"Catch the Rain"
Distributed Rain Water Harvesting (RWH)
"Sponge Soil"

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RWH – Eco Terrain based Solutions

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CWAS CENTER FOR WATER AND SANITATION CRDF CEPT UNIVERSITY

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Mother Nature

"One Drop of Rain Water
Harvested, Gives one Million in Return "

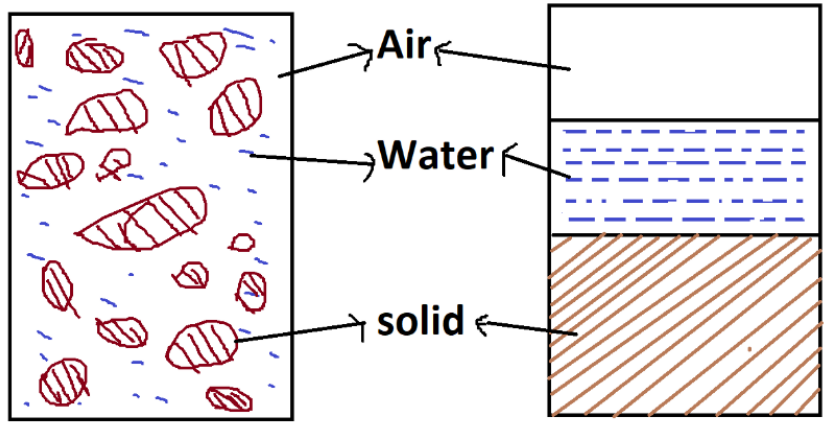
The Magic of Rain, Soil, Vegetation, Climate – “The Life”

- **Nature gives Abundant Rain**
- **The power of Soil to absorb Water is Enormous**
- **Let us feed the Mother earth , with Rain water ,in a distributed manner.**
- **Our Mother , will take care of our Water Needs for ever**

- **Our Nation ,India -Receives Annual Average Rain fall of around 100 to 110 cm. (Utilization is around 08% of Rainfall.)**
- **Most of our Cities need only, less than 50 % of Rainfall falling on the City area.**
- **NWM Campaign :“Catch the Rain , where it falls, when it falls” by effective Rain Water Harvesting (RWH)**

The Sponge Soil

Soil is the largest reservoir of fresh water in our planet earth.
Soil Holds 6 to 8 times fresh water of all River basins put together.
"The soil is a living being " nurtures the vegetation, Life giver for micro-organisms.
Enabling the positivity and Reducing the impact of Climate change



One Unit of Soil Approx:

Solid Soil 50 %
Water 25 %
Air 25 %
(Varies with Soil Type)
Capacity of Soil to retain Water varies from15% to 50%

Zilla Parishad School at Kupri (Taluka Wada, dist Palghar, Maharashtra)

Tribal area – Low cost RWH – Water comfort for school (2024 – 25)

https://www.youtube.com/watch?v=WaH82BFyiK4&authuser=0

Joining Hands with the Inner Wheels Club of Thane Garden City .
The school : convincing the team.
Problem : Existing Bore – No yield for 4 months in a year
Solution :The Soil recharge with Provision 6 RWH pits filled with graded Gravel (size Approx 3 ft x 3 ft x 4 ft to 6 ft (depth) – Recharging Bore well too
Cost Rs 18,000/-
Result : Borewell yield all around the year .Water comfort for school. School Students presented this initiative at a district-level science exhibition and won the first prize! (presentation - Video Link)

Graded Gravel RWH Pits- illustration

The gravel in touch with Soil , for all around water recharge

Graded Gravel RWH Pits (GGPs) filled with Gravel/Blue metal nominal size (from bottom to Top)

75 mm, 50 mm, 25 mm

Design Can vary as per design

City Woes

The Flooded Roads in Rains

Thirsty Summers

Can We Recharge the Soil, with Rain water .
Soil as the Reservoir of Fresh Water….

Can we Recharge Rain at the Concrete Areas / Roads ?

