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Environmental Effect of Stone Crusher Industry on Riverbed Using Geo- Spatial Techniques: A Case Study in Pathankot District, Punjab

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Abstract: In this article Geo- spatial Techniques were used to determine the Environmental Effect of Stone Crusher Industry on Riverbed in Pathankot District, Punjab. The Satellite Imageries (CARTOSAT-1+LISS-IV Merge & Quickbird) and GPS & GPS enable camera are used to locate the stone crushers for preparing the Land Use/Land Cover map by using Arc-GIS 10 software. After delineating the Riverbed, a 50m buffer is drawn along it which act as a boundary of Riverbed, so we can easily identify which crushers are distributing the RiverBed area.

Keywords: Geo- Spatial Techniques, Stone Crusher, LULC, Environmental Effect, River

I. INTRODUCTION

Country be in agreement to go with in producing crushed stone of different sizes depending upon the thing needed which act as cold wet (weather) material for different building activities such as building of roads, high-ways, bridges, buildings and man-made waterways and so on. It is put a value on that there are over 12,000 stone crusher units in India. The number is looked on as to come to grow further keeping in view the future plans for development of base structure of roads, man-made waterways and buildings that are needed for overall development of the country. In India, the Stone crushing Industry part is put a value on to have an every year turnover of Rs 1. 5000 crore (equal to over us \$ 1 1.000.000.000) and is therefore a by money and goods important part. The part is put a value on to be making ready straight to employment to over 500,000 people (in the middle of pollution 2 Control Board) be in agreement to go with in different activities such as mining, crushing plant, transport of mined stones and crushed products and so on. Most of these personnel are from country, not town and by money and goods in the back direction areas where Employment 3 chances are limited and therefore it carries greater sense, value in terms of grouping importance in country, not town fields. It is a starting point of making, getting (money) for uneducated poor untrained country, not town persons in general. The stone crusher is one such industry that has existence in the round about of almost all Major cities/towns throughout the country in all the states because the building activities go on throughout the country. As transport of stone over long distances makes an addition to price of the crushed stone products, the crushers need to be necessarily placed nearer to the request middles such as great towns, bridges and man-made waterways and so on. Stone crushers also need electric supply and greatly sized number of man power for its operation. It also needs way in roads for the chief division of music of mined stone as well as crushed stone products. It is for these reasons that most Stone crushers are gave position of along the periphery of great towns or in the round about of Major building undertakings. In most cases the Stone crushers come up in clusters of number of units ranging from five to fifty in one mass, group. The crushers are placed nearer to the starting point of cold wet (weather) material such as Stone mines, River beds and so on. These stone crushers though socio-economically an important part, gives go higher to important amount of in very small grains short in time dust emissions 4 which make come into existence being healthy hazards to the workers as well as all round, nearby group by way of causing respiratory 5 diseases. The dust also against has an effect on seen at a distance, gets changed to other form growth of plants and baskets ideas to do with the nature and opinions about being beautiful of the part. In order to prevent/control these emissions 4, CPCB has already became emission 6 quality examples and guidelines in 1989, which has been gave word under general condition (system of care for trade) Act, 1986 by chief government offices of general condition & tree-covered lands vide letter making note No. G.S.R. 742(e) old 30th August 1990 & S.O. 8(e) old December 31, 1990 based on technoeconomic able to be done to get done the quality examples. But over the years, as the need for more working well control and Enforcement 7 has been felt and to make ready more special guidelines to the stone crushers to make able them control emissions 4 goodly, CPCB has signed a note, statement of undertaking (MoU) with National amount produced Council (NPC) and given payment for trade the

work-place with the work of going over again the having existence quality examples, guidelines and being seated criteria and to evolve 8 a complete Industry Document 9 (COINDS) for Stone Crushers.

II. OBJECTIVES OF STUDY AREA

- A. To examines Environmental Effect of stone crusher industry on near River Bed.
- B. To identify the problems in Stone Crusher Industry on near River Bed.

