REPORT ON RANGE OF COSTS TO IMPLEMENT A MANDATORY STATEWIDE 5-YEAR SEPTIC TANK INSPECTION PROGRAM

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EXECUTIVE SUMMARY

This report is submitted in compliance with Line Item 1682, House Bill 5001, General Appropriations Act for Fiscal Year 2008-2009. The bill tasks the Department of Health to "submit a report to the Executive Office of the Governor, the President of the Senate and the Speaker of the House of Representatives by no later than October 1, 2008, which identifies the range of costs to implement a mandatory statewide 5-year septic tank inspection program to be phased in over 10 years pursuant to the Department of Health's procedure for voluntary inspection, including use of fees to offset costs."

Less than 1 percent of Florida's 2.3 million onsite sewage treatment and disposal systems are actively managed under operating permits and maintenance agreements. The balance of Florida's 2.3 million systems are generally only serviced when the system fails. Over half of these systems are 30 years old and were installed under standards less stringent than current standards.

The U.S. Environmental Protection Agency strongly encourages adoption of programs, which include a comprehensive management and maintenance component to ensure onsite systems are performing as designed and to minimize the potential adverse human or environmental health impacts from the continued use of under designed or failing systems. As requested, this report provides a range of costs to implement a mandatory statewide management and maintenance or septic tank inspection program. Cost ranges are given for department and the private sector, both in terms of administrative and onsite system construction costs.

Assumption was made that the program could be implemented through the department's existing system repair and modification programs and during real estate transactions. At the end of a 10 year implementation cycle, all 2.3 million systems would have been inspected and mechanisms would be in place to annually inspect 460,000 systems. The department's cost would be fully funded through application and permitting fees, currently $112.00. No general revenue funding would be required. Consideration could be given to adding a surcharge to these fees to fund a grant or loan program for low income families. System evaluation and tank pump out would be done by licensed septic tank contractors or plumbers at a current average cost of $500. The average repair cost is estimated to range from $1,988 to $4,088 with an average cost of $3,038 for a standard gravity system. It is estimated that 9.5 percent of systems inspected would need repair permits during the initial implementation cycle. After implementation, it is expected that the number of failures would be significantly reduced and the life span of onsite systems significantly increased.

1.0 INTRODUCTION

This report is submitted in compliance with Line Item 1682, House Bill 5001, General Appropriations Act for Fiscal Year 2008-2009. The bill tasks the Department of Health to "submit a report to the Executive Office of the Governor, the President of the Senate and the Speaker of the House of Representatives by no later than October 1, 2008, which identifies the range of costs to implement a mandatory statewide 5-year septic tank inspection program to be phased in over 10 years pursuant to the Department of Health's procedure for voluntary inspection, including use of fees to offset costs."

In Florida, 2.3 million onsite sewage treatment and disposal systems (OSTDS or onsite systems) are in use statewide, serving approximately 31% of the population. More than half of Florida's OSTDS are over 30 years old and were installed under standards less stringent than current standards. The U.S. Environmental Protection Agency (EPA) concluded in its 1997 Report to Congress that "adequately managed decentralized wastewater systems are a cost-effective and long-term option for meeting public health and water quality goals, particularly in less densely populated areas." In Florida, development is dependent on OSTDS due to the cost and time frames to install central sewer. In rural areas and low-density developments central sewer is not cost effective. Less than one percent of Florida systems are actively managed. The remainder generally only receive maintenance when they fail, often leading to costly repairs that could have been avoided with routine tank pump outs and service.

