

INNOVATIVE ONSITE WASTEWATER DISPOSAL SYSTEMS OUTREACH AND DEMONSTRATION PROJECT

INTRODUCTION

The Puerto Rico Environmental Quality Board (EQB) estimates that fifty four percent of the population of Puerto Rico uses onsite wastewater disposal systems (OWDS) (Puerto Rico Environmental Quality Board, 2004). OWDS for residential wastewater are mostly septic systems.

Conventional septic systems are an effective technology to handle domestic wastewaters in areas where connections to public treatment systems are not accessible or are overloaded. For these systems to be effective they must be designed, constructed and managed adequately. The primary advantage of these systems is that they do not represent additional load to the public treatment systems. Its main disadvantage is that they are limited by soil characteristics and the size of the residential lots.

In Puerto Rico there are 175 established soil series and 12 tentative series (Beinroth, F. H. et al., 2003). This diversity in the soils in addition to the high cost of land, presents a complex technical situation to the designers of OWDS. Many times the designers are faced with having to design systems in small lots in areas of high population density. Many of these lots are located in coastal areas with high water tables. Conventional septic systems will not work effectively and can not be built in compliance with local regulations in these lots.

Conventional systems, which consist of a septic tank with two compartments and an infiltration field, can be replaced with an array of innovative technologies that incorporate multiple stages of wastewater treatment. These new innovative technologies have been in use in places like the coastal areas of Rhode Island and have been disseminated by groups like the Consortium of Institutions for Decentralized Wastewater Systems with great success. Unfortunately many designers and regulators in Puerto Rico are not familiar with innovative OWTS and need to be trained on their use. In addition, there is a need to establish demonstration units so that the designers and potential users of these systems can have better understanding of them.

An example of the need for innovative wastewater treatment technologies is a government sponsored low cost housing project in Puerto Rico, the "Special Communities Project." The Special Communities Project includes 300 low income communities throughout the Island with new housing units on lots of 350 square meters (approximately 1/10 of an acre). Most of these communities do not have access to public wastewater treatment systems and will need innovative OWTS.

OBJECTIVES

1. To establish an innovative wastewater treatment demonstration system in the Gurabo Experiment Station of the University of Puerto Rico. The system will consist of a septic tank, dosing tank with pump and an above ground infiltration field using sand as a filtering media.
2. Prepare information sheets and design guidelines for the demonstration system. The guidelines will serve designers in the planning and establishing of similar systems in other communities. The target audience of the information sheets will be community leaders, extension personnel and other agencies that have direct contact with the special communities and other potential users of these technologies.
3. Prepare a one day workshop for selected Extension Service county agents, personnel from Department of Natural and Environmental Resources and others agencies with interest in these systems.

METHODOLOGY

1. Study available information and collect data for the design of innovative wastewater treatment systems that could be used in areas of Puerto Rico where conventional technologies do not work.
2. Prepare plans and construction drawings for a demonstration system in the Gurabo Experiment Station of the University of Puerto Rico.
3. Present the alternative system to the regulatory agencies for their consideration and approval as a demonstration system.
4. Construct the demonstration system in the Gurabo Experiment Station of the University of Puerto Rico. This will be done by the personnel of the Station under the supervision of the principal investigator of this project.
5. Prepare pamphlets and technical information about this project. The technical information will include design guidelines.
6. Offer a one day workshop in OWDS. The audience will be Agricultural Extension county agents, personnel of the Department of Natural and Environmental Resources and other agencies who work with onsite disposal systems. The workshop will have a "train the trainers" format.

PRELIMINARY WORK PLAN

- Collection of preliminary data. ----- 1.5 month
- Preparation of plans and construction drawings for the demonstration system --- 1 month
- Presentation and approval from regulatory agencies ---- 2 months
- Construction of the demonstration system ---- 3 months
- Preparation of publications --- 1.5 month
- Preparation of material for seminar, selecting and inviting the audience for the seminar presenting the seminar --- 1.5 month
- Completion report writing, editing, and delivery --- 1.5 month