River Bed Mining – A large scale Concession and Multiple Problems

Sand is an essential minor mineral used extensively across the country as a useful construction constituent and variety of other uses in sports, agriculture, glass making (a form of sand with high silica content) etc. It is common knowledge that minerals are non-renewable but this form of mineral naturally gets replenished from time to time in a given river system and is very much interrelated to the hydrological cycle in a river basin. But its over-exploitation and indiscriminate mining supersedes replenishment & optimum extraction is overtaken by profits, extraction has exceeded its replenishment rate and it neglects laws of mineral conservation.

Sand mining has become a widely spread activity and does not require a huge set up or technology, the number of ventures has increased extensively and it has become a footloose industry in itself but the backward-forward linkages are becoming stronger as many are getting employed as well as the construction activity / industry requires this mineral at consistent rates. In the state of Punjab, sand has been declared as an essential commodity[i] so as to control its extraction and sale price. Andhra Pradesh on the hand is heading towards a lottery system[1]. Riverine environmental systems are unique in themselves and provide environmental services, natural resources to meet variety of needs of urban and rural communities. The Rivers originating from the Himalayas bring with them lots of aggregate materials whereas as they move downstream, only finer elements / minerals like sand are found in abundance.

Rivers also act as natural administrative boundaries[ii] among the states and this gives rise to improper and unclear demarcation of boundaries as the river keeps changing its course from time to time thereby unclear administrative controls and mechanisms becomes a point of excuse for administration for any illegal activity taking in this disputed area. River Yamuna near Dakpathar barrage leaves Uttarakhand and enters Himachal Pradesh, this spot gives rise to illegal mining on one side and making an easy escape in other administrative boundary. Similarly, River Ravi leaves J&K (near lakhanpur) and enters Punjab, unclear boundaries again become an issue of contention and the result is loss of natural wealth to unprecedented rate of extraction while the administration engages in explanations / reasoning. This remains an issue at the macro level.

Looking at the micro side of it (*relevant is to see point 14 of High Court Decision in CWP 20134 & CM 12170 of 2009 which mentions the issues of demarcation and intrusion by quarrying contractors*)[iii], the lease / quarries are not demarcated properly which becomes a micro but a chronic problem of illegal mining outside the

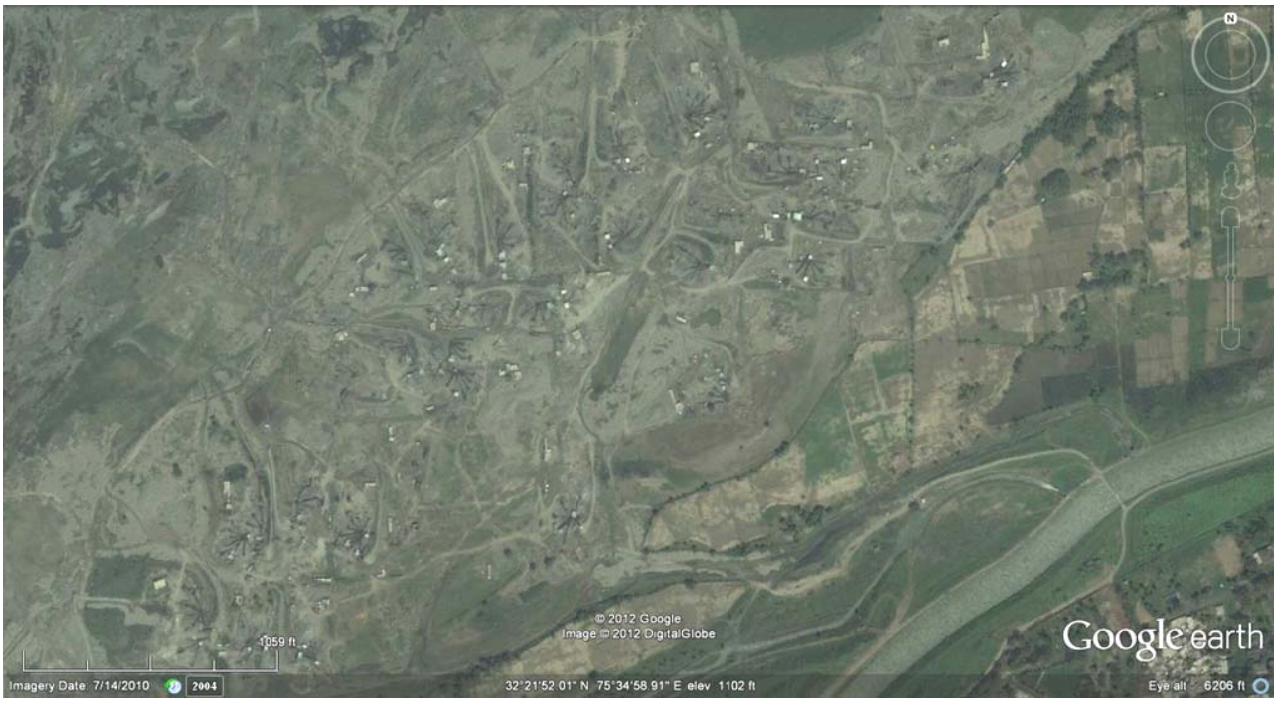
[1] http://www.business-standard.com/generalnews/news/ap-govt-introduces-new-sand-mining-policy/67951/

