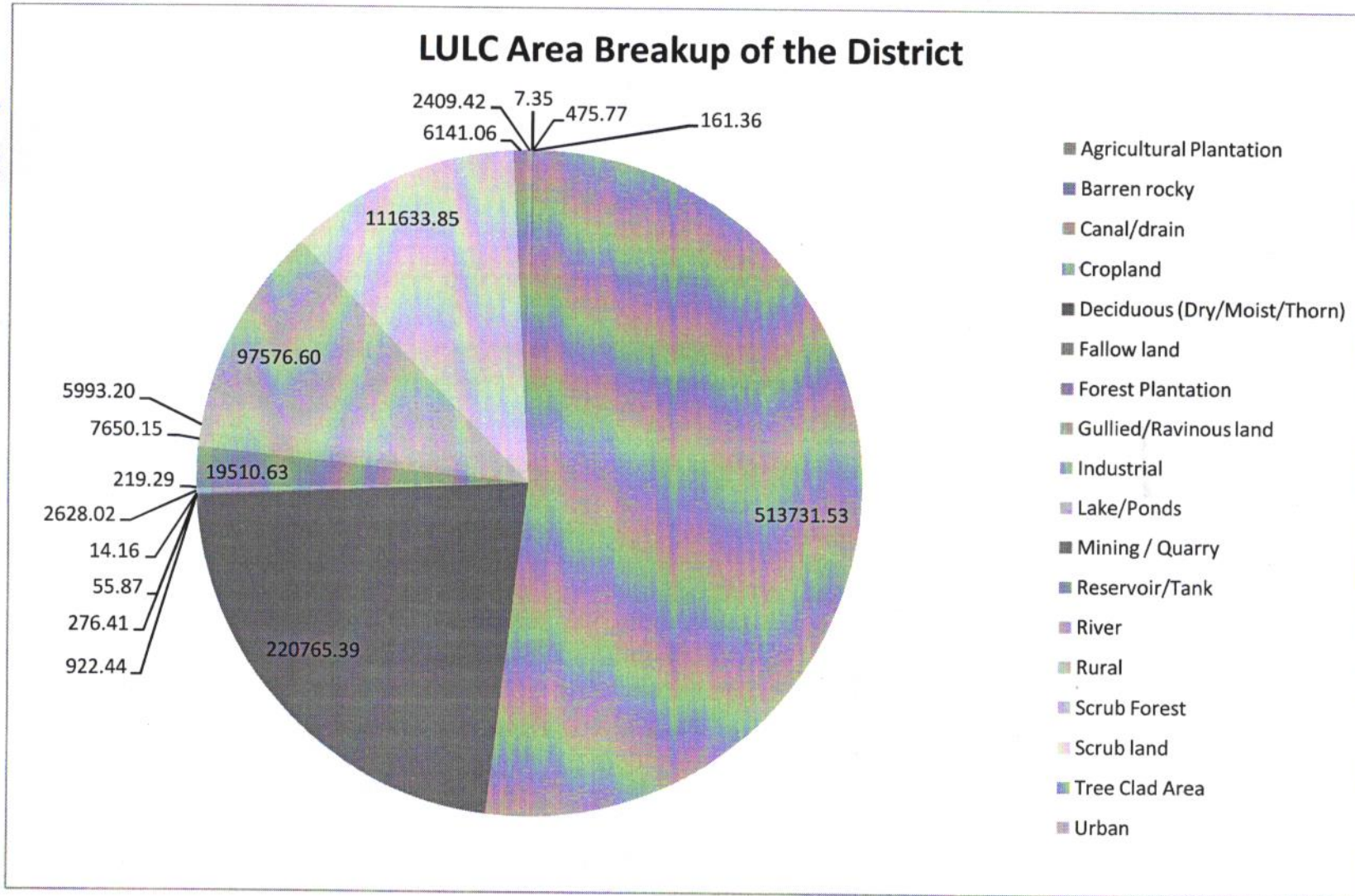


Figure 6 Land Use and Land Cover Breakup of the District



## 10 Physiography of the District

Physiographically, the district is an upland region over the Bundelkhand plains, with escarp in the east, characterized by rugged up landing topography with north south trending parallel ridges and intervening valleys. The eastern part is a pediplain over the granite. The maximum elevation is 522 m above MSL and minimum elevation is 266 m above MSL. In Shivpuri district, landforms are mainly denudation hills of Vindhyan sediments and pediments of granites are predominant. Apart from these geomorphic units' features, alluvial plain, valley fills, intermundane valley and Deccan trap plateau arte also seen.

The district can be bifurcated into three main divisions based on its geology.

1. The Bundelkhand trap: It comprises mostly Pre-Dharwarian granites, which consists of sparsely cultivated uplands and shallow valley. It covers eastern half of the district with an area of 1,539 Sq. miles (3985.99 Sq. Kms.) approximately.
2. The Upper Vindhyas: Sandstone of Kaimur Rewa and Bhandar are commonly found in this region. The dips are very shallow and this suggests that there has been a very little disturbance since Vindhyan period. This region occupies the western half of the district.
3. The Deccan Trap: It mainly constitutes undulating plains and flat topped ranges of the hill. It covers an area of 426 sq. miles (1103.34 Sq. Kms.) towards the southern parts of the district viz.- towards Bhadarwas, Barokra Laterite and Aluminum are also found in the region and cover an area of 374.80 Sq. miles (968.66 sq. kms).



## 11 Details of Month wise Rainfall data of 1year

Table 18 Details of Month wise Rainfall Data in (mm)

Tehsil/ Month	Badarwas	Karera	Khaniya dhana	Kolaras	Narwar	Pichhore	Pohri	Shivpuri
Jan	62.0	23.0	38.0	102.0	93.0	71.0	43.0	76.0
Feb	31.0	45.0	19.0	31.	32.0	10.0	16.0	8.0
Mar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Apr	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
jun	25.	0.0	28.0	34.0	7.0	49.0	60.0	91.0
jul	250.2	321.0	377.0	337.0	182.0	329.3	155.0	218.0
Aug	399.0	137.0	193.0	232.0	95.0	378.0	454.0	176.0
Sep	20.0	56.0	102.0	51.0	359.0	184.0	69.0	120.0
Oct	62.0	0.0	0.0	10.2	0.0	0.0	0.0	0.0
Nov	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dec	78.0	65.0	45.0	46.8	40.0	60.0	79.0	37.0

## 12 Rainfall of the District and Climate Conditions

### 12.1 Rainfall

Shivpuri has a cool and dry climate. The hot weather starts from about the middle of April and lasts up to mid of May. The temperature in June touches 45 degree Celsius. By the end of June or by the 1st week of July, the monsoon breaks and the weather becomes cool, through humid. The district receives its rains from the Arabian Sea. The rains are over generally by end of September. Shivpuri receives on an average 816.3 mm of rain.

### 12.2 Climatic Conditions

Shivpuri goes through a subtropical climate like most of the northern regions of India that features three major seasons mainly, a hot summer, a monsoon season, and a cold winter.

- Summer in Shivpuri arrives in April and lasts till June. During this period Shivpuri remains hot with an average high of 40 °C while the low stays around 30 °C. May is considered as the hottest month of the year when the average high temperature in the city climbs to 43 °C. However, as the season progresses temperature drops slowly.
- Throughout the monsoon, July–September, Shivpuri experiences a much enjoyable temperature with an average high of 34 °C. The minimum, on the other hand, fluctuates between 20 °C -24 °C.
- The winter months remains cool and comfortable enough for the people. The season, from November till March, remains somewhat chilly with the average minimums of 14 °C while the low drops to 6 °C.

## 13 Geology of the District

General Geology of the District can be described as:

### Alluvium

Alluvium consists of granular zones of sands and gravels. The extent and thickness of this formation is limited. The maximum thickness of the alluvium is 15m.

### Laterite

  
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Laterites are semi-consolidated rock and consist of cavities. Thickness of this rock ranges from 3 to 75 m. The porosity and permeability are sufficient to act as good aquifer when it is occurring in low-lying areas.

## Deccan Trap

Water bearing capacities in Deccan trap formation differ from flow to flow. Phreatic aquifer occurs in weathered, jointed and fractured basalts. In the areas where weathered basaltic layer is extensive, a continuous aquifer can be traced to some distance, however due to low permeability of the weathered basalt the aquifer sustain limited ground water withdrawal.

## Vindhyan Sandstone and Shale

Sandstone of the Vindhyan formation is compact and having poor permeability, Joints and fractures in the sand stone controls the occurrence and movement of the ground water. Soil and weathered mantle developed in the Vindhyan formation is generally thin and as result ground water occurs at shallow depth under unconfined condition in jointed, fractured & weathered rocks.

## Bundelkhand Granite

Granites are most extensive rock formation in the Karera & Narwar blocks. Ground Water occurs in the weathered part and vertical and horizontal joints.

**Table 19 Geological Profile of the District**

Group	Formation	Age	Lithological units
Kaimur Group		0.910 Ga to 1.1 Ga	Purple ortho- quartzitic Sandstone with thin shale partings and basal polymictic conglomerate
-----Unconformity-----			
Semri Group	Dhala Formation	0.95Ga to 0.96 Ga	Buff and khaki tuffaceous shales with gritty arkosic sandstone and impersistent intra formational polymitic conglomerate.
	Mohar Formation	0.96 Ga to 1.6 Ga	Felsic Volcanics Member (felsic volcanics and tuffs )
	porcellanite Formation		Collapse Breccia Member (Collapse breccia)
	Basal Formation		Not exposed

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-----unconformity-----		
Bundelkand Granitoid Complex	1.8 Ga to 3.5 Ga	Basic Dykes Quartz reef Pink and grey coarse porphyritic grites with metasedimentary – meta basic enclaves



