

A Drainage System With Benefit Of Groundwater Recharge

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Abstract

Groundwater Recharge Has Been Adversely Affected On Account Of Disruptions In The Hydrological Cycle Due To Climate Shifts. All Of This Translates Into More Than A Third Of India’s Population Living In Water-Stressed Areas, A Number Set To Increase With Intensifying Climate Impacts And Accelerated Urbanisation.

Groundwater Depletion In India Has Now Become One Of The Most Prominent Challenges For Food And Water Security

We Used Drainage System For Increasing Ground Water Table . There Are Many Methods For Increasing Ground Water Through Artificial Recharge But In This Project We Suggest New Technique In Which We Use Drainage System And Greywater (Waste Water From Kitchen , Bath, W/C And Sink) .In This Project We Use This Type Of Drainage Which One Explain Above Like Foul Drainage System

There Are Used Of A Waste Water In This Technique So This Is Also A Beneficial Thing And The Other Remaining Water Are To Be Treated In A Water Treatment Plant Here We Discuss The Challenges And Opportunities Related To The Measurements And Modelling Of Groundwater, Groundwater Recharge, Cropping Systems And Irrigation Efficiency, And Social And Policy Reforms For Sustainable Groundwater Management In India

Keywords

Reuse Of Waste Water , Greywater Usage , Groundwater Recharge , Improve Aquifer Condition , Beneficial Drainage System

Introduction

We Define Groundwater Recharge As The Water Added To The Aquifer Through The Unsaturated Zone Following The Percolation (Or Infiltration) After Any Storm Rainfall Event.These Include - Unregulated Extraction; Excessive Irrigation; Poor Knowledge Of Groundwater Management System; GW Pollution; Climate Change.

Groundwater, Regarded As A “Common Pool Resource”, Has Historically Witnessed Little Control Over Its Extraction. Driven By A Rising Population, Urbanisation And Expansion Of Irrigation Activities, Groundwater Extraction Has Been On The Rise For Several Decades.

Water Is Not Only Important For Human Beings But For The Entire Ecosystem. Without Enough Water, The Existence Of Humans, As Well As Animals, Is Next To Impossible. So There Is A Need Of Increasing Ground Water Table Through The Artificial Ground Water Recharge . Specially In Urban There Is A Most Of Problem Are The Scarcity Of A Water Because Of A Low Water Table In That Area , Ground Water Table Is Low In That Area Because Of A Impervious Road And The Impervious Open Ground

House Drainage System Is An Arrangement Provided In A House Or Building, In Order To Collect And Convey The Wastewater Through Drain Pipes, By Gravity, To Join Either A Public Sewer Or A Domestic Septic Tank. House Drainage System Is A Collective System Of Important Components Like W.C, Bathrooms, Sinks, Wash Basins, Etc.

So , We Used Drainage System For Increasing Ground Water Table . There Are Many Methods For Increasing Ground Water Through Artificial Recharge But In This Project We Suggest New Technique In Which We Use Drainage System And Greywater (Waste Water From Kitchen , Bath, W/C And Sink) . In This Project We Use This Type Of Drainage Which One Explain Above Like Foul Drainage System

In This Project Increasing Of Groundwater Table Through The Artificial Groundwater Recharge Via The Process Of A Percolation Of A Greywater From A Main Drainage Pipe (Main Sewer) . In A Main Drain Pipe Use A Strainer As Our Signature Component Of This Project . Strainer Can Help For The Percolation Of A Greywater To The Beneath And Surrounding Of A Drain Pipe Which Is Helpful To Increase The Groundwater Table

There Are Used Of A Waste Water In This Technique So This Is Also A Beneficial Thing And The Other Remaining Water Are To Be Treated In A Water Treatment Plant .

Scope Of Study

In This Study There Is A Use Of A Strainer As The Signature Component Of This Study In A Main Drain Pipes Either A Instead Of A Strainer Fixed Main Drain Pipes Also Used A Perforated Main Drain Pipes Or A Porous Concrete Main Drain Pipes .