lease / quarry / pit and goes unnoticed from the vigilance of general public / communities, thanks to the mining department's approach and certain limitations too. No pro active approach by the government to publicize granted leases is made in order to initiate a reporting mechanism if activity is noticed at locations other than those specified or leases granted by the government.

Officials confiscating the processing equipments from Yamuna River Bed, No worker or miner is seen, as they fled the scene upon getting information about the squad.

Processing of minerals is economical near to the source of availability, one usually finds a variety of stone crushers dotting such places (see pic below - River Ravi), if one looks at it cumulatively, the fugitive emissions become a public nuisance and a potential health hazard, whereas over exploitation of sand / stones, boulders changes the river geometry and its recharging capacity to replenish sub surface flows.

Public property is another victim of unprecedented exploitation of the river, Governments have made provisions as enshrined in respective Minor Mineral Concession Rules and also under Mineral Conservation & Development Rules but these provisions fail to get complied due to several reasons – lack of incentives for monitoring, lack of human resource, pre-payment through auctioning secures money for government, unclear or no demarcations thereby neglects physical identification and psychological impression on area of interest or lease etc.



Mineral Administration and Institutions

The administration of minor minerals is a state subject under the Minor Mineral Concession Rules (for each respective state), the conditions proposed and imposed on mining activity is extensive but the mechanism to monitor such concessions gets missed out in the absence of well tuned coordination and lack of community inclusion in the process. Mining in rivers is common across the states and the problem of illegal mining is even more severe in rivers which share boundaries of two or more states.

The key department dealing with different aspects of a River are Central Water Commission (Hydrology and Monitoring of flows), Central Pollution Control Board (River Water Quality and Pollution studies), States' Department of Mines and Geology (granting lease or quarry for mining in river), Geological Survey of India brings guidelines on scientific and systematic mining (read here). But how comprehensively the roles can be redefined and shared responsibility towards protection of natural resources lying in length of these riverine systems be ensured is a challenge. In case of Schedule V states, PESA requires consultation with gram sabhas before granting any mineral concession but to combat this revenue sharing or revenue accumulation and spending system has emerged at several places but no indepth study is available to understand the dynamics of protection, benefit sharing.

The quarries are auctioned at a reserved price for a particular period which may extend to several years (largely in case of river bed sand mining), thus ensuring the department of this 'particular' reserved price but how it would be checked whether the quantity extracted exceeds the value. This is more towards administrative convenience of the department and disrespect towards natural resources like sand, stone, boulders.

State of Mining in 2 Adjoining States (Punjab and Haryana)