Yes, We Can……

The Soil itself is a "Shallow Aquifer" -

The Shallow Aquifer Recharge

Enabling Natural Recharge to Deep Aquifers too

- **Mostly the present Storm Water Drains (SWD) are Conduits for carrying water from one place to another. Overflows in Rains too**

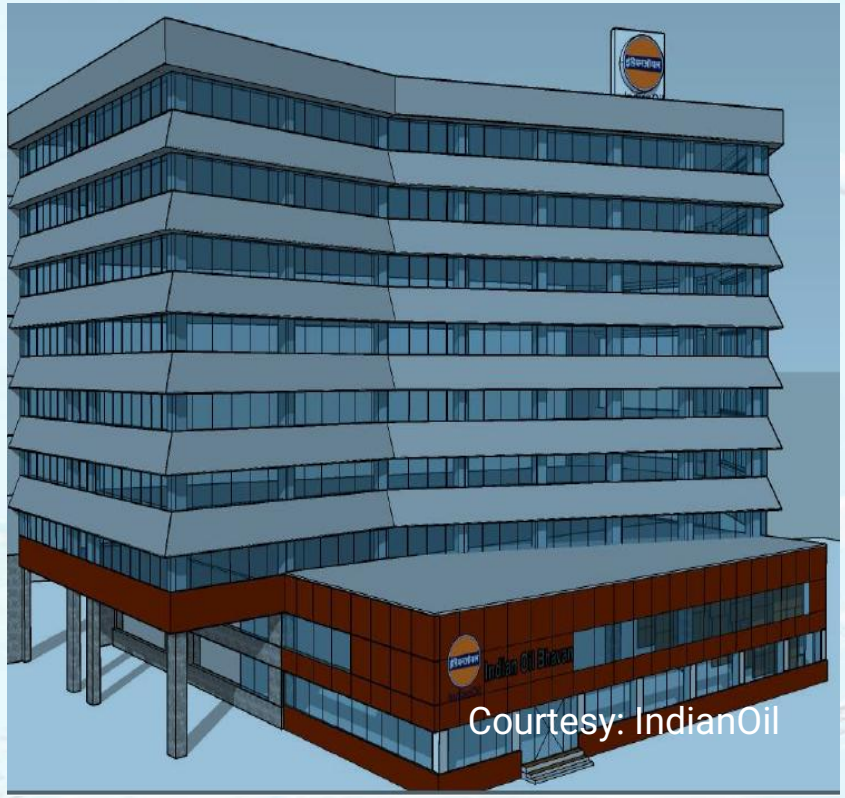
- **The implementation of "Rain Harvesting Storm water drains" (RH- SWD) with Micro Graded Gravel pits within the Storm Water Drains itself at Plots, Complexes, Industries, Societies, Muncipal / City Roads.**

- **Gives Life to Soil . Reduces Road Flooding**

RWH at Concreted Areas - Corporate Office Building , Chennai (2021)

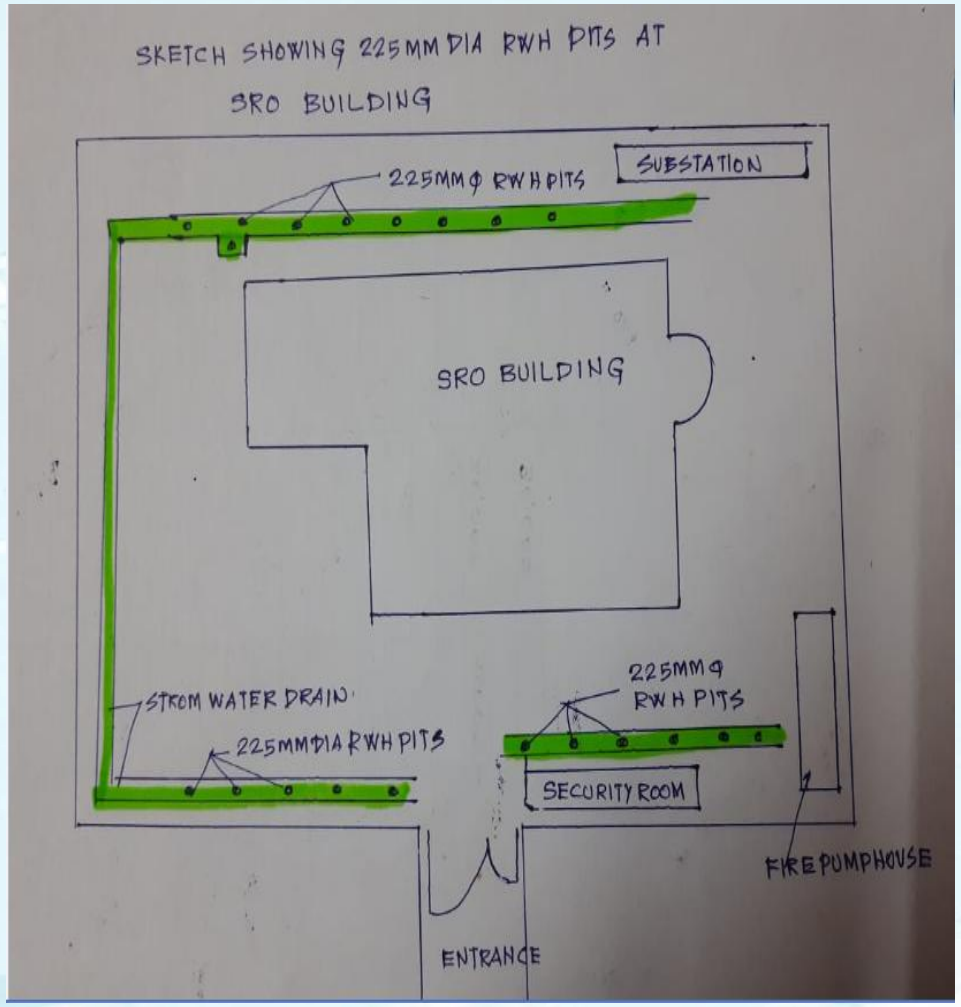
RWH : Water Positive Model & Holding Rain within the Plot