Technical Learning

In This Technique Used Of A Drainage System Of A Residential Or A Commercial Area For Implementing This New Thought Or A Idea . Instead Of A Normal Drainage System Which Are Already Practiced In A Residential Or A Commercial Area , Use Of A Drainage System With The Strainer Type Pipe Which Is Also Known As Perforated Pipes . In A Main Drain Pipes Used Of A Strainer Are Found Out

In This Technique Also Used A Porous Concrete , Perforated Pipe , Strainer Type Pipes Or A Strainer Fixed In A Normal Drain Pipes

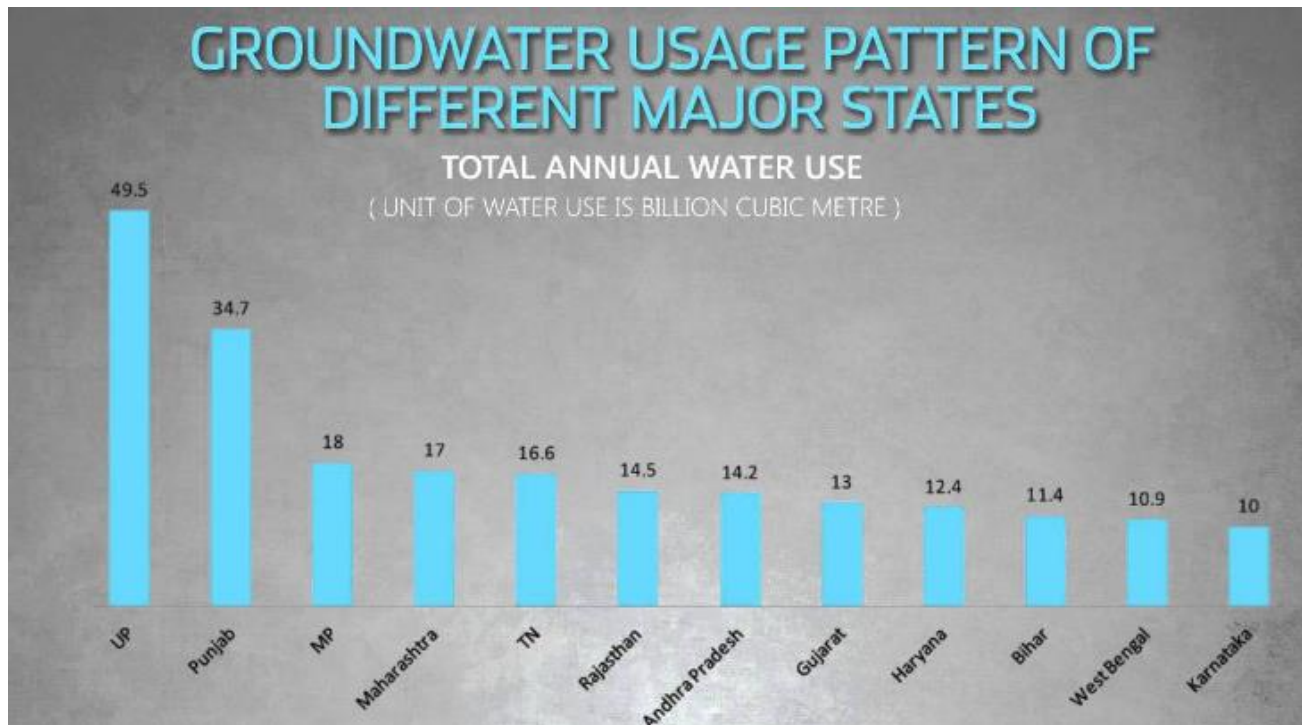
When Greywater (Means Waste Water In Which Only Contained Kitchen, Basin, Sink And Bath Waste Water) Is Disposed Out From The Domestic Usage And From The Residential Area

Which Is Drain Out Through The Laterals Pipes And It Reach To The Main Drain Pipes Which Is Laid Down Beside The Road . So, In A Main Drain Pipes We Used A Strainer Type Pipe .Which Is The Main Part Of Project

In A Main Drain Pipes In Which Strainer Fixed Portion Are Helpful In Percolation Of A Water To The Beneath The Sub Soil Surface . The Content Of A Percolation Of A Water Is Nearly About 70%.

That Remaining Waste Water Reach For The Treatment Of That Water To Treatment Plant Through Main Drain Pipes . Treatment Plant Which Is Situated At The End Of The Main Drain Pipes At Treatment Plant The Treatment Of A Water Is Not Completely Like Not Pure Potable Water Is Extracted From It .

Irrigation Alone Accounts For 90% Of The Total Groundwater Used In India Today. Groundwater Irrigation Popularised In The 1970s Has Led To Socio-Economic Well-Being, Increased Productivity And Better Livelihoods. But That Treated Water Will Be Used For The Recreational Purpose , Agricultural Purpose , For Cleaning And Industrial Purpose Etc.