State	District	Unit No.	Blocks	Quarries No.	Area (ha)	Reserve Price per annum	Extraction (Lakh tonnes)
Punjab	Jalandhar		**4**	**11**	**203.7**	**2.23**	**7.44**
	Ajitgarh		**1**	**2**	**29.12**	**0.45**	**3**
	Kapurthala		**3**	**6**	**100.2**	**0.07**	**0.25**
	Ludhiana		**1**	**3**	**95.2**	**1.11**	**3.7**
	Hoshiarpur		**14**	**43**	**609.7**	**6.20**	**20.70**
	TOTAL		**23**	**65**	**1037.92**	**10.06**	**35.09**
State	**District**	**Unit No.**	**Blocks**	**Quarries No.**	**Area (ha)**	**Reserve Price per annum**	**Time Period**
Haryana	Yamunanagar		13	48	2949.56	66.61	**8-10 yrs**
	Panchkula		6	36	1105.7	45	**7-10 yrs**
	Ambala		6	48	1027.64	10	**8-10 yrs**
	Kurukshetra		1	11	257.94	0.3	10
	Karnal		9	26	2954.57	21	8-10 yrs
	Mohindargarh		4	38	1200.56	3	7-10 yrs
	Faridabad		5	15	818.03	5.01	8-10 yrs
	Palwal		3	9	619.22	3	8-9 yrs

	TOTAL		**46**	**221**	**10675.28**	**153.92**	
Source:	Summarised from Gazettee Notifications of Respective States						

The closest mountain system in all these places is the Shivaliks i.e. Outer Himalayan region where the sub-mountainous regions begin and eventually expand into plains. One such region i.e. Hoshiarpur which is a sub-mountainous region has the maximum number of mines and extraction proposed as per auction. Similarly Panchkula is a similar region abutting the Shivaliks. As the river flows further down, the reach or its active floodplains increase. In 2012, the auctioning of river bed mining (sand) in the state of Punjab reflects the high quantum of sand mining. So far 65 such quarries over an area of 10 sq. kms. have been auctioned for extracting 35.09 lakh tonnes of sand. Similarly in Haryana, 221 quarries over an area of 106 sq. kms are proposed for a period of an average 8 years. Every year the reserve price is slated to increase by a certain percentage. By doing this the states have earmarked the upper limit, thereby ensuring monetary gain to the state but how much mineral is to be extracted and monitored remains a loophole.

Assessment and Infrastructure

Dandy bolton formula is often used to check whether the sedimentation yield exceeds the replenishment rate but the whole question is whether there is adequate monitoring of the river basin, the answer is no as hydrological stations are sparsely spread. The formula uses catchment area and mean annual runoff as key determinants to give a yield value. It does not differentiate in basin wide smaller streams and their characteristics. CWC distinguishes river basins as classified and non-classified, as per the latest hydrological data for unclassified River basins; there are 122 GDSW (Gauge, Discharge, Sediment & Water Quality) sites in 12 such basins, the number was 147 in 2005. This brings in context the whole issue of scientific mining, thereby indicating that the monitoring of sediment yield in rivers / streams within the river basins is essential to arrive at extraction rates and express and conduct environmental studies based on these basin wide characteristics which should become part of the ‘Terms of Reference’.

