

# A Case Study Watershed of Siraspur Delhi

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## Abstract:

In many nations, watershed development is a critical component of rural development and natural resource management initiatives. A watershed is a kind of common pool resource that consists of a geohydrological unit that drains to a common location through a series of drains. All regions on the planet are part of one or more watersheds, and even small land fragments act as watersheds (for this purpose a case study on VILLAGE SIRASPUR, DELHI is also a part of MICROWATERSHEDS IN DELHI). Watershed management is problematic because watershed systems include a variety of competing uses, thus any gain or cost will be distributed unevenly across users. Theories based on common research suggest that managing complex watersheds would be challenging, and that success will be restricted to isolated, actively aided micro watershed programmes with a social organisation emphasis. The simplest way to encourage community action is at the micro watershed level, yet good hydrological management necessitates effort at the macro watershed level. It also helps in recharging groundwater which is depleting in Delhi at alarming rate.

## 1. Introduction

A watershed or catchment area is a reservoir that drains the collected water from whole area to a common area, and watershed development aims to manage hydrological relationships in order to make better use of natural resources to conserve, produce, and eradicate shortage of water. To achieve this requires the integrated management of many resources in the watersheds, including forests, pastures, agricultural land, surface water and groundwater, all connected by hydrology. This study presents important challenges in practice of watershed development work and presents lessons from watershed research and ideas on common resource management. Traditional ponds have two primary characteristics: Many natural resources in the watershed, including as meadows, woods, lakes, and groundwater, are frequently owned equitably. Some resources, such as agricultural land, but also other areas of forest and trapped water, are often managed on an individual basis. Watersheds, on the other hand, are characterised by

the hydrological links that exist between all of these resources. For the whole watershed region to be productive, all water resource users must work together to manage hydrological processes. Every piece of land on the planet is a part of one or more watersheds, and even at the micro level, every piece of land is a member of one or more watersheds. Act in the manner of a watershed (like this case study on VILLAGE SIRASPUR, DELHI is also a part of MICROWATERSHEDS IN DELHI). Watershed management is problematic because watershed systems include a variety of competing uses, thus any gain or cost will be distributed unevenly across users.

Watersheds can cover areas of any size (small or large), because small areas of watersheds are subdivisions of large areas of watersheds built into large areas of watersheds. What is described in any setting must be noted, Micro watershed usually refers to a small area the size of a town, while macro watershed refers to something much larger. A brief review of the literature found on river management negotiations. (Darghouth et al. 2008;

White and Runge 1992) The scale can refer to any level or size, On average as a system of positions, watershed is part of a series of relationships, in which a small body of water is placed inside a large body of water, which in turn becomes a nest in an even larger water body. Technological initiatives may be ineffective if they are not followed by management. The institutional mechanisms for guiding administrators are referred to as watershed governance (Kerr 2007a) Depending on the issue of resource management in a given location, water projects serve a variety of objectives. Harvesting water (fig.1), or retaining water flowing during the rainy season for later use when water is limited, is the emphasis in mountainous, dry parts of India. It's about regulating soil moisture to boost rainfall agricultural productivity in low-lying locations with little water gathering capacity. Land conservation is either a specified aim or a way of attaining another goal in practically all river projects. The emphasis of this research is on water-harvesting and groundwater recharge initiatives, which are common in regions with seasonal water shortages.



Fig.1 Water shed and crops

## 2. WATERSHED PROJECT AIM TO ACHIEVE

Watershed In poor nations, projects concentrate on water harvesting and soil conservation, with three goals:

(1) protect the natural resource base, (2) improve the efficiency of agriculture and other natural resource-based activities, and (3) assist rural livelihoods in overcoming poverty. The first goal lays the groundwork for the second, which in turn helps to support the third, Soil, water, agricultural land, and forests are among the natural resource bases in concern in seasonally dry places where watershed projects concentrate on water/rain-water gathering. Reducing erosion lowers the amount of silt in runoff water and water harvesting ponds, extending their life. Water collection serves crops lower down the hill by supplying irrigation, either via surface water or groundwater recharge.