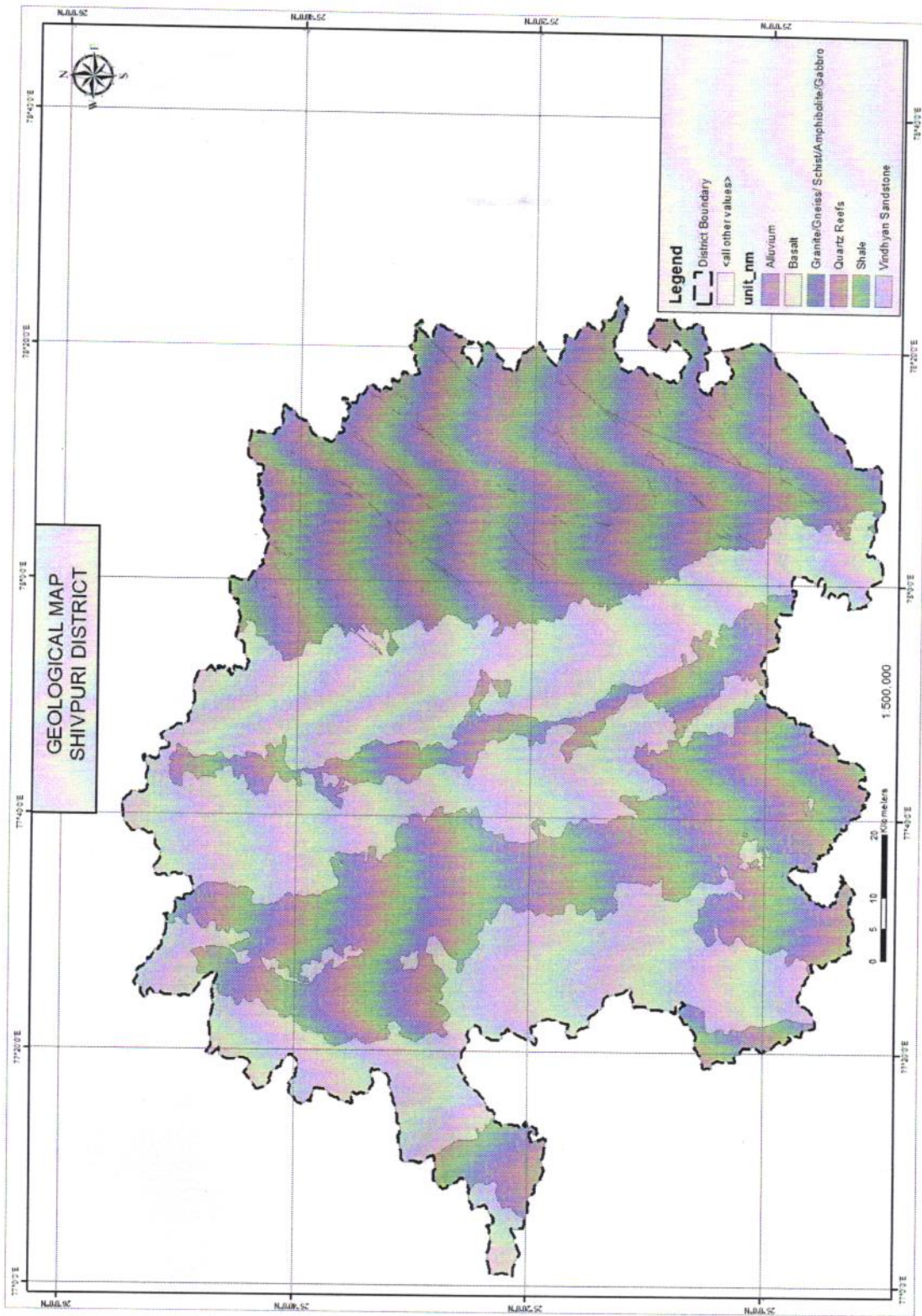



Figure 7 Geological Map of the District

  
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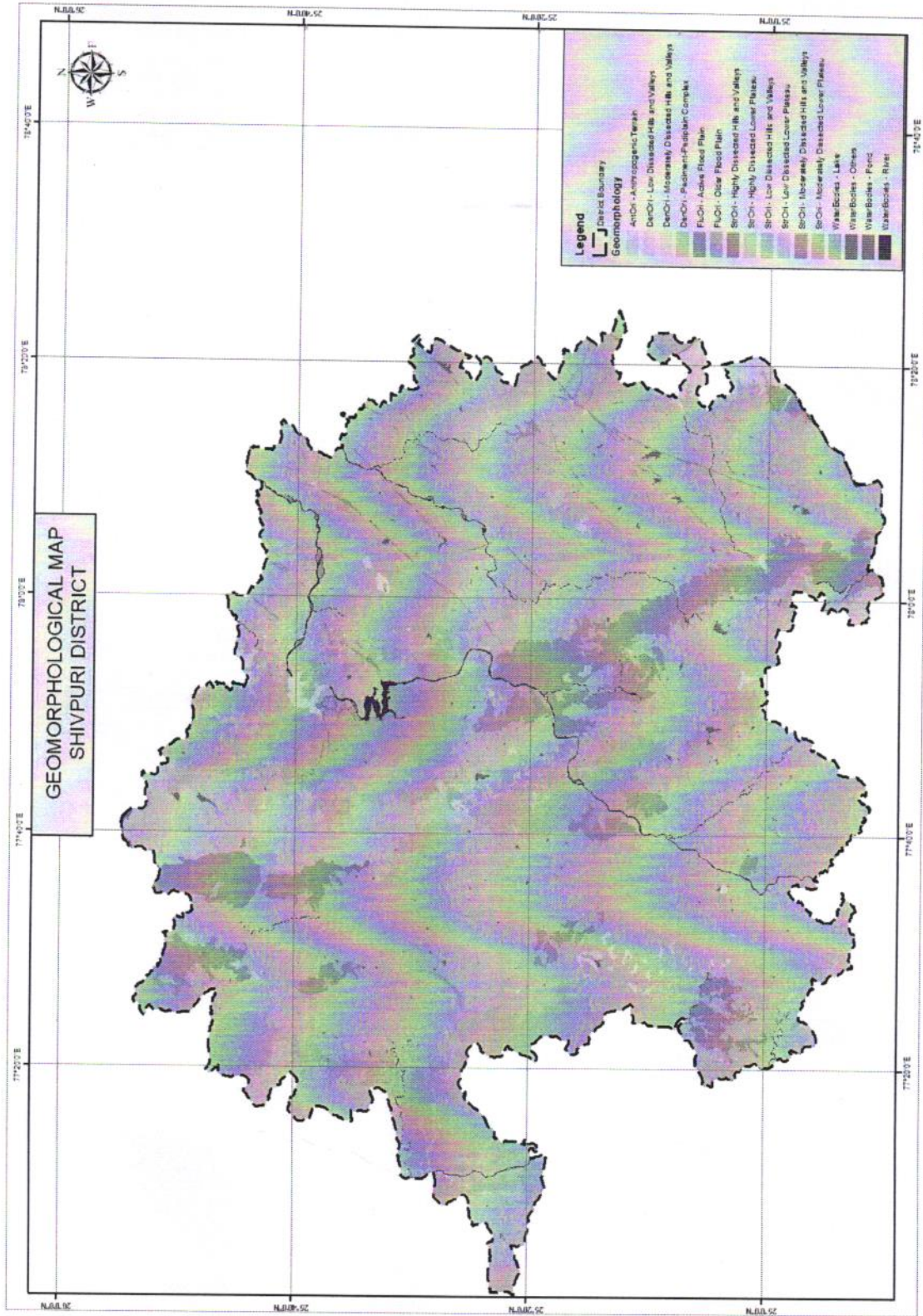


Figure 8 Geomorphologic Map of the District

*[Signature]*  
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## 14 Drainage and Irrigation Pattern

### 14.1 Drainage Pattern

The main rivers are namely Parwati, Sindh, Kuno and Betwa, which pass through the district. Parwati is a tributary of Sindh River and joins it near Pawa in Gwalior district. The Sindh enters from Guna district and flows north for a while then towards east, forming the boundary between Gwalior and Datia districts and finally flows through Bhind to join the Chambal. The Kuno is tributary of the Chambal. It flows north from Shivpuri district to Morena and joins the Chambal. The Betwa or Vetravati rises in Raisen district and flows through Raisen, Vidisha, Guna, Shivpuri and Jhansi districts. Mata Tila Dam is across this river.

The district falls in the Yamuna basin. The district can be divided into four sub basins as below:

#### I. Sub – Parwati Sub basin

The Sind – Parwati sub basin of the Chambal River is in Yamuna basin. River Parwati flows west to east and forms the northern boundary of the district. This sub basin attains maximum height of 499.2 m above MSL at village Piparsuma and minimum 415.38 m above MSL. The general topography is hilly and sloping toward North & West.

#### II. Sind – Kuno Sub Basin

River Kuno flows from south to north forming the western boundary of the district. The general slope is south – east to north – west i.e. towards Sind River. Sub basin attains maximum height of 575 m above MSL at village Bhaopur and minimum of 342 m above MSL at the confluence of river Kuno and Sind.

#### III. Sind – Betwa Sub Basin

River Betwa flows from SW to NE and forms eastern boundary of the district. The general slope is towards NE. The maximum height in the sub basin is 417 m above MSL in Loharchha reserve forest and minimum is 313 m above MSL near village Bharot.

#### IV. Sind – Mahur Sub Basin

The River Mahur crosses the hilly area at an elevation of 296.91 m above MSL after flowing from south to north in Pichor block enters into Karera block at village Bardi. The general slope of the sub basin is towards North.



## 14.2 Irrigation Practices

Irrigation is the artificial application of water to the soil for normal growth of plants. Water is an important determinant factor for production of crops in agriculture sector. Intensive and extensive cultivation of land depends mainly on the availability of water. Medium and minor irrigation schemes are implemented in the state for augmenting the water supply for agriculture. The various sources of irrigation are canals, tanks, tube wells, ordinary wells, springs and channels.

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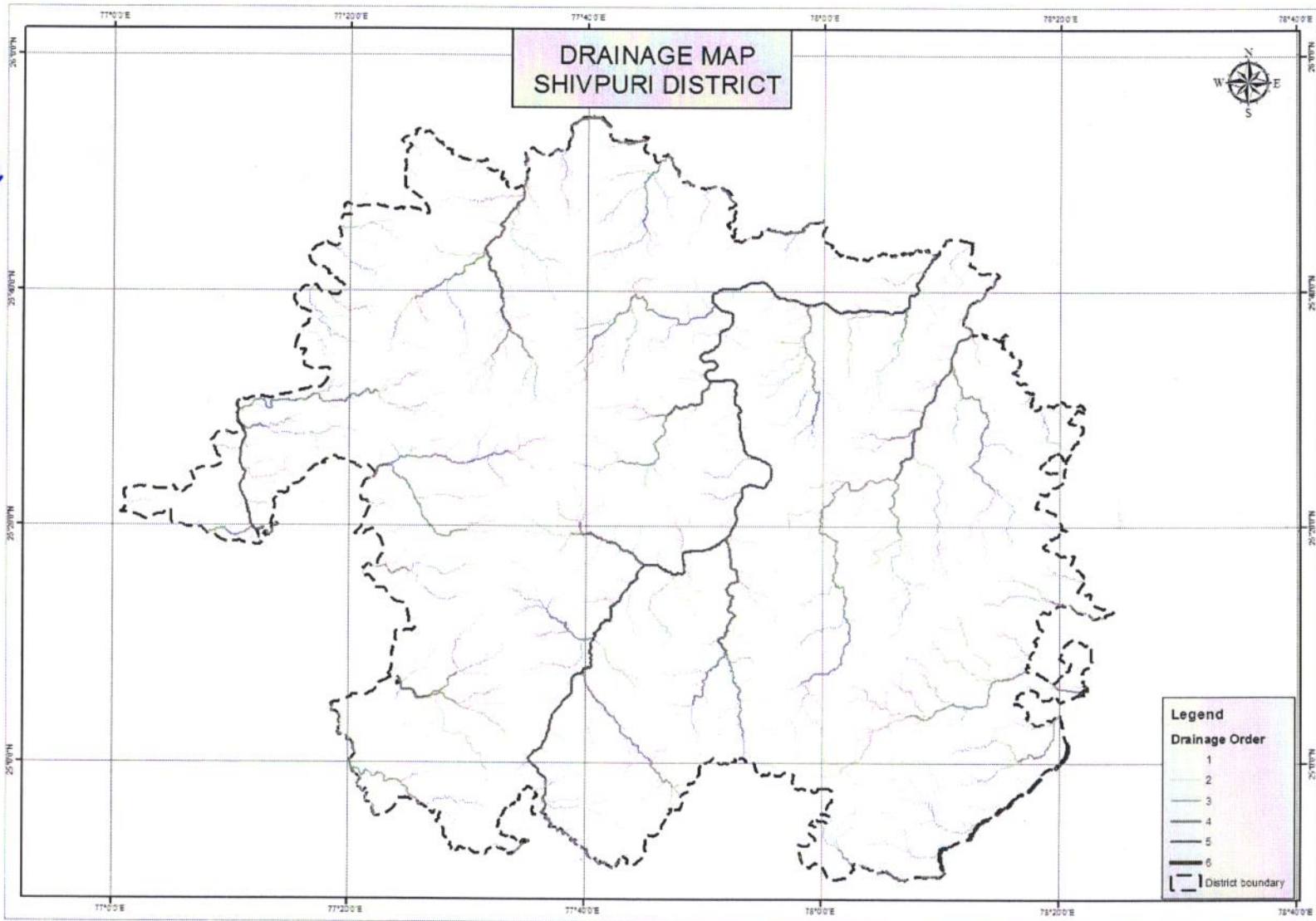


Figure 9 Drainage Map of the District

## 15 Surface Water and Ground water scenario of the District

### 15.1 Ground Water

Ground Water is found beneath the earth's surface and is an important source of water in most of the Districts in the State. Ground Water is withdrawn for Agriculture, Municipal and industrial use. The depth at which the ground water occurs is called Ground water Table.