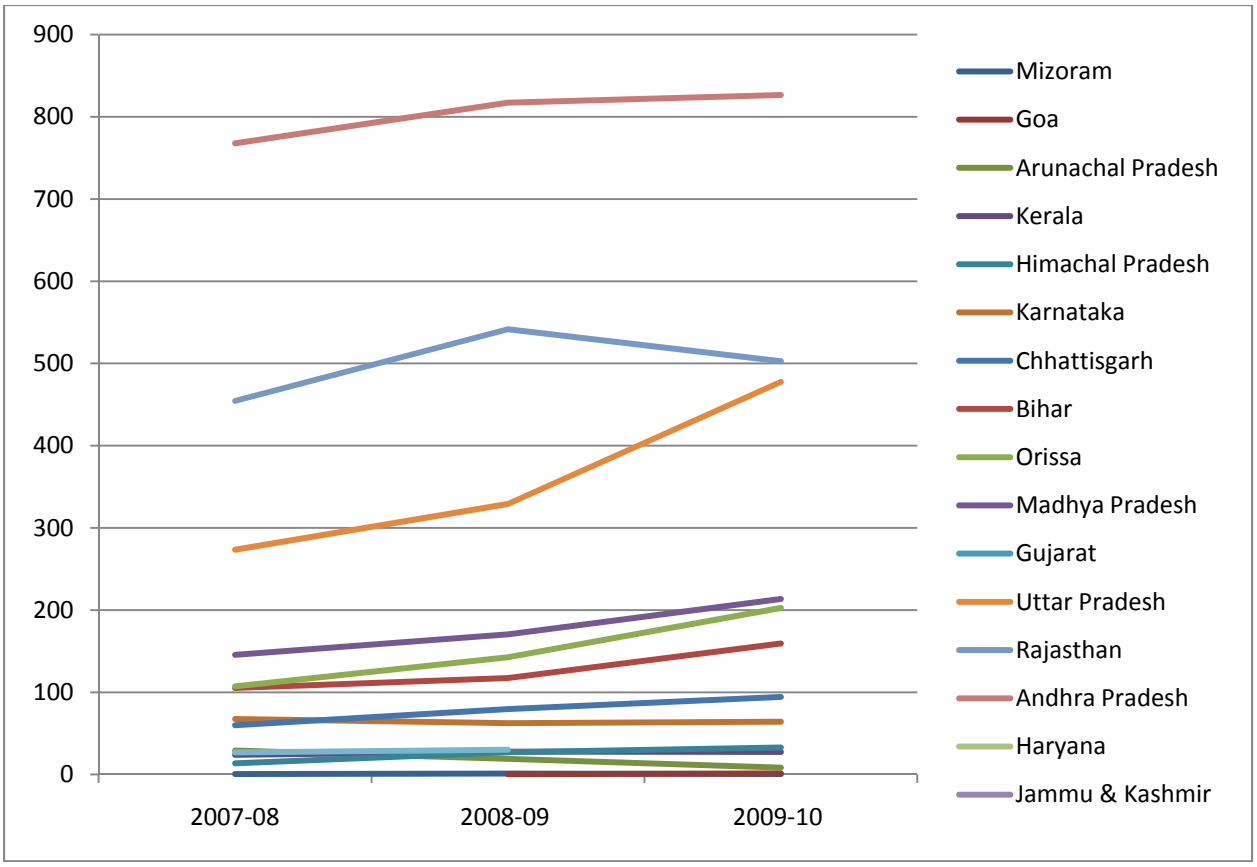
Sand, Coal Mines and Increasing Revenue Share of Minor Minerals

Sand when used in underground coal mines for stowing purposes is treated as a major mineral. This is a classic case of removing one mineral and stowing the hollowness created with another mineral for safety purposes. Sand is used in underground coal mines for suppressing recurring fire as well as stowing to support the adjoinings of hollowness of the mine as well as the surface itself. But the rate at which coal is mined (currently 550 million tones approximately) and the hoard of thermal power plants proposed, assuming doubling of production would mean more requirement of sand, sand in construction sector is another competing use.

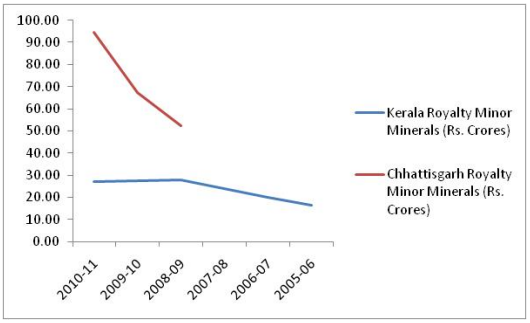
The recent changes to administration and regulation of minor minerals pertains to bring the following within the domain of minor mineral regulation;

- Cluster approach for mines not amenable to scientific mining

- Mining plan must for any size of mining lease and environment clearance must for every lease / quarry (Supreme Court's Order of February 2012)
- Auctioning is becoming a norm
- For river bed mining, leases should be granted stretch wise, depth may be restricted to 3m / water level, whichever is less and safety zones should be worked out.



Note: All figures on x-axis in Rs. Crores



The state of Andhra Pradesh, Rajasthan and Uttar Pradesh are top revenue earners from minor minerals (including minerals other than sand) across the spectrum. The revenue values for these three states remained between Rs. 480 – Rs. 826 crores. Rest of 17 states remain below Rs. 200 crores. Among them 14 remained below Rs. 100 crores. An upward trend is noticed in revenue earned from minor minerals (see figure I). The state like Kerala where high rate of sand extraction has resulted in ecological degradation of River Bharathapuzha.

Conclusions and Options

- Sand is required but at what cost needs to be answered – a sound basin wide assessment of resource replenishment rates to be monitored and revised with the rapid changing climate and hydrological cycle. An article "A Sandy Solution for Nitish's Revenue Coffers[2]" reflects the other situation

- Alternative to sand for use in coal mines, rationalization of construction activity with optimal usage of alternative but equivalent sturdy materials. Material research should be given emphasis to test in different uses and environments.

