DISTRICT SURVEY REPORT
FOR SUSTAINABLE SAND MINING IN DISTRICT
MAHENDERGARH, HARYANA

District Survey Report is prepared in accordance with Para 7 (iii) of S.O.141 (E) dated 15th January 2016 of Ministry of Environment, Forest and Climate

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PREFACE

In Compliance to the Notification Issued by the Ministry of Environment, Forest and Climate change Dated 15.01.2016, the preparation of District Survey Report of sustainable sand mining is in accordance appendix 10 of the notification. It is also mentioned here that the procedure of preparation of District Survey Report is as per notification guidelines. Every efforts have been made to sand mining locations, areas & overview of mining activity in the district with all it's relevant features pertaining to geology & mineral wealth sources. This report will be a model and guiding document which is a compendium of available mineral resources, geographical set up, environmental and ecological set up of the district and is based on data of various departments, published reports and websites.

~2~
DISTRICT SURVEY REPORT OF DISTRICT MOHINDERGARH FOR SUSTAINABLE SAND MINING – REGARDING

INTRODUCTION

Geographically Mahendragarh district is in the southern extremity of the Haryana State jointly with Rewari and Gurgaon districts of Haryana having a total geographical area of 1776 sq km. and falls between Latitudes 27°48'10" and 28°8'30" and Longitudes 75°54' 00" and 76°51' 30". Mahendragarh district is bounded by Bhiwani and Rohtak districts in its North, Rewari in its east and Alwar and Jhunjhunu (Rajasthan) districts in its South and West respectively.

RAINFALL AND CLIMATE

The climate of Mahendragarh district can be classified as tropical steppe, semi-arid and hot which is mainly dry with very hot summer and cold winter except during monsoon season when moist air of oceanic origin penetrates into the district. There are four seasons in a year. The hot weather season starts from mid March to last week of the June followed by the south-west monsoon which lasts up to September. The transition period from September to October forms the post-monsoon season. The winter season starts late in November and remains up to first week of March.

The normal annual rainfall of the district is about 500 mm which is unevenly distributed over the area for approximately 26 days. The south west monsoon sets in from last week of June and withdraws in end of September, contributed about 84% of annual rainfall. July and August are the wettest months. Rest 16% rainfall is received during non-monsoon period in the wake of western disturbances and thunder storms. Generally rainfall in the district increases from southwest to northeast.
Normal Annual Rainfall : 500 mm  
Normal monsoon Rainfall : 420 mm  
TEMPERATURE  
Mean Maximum : 41°C (May June) Mean Minimum : 5.6°C (January)  
Normal Rainy days : 26

GEOMORPHOLOGY & SOIL TYPE

The area forms the part of Indo - Gangetic plains and has vast alluvial and sandy tracts. It is interspersed with strike ridges which are occasionally covered by blown sands. South western part of the district is occupied by blown sand and alluvium. The sand dunes attain heights upto 30m but on an average they attain height of about 7m with respect to surrounding.

The hill ranges are marked features of the district and are part of great Aravali chain. The master slope of the area is north ward. The main streams of the district are Dohan & Krishnawati river which flow from south to north. These streams are known to carry copious supply of water to inundate large part of the district during monsoon and remain dry for major part of the year.

Light colored arid soils are found in the major part of the district. These soils are calcareous and have lime nodules in the subsurface horizons. Most of the soils in district are medium textured. Loamy sand is the average texture in all the blocks of the district.

Both the rivers i.e. Dohan and Krishnawati enters in District Mohindergarh from Rajasthan. The areas falling in revenue estate of village Hamidpur, Jadupur, Khatoti Sultanpur, Khatoti Khurd, Gehli, Khorma, Nangal Katha, Baprol, Mehrampur.
Kuksi, Kherki, Deroli Jat, Kothal Kaian fall either or along the river bed of Dohan River and areas falling in revenue estate of village Shahbajpur, Nolayaja, Lujota, Bihari Pur, Antri, Nangal Chaudhary, Nangal Kalia, Sirohi Bahali, Nangal Pap, Akbarpur Sirohi, Totaheri, Dhani Bhatotia, Shahpur Awal, Kojinda and Patikara fall either or along the river bed of Krishnawati River.