III. STUDY AREA

The study area covers part of Hariyal, Mirthal, Berian, Narot Jaimal, Talwara Jattan, Gujuran, Kauntarpur, Aneer, Andoi, Nangal, Mamoo, Mukimpur, Tajpur solid mass in Pathankot part of the country Punjab Pathankot is at the meeting point of three of the north states of Punjab, Himachal Pradesh & Jammu and Kashmir. Due to its placing; it serves as journey middle part (of wheel) for three northerly states. It is the last great town in Punjab on the of the nation highway in the direction of Jammu and Kashmir. placed in the small mountains of Kangra and Dalhousie, with the river Chakki moving liquid close by the great town.

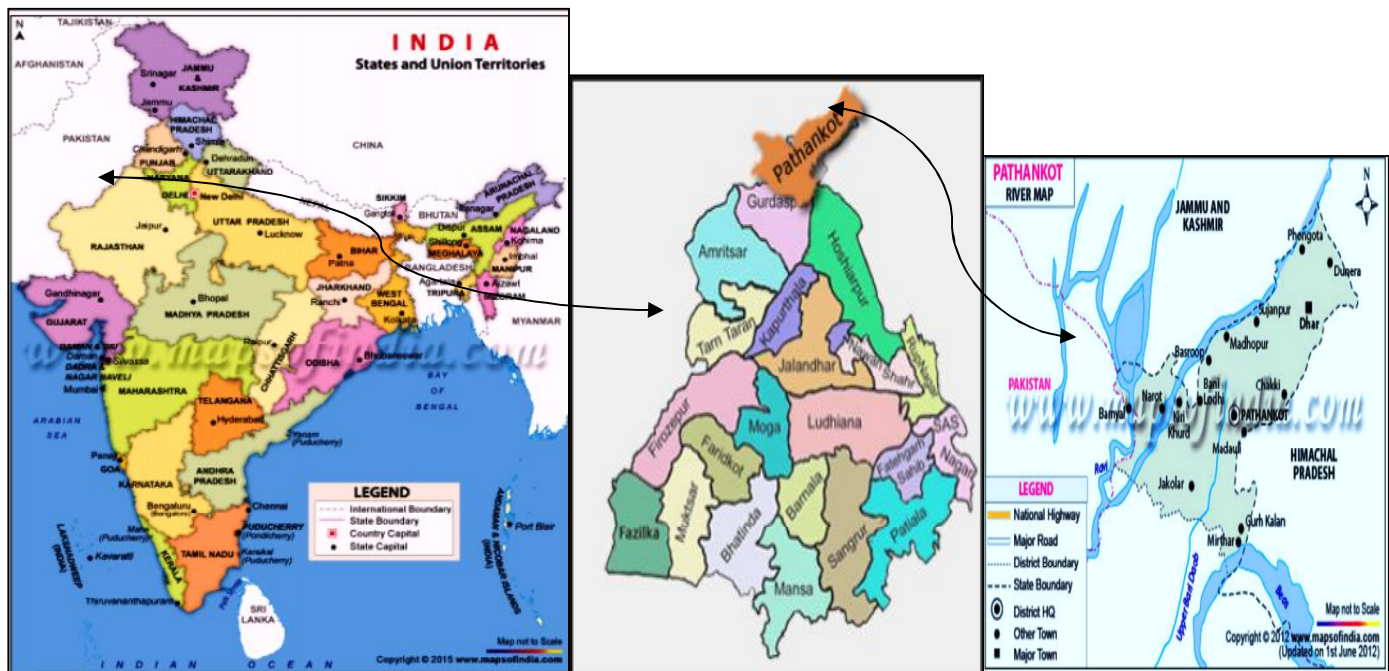


Fig.1 Study Area

IV. DATA USED

Satellite Imageries (CARTOSAT-1+LISS-IV Merge & Quick bird) were used

A. Quick Bird

Uses a relatively low orbit, at an altitude 450 km. Payloads over the Quick Bird include a panchromatic camera and a four-band multispectral scanner. Quick Bird sensors are composed of linear arrays detectors to achieve a spatial resolution as fine as 0.61 m in the panchromatic mode and 2.4 m in the multispectral mode.