- Demarcation of quarry lease boundaries and to be brought up in public domain to strengthen monitoring and checking violations. Rivers being common property have several tangible and non-tangible benefits to different stakeholders, monitoring thus cannot happen without taking into account these stakeholders. This could become part of the environment management plan itself.

- State Empowered and Coordination committees exist and formed in several states, emphasis to bring implementable options at the forefront.

- Primary joint analysis of ecological regime of different river zones if made mandatory will enrich understanding from the existing level and also make states more accountable to resource protection. State's auction rates thus could be rationally increased and dedicated to such conservation efforts and implementation with a dedicated team.

- Enabling provisions in the cooperative legislations to enable mining of minor minerals wherever feasible by local cooperatives and reviving the traditional cooperative societies at state level and working with such cooperatives on systematic mining practices to draw out a mining framework through understanding local's perceptions on various facets of extraction and damages.

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2 http://epaper.timesofindia.com/Default/Scripting/ArticleWin.asp?From=Search&Source=Find&Key=CAP/2012/11/18/10/Ar01002%2Exml&CollName=TOI_DELHI_DAILY_2009&DOCID=852593&Keyword=%28%3Cmany%3E%3Cstem%3Eillegal%29&skin=TOINEW&AppName=1&PageLabel=10%20&ViewMode=HTML

[i] Government caps rates for sand
246 'C' category mines to be auctioned through e-tenders
Tribune News Service

Chandigarh, June 14Wednesday, June 15, 2011
The Punjab Government has decided to streamline sand mining in the state by fixing uniform rates and ushering in e-auctions besides bringing mining under the Essential Commodities Act.

Addressing a press conference on the issue here, Local Bodies and Industries Minister Tikshan Sud said the government had fixed the rate for sale of sand at Rs 300 per 100 cubic ft.

He said for the present, the government had decided to hold e-auctions for 246 "C" category mines that would be auctioned through e-tendering on June 27, 28 and 29.

The government had fixed an auction price of Rs 14.70 crore and brought in a system whereby prices would go up by 10 per cent every year for a period of three years, the Secretary, Industries, SS Channy, said.

He said the government had identified 180 sale points from where sand would be available at the notified rates.

Sud said transparency had been introduced in the system with Rs 80 per loyalty per 100 cubic ft fixed for the government, Rs 80 for the panchayats or anyone whose land was being mined, Rs 40 to be paid to the contractor and Rs 100 to be charged as loading charges. Following the introduction of the new policy, the price for each trolley of sand had been brought down to Rs 600 from Rs 1,000.

Sud said with mining being brought under the Essential Commodities Act, entry tax would be imposed on sand when brought in from states like Haryana, Himachal Pradesh or Jammu and Kashmir. He said the auction for 72 "A" and 133 "B" category mining sites would be held later as the matter was under litigation and permission has to be sought from the union environment ministry for the same.

* The got has fixed an auction price of Rs 14.70 crore and brought in a system whereby prices would go up by 10 pc every year for a period of three years

* Sand will be available at notified rates at 180 sale points; the price for each trolley of sand has been brought down to Rs 600 from Rs 1,000

* Entry tax on sand when brought in from states like Haryana, Himachal or Jammu and Kashmir with mining being brought under the Essential Commodities Act

[ii] Sample River Stretches in States identified through Physical Maps and Google Earth

River	Tributary of	Length along State Boundary (kms)	Important Locations	Location to verify	States	Additional Remarks
Painganga	River Wardha (AP-MH)	75	Pimpal Khuti SH 234 Sangvik Pendalwada	19 47' 11.41"N 78 35' 01.90" E	AP-Maharashtra	
Manjeera	Godavari	22	Chambol Chillargi	18 02' 25.43" N 77 32' 06.80" E	AP-Maharashtra	