Both these seasonal rivers show dendritic drainage pattern. These rivers originate from western slope of Aravalli Hills situated in Alwar & Sikar Districts of Rajasthan. After flowing North East, these rainfed streams enter Haryana at Hamindpur and Dostpur villages respectively.

Some years ago mining contracts for extraction of sand were being granted on revenue estate basis and sand has also been extracted from adjoining fields or from the river bed. The remaining adjoining fields cannot fulfill the demand of long term contracts for extraction of sand.

As far as river bed areas of both the rivers i.e. Dohan and Krishnawati are concerned, it is correct that mining activities have been carried out during last several years extensively and river sand reserves have almost been exhausted. Both the rivers i.e. Dohan and Krishnawati are seasonable river i.e. rainfed rivers totally based on rainfall. Moreover, the Rajasthan State have constructed obstructions in the course of both the rivers to recharge their ground water in their jurisdictions. As a result, these rivers have almost become extinct as no rainwater during the monsoon season have been seen/ reported flowing since many years. Due to this, not only the ground water in the Nangal Chaudhary Tehsil and Narnaol Tehsil of District Mohindergarh have depleted considerably but the sand deposits have also exhausted. Even, the Central
Ground Water Agency has declared both these Tehsils as ‘Dark Zone’ as the Ground water have fallen upto 1500 feet below ground surface.

**SAND/ BAJRI**

The thickness of sand varies from 3-10m in river bed. Sediments of various sizes and in mixed form are predominantly deposited in the river bed and there is no perfect classification between sediments. These may be called as coarse sand, medium sand and fine sand.

The term sand is used to denote an aggregate of mineral or rock grains greater than 1/16mm and less than 2mm in diameter.

**PHYSICAL & CHEMICAL CHARACTERISTIC OF MINERAL**

Technically, sand is merely a size category. Sand is particulate matter that’s larger than silt and smaller than gravel. Different specialists set different limits for sand:

Engineers call sand anything between 0.074 and 2 millimeter, or between a U.S. standard #200 sieve and a #10 sieve.

Soil scientists classify grains between 0.05 and 2mm as sand, or between sieves #270 and #200 sieve and a #10 sieve.

Sedimentologists put sand between 0.062 mm (1/16mm) and 2mm on the Wentworth scale, or 4 to -1 unit on the phi scale, or between sieves #230 and #10. In some other nations a metric definition is used instead, between 0.1 and 1mm.

From a geological viewpoint, sand is anything small enough to be carried by the wind but big enough that it doesn’t stay in the air, roughly 0.06 to 1.5 millimeters. It indicates a vigorous environment.
SAND COMPOSITION AND SHAPE

Most sand is made of quartz or its microcrystalline cousin chalcedony, because that common mineral is resistant to weathering. The farther from its source rock sand is, the closer it is to impure quartz. But river sands contain quartz grains, tiny bits of rock (lithics), or dark minerals like limestone and ferruginous concretions.

The size of the sediments is variable. The grains whether small or large are rounded in shape. Sand is grey, brown in color, coarse to fine grained. The present deposits are of good quality and can be used for building industries. There is no other use of this material.

ORIGIN AND CONTROL OF MINERALISATION (ANNUAL REPLENISHMENT OF MINERAL IN RIVER BED AREA vis-à-vis SEDIMENTATION)

Krishnawati river consists of two nalas before joining in Haryana namely Dohan Nala which originates from the vast Dokan Protected forest area? where as the Donger Nala is originate from the Khetri and Bansiyal protected forest areas of Siker Districts. Both these nala Dohan and Dongar Nala merge near the Biharpur village and after than it is called Krishnawati River. These nalas meanders through the area and joins near the village Biharpur 3kms SW of Mokhuta Azmabad in Haryana.

River sediment is transported depending on the strength of the flow that carries it and its own size, volume, density, and shape. Stronger flows will increase the lift and drag on the particle, causing it to rise, while larger or denser particles will be more likely to fall through the flow.