To promote onsite system management and maintenance programs, the U.S. EPA developed the Voluntary National Guidelines for Managing Onsite and Clustered (Decentralized) Wastewater Treatment Systems. In its guidelines, the EPA recognizes several benefits to the implementation of effective onsite system management and maintenance programs. The EPA concluded that "These systems will play an even greater role in the future because they are often more affordable than conventional centralized sewage treatment plants and can be designed to perform under a variety of specific site conditions." Among the benefits, EPA listed:

- Protection of property values - Well-managed, properly designed onsite or cluster systems can provide sewage treatment equivalent to a centralized plant, often at a lower cost.
- Water conservation **-** Decentralized systems can help recharge groundwater aquifers and maintain dry season flow in streams.
- Preservation of the tax base - Decentralized systems can be installed on an as-needed basis, thus avoiding the large upfront capital costs of centralized sewage treatment plants.
- Life-cycle cost savings - Proper management can result in lower replacement and repair costs, increased property values, enhanced economic development, and improved quality of life.
- Effective planning - Decentralized systems provide flexible wastewater options and help achieve land use objectives.

In its guidelines, the EPA suggested five management and maintenance models or recommendations; these are the Homeowner Awareness, the Maintenance Contract, the Operating Permit, the Responsible Entity, and the Responsible Management Entity (RME) Ownership Models. Florida has implemented some aspects of the first three but does not have a mandatory maintenance and management program for the vast majority of its onsite systems.

In Florida, management and maintenance programs have been implemented to ensure upgrades and infrastructure improvements in the areas of publicly owned wastewater collection and treatment facilities, stormwater management projects, combined sewer overflow control facilities, and other non-point source pollution control projects. Florida would greatly benefit from the implementation of a comprehensive management and maintenance or mandatory septic tank inspection program to ensure onsite systems are performing as designed and to minimize the potential adverse human or environmental health effects from the continued use of illegal or failing onsite systems or onsite systems located in environmentally sensitive areas.

As requested, this report provides a range of costs to implement a mandatory statewide management and maintenance or septic tank inspection program. Cost ranges are given for department and the private sector, both in terms of administrative and onsite system construction costs.

2.0 MANAGEMENT AND MAINTENANCE OF FLORIDA'S ONSITE SYSTEMS

Florida has been a leader in the field of onsite wastewater treatment and disposal practices. Onsite system construction and use standards in the State date to 1921. These standards provide needed environmental and public health protection. However, increases in population density have placed significant challenges to Florida's onsite system industry and regulatory authorities. In particular there is growing concern over the nutrient impact on Florida's waters from onsite systems, as well as other non-point sources of nutrients.

The majority of Florida's onsite systems provide passive treatment with a septic tank and subsurface drainfield. With the advent of new onsite system technologies, management and maintenance became critical to ensure the proper functioning of these systems. The management of these systems conforms to the EPA Maintenance Contract and Operating Permit management models 2 and 3.

The Maintenance Contract Model applies "where more complex system designs are employed to enhance the capacity of conventional systems to accept and treat wastewater" and the "objectives of this model build on the Homeowner Awareness Model by ensuring that property owners maintain maintenance contracts with trained operators." The Operating Permit Model is recommended when "sustained performance of onsite wastewater treatment systems is critical to protect public health and water quality . . . A principal objective of this management program is to ensure that the onsite wastewater treatment systems continuously meet their performance criteria…limited-term operating permits are issued to the property owner and are renewable for another term if the owner demonstrates that the system is in compliance with the terms and conditions of the permit…systems can be used safely in more sensitive environments if their performance meets those requirements reliably and consistently. The operating permit provides a mechanism for continuous oversight of system performance and negotiating timely corrective actions or levying penalties if compliance with the permit is not maintained. To comply with these performance standards, the property owner should be encouraged to hire a licensed maintenance provider or operator."

In Florida, less than one percent of the estimated 2.3 million active systems has operating permits and receives annual inspections by the Department of Health and routine maintenance from private maintenance entities. Beyond a conventional septic tank and subsurface drainfield, the advanced or more complex onsite systems designs that require operating permits, generally utilize aerobic treatment units (ATU), or are designed to meet specific treatment standards (performance-based treatment systems), or are systems designed to treat commercial sewage

waste (food establishments), or are systems that are located in industrial or manufacturing areas, where there is potential for disposal of hazardous, toxic, or industrial wastes. Of the 16, 701 onsite systems with operating permits, approximately 54% are ATU, 34% are located in industrial or manufacturing zones, 8% are designed to treat commercial sewage waste and 5% are for performance-based treatment systems.