Ravi	Ravi		Madhopur Pathankot Lakhanpur	32°21'45.80"N 75°34'40.05"E	Punjab-J&K	
Yamuna	Yamuna	26	Dakpatthar Vikasnagar	30°28'55.28"N 77°44'50.51"E	H.P. & UKD	
Yamuna					UP-Haryana	
Indravati	Godavari (MH-CG)	130	Bhamragarh Pasewada Sundra Bhadrakali	19 17′ 03.51″ N 80 41′ 28.52″ E	Maharashtra-Chattisgarh	
Sone	Ganga's Southern Tributary	70.94	Rohtas (Bihar) Yadunathpur (Bihar) Kanri (Jharkhand)	24°30'39.00"N 83°45'53.16"E		Sone's chief tributaries are Rihand and North Koel.
Ganga		89	UP-Bihar Rudrapur (UP)	25°45'53.34"N 84°39'14.37"E	UP-Bihar	
Ghagra		78	UP-Bihar Darauli (Bihar) Revalganj (Bihar)	25°45'53.34"N 84°39'14.37"E	UP-Bihar	Confluence with Ganga at Doriganj (Bihar)
Krishna (Check)		49.5	Atkur (KR) Mudumala (AP) Devarsugur (KR) – Ash Pond	16°22'59.22"N 77°21'6.51"E		Tungbhadra is the major tributary
	Tungbhadra	60.2	KR_AP Talamari (KR) Mantralayam (AP) Ayanur (KR)	15°57'17.63"N 77°16'53.01"E	Karnataka – Andhra Pradesh	
Cauvery		67.3	KR-TN Billgundala (TN) Hogennakal (TN) Gopinattam (KR)	12°10'39.46"N 77°43'48.61"E	Karnataka – Tamil Nadu	
Godavari		45.8	AP-MH Kandakurthi (AP) Thagelli (AP) Azgi (MH) Mandarna (AP) Sagroli (MH) Sunkini (AP)	18°44'41.22"N 77°49'18.87"E	Andhra Pradesh - Maharashtra	
	Tributary of Godavari	18.6		18°33'18.97"N 77°42'12.87"E		
Kagna		10.6		17°14'16.73"N 77°25'15.88"E		
Pranhita		114	AP_MH Saidhapur (AP) Vemanpally (AP) Neelvai (AP) Allapali (MH) Sironcha (MH)	19°14'57.70"N 79°55'56.01"E	Andhra Pradesh - Maharshtra	Joins wardha at 19°35'18.79"N 79°47'29.68"E
Wardha		38.25	MH_AP Sirpur (AP) Lonavelly (AP)	19°34'34.28"N 79°39'22.41"E	Andhra Pradesh – Maharashtra	
Godavari1		69.8	MH_AP Kaleshwaram (AP) Kannepalli (AP) Kudurupalli (AP) Edapalli (AP) Kotturu (MH) Ambatipalli (AP)	18°41'7.50"N 80° 8'3.10"E	Andhra Pradesh – Maharashtra	

Indravati		133	AP_MH_CG Bhamragarh (MH) Pasewada (CG) Sundra (CG) Bhopalapatnam (CG) Bhadrakali (CG) Palmala (AP) Kotturu (CG)	19°11'6.81"N 80°23'31.79"E	Andhra Pradesh – Maharashtra – Chhattisgarh	Parlkota (NImbra River Joins at) 19°24'6.30"N 80°34'30.22"E Near bhamragarh
Wainganga		47.6	MH-MP	21°33'42.48"N 80° 4'49.14"E	Maharashtra – Madhya Pradesh	Chandan River Joins at 21°33'23.54"N 80° 1'54.38"E Bawanthari River Joins at 21°31'16.51"N 79°55'10.22"E Bagh Joins at 21°38'2.94"N 80°11'38.31"E
Bagh		43.5	MH-MP Bhourgarh (MP)	21°32'32.96"N 80°20'18.01"E	Maharashtra – Madhya Pradesh	Dev River Joins at 21°37'15.22"N 80°15'51.05"E (from MP side) Son River Joins at 21°35'23.27"N 80°17'44.26"E (from MP side)
Bhawanthari		65.7	MH-MP Chicholi (MH) Nakadongri (MH)	21°34'57.45"N 79°41'28.94"E	Maharashtra – Madhya Pradesh	Rajiv Gandhi sagar Dam at 21°32'38"N 79°32'51"E
Tapi (Tapti)		61.4	MP_MH	21°40'39.40"N 77° 0'41.08"E	Maharashtra – Madhya Pradesh	
Aner		64.22	MP_MH Balwadi (MP)	21°23'9.61"N 75°27'29.86"E	Maharashtra – Madhya Pradesh	Ogai River joins at 21°24'47.50"N 75°12'24.01"E (from MP side) Dudkhera River joins at 21°24'37.22"N 75°13'21.80"E (from MP) Kaner River Joins at 21°24'35.73"N 75°17'59.96"E (from MP) Khadak Joins at 21°23'7.99"N 75°30'58.77"E
Narmada		36.7	MP-MH	21°57'37.89"N 74°17'41.14"E	Maharashtra – Madhya Pradesh	
Narmada		40.8	MH_GJ	21°53'17.11"N 73°58'43.73"E	Maharashtra – Gujarat	
Mahi			GJ-RJ	23° 7'49.30"N 74°16'31.59"E	Gujarat – Rajasthan	
Mahi			GJ-MP	23° 1'34.43"N 74°20'48.15"E	Gujarat – Madhya Pradesh	
Mahi			GJ-MP (1) cont..	22°53'14.92"N 74°27'46.93"E	Gujarat – Madhya Pradesh	