B. Cartosat

Cartosat-1 or IRS-P5 is a stereoscopic earth observation satellite. Maintained by the Indian Space Research Organization (ISRO), this satellite carries two panchromatic (PAN) cameras that take imageries of the earth in the visible region of the electromagnetic spectrum. The imaging capabilities of Cartosat-1 include 2.5 m spatial resolution, 5 day temporal resolution and a 10-bit radiometric resolution.

V. METHODOLOGY

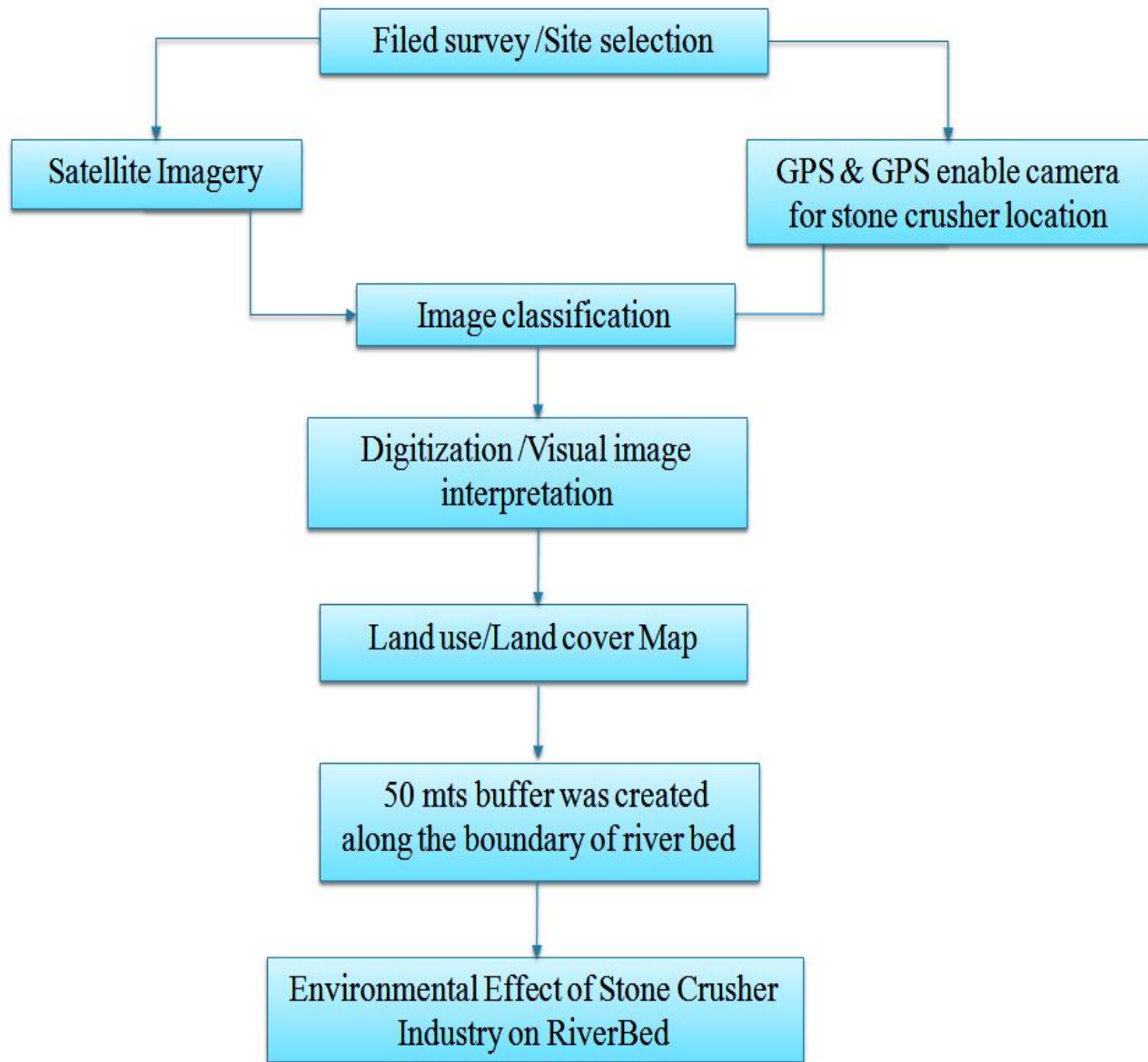


Fig.2 Flow Diagram

Steps we follow are to generate the map

- A. First we have done the field survey of each site and tracking the location of stone crusher by using GPS and GPS enable camera.
- B. Now the captured location is converted in ESRI Shapefile format so that we can able to view in GIS software i.e. ArcGIS10
- C. To put these captured locations of crusher over the map, we have created LandUse/LandCover map
- D. To create LandUse/LandCover map, we have used Satellite Imageries (CARTOSAT-1+LISS-IV Merge & Quickbird) in which the following classes are delineated i.e. Water channel, Riverbed, Sandy Riverine, Scrub Land, Plantation, Roads, Bridge, Stud/Spur, Drain/Choe, Brick Kiln, Mining Active, Bund, Settlement/Built Up, Ponds, Agriculture, Canal, Waterlogged.
- E. After locating the location of crushers over LULC map, we have drawn a buffer of 50m around the riverbed as a boundary and identifying the crusher which comes inside it.

