AAETI

Natural & Self-sufficient Wastewater Management in a patient-care facility in the Himalayan Foothills

Presented by: Ganga Prem Hospice, Rishikesh,
State: Uttarakhand, INDIA
Date : August 11-13, 2021

About Ganga Prem Hospice

Envisaged as an end-of-life-care facility that provides quality hospice care and spiritual solace to patients, Ganga Prem Hospice is one of the very few hospices in India, and the first in the state of Uttarakhand ;

The Ganga Prem Hospice project is 100% charitable, providing free-of-charge **inpatient services**, **home care service**, as also **outpatient consultation**, **counselling**, and **education** to patients & health care workers/professionals ;

The project took root in 2005, and has touched the lives of **15,000** patients who have come from all over North and Central India, with a majority from Rishikesh, Dehradun, Haridwar, all the mountainous districts of Uttarakhand, as well as West UP.

The Ganga Prem Hospice In-patient Facility

The Ganga Prem Hospice inpatient facility (3567 sqm plot area) is nestled in the picturesque surroundings of Rishikesh, near to the Rajaji National Park, the Shivalik hills range, river Ganga, and river Saung/Song (tributary of river Suswa) ;

The hospice is located in Village Gohri Maphi of the Raiwala area that falls in District Dehradun ;

The facility has 35 rooms, a **15-bed inpatient capacity**, inhouse residential area for the team, amenities such as dining area, temple, pharmacy, mortuary, nursing station, yoga hall & library, **4000LPD** solar water heating system, rain-water harvesting system with **5700L** storage capacity, a green-design that maximises natural light, view, vegetation, natural temperature regulation, and interaction with nature.

The GPH DWWT System Collaboration with CSE

With its proximity to rich natural heritage areas, farmland, and no municipal or government-managed sewage disposal network in the area, Ganga Prem Hospice (GPH) opted for the DWWT system even before the construction of the hospice building started in 2014 ;

The Ganga Prem Hospice DWWT system collaboration with the Centre for Science & Environment started in **2013**.
A **10KLD system** was designed by CSE for GPH as a model project (free-of-charge consultancy);

As the inpatient facility started its operations in 2017, so did the DWWT system which was commissioned at the same time;

The five-module GPH DWWT system receives wastewater from **27** toilets/bathrooms + one kitchen + dining hall hand-wash area.

Approx average number of inmates using the DWWT system daily: **50**
Approx no. of users who used DWWT in month of July 2021 **:** **1534**

Maintenance & Monitoring : With CSE's Guidance

The Ganga Prem Hospice DWWT system is monitored with on-site visits and off-site consultation by the Centre for Science & Environment Water & Waste Management team ;

Wastewater samples are tested at periodic intervals at an NABL Accredited laboratory – the Pollution Control Research Institute (PCRI) at BHEL, Haridwar

Site visit by CSE Deputy Programme Manager, Water Programme, Sept 2017. At Ganga Prem Hospice, Raiwala, Rishikesh.

Maintenance & Monitoring : With CSE's Guidance ....contd

CSE monitoring of the GPH system includes:

Technical analysis of laboratory test results ;

Suggesting corrective course if test results not optimal ;

Providing of logbook format, daily-analysis training & check-list, detailed DWWT system upkeep manual

Site visits include visual analysis of the system & its environs: PGF ideal plant growth, suggesting ways of keeping PGF in top-health, no algae growth on stones, settler covers should be without any small plant/weed growth ;

