

Department of Health  
Bureau of Onsite Sewage Programs

# Nitrogen Reduction Strategies Study Progress Update November 2011



# Florida Onsite Sewage Nitrogen Reduction Strategies Study

## Purpose:

- Develop passive strategies for nitrogen reduction that complement the use of conventional onsite sewage treatment and disposal systems
- Further develop and test the most cost-effective nitrogen reduction strategies



# Florida Onsite Sewage Nitrogen Reduction Strategies Study

## Project Tasks:

- A. Technology Selection & Prioritization
- B. Field Testing of Technologies
- C. Evaluation of Nitrogen Reduction by  
Soils & Shallow Groundwater
- D. Nitrogen Fate and Transport Modeling



# Florida Onsite Sewage Nitrogen Reduction Strategies Study

## Task A: Technology Selection & Prioritization

- Selected different technologies for field testing after conducting a literature review, technology evaluation, and technology prioritization process
- Built pilot scale units with various media combinations at a newly constructed test facility at the University of Florida's Gulf Coast Research and Education Center in Wimauma, Florida
- Results from two-stage passive biofilter are encouraging after 12 months of testing, showing a TN reduction of over 95% (2.6 mg/L)
- Also testing reactive media in a more in-situ/in-ground system approach



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## **Nitrogen Study Test Facility**





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## Task B: Field Testing of Technologies

- Installation of top ranked nitrogen reduction technologies at actual home sites and document performance and cost
- Total of seven sites to be installed and monitored
- One system (Nitrex) installed to date in Wakulla County, sampling is underway
- Other homeowner agreements have been reached for potential sites in Hillsborough, Marion, Lee, Seminole, and Wakulla counties



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## Task C: Evaluation of Nitrogen Reduction by Soils & Shallow Groundwater

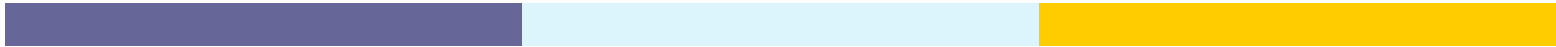
- Field evaluations of nitrogen reduction in Florida soils
- Will provide data for the development of a simple planning model
- Test Facility to be constructed to conduct controlled tests in multiple drainfield configurations
- Up to four home sites will be evaluated
- Two home sites (Wakulla and Seminole counties) and the existing mounded system at the test facility have been instrumented and tested to date
- Other homeowner agreements have been reached in Hillsborough, Marion, Seminole, and Wakulla counties



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## Task D: Nitrogen Fate and Transport Modeling

- Development of a simple fate and transport model of nitrogen from onsite sewage treatment and disposal systems that can be used for assessment, planning, and siting
- Quality Assurance Project Plan has been completed
- Development of a soil model is underway and will be utilized to generate a simple tool for prediction of nitrogen removal in Florida soils



# Florida Onsite Sewage Nitrogen Reduction Strategies Study Funding Recommendations

- Project is funded through June 30, 2012. Funding (cash) required in the amount of \$2.2 million for continuation and completion of all tasks in the original project scope.
- The results of this project will assist with producing more cost-effective nitrogen reducing systems that protect groundwater with lower life-cycle costs and lower energy demands.