Shivpuri district is underlain by Budelkhand granite; Basaltic lava flows of Deccan trap Vindhyan Sandstone and Alluvium. Dynamic ground water resources of the district have been estimated for base year -2008/09 on block-wise basis. Out of 1,02,7800 ha of geographical area, 9,77,049 ha (95 %) is ground water recharge worthy area and 50751 ha (5 %) is hilly area. There are eight number of assessment units (block) in the district which fall under non-command (94 %) and command (13.%) sub units. Badarwas, Karera, Khaniyadhana, Narwar and Pichhor blocks of the district are categorized as semi critical (safe in 2003/04,) and rest under safe.

In general, ground water is suitable for domestic and irrigation purposes in the entire district except a few villages located in the south of the Sind River in Narwar & Karera blocks are having high fluoride content in dug well and tube wells. Due to the high content of the fluoride ground water in these villages are not suitable for the drinking purpose.

### 15.2 Surface Water

The main rivers are namely The Parwati, The Sindh, The Kuno and The Betwa, which pass through the district. The Parwati is a tributary of Sindh River and joins it near Pawa in Gwalior district. The Sindh enters from Guna district and flowing north for a while than towards east forming the boundary between Gwalior and Datia districts and finally flows through Bhind to join the Chambal. The Kuno is tributary of the Chambal. It flows north from Shivpuri district to Morena and joins the Chambal. The Betwa or Vetravati rises in Raisen district and flows through Raisen, Vidisha, Guna, Shivpuri and Jhansi districts. Mata Tila Dam is across this river.



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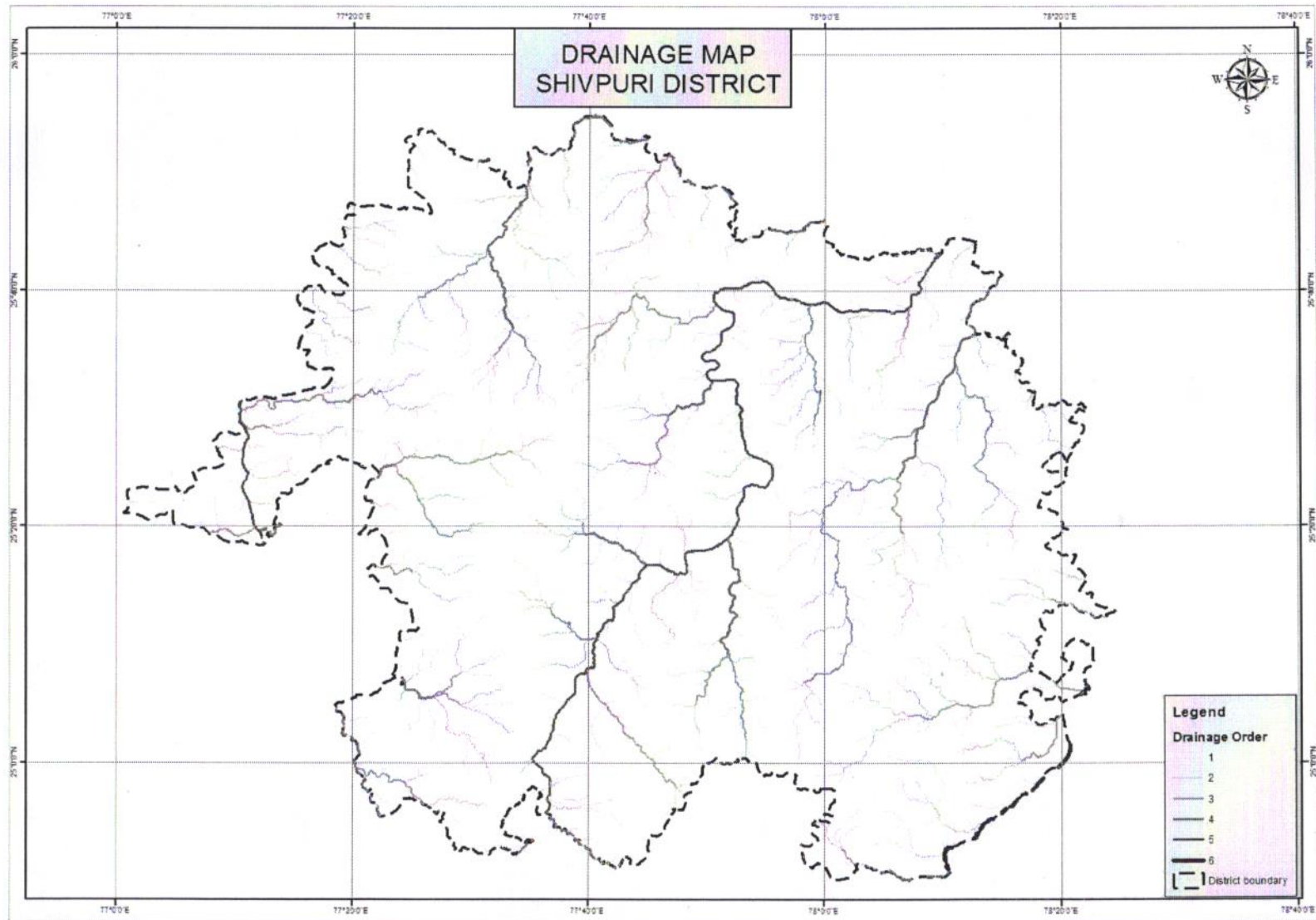