VI. RESULTS

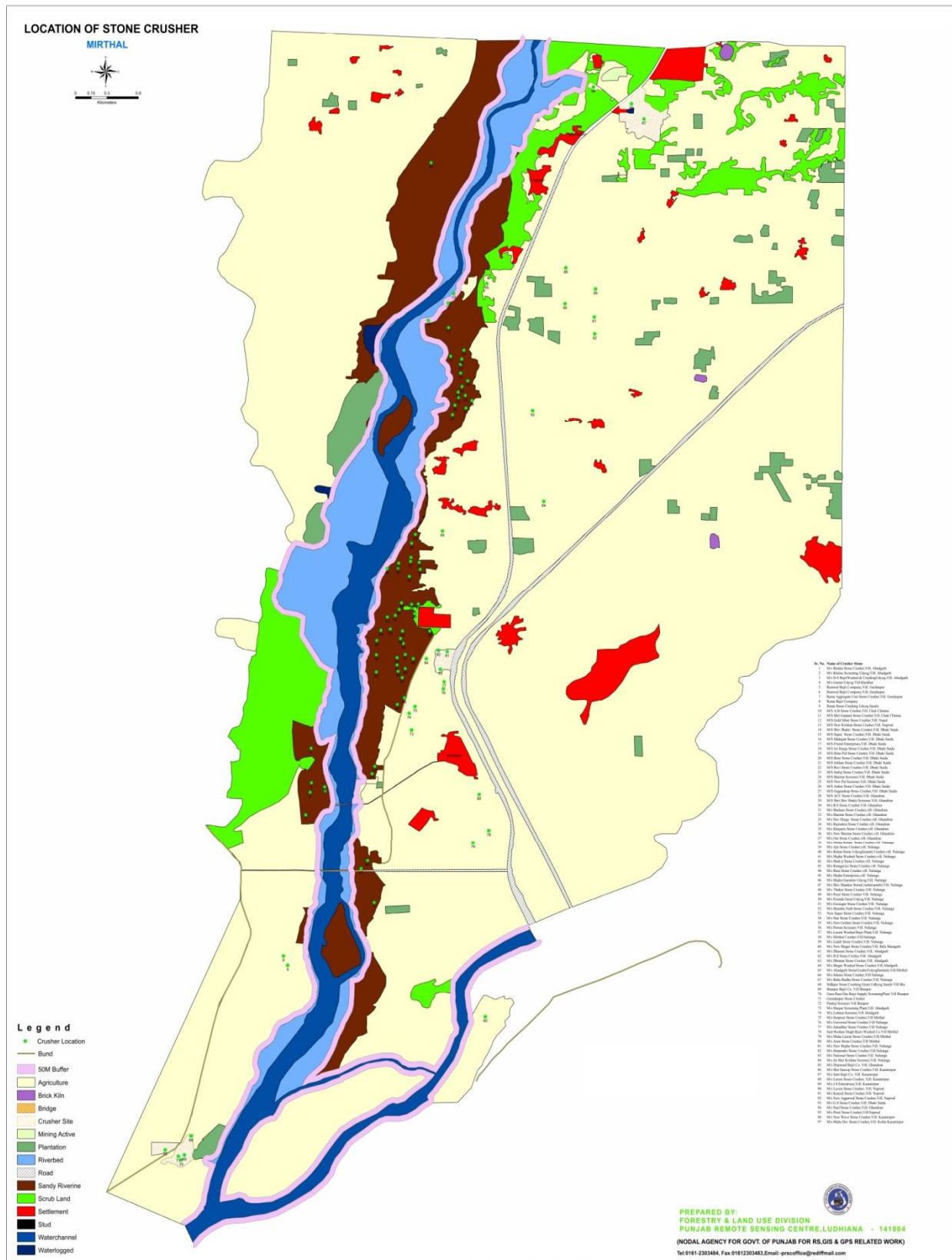


Fig.3 Map of Mirthal site during a period June,2014

The Mirthal site map pin out the four crushers in the vicinity of riverbed.