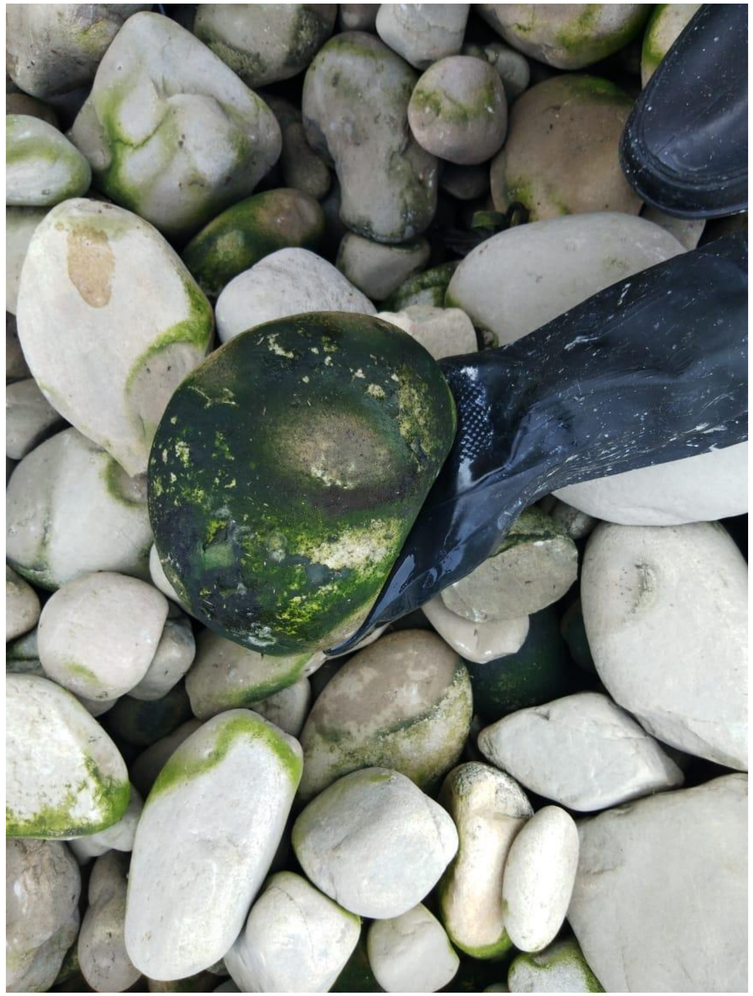
DWWT system signages should give comprehensive information & exhibit warnings clearly.

Maintenance & Monitoring ....contd

PGF Cleaning with gloves, masks, boots, and brushes

Settler cleaning

Maintenance & Monitoring ....contd



BEFORE CLEANING: Algae growth on stones in PGF

AFTER CLEANING: Algae growth scrubbed off from PGF stones

Maintenance & Monitoring ....contd

Daily visual check of water quality

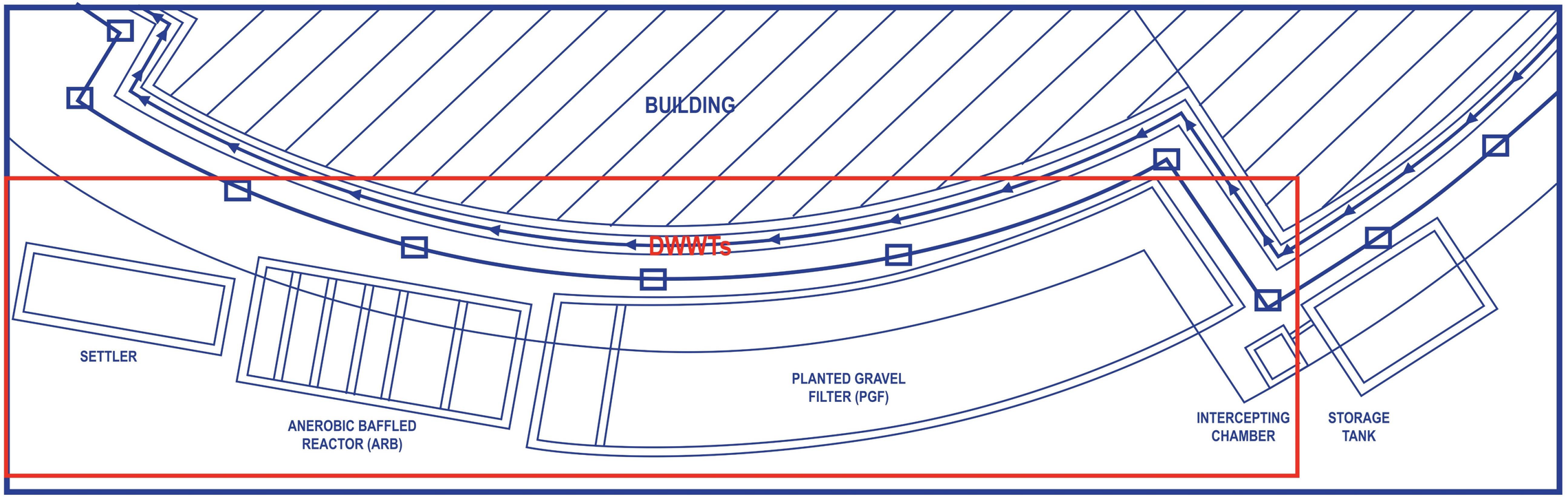
*Treated DEWATS water sample **on left**.*
*On the **right** is clean filtered drinking water sample collected from dispenser at Ganga Prem Hospice*

Sprinklers in Ganga Prem Hospice garden using DWWT treated water

The plentiful source of irrigation water from the DWWT system keeps the grass and garden green.