Figure 10 Drainage Map showing Rivers of the District

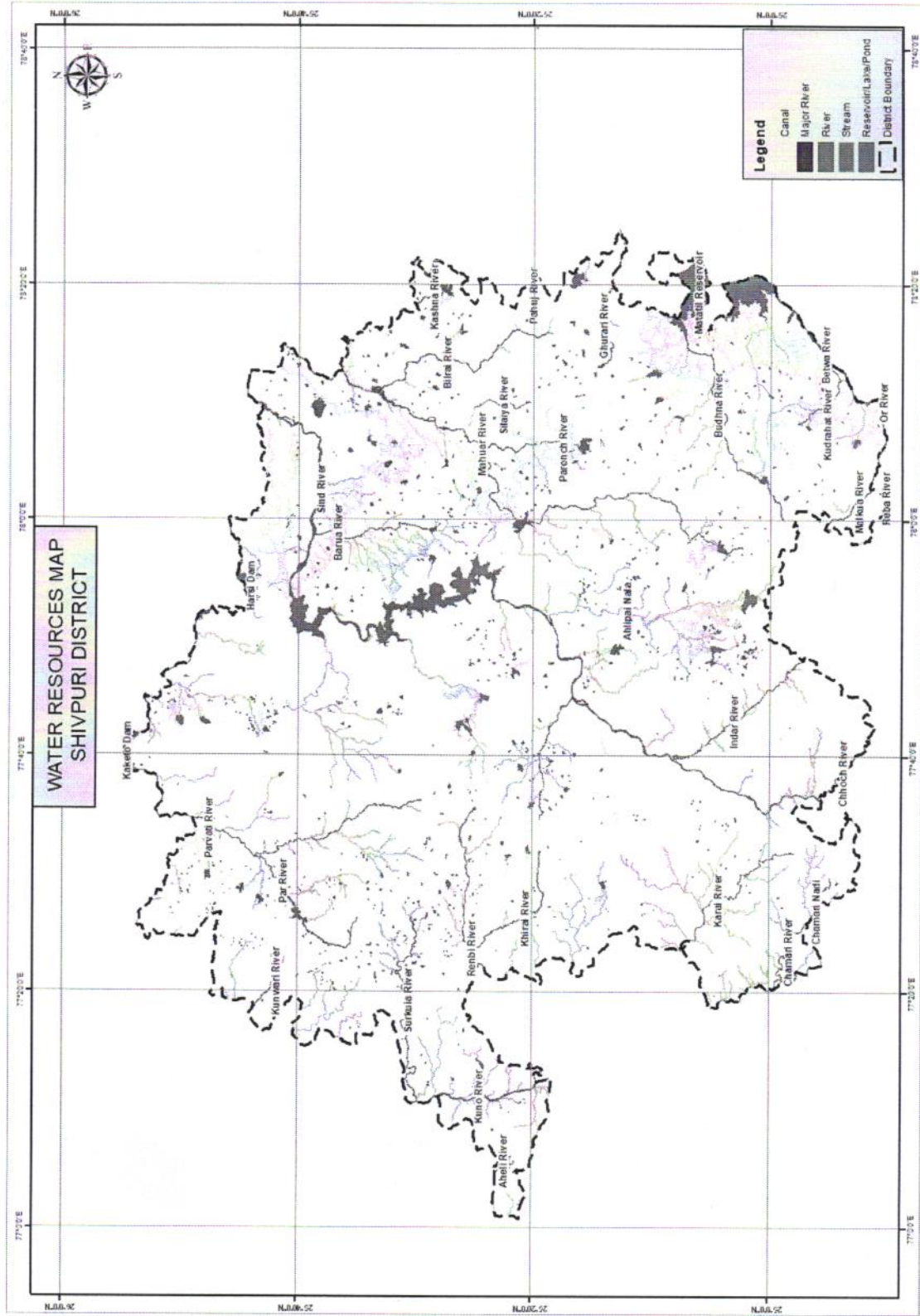


Figure 11 Water Resources Map of the District

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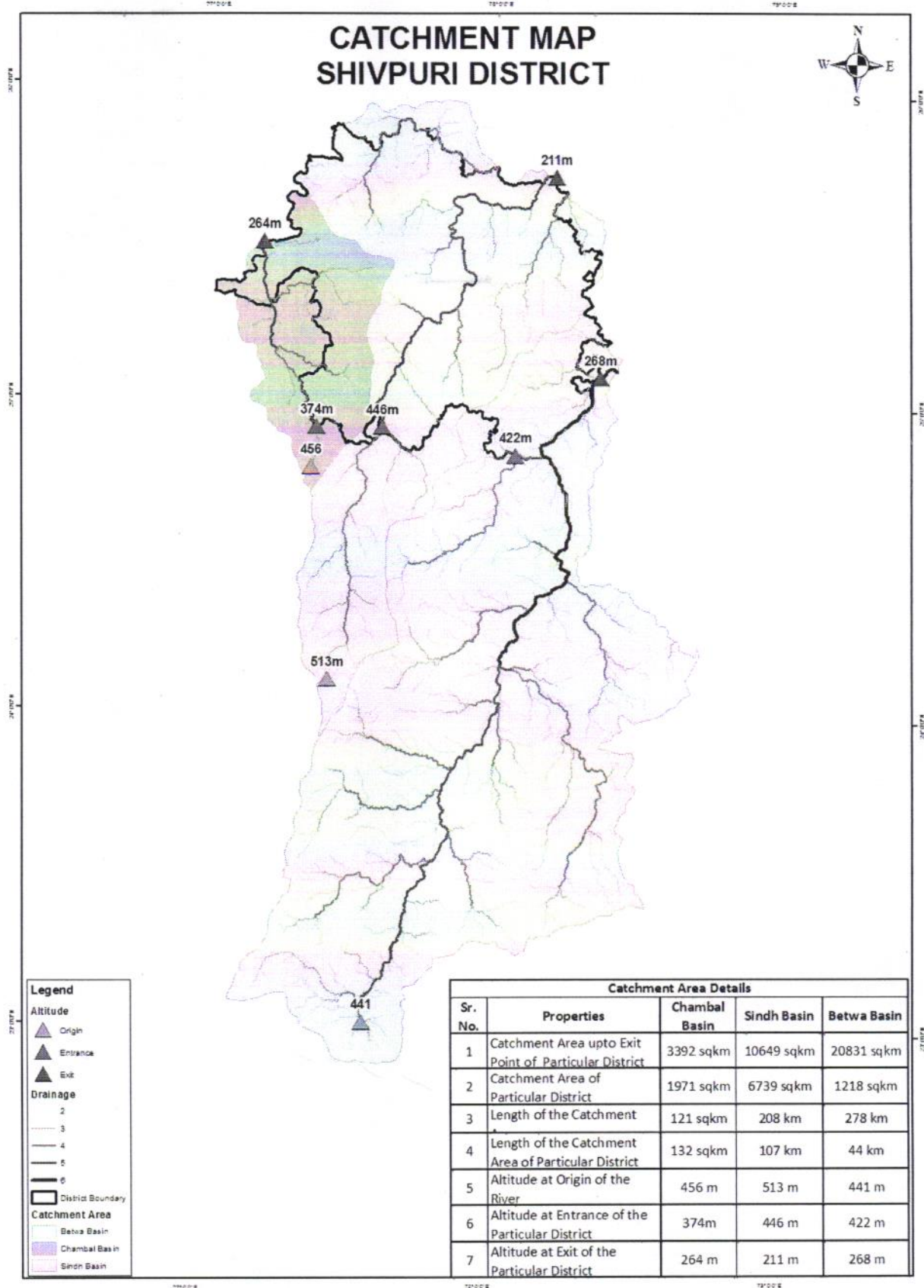


Figure 12 Catchment Map of District

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**Table 20 Details of Catchment Area**

Sr. No.	Properties	Chambal Basin	Sindh Basin	Betwa Basin
1	Catchment Area upto Exit Point of Particular District	3392 sqkm	10649 sqkm	20831 sqkm
2	Catchment Area of Particular District	1971 sqkm	6739 sqkm	1218 sqkm
3	Length of the Catchment Area	121 sqkm	208 km	278 km
4	Length of the Catchment Area of Particular District	132 sqkm	107 km	44 km
5	Altitude at Origin of the River	456 m	513 m	441 m
6	Altitude at Entrance of the Particular District	374m	446 m	422 m
7	Altitude at Exit of the Particular District	264 m	211 m	268 m

### 16 Mineral Map of the District

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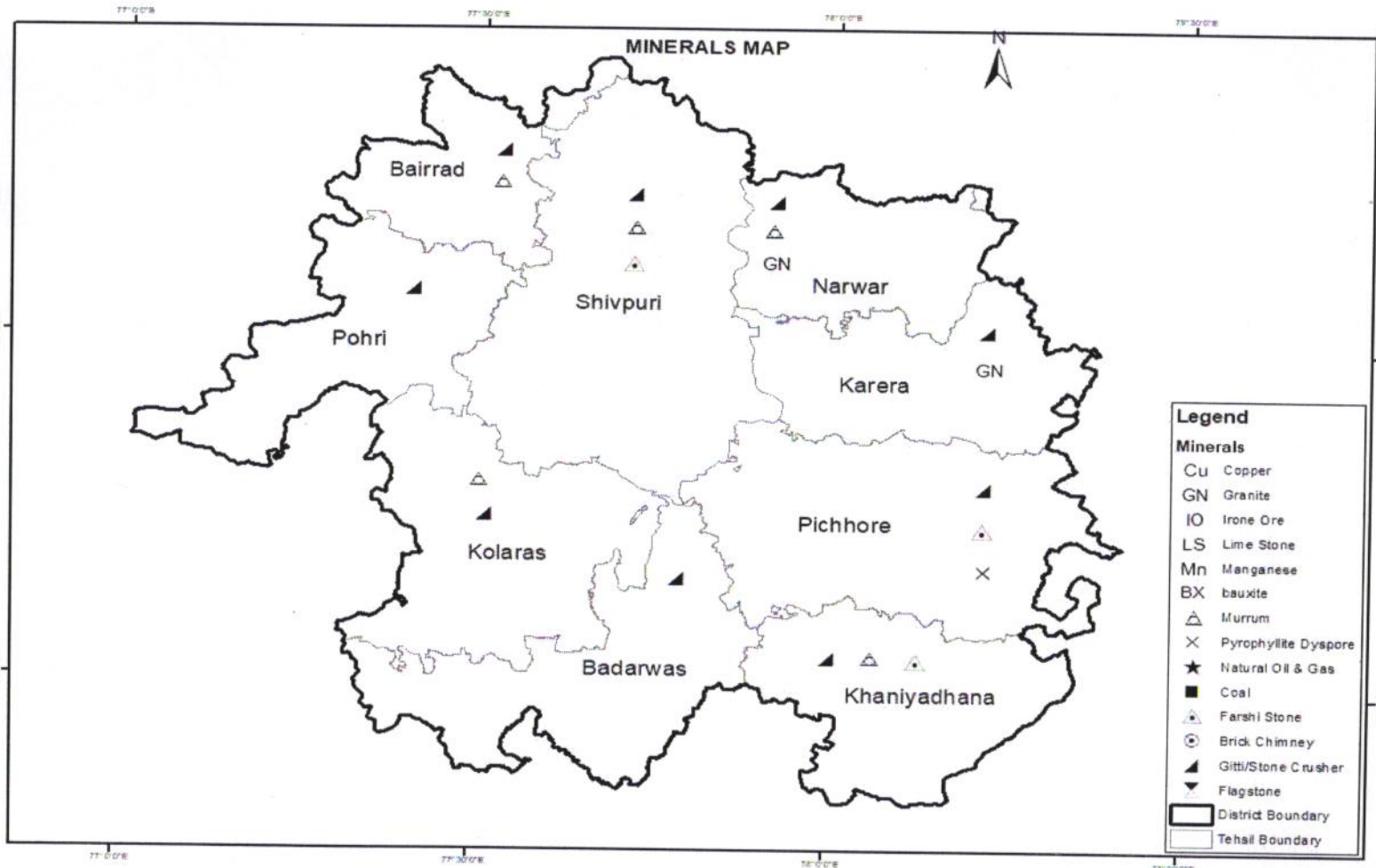


Figure 13 Mineral map of the District



## 17 Total Mineral Reserve available in the District

Table 21 Total mineral reserve available in the district

S. no.	Mineral Name	Total Mineral Reserve
1.	Crusher gitti	5494402 Cu. M.
2.	Flagstone	310575 Cu. M.
3.	Murum	260125 Cu. M.
4.	Red Ocher	567000 Tone
5.	Pyrophyllite	226807 Tone
6.	Diaspore	19726 Tone

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## 18 Quality/Grade of Mineral available in the District

There is quality of mineral available as a major and minor grade is present in the Shivpuri District.

As we have assessed mineral availability of the district is fare and acceptable quality and it has commercial value.

There are various minerals and ore available in the district as it is given in our next chapter 18.

Table 22 Details of quality/grade mineral available in district

S. no.	Mineral Name	Quality/ Grade
1.	Red Ocher	Pigmentation
2.	Pyrophyllite	paper, plastic, paint, insecticide, and

		pharmaceutical industries
3.	Diaspore	Detergent Industry

### 19 Demand and supply of the Mineral In last three Year

Table 23 Demand and supply of the mineral in last three year

Minerals Name	Year wise Supply according to Demand			Remark
	2018-19	2019-20	2020-21	
<b>Major Mineral</b>				
Diaspore/Pyrophyllite	6350	14751	7232	Pyrophyllite is easily machineable and has excellent thermal stability, so it is added to clay to reduce thermal expansion when firing, but it has many other industry uses when combined with other compounds, such as in insecticide and for making bricks.
Redocher	-	-	16428	Red ochre is used for basically brick making etc.
<b>Minor Mineral</b>				

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Flag stone	61,317	38,295	27,063	Mainly it is used for Construction purpose. Flagstone supply is on the basis of demand on the market
Khanda	0	10,839	25438	
Boulder	0	0	5,674	
Murum	16,108	0	8,335	It is a mixture of minerals, organic matters, gravels, rock particles etc. Murrum is used in plinth filling, road pavements, backfilling in trenches, footing pits, etc. Given that it doesn't contain any organic matters and can be compacted easily forming hard surfaces, it is a soil suitable in the field of construction.
Stone/Gitti	2,24,260	4,52,142	10,48,373	minor mineral such as stone /Gitti , sand are supply basis of demand on the market
Sand	1,39,678	1,41,228	1,27,559	

## **20 Details of Eco – Sensitive Area, if any, in the District**

Madhav National Park is situated in Shivpuri District of Gwalior division in northwest Madhya Pradesh, India. Two national highways pass through the park, the Agra to Bombay former National Highway 3 and the Jhansi to Shivpuri National Highway 27 (formerly N.H25). Madhav National Park has an area of 354 km<sup>2</sup>. It was set up in 1958. The national park is open year-round. With a varied terrain of wooded hills – the forest being dry, mixed and deciduous- and flat grasslands around the lake, it offers abundant opportunities of sighting a variety of wildlife.

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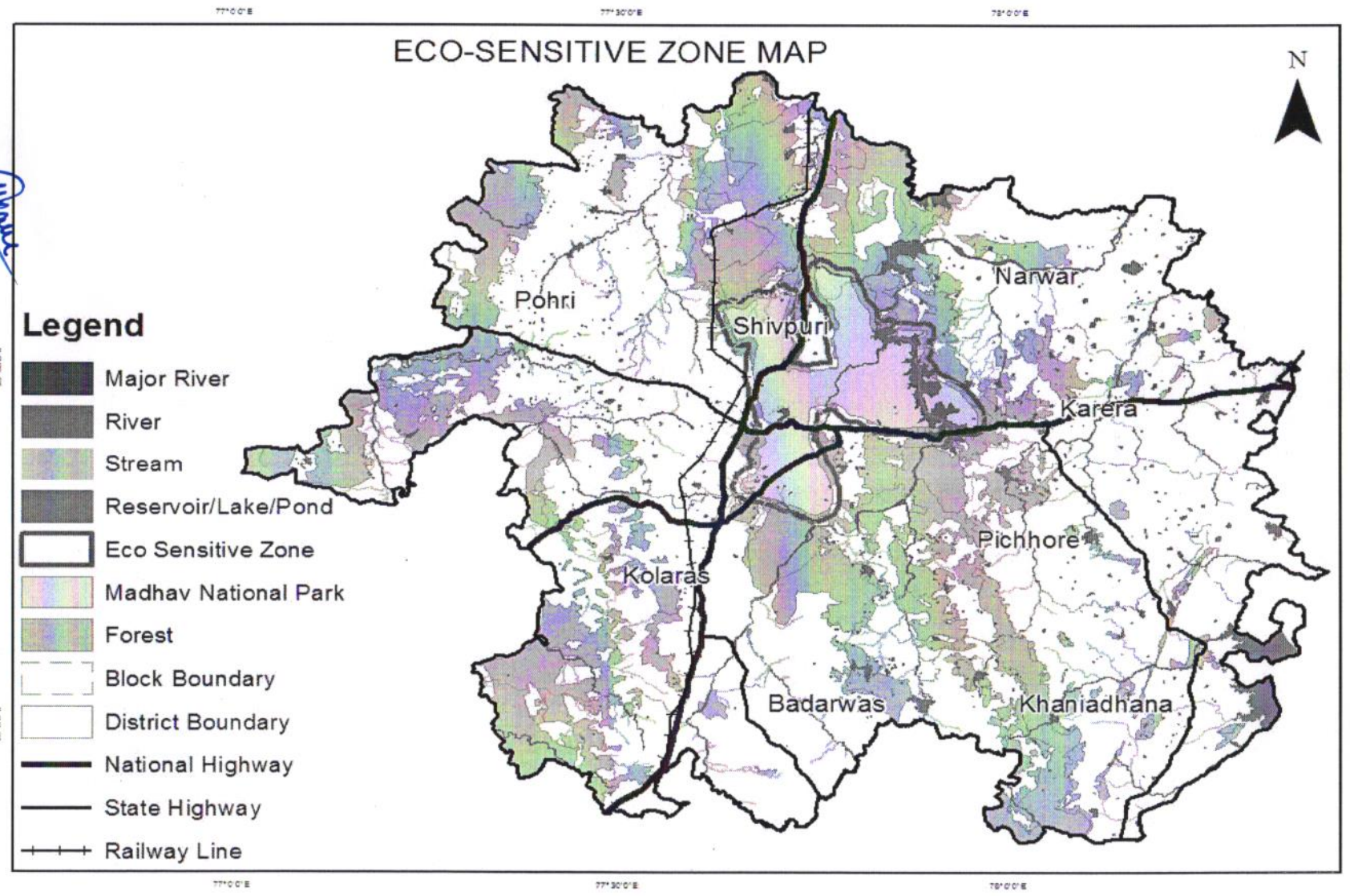