River and stream carry sediment in their flows. This sediment can be in a variety of locations within the flow, depending on the balance between the upwards velocity on the particle (drag and lift forces), and the settling velocity of the particle.
If the upwards velocity is approximately equal to the settling velocity, sediment will be transported downstream entirely as suspended load. If the upwards velocity is much less than the settling velocity, but still high enough for the sediment to move, it will move along the bed as bed load by rolling, sliding, and saltating (jumping up into the flow, being transported a short distance then settling again). If the upwards velocity is higher than the settling velocity, the sediment will be transported high in the flow as wash load.

**Sedimentation**, in the geological sciences, is a process of deposition of a solid material from a state of suspension or solution in a fluid (usually air or water). Broadly defined it also includes deposits from glacial ice and those materials collected under the impetus of gravity along, as in talus deposits, or accumulations of rock debris at the base of cliffs. The term is commonly used as a synonym for sedimentary petrology and sedimentology.

Sedimentation is generally considered by geologists in terms of the textures, structures, and fossil content of the deposits lay down in different geographic and geomorphic environments.

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.

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 so as to control its extraction and sale price. Riverine environmental systems are unique in themselves and provide environmental services, natural resources to meet variety of needs of urban and rural communities. The River originating from Aravalli Hills bring with them lots of aggregate materials whereas as they move downstream, only finer elements/minerals like sand area found in abundance.

Both rivers Dohan and Krishnawati originating from the Jaipur and Siker District of Rajasthan are the key players in the formation of the drainage basin of the entire district Mohindergarh. Its source is in the Dokan area.

**AUCTION OF MINOR MINERAL SAND OF DOHAN AND KRISHNAWATI RIVER**

The State Government vide notification dated 30.11.2013 auctioned three units i.e.

**Unit-1:** Krishnawati River (Block - comprising of village Bahmanwas and Mokhuta and

**Unit-2:** Dohan River comprising of 11 villages and

**Unit-3:** Krishnawati River comprising of 18 villages.

The above said three units were auctioned on 28.12.2013 in the office of Mining Officer, Mines & Geology Department, Narnaul. Unit-1 received highest bid of Rs. 3.06 in response of reserve price of 0.14 core. Similarly Unit-2 received highest bid

~ 7 ~
of Rs. 14.00 Crore in response of reserve price of Rs. 2.00 Crore and Unit-3 received highest bid of Rs. 11.51 Crore in response of reserve price of 1.16 Crore.

Of the above said three units, the unit-2 could not be operated and as per the orders of Hon'ble Punjab & Haryana High Court 15.01.2015 in the CWP No. 15431 of 2014, the amount of 10% of the bid amount deposited at the time of auction held on 28.12.2013 was refunded to the highest bidder of Unit-2 i.e. M/s Esteem Infra Build Pvt. Ltd., T-4, Lal Bahadur Nagar, Jaipur.

Unit – 3 became operational on 05.12.2015 after obtaining the requisite Environmental Clearance from Ministry of Environment, Forest & Climate Change, Government of India, Consent to Establish and Consent to Operate from Haryana State Pollution Control Board. However, the contractor of the said unit submitted request vide letter dated 09.06.2016 to surrender the contract referring to rule 25 of Haryana Minor Mineral Concession, Stocking, Transportation of Minerals and Prevention of illegal mining rules, 2012. Vide his aforesaid representation, it was claimed that there is scarcity of sand deposit in the contract area. Accordingly, in exercise of the powers conferred under rule 56(7)(vi) of Haryana Minor Mineral Concession, Stocking, Transportation of Minerals and Prevention of illegal mining rules, 2012, the mining contract of sand unit -3 granted to M/s Om Minerals was terminated with forfeiture of security.
**DETAILED OF ROYALTY/ REVENUE RECEIVED IN LAST THREE YEARS OF DISTRICT:-**

Quarry wise record of received revenue/ royalty for the time period November, 2014 to March, 2018 in District is listed below in tabulated form:-