- Nungambakkam high road
- Area - 6500 sq. m.
- Quantity Rainfall - 9170 cu. m/yr
- Consumption 5400 cu.m/yr
- RWH Pits - 29 nos.
  - 9 inch dia. x 10 ft deep within Storm water drains plus tube well
- Recharge achieved
  - **~ 80% rainwater falling on the plot to ground**
- Benefits
  - **Purchase of 2 nos. tankers (approx. 20 cu.m /day) eliminated ie. about Rs. 1.2 lakhs/mth.**



Rain water recharge is greater than consumption ie. *Water Positive Model*

Rain Harvesting Storm Water Drains at Concrete Areas



RWH in concreted area - Use of Existing Storm Water Drains, Multiple Micro Graded Gravel Pits for Distributed Water Recharge .

Outcome – Water Demands met, Water Flooding Reduced

Effective Water Recharge…..No Water Logging

During Rains - Nov / Dec 2021

Surrounding Areas - Water Logged

IOC - Clean driveways - Rain Harvesting Storm water Drains, with Graded Gravel RWH Pits.

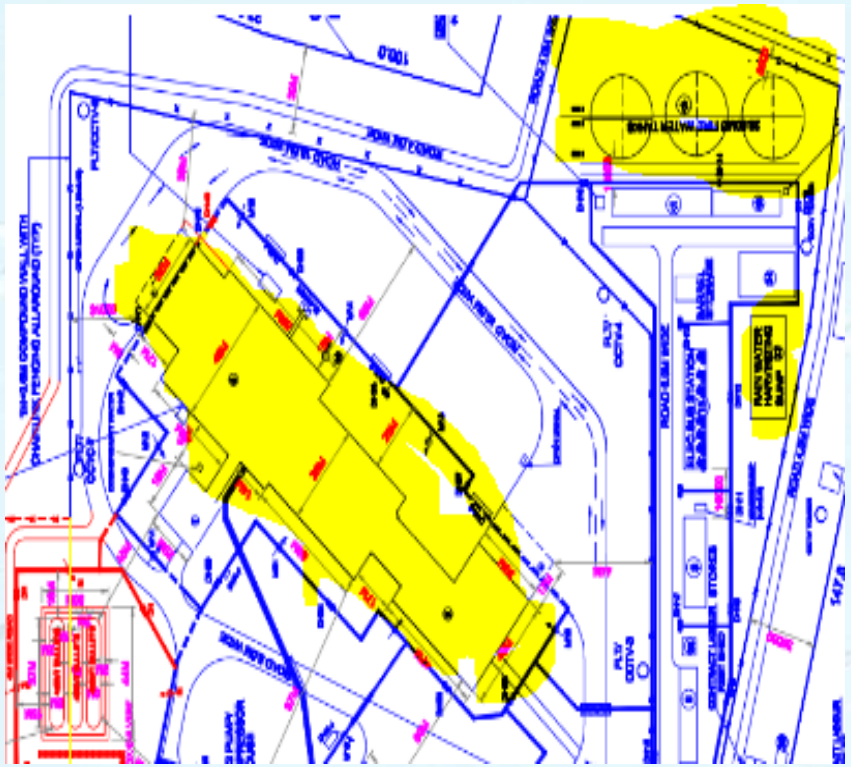
Salty Ground Water improvement - LPG Bottling Plant, Ennore, Chennai (Yr 2000)