Figure 14 Eco Sensitive map of the District

## 21 Impact on the Environment due to Mining Activity

Generally, the Environmental impacts can be categorized as either primary or secondary. Primary impacts are those, which are attributed directly by the project, secondary impacts are those, which are indirectly induced and typically include the associated investment and changed pattern of social and economic activities by the proposed action.

The impact has been ascertained for the project assuming that the pollution due to mining activity has been completely spelled out under the baseline environmental status for the entire ROM which is proposed to exploit from the mines.

### 21.1 Air

Mining Operations are carried out by opencast semi mechanized/ Mechanized method, dust particles are generated due to various activities like, Excavation, Loading, handling of mineral and transportation. The air quality in the mining area depends upon the nature and concentration of emissions and meteorological conditions. The major air pollutants due to mining activity includes: -

- Particulate Matter (Dust) of various sizes.
- Gases, such as, Sulphur Dioxide, Oxides of Nitrogen, Carbon Monoxide etc., from vehicular exhaust.
- Dust is the single Air pollutant observed in the open cast mines. Diesel operating drilling machines, small amount of blasting and movement of machinery/ vehicles produce gaseous (NO<sub>x</sub> and SO<sub>x</sub>) emissions, usually at low levels. Dust can be of significant nuisance surrounding land users and potential health risk in some circumstances.

### 21.2 Water Impact

The mining operation leads to intersection of the water table which causes ground water depletion. Due to the interruption surface water sources like River, Nallah, Odai etc., surface water system, Drainage pattern of the area is altered.

### 21.3 Noise

Noise pollution is mainly due to operation of Machineries and occasional plying of machineries. These activities will create Noise pollution in the surrounding area.

## 21.4 Land Environment

The topography of the area will change; due to the Topographical changes the entire Eco system will be altered.

## 21.5 Flora and Fauna

The impact on biodiversity is difficult to quantify because of its diverse and dynamic characteristics. Mining activities generally result in the deforestation, land degradation, water, air and noise pollution which directly or indirectly affect the faunal and floral status of the project area.

However, occurrence and magnitude of these impacts are entirely dependent upon the project location, mode of operation and technology involved.


## 22 Remedial Measure to mitigate the impact of Mining on the Environment:

### 22.1 Air

Mitigation measures suggested for air pollution controls are based on the baseline ambient air quality of the area

The following measures are proposed to be adopted in the mines such as,

- Dust generation shall be reduced by using sharp teeth of shovels.
- Wet drilling shall be carried out to contain the dust.
- Controlled blasting techniques shall be adopted.
- Water spraying on haul roads, service roads and overburden dumps will help in reducing considerable dust pollution.
- Proper and regular maintenance of mining equipment's have to be considered.
- Transport of material in trucks covered with tarpaulin.
- The mine pit water can be utilized for dust suppression in and around mine areas.

  
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- Information on wind direction and meteorology will be considered while planning, so that pollutants, which cannot be fully suppressed by engineering technique, will be prevented from reaching the nearby agriculture area.
- Comprehensive green belt around overburden dumps has to be carried out to reduce to fugitive dust emissions in order to create clean and healthy environment.

## 22.2 Water

- Construction of garland drains to divert surface run-off into the mining area.
- Construction of check dams / gully plugs at strategic places to arrest silt wash off from broken up area.
- Retaining walls with weep hole will be constructed around the mine boundaries to arrest silt wash off.
- The mined out pits shall be converted into the water reservoir at the end of mine life. This will help in recharging ground water table by acting as a water harvesting structure.
- Periodic analysis of mine pit water and ground water quality in nearby villages.
- Domestic sewage from site office & urinals/latrines provided in ML is discharged in septic tank followed by soak pits.

## 22.3 Noise

- Periodic maintenance of machinery, equipment shall be ensured to keep the noise generated at minimum.
- Development of thick green belt around mining area and haul roads to reduce the noise.
- Provision of earplugs to workers exposed to high noise generating activities. Workers and operators at work site will be provided with earmuffs.
- Conducting periodical medical check-up of all workers for any noise related health problems.
- Proper training to personnel to create awareness about adverse noise level effects.
- Periodic noise monitoring at suitable locations in the mining area and nearby habitations to assess efficiency of adopted control measures.



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- During the blasting, optimum spacing, burden and charging of holes will be made under the supervision of competent qualified mines foreman, mate as approved by Director of Mines safety.

## 22.4 Land Environment

- Riparian vegetation should be developed that doesn't stress with changes over short period of time.
- Safety barrier zone should be left out in order to prevent quick sand condition or rapid erosion of river banks.
- Development of suitable greenbelt in safety and barrier zone
- Waste dumps should be stabilized taking proper measures
- Degradation of land environment should be checked by briefing the worker about routine works regarding cleanliness and proper mining measures.
- No such infrastructure or any construction should be done that might hinder the natural flow of the river.

## 22.5 Biological Environment

- Development of gap filling saplings in the safety barrier left around the quarry area.
- Carrying out thick greenbelt with local flora species predominantly with long canopy leaves on the inactive mined out upper benches.
- Development of dense poly-culture plantation using local flora species in the mining area at conceptual stage.
- Adoption of suitable air pollution control measures as suggested above.
- Transport of materials in trucks covered with tarpaulin.
- Construction of garland drains and settling tank to arrest silt wash off from lease area.
- Construction of retention walls around lower boundary of mining area to arrest silt wash off and roll down boulders.
- Retaining walls with weep hole will be constructed around the mine boundaries to arrest silt wash off.

  
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## 23 Reclamation of Mined out area

There is no proposal for backfilling, reclamation and rehabilitation. The quarry pit should be fenced by barbed wire to prevent inherent entry of public and cattle. The quarried out pit will be allowed to collect rain and seepage water which act as a reservoir for storage. The Quarried pit may be used as water reservoir for both Domestic and Agriculture purpose, in case of stone mining and inland sand mining. For River sand mining, the quarry should be demarcated using pillars and left for replenishment during monsoon season. No mining should be undertaken during monsoon period to avoid accidents and mishaps.

## 24 Details of the area of where there is cluster of mining lease viz no. of mining lease location.

**Table 24 Details of the cluster of Mining Lease**

S. No.	Tehsil	Name of the Lease	Khasra No	Area in ha	Cluster and Non - Cluster
1.	Karera	Sirsona	157,158	5.3	Non- Cluster
2.	Karera	Chhitipur	181	5.1	Non- Cluster
3.	Karera	Kalyanpur "A"	1	4.8	Non- Cluster
4.	Karera	Kumhroa	30,559	6.33	Non- Cluster
5.	Karera	Machhawali	1645	3.50	Non- Cluster
6.	Narwar	Pananehr	1	8.05	Non- Cluster
7.	Narwar	Kerua	852	3.85	Non- Cluster
8.	Narwar	Khiriya Sunwai	1	3.20	Non- Cluster
9.	Pichhore	Mahowadamron	1488	12.65	Non- Cluster
10.	Khaniya Dhana	Sinaival Kalan	1572,1614,1712,1	5.56	Non- Cluster

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25 Mining lease marked on the District map