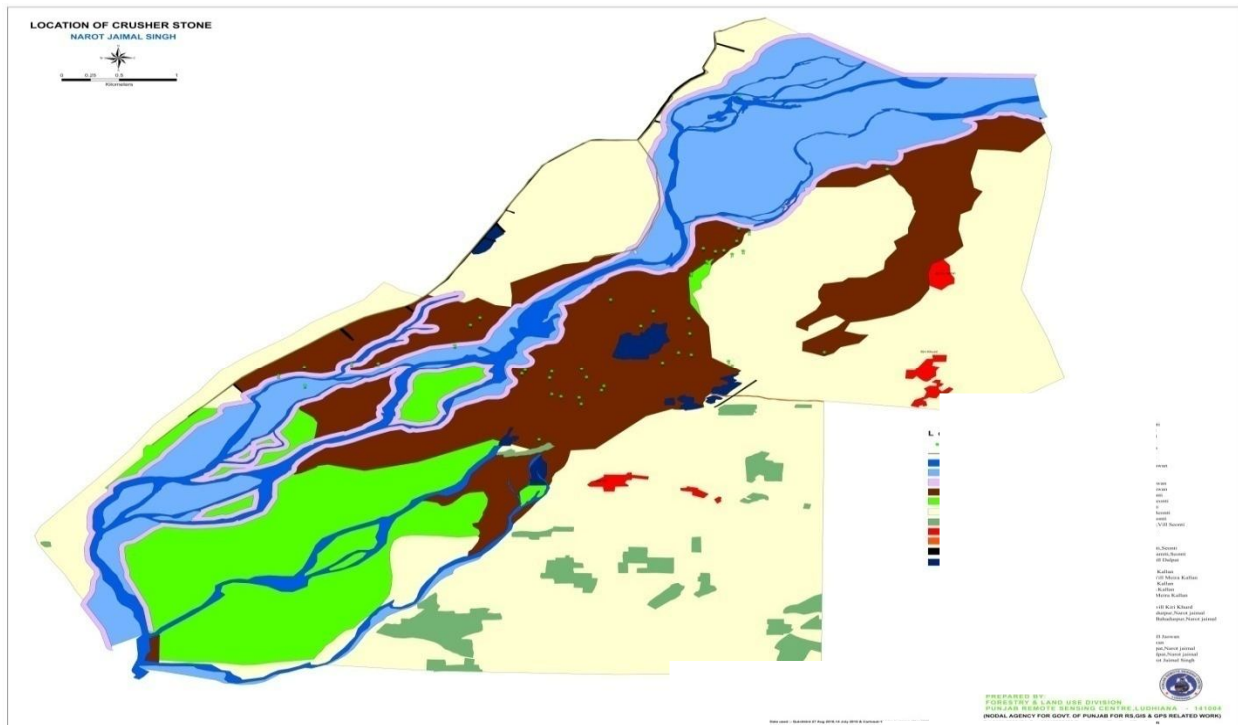


Fig.4 Map of Norat Jaimal Singh site during a period Ju

The Narot jamal site map pin out the five crushers in the vicinity of riverbed.