Year 2000 : Extremely Salty ground water
Area : 50 acres of land

Roof Rain Water Catch, to meet water needs
RWH – improving Surface water to Service water quality.
Outcome : A Lush Green Plot with water comfort

Roof Water Catch to Lined Reservoir

(year 2000)



Filling shed roof (7,300 Sqm) with rain water down pipes to Channelise to the lined reservoir cap 3 Million litres (50m X 30m x 2m)

Direct Catching of Rain 10 million litres (10,000 Kl) per Yr Meeting 60% of the Plant's Water Requirements

RWH – Graded Gravel Pits, Recharge Wells

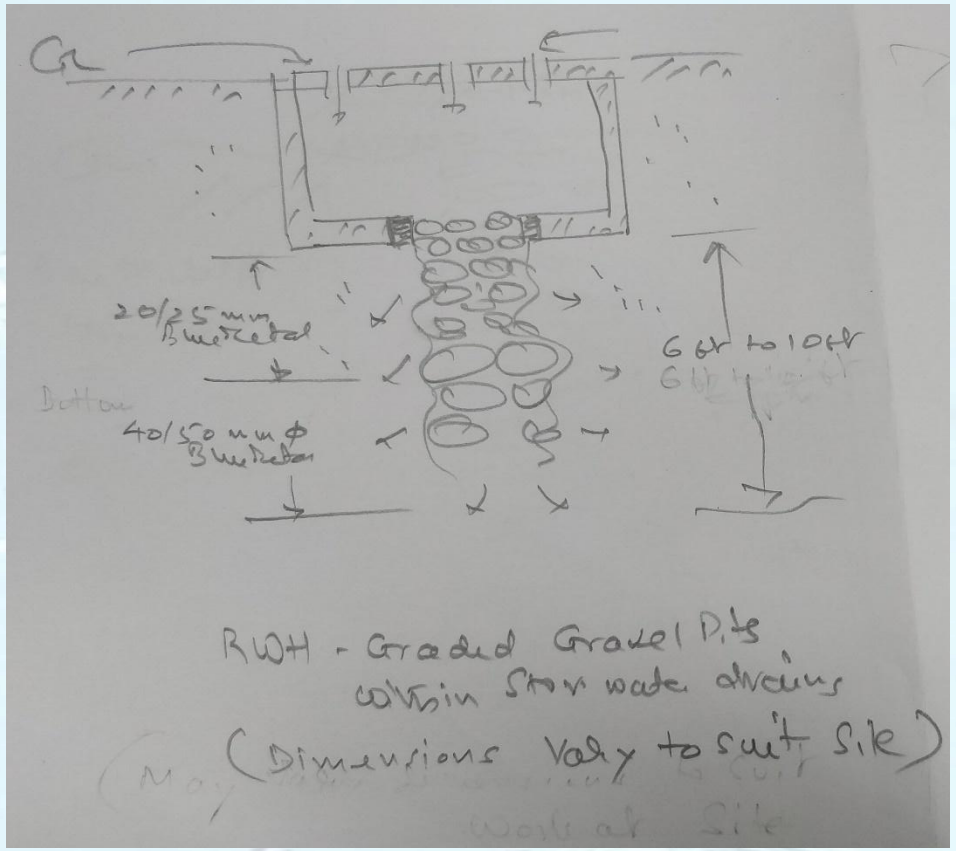
Storm water drains are connected to Graded Gravel Pits, & Recharge Wells (54 Nos) for Soil Recharge