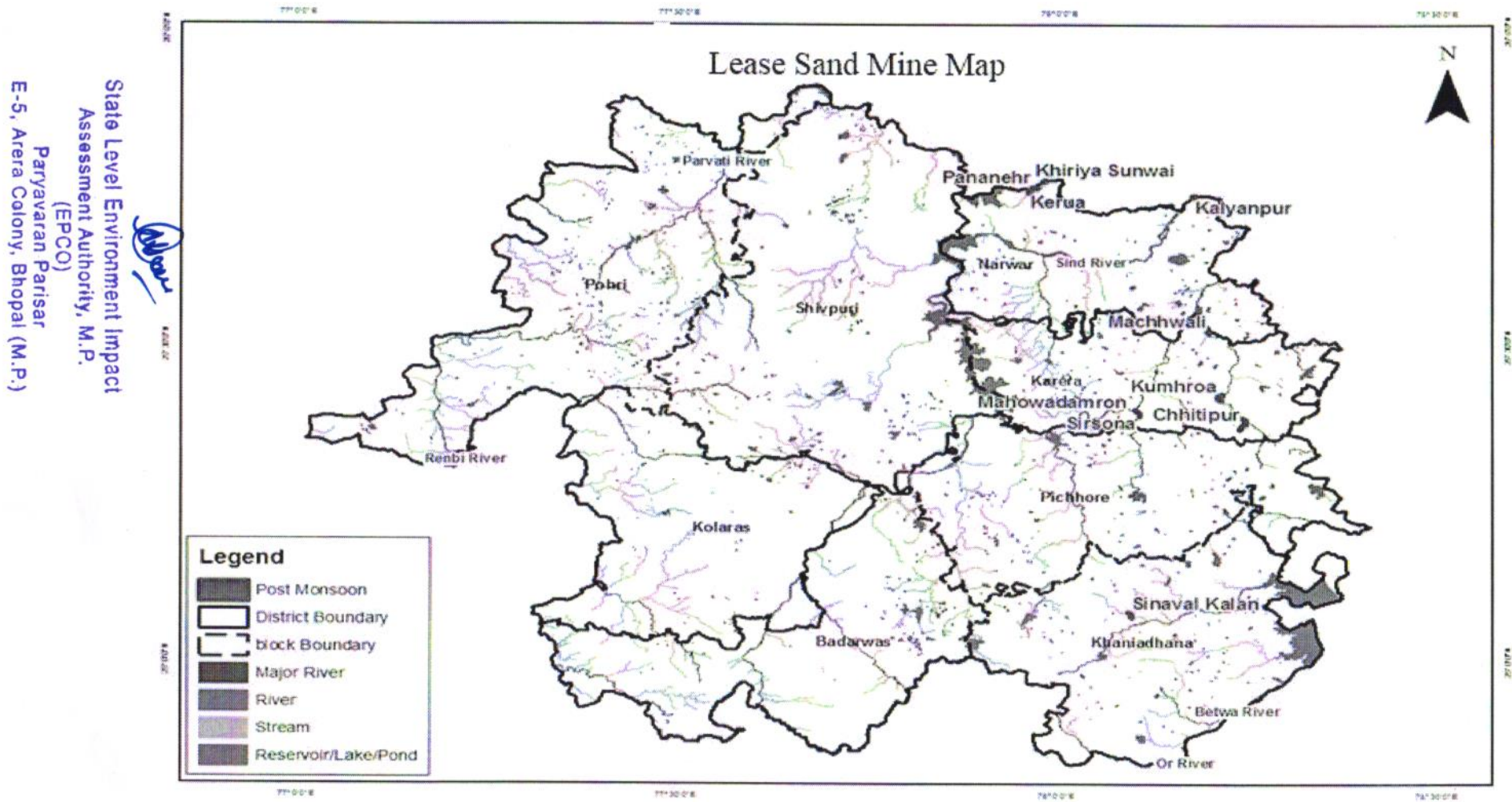


Figure 15 Mining Lease Marked on the District map

## 26 Sand Replenishment Plan and Projections

### 26.1 Sand Replenishment Assessment

The process of sand replenishment is highly dependent upon the rainfall received in the catchment areas of rivers and their tributaries and velocity of river. It is a dynamic process. Thus it is difficult to predict, what quantity of sand may be reclaimed/ replenished by river. Because, in case of less rain, less water in the river, there may be less erosion and transportation may also be minimal and as a result deposition too will be less. Moreover, in case of floods, the sudden gush of water may force the change in river course, thus old sites of sand deposition may not be relevant. Thus, the above figures may just be a mere prediction, based on the production in the preceding years. More so, practically, it is not possible that in such a short period, single person can visit each spot within the district and determine how much quantity of sand may be replenished every year. The data narrated in the report, regarding annual deposition of sand and associated aggregates and minable mineral potential is concerned, is only an estimation based on the production data provided by the district mining office. Thus, the figures may vary from area to area and year on year basis. Therefore, this document is not a static one but have to be a dynamic one, the figures of which may vary with respect to the area under question for which the prior environmental clearance will be sought.

In order to establish a safe extraction limit, such that the extracted sand gets replenished annually, a replenishment study is to be carried out. For this purpose, the river bed RL at selected points in the dry portion of riverbed will be measured during pre-monsoon period and again during post- monsoon period in order to assess the annual quantum of sand deposition. If it is observed that, there is an average increase in riverbed RL, it shows that it is due to deposition of sand during the monsoon flow of the river and by multiplying it with the area of lease one can measure the quantity of sand replenished every year.

Sand quarrying from the river bed will have both positive and negative impacts.

### NEGATIVE IMPACTS

  
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It includes destruction of natural river course, sand erosion, bank erosion, bank cutting and widening and deepening of river bed, change in hydrological status and recharging conditions and destruction to closely linked flora, fauna and aquatic life.

## **POSITIVE IMPACTS**

Employment and socio-economic status of the habitats living besides the river depends on sand mining industries. Construction of concrete infrastructure, roads and some other related activities depends on the river bed sand. Continuous accumulation of sand ultimately leads to the reduction in water carrying capacity of the river leading excessive flood in the river. Sustainable extraction of sand from river will lead to overcoming the problem.

Initially replenishment study requires four surveys. The first survey needs to be carried out in the month of April for recording the level of mining lease before the monsoon. The second survey is at the time of closing of mines for monsoon season. This survey will provide the quantity of the material excavated before the offset of monsoon. The third survey needs to be carried out after the monsoon to know the quantum of material deposited/replenished in the mining lease. The fourth survey at the end of March to know the quantity of material excavated during the financial year. For the subsequent years, there will be a requirement of only three surveys. The results of year-wise surveys help the state government to establish the replenishment rate of the river. Based on the replenishment rate future auction may be planned. The replenishment period may vary on nature of the channel and season of deposition arising due to variation in the flow. Such period and season may vary on the geographical and precipitation characteristic of the region and requires to be defined by the local agencies preferable with the help of the Central Water Commission and Indian Meteorological Department. The excavation will, therefore, be limited to estimated replenishment estimated with consideration of other regulatory provisions.

## **27 Need for Sand Replenishment Study and Factors to be considered**

Environmental status of the mined out area may be affected badly if proper care is not taken to ensure sustainable extraction of sand from river bed. Proper study of the following factors must be taken into consideration to reveal the actual potential of sand deposition in river course after

  
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completion of periodical excavation annually. The main factors to be considered for the study of the replenishment potential of particular river course are:

Formation of sand comprises of the following:

- Catchment area and geographical strata
- Erosion, weathering and transportation of load
- Climatic conditions, precipitation
- Geomorphology, physiographic manmade structures and activity details

Deposition/sedimentation of material or sediment yield depends upon several factors like:

- Catchment area
- Span of river/ flood plain
- Travelling distance of suspended particles
- Slope/gradient/ depth of water channel;/meandering of river
- Geology traversed
- Climatic conditions
- Tributaries/ confluence
- Type/ stage of river and flow velocity
- Flow during lean period

  
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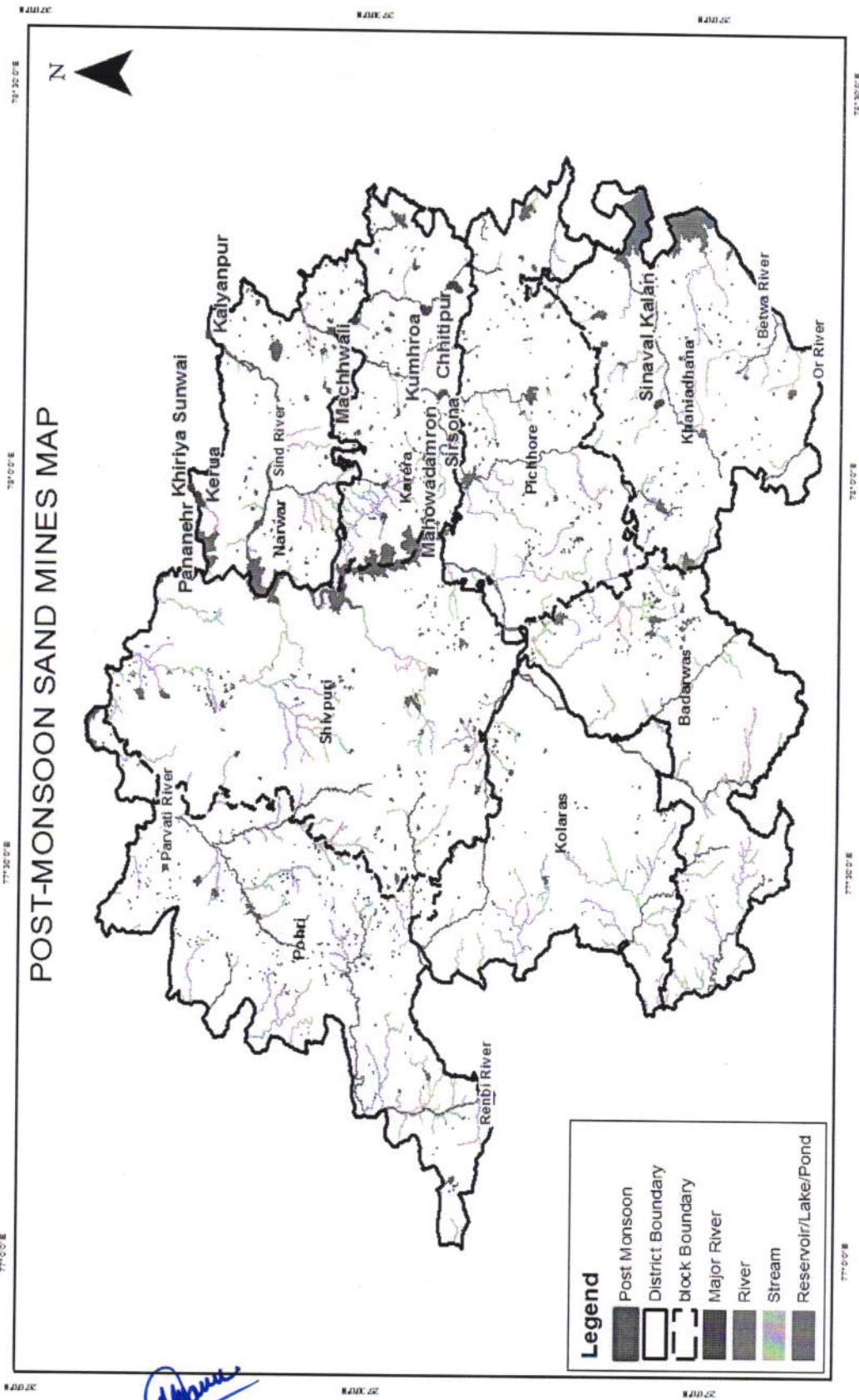


Figure 16 Sand Mining Map of the District – post monsoon


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**Table 25 Sand Mining Area based on Post Monsoon Map**

Sr. No.	Name of Mines	Mines Status	Total Area in sqm	Sand Mines Quantity Cubic meters
1	Sirsona	Operated by Contractor	53000	41,000
2	Chhitipur	Non-Operational	51000	16400
3	Kalyanpur	Non-Operational	48000	50600
4	Kumharoa	Non-Operational	63300	14050
5	Machhwali	Non-Operational	35000	11800
6	Pananehra	Newly declared	80500	15400
7	Kerua	Newly Declared	38500	13200
8	Khiriya Sunvai	Newly Declared	32000	21000
9	Mahobadamaron	Non-Operational	126500	25400
10	Sinaval Kalan	Operated by Contractor	55600	42,050