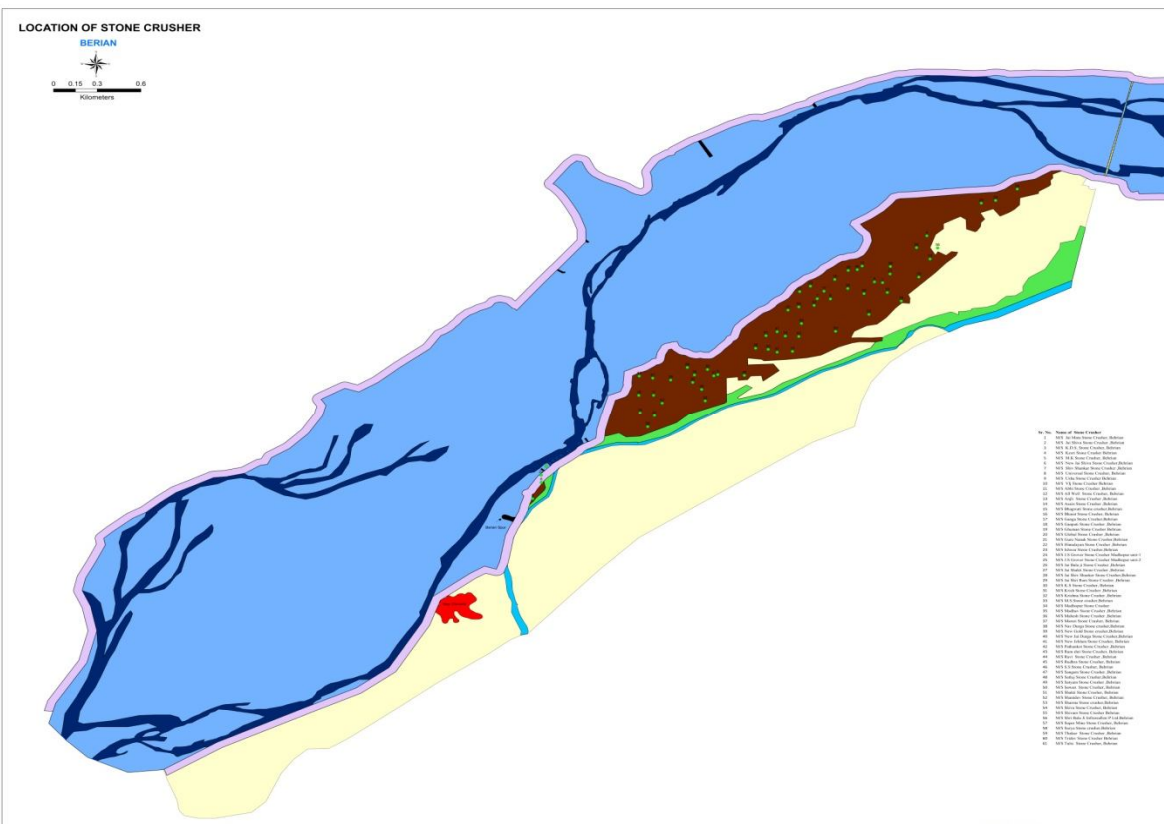


Fig.5 Map of Berian site during a period June,2014

The Berian site map pin out the three crushers in the vicinity of riverbed.

