

CTARA Koregaon Project 2016

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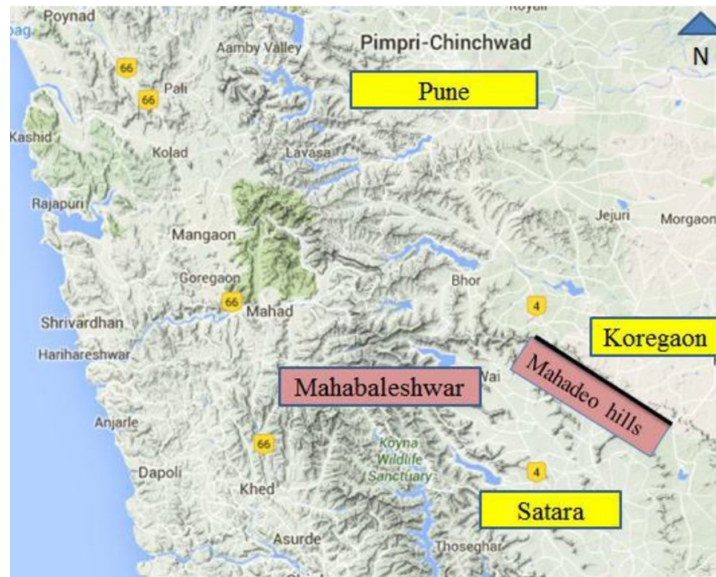
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1 Introduction

Over the Academic Year 2015-16, two TDSL (Technology and Development Supervised Learning) teams have contributed to the development of the village of Koregaon near Satara, based on a nearby village named Kapshi. This TDSL effort intends to continue that endeavour.

1.1 Location

Koregaon village is located in the Satara district at distance of 45 km from Satara town and is 90km south of Pune. Village lies in the leeward side of Mahadeo hills.



1.2 Project Description

The aim of this project is to bring overall development of the Koregaon village. This village suffers from water shortage which affects their agricultural production which is mostly onion. It was found that the village does not have any onion storage facility. Past year's team worked on developing infrastructure to solve the problem of onion storage. Our team's aim is to deal with the problem of water shortage.

2 Situation Review

Koregaon village is one the most badly drought affected areas. The annual rainfall at the place is quite minimal and is hardly sufficient for the people to meet their demands. The situation is even worsened during the summers. While regions like Mahabaleshwar which are close to Sahayadri hills in west, receive rainfall as high as 2223 mm, moving eastwards the rainfall amount drops to less than 900 mm in the Taluka of Koregaon, Karad, Satara and to less than 600 mm in the Taluka of Man, Khatav, Phaltan and Khandala.

2.1 Dependence on Monsoon Rains

Currently Koregaon is dependent heavily on the monsoon rain. There are two small seasonal streams which run besides the village. There is small lake just outside the village which was constructed by government in 1960s when the entire district was under severe drought. This small lake doesn't have a good catchment area and with poor rainfall it gets dry within few months after monsoon season. Government had constructed two Bandharas (stop dams) on one of the stream but those failed within a year of operation. There are number of wells along the stream. These wells are dug to store the percolated water from stream. However due to rocky terrain the percolation is poor in these wells. So the villagers have put a bore well to meet the need of water. But this is leading to continuous decrease in the level of water table.

Looking at the much higher construction cost for the canal, the option to electrically pump the water from the stream to the lake seems to be significantly cheaper and feasible. In order to select the specifications of the pump we will visit the place and look at the geographical features of the area of interest. The lake

existing in the village is very shallow and due to high temperature conditions in summer, the evaporation losses are significant since most of the surface areas is exposed to sun due to less depth.

The water collected in this lake would come from a nearby stream that remains dry for most of the year but fills up during the rainy season. The proposed solution is to transfer the water from the stream to the lake through pump.

3 Field Visit I

3.1 Field Visit Description

As our maiden visit to Koregaon, our main objectives were

- To observe the problems regarding water shortage, storage facility in the vicinity
- To acknowledge the work done till now and support the continuance of it
- To propose/validate solutions pertaining especially to water shortage

We were able to meet all the main stakeholders regarding this project, and went through all the sites that would serve in the proposed solution.

3.2 Current Water Facility

Koregaon Tank Capacity = 25,000 litres

Water required per day = 12,500 litres

This requirement is fulfilled by transference of water from well to the tank. Current Pump specifications to transfer water from the well to storage tank.

Pump capacity = 5 HP

Pipe specification = 3 Diameter

Therefore every day the aforementioned pump is used for an hour to meet the daily water requirements.

3.3 Work Accomplished till date

- Near completion of storage facility for onions
- An area of the dam has been dug out to facilitate storage of water



Storage Facility of Onions



Dam to be filled by stream

3.4 The Problem

During the summer season, the well dries up, generating shortage of drinking water and for irrigation for the villagers. Over the years, the groundwater level has also gone down adding to the above problem.

3.5 Proposed Solution

Water to be shifted from the nearby stream to the dam during monsoon season considering that the water flows in the stream for 2 months to solve following objectives

- Fill the dam well enough that could be served as the major water source during drought conditions
- Increase the well water level via percolation through dam
- Make water available for irrigation purposes

5HP Pump and 3" Pipe

Let the pump run for 10 hours/day for these 2 months. So the total water stored in these 2 months is equal to 20 months water requirement of the village. So 5HP pump is sufficient to meet the 1 year water requirement of the village, considering evaporation of water, percolation, leak losses, etc. Still there is scope to increase the duration of the pump from 10 hrs to 15 hrs, making the total storage to 30 months.

10HP Pump with 4" Pipe

We don't think there is a need of a higher pump capacity. But considering the request of the people from Koregaon, we can go at most for this pump.

Requirement of 15 HP Pump and 5" Pipe seems unfeasible due to following reasons:

- Almost double cost of pipes due to increment of diameter
- Increased cost of pump
- Higher maintenance required

3.6 Further recommendation

We also believe that the success of this project will highly depend on the participation from the people of Koregaon, as it involves high monetary input and maintenance after implementation. We should make sure that all the stakeholders are actively involved and contribute (monetary or otherwise) towards this, to make it possible.