Decentralised Wastewater Treatment System (DWWTs)

GANGA PREM HOSPICE



DESCRIPTION

This system treats wastewater generated within the hospice premises from the kitchen and bathrooms. The system uses natural technology that treats without use of any chemicals or energy. The treated water is of quality that is fit-for horticulture purposes. The treated water is stored in a storage tank from where, it is pumped for re-use.

DESCRIPTION

Implementing Agency: Ganga Prem Hospice

Knowledge Partner and Design:
Centre for Science and Environment, New Delhi

Proposed use of treated water:
Horticulture Purpose

Treatment Capacity: 10,000 litres per day

Project Commencement: 2017

DON'TS

- Plucking plants/ flowers from the planted gravel filter (PGF) bed is prohibited.
- Avoid throwing wrappers , plastics or rubbish inside any of the tanks/ planted filter bed.
- The treated water is not for drinking or bathing.
- Don't allow animals or pets near the system.

DO'S

- If any unusual observation or concerns contact - Name, Designation and Phone number

DWWT optimization hurdles encountered

- Weaning facility inmates & visitors off the habit of flushing disposables down in the DWWT system. Constant reminders needed as new patients/carers keep arriving ;

- Minimizing solid particles/vegetable/food pieces from kitchen wastewater - *jaali* installed to catch debris ;

- PGF plants dying off : are replaced from time to time;

- Rishikesh receives heavy rainfall : PGF flooding happens on occasion .

MAINTENANCE OF DWWT DONE:

- Regular visual checking of water sample;
- Regular settler cleaning ;
- External sludge (cow dung slurry) introduced (**Sept 2017**: fresh cow dung+ sludge+water);
  February 2019: fresh cow dung only in 300L water);
- Traps installed to catch non-biodegradable debris.

DWWT System Benefits & Popularization

- No discharge of wastewater in an otherwise ecologically sensitive area with wide biodiversity. Self-sufficiency in wastewater management for the hospice;
- Model system for the entire area ;
- Treated wastewater provides easy source of water for garden & plant irrigation – no need to pump water from underground ;
- DWWT system gels into the landscape – no conspicuous over-ground structure to become an eyesore in premises. PGF makes DWWT system look part of the garden ;
- No odour/offensive smell around the DWWT system while walking in the garden. Experience remains pleasant.

DWWT System Benefits & Popularization (...contd)

The Ganga Prem Hospice DWWT System has been observed by :

Students of neighbouring schools who visit GPH for educational purposes ;

Under-graduate medical students ;

Visiting doctors, nurses, therapists ;

Volunteers/professionals from various fields;

Visiting Maharatna PSU officers/Corporate Sector Professionals (BHEL, THDC, IFCI, Hero MotoCorp)

Ganga Prem Hospice Training with CSE & Team

CERTIFICATE OF PARTICIPATION

ADVANCED TRAINING PROGRAMME ON DECENTRALIZED WASTEWATER, FAECAL SLUDGE AND SEPTAGE MANAGEMENT

This is to certify that Mr / Ms COL VIJAY PAL SINGH NARULA (Retd.) has participated in the **"Advanced Training Programme on Decentralized Wastewater, Faecal Sludge and Septage Management"** organised by the School of Water & Waste (SW&W), Centre for Science and Environment from **9 – 12 March, 2021** at Anil Agarwal Environment Training Institute (AAETI), Nimli, Rajasthan.

With best wishes,

Dr Suresh Kumar Rohilla
Senior Director & Academic Director
School of Water and Waste, CSE

Under the aegis of COO, at the Ganga Prem Hospice facility the team managing DWWT System:

1. Manager : Admin
2. Admin Dept officers
3. Gardener
4. Housekeeping/cleaning staff

Remote assistance by :
Coordinator, Ganga Prem Hospice