Groundwater usage in different states

Material used in this technique

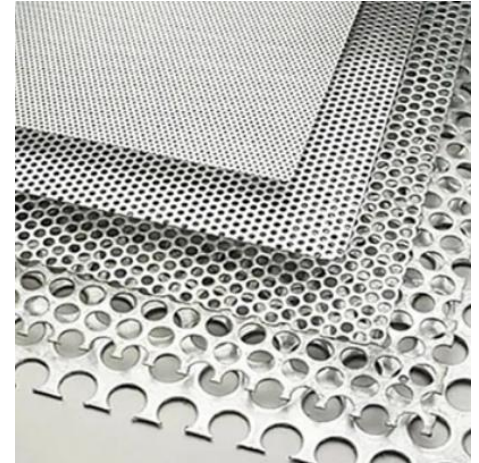
1. Strainer
Or
2. Perforated pipes
3. Porous concrete main drain pipes

Strainer

The purpose of a strainer in this study for the percolation of a water from the main drain pipes to the beneath the underground surface to increasing the ground water table .

Type of strainer size is decided according to the soil bearing capacity and the flow of percolation rate

Strainer is fixed in a drain pipes at every equal distance in a main drain pipes .



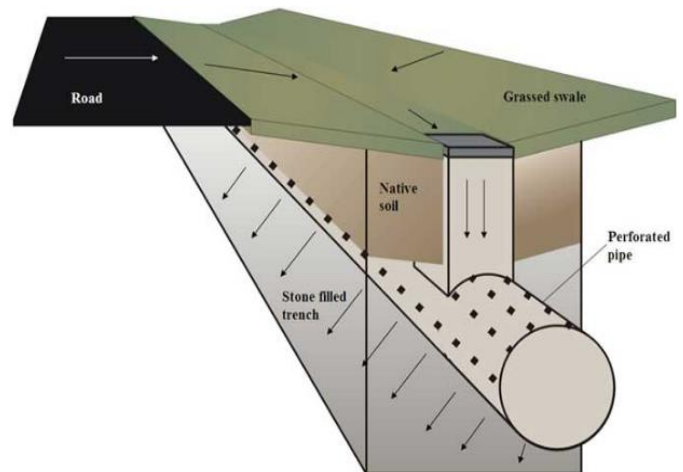
Types of strainer

Perforated pipes

Perforated pipes are pipes with a series of small holes or slots that allow water to enter or exit from them easily. They are designed and manufactured to be more flexible as they are always buried underground for a longer period.



Perforated pipes



Porous concrete main drain pipes

Pervious concrete (also called **porous concrete**, **permeable concrete**, **no fines concrete** and **porous pavement**) is a special type of concrete with a high porosity used for concrete flatwork applications that allows water from precipitation and other sources to pass directly through, thereby reducing the runoff from a site and allowing groundwater recharge.



Porous concrete pipe

Advantages

- It Is Helpful In Specially Urban Areas .
- Ground Water Table Increases Because Of This Application In Drainage System.
- Both Process Is Done Through This System Recharge Of A Ground Water & Treatment Of Water In A Plant
- Quality Improvement By Infiltration Through The Permeable Media.
- Ensures Water Availability All-Year-Round For Agricultural Purposes.
- Reuse Of A Waste Water Is Also Done In This Technique

Disadvantages

- This Type Of Drainage Pipes Require A More Maintenance Than The Normal Drainage Pipes .
- There Is A Chances Of Blockage In A Drain Pipes And In Strainer .
- It Is A Costly As Compared To Normal Drainage System.
- There Is Chances Of A Soil Losing Their Bearing Capacity .

Conclusion

It Plays An Important Role In The Increase Availability Of Water For Irrigation ,Domestic And Industrial Sector, Improve The Drainage, And Improvement Of Groundwater Quality And Soon.

Currently, An Intensive Exploitation Of Aquifers Is Considered One Of The Main Environmental Problems In The World, Which Can Increases Also Its Negative Situation Due To The Present Global Change (Climate Change And Changes In Land Use).

So, We Can Solve This Problem By Suggest A New Technique In Which We Can Use A Greywater (Waste Water From Kitchen , Bath, W/C And Sink) And The Drainage System With The Replacement Of A Update Drainage System (Main Drainage Pipe With Strainer)

This Also Beneficial For The Reuse Of A Water And And It Also Give Us A High Ground Water Table And Also Improves The Aquifer Condition .

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