

Fact Sheet Water Reclamation and Reuse

Definition

Water reclamation is the treatment or processing of wastewater to make it reusable with definable treatment reliability and meeting appropriate water quality criteria; water reuse is the use of treated wastewater or reclaimed water for a beneficial purpose. The term reclaimed water is used interchangeably with the often more culturally-acceptable term recycled water.

Typical wastewater treatment schemes incorporate multiple levels of physical, biological, and chemical treatment in order to ensure that water discharged to the environment does not pose a significant risk of adverse environmental or health impacts.

Water reclamation approaches uses the same technologies as conventional waste water treatment. There are three levels of treatment. They are primary, secondary and tertiary treatment. Direct potable reuse is very rarely recommended; regardless of the level of treatment reclaimed water has received. Reclaimed water is mostly used in Grenada for irrigation.

Description

There are several secondary treatment technologies they include:

Stabilization and aerated ponds lowest capital cost lowest operation cost, lowest skill level but requires large land space but produces small amount of sludge. It uses macrophytic plants and microorganisms in an artificial pond to treat organic residues and clarify wastewater. The treated water could be used for irrigation.

Trickling filter or Rotating biological contractor is a biological treatment process used in the treatment of wastewater after the removal of grit and solids in a primary screen process followed by settling. The treated water can be emptied into a body of water.

Activated sludge is also a biological treatment and it has the highest capital and operations cost, it requires a high operational skill and is energy intensive but uses lowest land space. Produces large amount of sludge. This process remove nitrogen and phosphorus from the treated water.

How does the technology/practice contribute to climate change adaptation?

Water reclamation and reuse approaches can and have been shown to be effective for adapting water resource management in the face of such stressors. Most importantly, water reclamation and reuse contributes to climate change adaptation by allowing water resources to be diversified and conserved.

What are the costs and financial requirements?

In general, the most economically viable applications for water reuse are those that replace potable water with reclaimed water for use in irrigation, environmental restoration, cleaning, toilet flushing, and industrial uses.

The financial requirements for implementing water reclamation and reuse programs will vary significantly based on the type of application that is planned for the reclaimed water. An economic analysis should be conducted in order to weigh the cost of maintaining traditional approaches and of possibly needing to develop additional water sources versus the cost of retrofitting existing and constructing new infrastructure for reuse applications.

In 1992 a study wastewater treatment put the cost of the technologies for Grenada as follows:

Technology	Capital cost (US\$)	Operating cost (US\$ per year)
Stabilization pond	600, 000 – 1 500,000	60,000.00
Aerated pond/oxidation ditches	1,000,000 – 1 500,000	140,000
Rotating biological contractor/trickling filter	1,000,000- 1500 000	220, 000
Activated sludge	2,000,000 – 2,500,000	270,000

The Caribbean Environmental Health Institute (CEHI) in 2009 estimated that the capital costs for a centralized waste stabilization pond treatment plant for Grenada to be US\$ 885, 614, 216 and the operating cost to be US\$ 227, 368, 986.

A stabilization pond secondary treatment system was installed at a 254-room hotel in the region at a cost of \$EC 773, 847

Status of technology in Grenada

Wastewater treatment technology is currently only practiced by two entities in Grenada. Both facilities use treatment lagoons and the water is used for landscaping. There is no mechanical treatment system at the national level with the capacity to do tertiary treatment.

Site-specific conditions, social and economic considerations, local preference or whether the system will be on-site or off site has to be taken into account for in selecting “appropriate” or “correct” technology for different part of Grenada.

Four small hotel properties and one major hotel currently have waste water treatment systems and the water is reused for irrigation of lawns.