## 3. METHODOLOGY

The different locations of any area and it will display the area embedded between those location The current report depends on essential information gathered through cantered gathering conversations (FGDs) and ground level survey done by the team members. To gather essential information a survey paper is prepared by group including how many farmers are getting help from this watershed and effect of this watershed on their crops. The group visited the watershed, directed gatherings with farmers and had elaborate conversations followed by field visits to gather the required data. The Storage Capacity of Percolation Pond was measured through detailed survey and measurements. For the water filled pond, depth of the water was measured at several locations across the pond and area is also calculated.

## 4. RESULTS AND DISCUSSIONS

### 4.1 LOCATION OF STUDY AREA

Siraspur micro- watershed at latitude 28.761915 N and longitude 77.139069 E covering an area of

around 375ha and presented in fig.2 is situated at 30 km from Indira Gandhi International Airport, on NH-1, in North-west District of Delhi and is surrounded by samaypur-badli, rohini on upstream and kadipur at downstream which is followed by Yamuna river.



Fig.2 Study area of micro water shed by Delhi Govt.

## 4.2 RAINFALL DATA OF SIRASPUR, DELHI

The annual rainfall of Sirasapur in 2019-21 was 576, 745 and 1503 mm respectively with an average annual rainfall of 726mm . Extremely low rainfall presented in fig.3 over the last 12 years it was 370 mm in 2014 and the highest was 1503 mm in 2021.

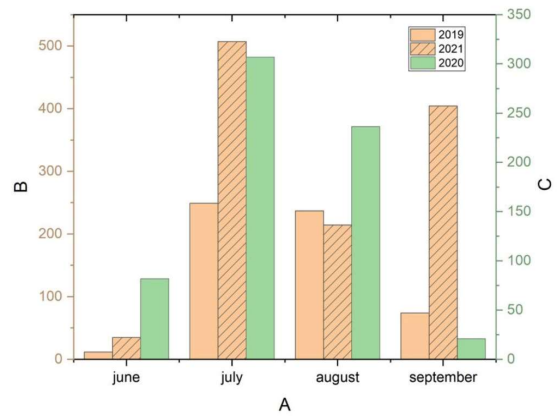


Fig.3 Annual Rain fall

## 4.3 DRAINAGE

The SIRASPUR micro- watershed depletes the abundance spill over water into downstream of kadipur followed by nangli and khera micro-watershed. Nowadays screens are also used to stop the heavy solid waste to enter the pond which can pollute it, mainly domestic waste of kitchen, bathroom and animals comes into it which is also not much polluted shown in fig.4.



Fig.4 drains releasing water of some part of Sirsapur Delhi

## 4.4 CROPS

Wheat, Rice, Mustard are the prevalent harvests become here. A portion of different yields are Maize, flowers, jawar, gram, vegetables etc. Because of good accessibility of water in western canal, wells, catchment area , farmers can easily produce vegetable harvests during summer. For the most farmers with huge families like to develop vegetables, as they got good price of their vegetables due to the good access nearest vegetables wholesale market (AZADPUR-which is only 10 km from village with good transportation facility) and various crops are presented in fig.5.



Fig. 5 PICTURES OF FIELDS OF SIRASPUR

## 5. CONCLUSION

- The study reveals that the micro-watershed in Siraspur plays an important role in production of crops as it helps in production of about 40% of wheat, 55% of jawar, 30%-60% of bajra, 50% of rice, 10% of mustard, 30% of vegetables out of the total production of crops in Siraspur.
- These micro-watershed not only helps the farmers but also to the other people's living in the area as these micro-watershed plays a vital role in recharging ground water.
- If these micro-watersheds are not there farmers will extract water from ground, which decreases the ground water level more rapidly which is already depleting at faster rate in Delhi.
- Delhi Government ,concerned authorities and civilians must think and work to revive more and more of these kinds of micro-watershed as these are the only way of recharging ground water effectively ( as most the Delhi's area is urbanised and congested ,concrete strata everywhere no other ways of recharging ground water) and for the betterment of our future generation, work and implementation on these kinds of project is needed , so that their number and efficiency increases.

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