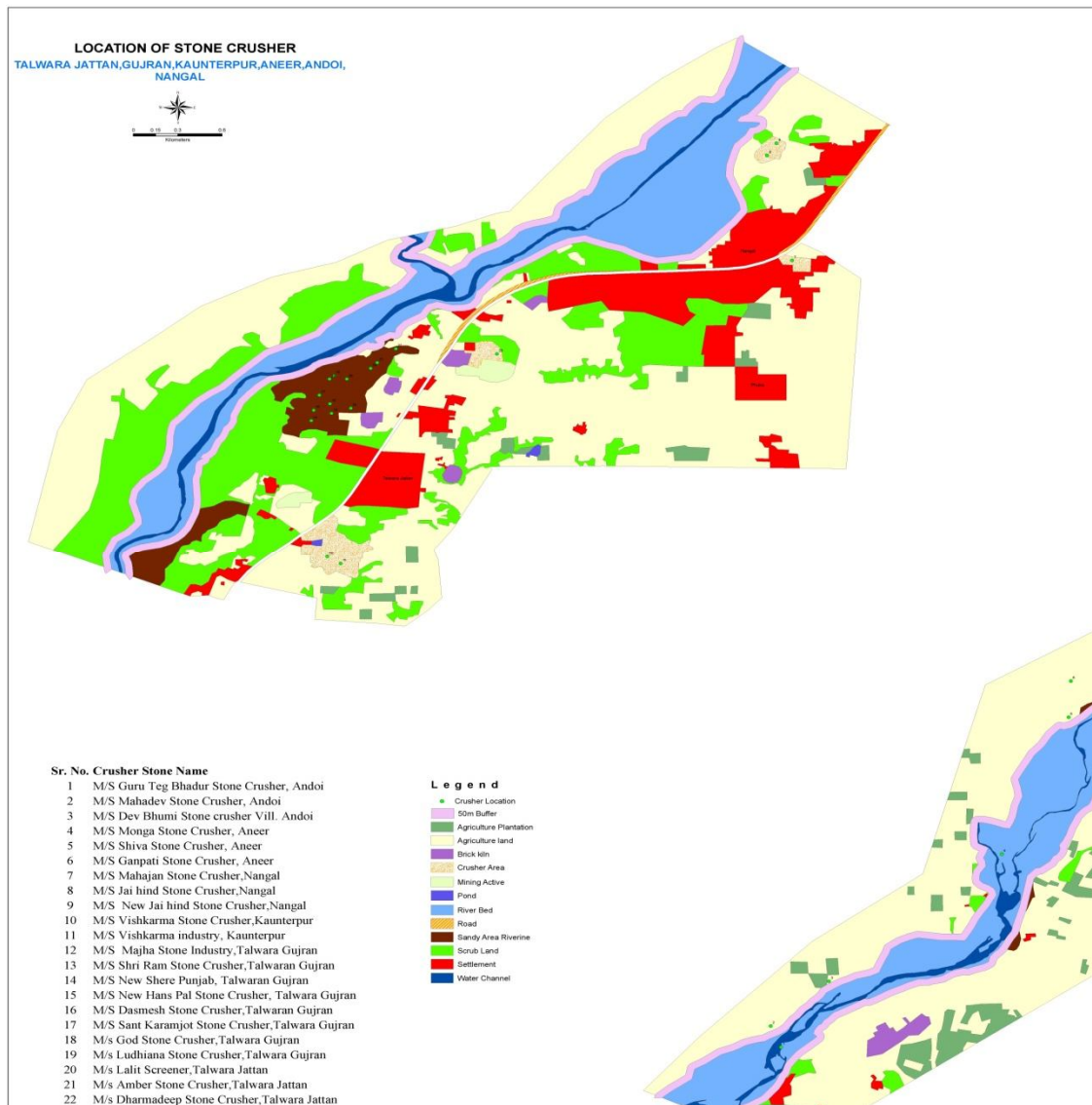


Fig.6 Map of Talwara Jattan, Gujran, Kaunterpur, Aneer, Andoi, Nangal sites during a period June, 2014

The Aneer, Kaunterpur, Nangal, Gujran, Talwara Jattan site map pin out the two crushers in the vicinity of riverbed.

VII. CONCLUSIONS

The land use map was prepared and the location of river bed was marked. A 50 mts buffer was created along the boundary of river bed. After delineating riverbed & buffer generation, in Mirthal site out of 97 crushers 4 comes inside the riverbed, Narot Jaimal site out of 44 crushers 5 comes inside the riverbed, Berian site out of 61 crushers 3 comes inside the riverbed, Aneer, Kaunterpur, Nangal, Gujran, Talwara Jattan site out of 24 crushers 2 comes inside the riverbed. So the crusher which comes under the riverbed are treated as vulnerable for rivers as it not only disturb the natural flow of river but also creates a problem for aquatic life by changing the contents of water or we can say water quality parameter due the dumping the waste of crusher industry. During the field visit it was observed that due to installation of crushers near the river bed intensive mining (which cause respiratory problem) has been done. At many places river has been deepened which is harmful for workers in term of causality as well as occurring of health issues. No defined course of water channel or river bed can be observed as there is no difference in tone of river bed and stone crusher areas.



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