Kanhar		63.4	CG_JH_UP Ramanuj Ganj	23°51'34.78"N 83°33'59.54"E	Chhattisgarh – Jharkhand – UP	River Sendhur joins Kanhar at 23°51'14.52"N & 83°36'33.63"E River Kursa joins Kanhar at 23°56'30.55"N & 83°32'24.32"E River Dhengura joins Kanhar at 24° 1'38.69"N & 83°30'59.94"E
Unknown starts at 24° 7'7.64"N & 83°17'49.18"E (Kanhar River, see above)		43	CG-UP	24° 0'38.16"N 83°15'31.77"E	Chhattisgarh – UP	
Banas River (tributary of River Son starting at 24°16'42.21"N & 81°27'24.62"E		27.2	CG_MP	23°48'47.09"N 81°38'38.72"E	Chhattisgarh - MP	
Unknown (starting from 23°53'2.73"N 81°36'12.92"E of banhar, see above)		67	CG_MP	23°48'29.08"N 81°48'44.20"E	Chhattisgarh – MP	
River Tel		36	OR_CG Deobandh (OR) Mohora (OR)	19°54'7.91"N 82°29'35.16"E	Orissa - Chhattisgarh	
River Ken		61.6		25°14'15.14"N 80°23'21.60"E	MP_UP	
River Urmila		18.2		25° 7'18.04"N 79°46'55.83"E	MP_UP	
River Dhasan 1 &2		19.62		25°14'0.04"N 79°17'5.72"E	MP_UP	
River Jamni1 (tributary of Betwa starting at 25°13'33.09"N & 78°34'15.09"E		27.4	MP_UP	25° 7'57.80"N 78°36'12.08"E	MP_UP	River Shahzad joins Jamni at 25° 0'56.58"N & 78°38'39.70"E
River Jamni 2		43.3	MP_UP	24°49'32.42"N 78°46'37.77"E	MP_UP	River Sajnam joins Jamni at 24°54'0.52"N 78°40'29.69"E River Jamnar joins Jamni at 24°43'1.50"N 78°46'38.01"E
River Dhasan (Above Banda, MP)		45.6	MP-UP		MP-UP	River Rohini

[iii] [14]. We are, however, aghast to know [as has been brought to our notice during the course of hearing of this application as well as in other related matters] that copies of the notifications issued under Sections 4 or 5 of the PLPA [Annexure A-1(Colly)] are neither readily available with the Divisional Forest Officers/other Forest Officers nor have been brought to the notice of the Mines and Geology Department of the State. Resultantly, no demarcation appears to have been done, at the spot, of the lands covered by these notifications by the revenue department. This has not only led to a large scale illegal mining in the prohibited areas but has also become a source of loss to the State exchequer and/or corruption at various levels. It further appears that the private forest land measuring 12527.94 hectares exists more on papers than on the ground and the intrusion by the quarrying contractors into the forest areas, with or without the connivance of the authorities of the Forest and Mines and Geology Departments, has led to a spate of litigations including various writ petitions filed in Public Interest. We are, therefore, of the view that the 'forest lands' covered by the notifications [Annexure A-1(Colly)] need to be saved from the illegal and unscientific mining, which is bound to have devastating effects in the area leading to ecological imbalance.