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of Quarry</th>
<th>Name of Firm</th>
<th>Royalty/ Revenue Received in last three years (November, 2014 to March, 2018)</th>
<th>Name of Mineral</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mahendergarh Unit-1 (Sand/ Bajri)</td>
<td>M/s Om Minerals Through Sh. Sunil Mittal, BM-31 (West), Shalimar Bagh, Delhi-110088.</td>
<td>Rs. 4,59,00,000/-</td>
<td>Sand/ Bajri</td>
<td>Representation regarding surrendering of the contract pending in Head office</td>
</tr>
<tr>
<td>2</td>
<td>Mahendergarh Unit-2 (Sand/ Bajri)</td>
<td>--</td>
<td>--</td>
<td>Sand/ Bajri</td>
<td>Under process for further action.</td>
</tr>
</tbody>
</table>
DETAIL OF PRODUCTION OF SAND/ BAJRI/ MINOR MINERALS IN LAST THREE YEARS:--

The detail of production in metric tonne of sand/ bajri or minor minerals of the time period November, 2014 to March, 2018 i.e. last three years is listed below in tabulated form:-

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of Quarry</th>
<th>Name of Firm</th>
<th>Production in MT in last three years (November, 2014 to March, 2018)</th>
<th>Name of Mineral</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mahendergarh Unit-1 (Sand/ Bajri)</td>
<td>Ms Om Minerals Through Sh. Sunil Mittal, BM-31 (West), Shalimar Bagh, Delhi-110088.</td>
<td>1,27,361 MT</td>
<td>Sand/ Bajri</td>
<td>Representation regarding surrendering of the contract pending in Head office</td>
</tr>
<tr>
<td>2</td>
<td>Mahendergarh Unit-2 (Sand/ Bajri)</td>
<td>--</td>
<td>--</td>
<td>Sand/ Bajri</td>
<td>Under process for further action.</td>
</tr>
<tr>
<td>3</td>
<td>Mahendergarh Unit-3 (Sand/ Bajri)</td>
<td>Ms Om Minerals Through Sh. Sunil Mittal, BM-31 (West), Shalimar Bagh, Delhi-110088.</td>
<td>2,43,603 MT</td>
<td>Sand/ Bajri</td>
<td>Agreement terminated. Under process for further action.</td>
</tr>
</tbody>
</table>

CONCLUSION/ RECOMMENDATION

A surveying team comprising of State Geologist Sh. Vir Singh, Jr. Geologist Sh. B.D. Yadav and Surveyor Sh. Narshimulu also surveyed the river bed and adjoining areas of Dohan river and Krishnawati river in the month August, 2016. The survey was done to verify the availability of sand in the river bed and adjoining agricultural land of both the rivers so that small blocks of 4-5 villages could be carved out and could be accordingly put on for fresh auction. But the team after detailed

~ 10 ~
physical survey of the rivers and after having a detailed discussion along with the Sarpanches of villages which are on the bank of both the rivers, concluded that the river sand is either absent or if present, is of inferior quality i.e. very fine grained almost equal to silt. The private land owners as per the report submitted by the aforesaid team, were not ready to give their land for extraction of sand. The main reason behind the non availability of sand in both the rivers is:-

(a) The rivers are seasonal and non flow of rainwater during the past 12-15 years have led to nonreplenishment of mineral sand in the rivers. This has created acute shortage or absence of mineral in the rivers. The mineral whatsoever is left is of very fine grained and of inferior quality.

(b) The non flow of rainwater in the river Dohan and Krishnawati is mainly because of construction of obstructions in the river beds falling in the jurisdiction of Rajasthan area.

Hence, it is advisable on the basis of the geological survey report carried out by the Departmental State Geologist, Junior Geologist and Surveyor of the department that the river bed area free from forest may be put into open auctioned on reasonable reserve price for the short duration and on village basis in small blocks instead of big blocks, so that the successful bidder may get the requisite Environmental Clearance from the State Environment Committee instead of Centre Environment Committee. The private land of the sand deposit areas on the banks of the river bed may be put to auction after getting the consent from the land owners/ farmers so that no dispute may arise.