  
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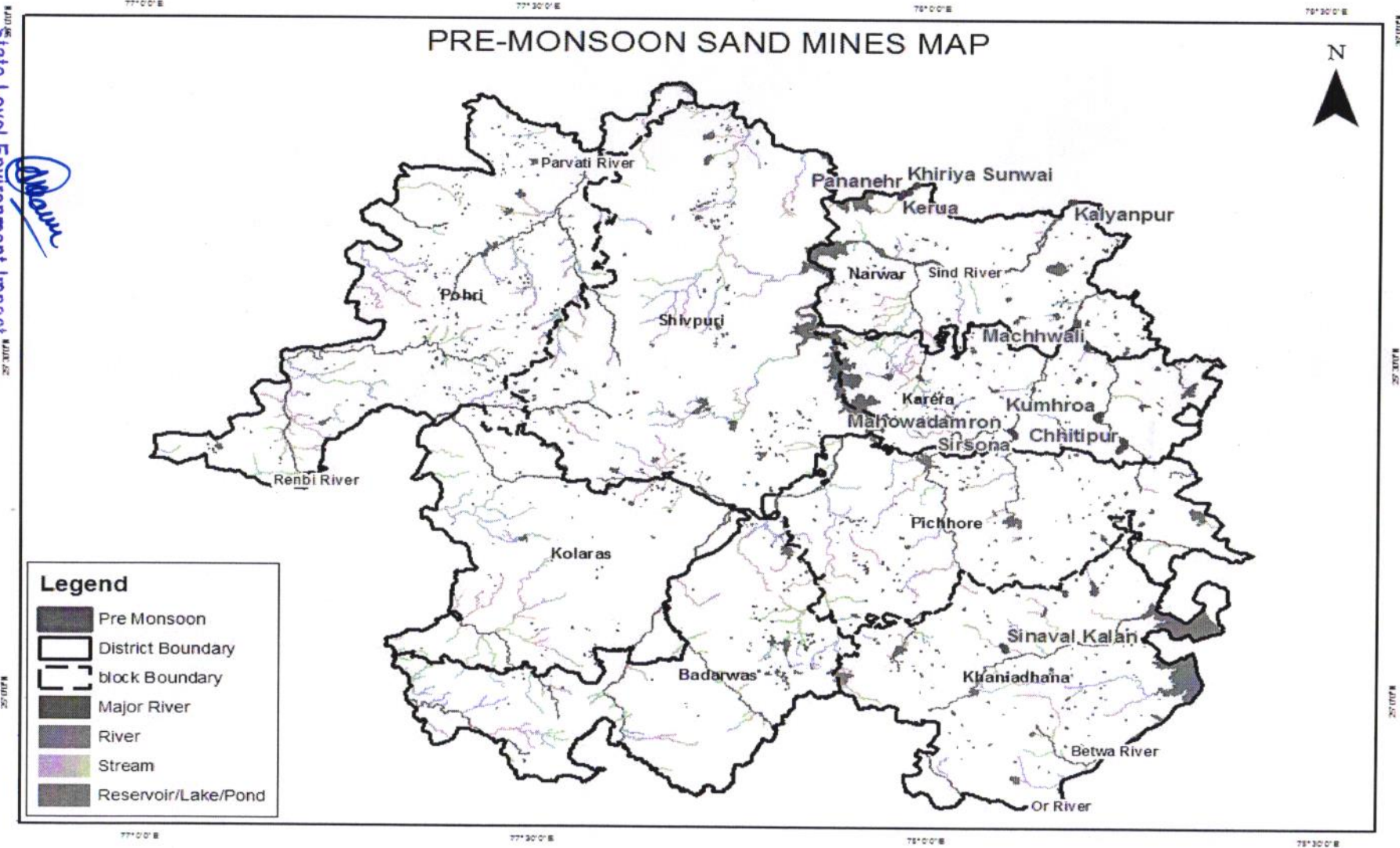


Figure 17 Sand Mining Map of the District – pre monsoon

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**Table 26 Sand Mining Area based on Pre-Monsoon Map**

Sr. No.	Name of Mines	Mines Status	Total Area in sqm	Sand Mines Quantity Cubic meters
1	Sirsona	Operated by Contractor	53000	25,400
2	Chhitipur	Non-Operational	51000	8,000
3	Kalyanpur	Non-Operational	48000	39000
4	Kumharoa	Non-Operational	63300	8500
5	Machhwali	Non-Operational	35000	5600
6	Pananehra	Newly declared	80500	8200
7	Kerua	Newly Declared	38500	7500
8	Khiriya Sunvai	Newly Declared	32000	10500
9	Mahobadamaron	Non-Operational	126500	15,500
10	Sinaval Kalan	Operated by Contractor	55600	31,540

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**Table 27 Comparative Study: Pre and Post Monsoon Scenarios**

Pre Monsoon					Post Monsoon		Comparative Study		
Sr. No.	Name of Mines	Mines Status	Total Area in sqm	Sand Mines Quantity Cubic meters	Total Area in sqm	Sand Mines Quantity Cubic meters	Total Area in sqmt	Sand Mines Capacity (Cubic meters)	% difference

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1	Sirsona	Operated by Contractor	53000	25,400	53000	41,000	0	15,600	1.61%
2	Chhitipur	Non-Operational	51000	8,000	51000	16400	0	8,400	1.48%
3	Kalyanpur	Non-Operational	48000	39000	48000	50600	0	11,600	1.77%
4	Kumharoa	Non-Operational	63300	8500	63300	14050	0	5,550	1.60%
5	Machhwali	Non-Operational	35000	5600	35000	11800	0	6,200	1.47%
6	Pananehra	Newly declared	80500	8200	80500	15400	0	7,200	1.53%
7	Kerua	Newly Declared	38500	7500	38500	13200	0	5,700	1.56%
8	Khiriya Sunvai	Newly Declared	32000	10500	32000	21000	0	10,500	1.5%
9	Mahobadamaron	Non-Operational	126500	15,500	126500	25400	0	9,900	1.61%
10	Sinaval Kalan	Operated by Contractor	55600	31,540	55600	42,050	0	10,510	1.75%

27.1 Aggradations and Degradation Study

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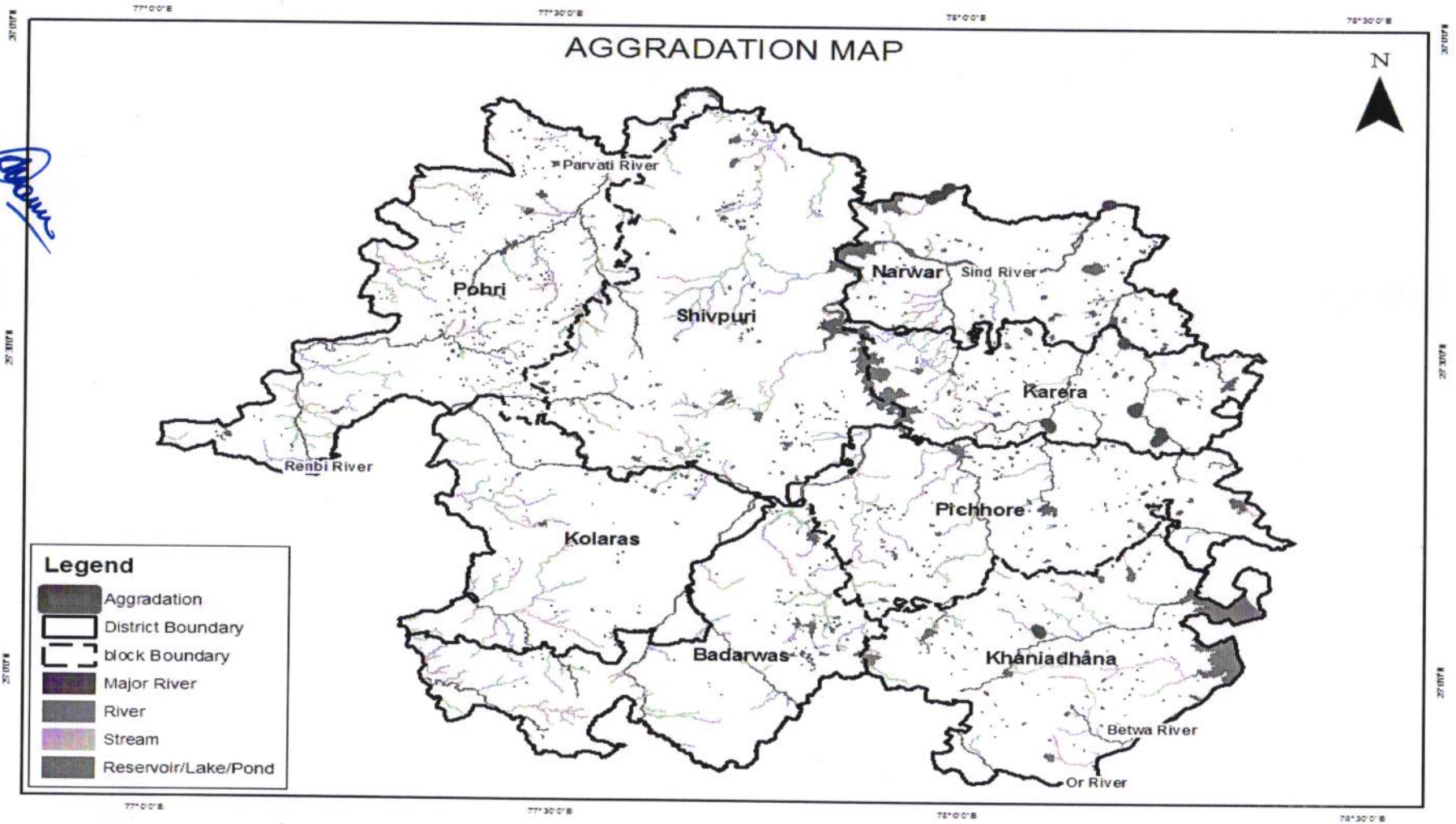
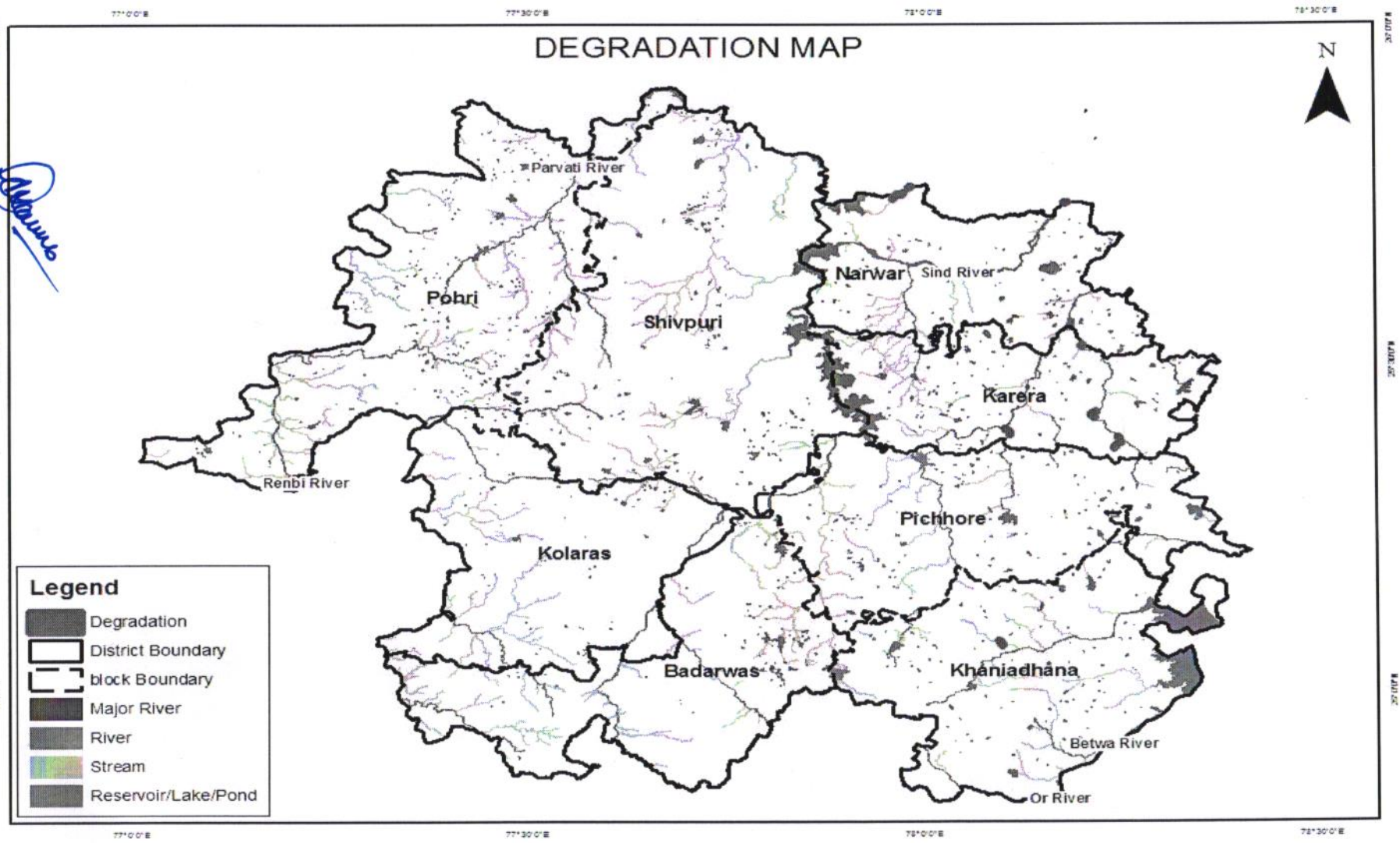


Figure 18 Aggradations Map of the District

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**Figure 19 Degradations Map of the District**

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**Table 28 Block Wise Details of Aggradations and Degradations**

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Sr. No.	Block Name	Aggradations (Post-Monsoon)			Degradation (Pre-Monsoon)		
		Total Area in sq.m	Standard Depth After Aggregation	Total Quantity in cubic m	Total Area in sq.m	Standard Depth After Degradation 0.5m	Total Quantity in cubic m
1	karera	250300	3	1,33,850	250300	0.5	86,500
2	Narwar	151000	3	49600	151000	0.5	26200
3	Pichhore	126500	3	25400	126500	0.5	15,500
4	Kaniya Dhana	55600	3	42,050	55600	0.5	31,540

Based on the study presented above about aggregation & degradation and the specific studies for each mine during the preparation of mining plan, the areas of prohibition for mining can be found out. The areas facing aggregation are possible and promising areas for mining of sand whereas the areas facing severe degradation are to be left out and should be left undisturbed. Mining should not be allowed at such location.

