

MANAGEMENT AND QUALITY IMPROVEMENT OF WATER

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Abstract— *Water is the most valuable resource on the earth and the essential component of the ecosystem because all living beings need it to support their living process. The goal to preserve water resources are determined by the range of necessities first of all it is an obligation to the humanity to save water resource for the future generation beside it helps to reduce the level of used energy. Therefore, the world community tries to prevent water resource from their complete disappearing.*

Keywords— *Artificial Recharge, Ground Water, Surface Water, Purifying, Quality*

I. INTRODUCTION

In recent decades, the quality of the water in rivers, lakes, the sea and the quality of ground water has improved significantly. But it can always be improved more. The quality of our drinking water is good. But to keep the same drinking water as clean and cheap as possible, it is important for the quality of our ground water or surface water to be good as well. The present thesis discusses about all the aspects of water, namely water resources, its present global scenario, prevailing water conservation techniques, and water management systems.

The present research explain about the idea what if the storm water pipelines which are released in the river flows into the infiltration trenches with the continuous process in which the storm water goes into the infiltration trenches automatically with the help of gravity which gets purified and goes to meet the ground water table and when the infiltration trench is on full capacity it overflows purified water into the river automatically.

II. BACKGROUND

Water has been a very important and rather indispensable need of the community. Without it, survival will be at its worst or considerably, there will be none. We can live for days without food but only in hours without water. We use water in almost all our house chores. Like washing the plates, washing the clothes, taking a bath, cleaning our cars, watering the garden and even gargling. We need water every day. That is how water is important.

A single drop means life to most people in the continents where water is rarely flowing and to where water has a scarcity in supply. The majority of the existing third world countries have been experiencing this situation. How they survive has been said to be part of the natural adaptation of humans to natural phenomena, but we know they won't last long and continue like that. This lead to the organizations concerned to have a campaign for water reservation and a project that helps people realize that saving water is vital. Here in the India, some government agencies, non-government agencies and institutes are already working up their campaign and some has already succeeded. At least we knew that many really cared to this crucial issue.

Since ages, people across different regions of India, have experienced either excess or scarce water due to varied rainfall and land topography. Yet, they have managed to irrigate their agricultural fields using localized water harvesting methods. Their traditional ways, though less popular, are still in use and efficient. They are enriched with knowledge to manage water in communal ways.

The stress on water resources is due to rising population and changing lifestyle that have increased the need for fresh water and increasing competition among agriculture, industry and domestic sectors is pushing the groundwater table deeper.

III. SCOPE OF WORK

A. Objectives

The main objective of the presented study is to enumerate various Conservation Techniques, Water Management Practices; those are prevalent and can be used as equivalent upcoming sector demand of the water resources and to access the quality of ground water and surface water to maintain the water from getting polluted.

B. Study Area

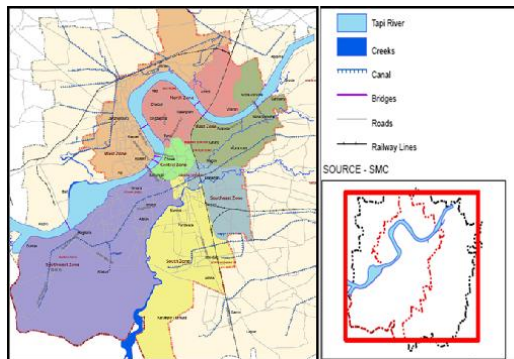


Figure 1 Study Area

Surat city is also known as Suryapur which is situated on the bank of the Tapi River. The city has been ranked 95th in the list of world's largest cities and is the 9th largest city of India after Pune with an area of 326.515 Sq.km. the Surat is situated at latitude 21.1702° N and longitude 72.8311° E.

C. Problem Identification

Surface Water

1. Shortage of portable water
2. 26 Sewerage line released in Tapi River
3. Less rain in past 2 year
4. Large amounts of bacteria and other microorganism present in Tapi reservoir
5. Dump of cattle waste near Katargam area on regularly basis
6. Throwing waste in river
7. Less level of river water near Nanpura and Chock area

Ground Water

1. 50% of area faces reduction in ground water level
2. Deduction of ground due to Sea water
3. At greater depth hard metals are found in water
4. Water logging

D. Probable Solution

We had given solution that what if we make an infiltration trench as shown below in river side to improve the ground water quality as well as surface water quality with a natural water purifying system for the storm water drainage line which is released in river Tapi.