Courtesy: IndianOil

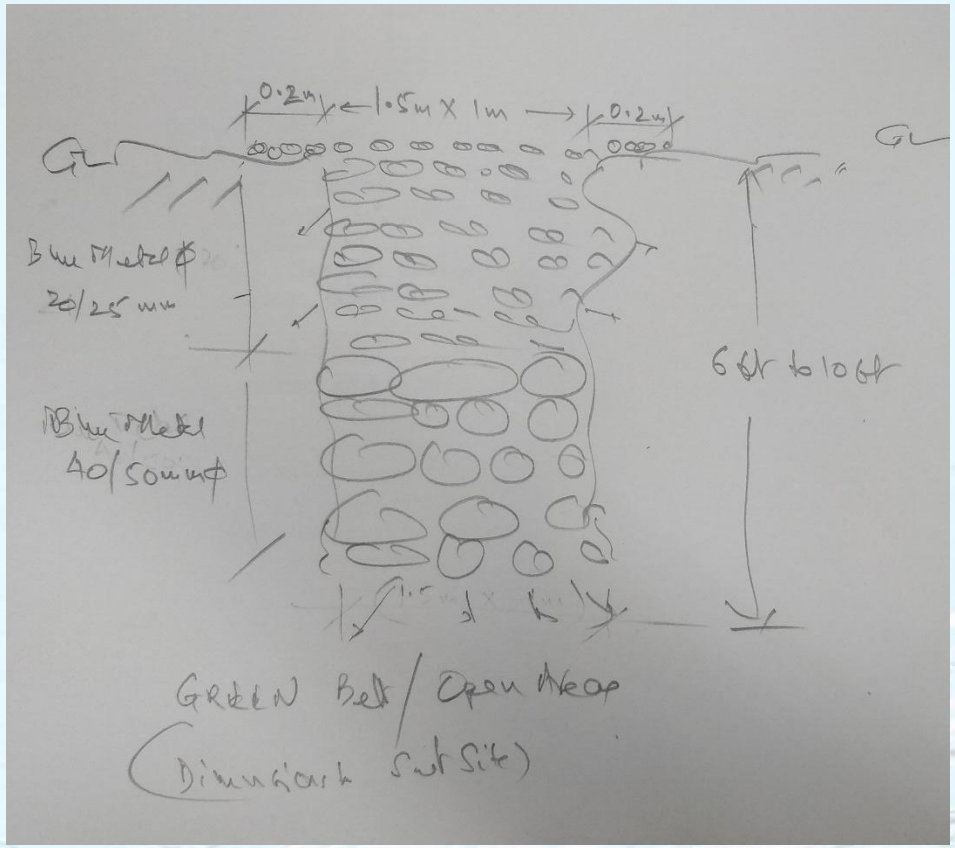
Saline Ground Water (25,000 TDS) improves to
Service Water Quality (TDS <1000 ppm)

A Plot in year 2000, without a drop of good water ,becames Water Comfortable

Rain Harvesting in Storm water Drains / Open areas



Multiple distributed RWH Pits
RWH pits inside Storm Water Drain



Multiple distributed RWH Pits
in Greenbelt area and at Open areas

RWH Pit Designs (Shape, Size, depth) Vary to suit Site Conditions

By : g ramkumar

Residential Complex - Rain Harvesting (Source Cum Recharge Well)

Source cum Recharge Well .
Improved Saline Water to Service Quality Water .
Holding Rain water > 90% of the Precipitation inside the plot

Courtesy: IndianOil

Societal Impact : Community Park ,Kamakoti Nagar , Pallikarnai ,Chennai (Yr 2020)

Park (1 hectare) like a saucer. Ground water Saline. Flooded during rains .
Water Table around 8ft during summer

- 12 Graded Gravel pits (cost appox 1.8 Lakhs)
- Safe approach, merging with the landscape

Benefits:

- Approx 65% of rain (10 Million Litres) per year is Recharged
- Faster Water Percolation ,Reduction in Water Logging
- Ground Water quality improvement in Surrounding Area, Wells
- Societal Impact –appreciated by Residents association
- Scalable Repeatable Model

RWH Merging with Landscape

Source
Alive projects,
Thiruvanthapuram

Let Us Join Hands.....for water Comfort...

Harness Rain & the power of Soil (to Absorb Water, nurturing Vegetation .....for better Climate

The beauty of distributed Shallow Aquifer Practical cost - effective RWH Solutions, recharging Deep aquifers too,

To Meet our Planet's Water Needs for Ever....

Thank You

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