The findings have been tabulated as below:

**Table 29 Drainage System with description of main Rivers**

S. NO.	Name of the River	Area Drained	Area Drained in the District
1	Chambal River	3,392 sq. km	1971 sq. km
2	Sindh River	10,649 sq. km	6739 sq. km
3	Betwa River	20,831 sq. km	1218 sq. km

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**Table 30 Salient Features of Important Rivers and Streams**

S. NO.	Name of the River or Stream	Total Length in the District (in km)	Place of Origin	Altitude at origin
1	Chambal River	132 km	Janapav (Village Vindhayn Range)	456 m
2	Sindh River	107 km	Bagli (Malwa Plateau)	513 m
3	Betwa River	44 km	Vindhyan Range	441 m

**Table 31 Details of the Concession area in the District**

Name of River or Stream recommende the for mineral concession	Portion of the River or Stream Recommended for Mineral Concession	Length of area recommended for mineral cocession (in kilometers)	Average width of area recommended for mineral cocession (in meters)	Area recommended for mineral concession (in M 2 )	Mineable mineral potential (in M3 (60 % of total mineral potential)
Chambal River		0	0	0	0
Sindh River	Sirsona	8.90 km	33	53000	24600
Betwa River	Chhitipur, Kalyanpur, Kumharauya, Machhwali, Pananehra, Kerua, Khiriya Sunwai, Mahovadamaron, Sinaval Kalan,	2.75km	29	530400	125940

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Table 32 Details of Annual Deposition

Name of River or Stream	Portion of the River or Stream Recommended for Mineral Concession	Length of area recommended for mineral cession (in kilometers)	Average width of area recommended for mineral cession (in meters)	Area recommended for mineral concession (in M <sup>2</sup> )	Mineable mineral potential (in M3 (60 % of total mineral potential))
Chambal River	0	0	0	0	0
Sindh River	North-East to South West on the Sindh River	8.90 km	33	53000	24600
Betwa River	South- East Part of the Shivpuri District	2.75km	29	530400	125940

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## **28 Risk Assessment & Disaster Management Plan:**

The Disaster Management Plan (DMP) is supposed to be a dynamic, changing, document focusing on continual improvement of emergency response planning and arrangements.

The disaster management plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities. For effective implementation of the disaster management plan, it should be widely circulated and personnel training through rehearsals/induction conducted by the respective department from time to time.

### **28.1 General Responsibilities during an Emergency**

During an emergency, it becomes more enhanced and pronounced when an emergency warning is raised, the workers in-charge, should adopt safe and emergency shut down and attend any prescribed duty as essential employee. If no such responsibility is assigned, he should adopt a safe course to assembly point and await instructions. He should not resort to spread panic. On the other hand, he must assist emergency personnel towards objectives of DMP.

### **28.2 Co-ordination with Local Authorities**

The mine manager who is responsible for emergency will always keep a jeep ready at site. In case any eventualities the victim will be taken to the nearby hospitals after carrying out the first aid at site. A certified first aid certificate holder will be responsible to carry out the first aid at site. The mine manager should collect and have adequate information of the nearby hospitals, fire station, police station, village Panchayat heads, taxi stands, medical shop, district revenue authorities etc., and use them efficiently during the case of emergency.

### **28.3 Disaster Management Plan**

The objectives of DMP are to describe the company's emergency preparedness, organization, the resource availability and response actions applicable to deal with various types of situations that can occur at mines in shortest possible time.

Thus, the overall objectives of the emergency plan are summarized as: -



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- Rapid control and containment of Hazardous situation
- Minimum the risk and impact of event/ accident
- Effective prevention of damage to property.
- In order to achieve effectively the objectives of emergency planning, the critical elements that form the backbone of Disaster Management Plan (DMP) are: -
- Reliable and early detection of an emergency and immediate careful planning.
- The command, co-ordination and response organization structure along with availability of efficient trained personnel.
- The availability of resources for handling emergencies.
- Appropriate emergency response action.
- Effective notification and communication facilities.
- Regular review and updating DMP.
- Training of the concerned personnel.
- Steps taken for minimizing the effects may include rescue operations, first aid, evacuation, rehabilitation and communicating promptly to people living nearby.

Mining and allied activities are associated with several potential hazards to both the employees and the public at large. A worker in a mine will be able to work under conditions, which are adequately safe and healthy. At the same time the environmental conditions also will not impair his working efficiency. This is possible only when there is adequate safety in mines. Hence mine safety is one of the most essential aspects of any working mine. The safety of the mine and the employees is taken care of by the Mines Act 1952, which is well defined with laid down procedure to ensure safety and constantly monitored and supervised by Directorate General of Mines Safety and Department of Mines, State Government.

## **29 Details of the Occupational Health issues in the District:**

Open cast method involves dust generation by excavation, loading and transportation of mineral. At site, during excavation and loading activity, dust is main pollutant which affects the health of workers whereas environmental and climatic conditions also generate the health problems. Addressing the occupational health hazard means gaining an understanding of the source (its location and magnitude or concentration), identifying an exposure pathway (e.g., a

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means to get it in contact with someone), and determination of likely a receptor (someone receiving the stuff that is migrating).

Occupational hazard due to open cast mining mainly comes under the physical hazards. Possible physical hazards are as below: -

**Physical Hazards due to Mining Operations:**

Following health related hazards were identified in open cast mining operations to the workers:

**Light:** - The workers may be exposed to the risk of poor illumination or excessive brightness. The effects are eye strain, headache, eye pain and lachrymation, congestion around the cornea and eye fatigue. In present case, the mining activity is done during day time only.

**Heat and Humidity:** - The most common physical hazard is heat. The direct effects of heat exposure are burns, heat exhaustion, heat stroke and heat cramps; the indirect effects are decreased efficiency, increased fatigue and enhanced accident rates. Heat and humidity are encountered in hot and humid condition when temperatures and air temperatures increase in summer time up to 46.10C or above in the river bed mining area.

**Eye Irritation:** - During the high windy days in summer the dust could be the problems for eyes like itching and watering of eyes.

**Respiratory Problems:** - Large amounts of dust in air can be a health hazard, exacerbating respiratory disorders such as asthma and irritating the lungs and bronchial passages.

**Noise Induced Hearing Loss:** - Machinery is the main source of noise pollution at the mine site.

**Risk Level using Risk Matrix:** Risk Matrix is used to identify the level of risk involved in various hazards identified.

There are 1 Regional Hospital, 1 Trauma Centre, 8 Community Health Centres, 12 Primary Health Centres, 193 Sub-Health Centres. The number of Grade- III employees in the district is 714 in health department. The detailed block-wise information is given below:

  
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**Table 33 Number of Health Centers in Shivpuri District**

S. No	Block	Number of CHCs	Number of PHCs	Number of SHCs	Number of Medical Officers
1.	Shivpuri	1	1 (not in function)	28	2
2.	Kolaras	1	1	19	1
3.	Badarwas	1	2	19	0
4.	Karera	1	2	18	3
5.	Narwar	1	1	22	1
6.	Pichor	1	3	26	2
7.	Khanniyadhana	1	2	29	1
8.	Pohari	1	1	32	1

**Table 34 Information of Tuberculosis and silicosis Shivpuri District**

S. no.	District	Village	No. of patients	Name of Patients	Disease	Death	Year
1.	Shivpuri	Pipalikhadi	4		Tuberculosis	0	11/08/2017
2.	Shivpuri	Majhera	2		Tuberculosis	0	
3.	Shivpuri	Majhera	2	1.Vijay Adiwasi S/O Ganpat Adiwasi, 2.Sri Sohan Adiwasi S/O Prahalad Adiwasi	Tuberculosis	0	10/12/2020
4.	Shivpuri	Tal majera	2	1.Mukes Adiwasi, 2.Smt. Canda Adiwasi W/o Suresh Adiwasi	Tuberculosis	0	11/10/2021
5.		Aamda and colony, majera	3		Tuberculosis	0	



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## 30 Plantation and Green Belt Development in respect of lease granted in the District:

Mining activities result in pollution of the environment. This requires protection of our environment. Plantation is the oldest technology for the restoration of the land damaged by the human activities as well as air pollution.

Trees are highly suitable for the detection and monitoring of the air pollutants and have been effectively used at various places

By planting trees we can achieve the dual purpose of bio aesthetics as well as mitigation of pollution. Proper planning and plantation scheme depends upon the magnitude and type of pollution, selection of pollution tolerant and dust capturing plants

The plants should be ever green, large leaved, with rough bark, ecologically compatible, with low water requirement, requiring minimum care, capable to absorb pollutants, pollutant resistant, agro climatically suitable, fast growing, free from wind throw and breakage and with high pollution tolerance index. The species should be suitable to the climate, topography and soil. A minimum two rows of plantation will be carried out to minimize the effect of pollution. This would attenuate the pollutants level.

However the afforestation should always be carried out in a systematic and scientific manner. It is proposed to carry the plantation along the river bank, both side of approach roads by considering 80% rate of survival. Trees like Karanj, Sheesham, Mango, Neem and some other varieties will be planted in consultant with forest department.

**Table 35 Recommended Plant species for green belt development/plantation**


S.No.	Botanical Name	Family	Common Name
1.	Azadirachta indica	Meliaceae	Neem
2.	Ficus religiosa	Moraceae	Pipal

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3.	Dalbargiasissoo	Fabaceae	Shisham
4.	Terminalia elliptica	Combretaceae	Saja
5.	Cassia Fistula	Caesalpiniaceae	Amaltas
6.	Sanegalia catechu	Mimosaceae	Khair
7.	Terminalia arjuna	Combretaceae	koha
8.	Bombax ceiba	Malvaceae	Semal
9.	Diospyros melanoxylon	Ebenaceae	Tendu
10.	Madhuca indica	Sapotaceae	Mahua
11.	Syzygium cumini	Myrtaceae	Jamun

Plantation has been done by project proponent on Barrier Zone, Non Mining Area, Approach road, nearby river bank and ravines etc. as per the suggestions of the authority.



  
खनिज अधिकारी  
जिला शिवपुरी (म.प्र.)

  
State Level Environment Impact  
Assessment Authority, M.P.  
(EPCO)  
Paryavaran Parisar  
E-5, Arera Colony, Bhopal (M.P.)