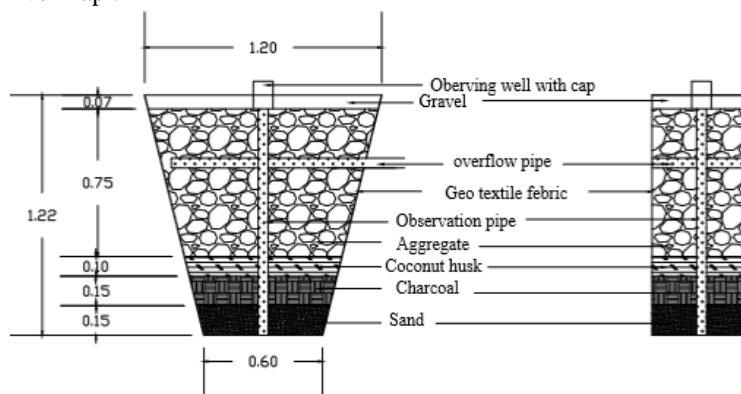
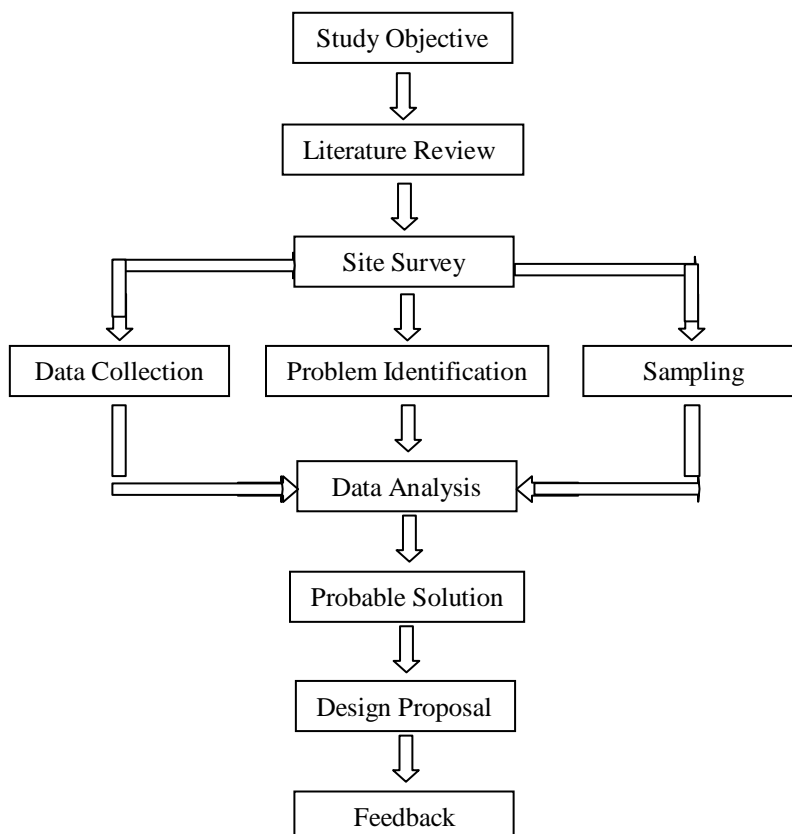


Figure 2 Probable Solution

TABLE 1
Material and its Purpose

SR NO	MATERIALS	PURPOSE
1	Geo Textiles Fabric	It is used for the protection of the slide slope
2	Double Side Butyl Tape	It is used for joining the geo-textile fabric
3	Barbed Plastic Peg	It is used for anchoring the geo-textile fabric
4	Sand	It removes suspended particles, pathogens and processed medium for iron, manganese, and hydrogen sulphide removal.
5	Charcoal	It is used for trapping contaminants and removing chlorine, sediment, volatile organic compound (VOC's), bad taste and odour
6	Coconut Husk	It is used for removing chlorine, bad taste and odour.
7	Aggregate	It is use for removing larger impurities like algae as well as waterborne viruses
8	Gravel	It is used for screening and removing the particles.
9	Observation Pipe	It is used for the observation of water in the infiltration trench
10	Overflow Pipe	It is used when the infiltration trench is full the extra water is removed with it.
11	Observation Pipe Cap	It is used for the observation of water

IV. PROPOSED METHODOLOGY



V. APPLICATIONS

The research can be used in the agriculture field, drainage system of roads and while modifying it can also be used in rain water harvesting.

VI. RESULT AND DISCUSSION

River Tapi passes from the central part of the Surat city. The area on both the sides of the bank is much highly populated area. The Rapid urbanization and water pollution has widened the supply and demand gap, putting enormous pressure on the quality of surface and groundwater bodies. The present research is related to the purification and improvement of water such as ground water and surface water which encompasses a process for removing impurities of the drained water which are released in river. The results of analyses have been used to suggest models for presenting water quality. The analysis reveals the groundwater of the area needs some degree of treatment before consumption.

VII. CONCLUSIONS

In recent decades, the quality of the water in rivers, lakes, the sea and the quality of ground water has improved significantly. But it can always be improved more. In developing countries, the concept of water resource conservation and river water quality management is yet to gain full momentum. There is lot of techniques to conserve water but by using an infiltration trench for urban drainage concept is considered appropriate because it has much advantages. Artificial recharge using source waters of impaired quality is a sound option where recharge is intended to control saltwater intrusion, reduce land subsidence, maintain stream base flows, or similar in-ground functions. We all have the ability to help restore the Tapi River to pristine, healthy condition. Together, through the simple acts of recycling, reducing, reusing, and finding safe alternatives to harmful chemicals, we can create a stream that will become a showcase that will champion the reduction of non point source pollution.

VIII. ACKNOWLEDGEMENT

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