Notable because of the lack of management and maintenance requirements, is the remaining 99% of Florida onsite sewage systems. While these systems were designed and installed in accordance with the regulations at the time of construction and installation, many are aging and by today's standards, may be under designed. In addition, repairs of onsite systems were not regulated until 1987; many systems may have been unlawfully modified. Also, 1.3 million onsite systems were installed prior to 1983 (DOH Statistical Data) and a significant fraction of the pre-1983 systems may have been installed with a 6" separation from the bottom of the drainfield to the estimated seasonal high water table. The current water table separation requirement is 24" and is based on research findings compiled by the DOH in 1989 that indicate for septic tank effluent; the presence of at least two feet (24") of unsaturated fine sandy soil is needed to provide a relatively high degree of treatment for most wastewater constituents. Florida's pre-1983 systems may not provide the same level protection expected from systems installed under current construction standards.

While not an EPA Maintenance Contract or Operating Permit Model program, a mandatory statewide 5-year septic tank inspection program to be phased in over 10 years, based on the Department of Health's existing procedure for voluntary inspection, would be a significant upgrade to Florida's onsite system management practices. The mandatory inspections would initially be phased in through inspection and inclusion of onsite systems that are already inspected by the Department (i.e., county ordained mandatory inspection programs, systems applying for modifications or repairs and for systems subject to real estate transactions). A mandatory septic inspection program would result in greater environmental and public health protection by increasing system owner awareness, prolonging system life and delaying or eliminating costly system repairs.

2.1 COUNTY MANDATED SEPTIC TANK INSPECTION PROGRAMS

There are 3 Florida counties, Charlotte, Escambia, and Santa Rosa that have implemented local management and maintenance programs to ensure the onsite system infrastructure is adequately maintained and continues to operate effectively. A survey of these management programs was conducted July 16, 2008.

The Charlotte County locally mandated inspection program was implemented in 2007. It requires 5-year inspections in geographically designated and environmentally sensitive areas. The tracking and property owner inspection notification process is handled by the county health department (CHD) and inspections are performed by both the CHD inspectors and the private sector (Registered Septic Tank Contractors, State Licensed Plumbers and Private Certified Environmental Health Professionals). For the year starting July 1, 2007 and ending June 30, 2008, the Charlotte County program conducted 3000 mandated septic tank inspections. Charlotte County's mandatory inspection program is costing approximately $115.00 per inspection and the program cost is covered by local fees. In general, the program was received favorably, but has received some complaints from economically challenged property owners. Charlotte CHD suggested that a statewide mandatory septic system inspection program must be properly staffed and must charge ample fees to cover costs.

The Escambia County program was implemented in 1999 and the mandated septic inspection is required at the point of sale (POS) on a real estate transaction. The inspection procedure is similar to the Department of Health's existing procedure for voluntary inspections. The objective of the POS inspection is to provide information and protection to property owners and to identify and repair existing malfunctioning systems. The program inspections are limited to a geographically designated environmentally sensitive areas and the property owner notification process is handled by realtors and title companies. Inspections are performed and tracked by the Escambia CHD. For the year starting July 1, 2007, ending June 30, 2008, the Escambia County program conducted 711 mandated septic tank inspections. In general, Escambia County's program was favorably received, as property buyers benefit from the information they receive on the condition of the onsite system. Escambia County's mandatory inspection program is costing approximately $83.93 per inspection and program costs are covered with by an inspection fee. Escambia County suggested that a statewide mandatory septic tank inspection program must be adequately tracked, have a proper enforcement mechanism and consider a program to provide financial aid.

The Santa Rosa County program was implemented in 2000 and requires a mandatory inspection every 5 years. Similar to Escambia County's program, in Santa Rosa the program inspections are limited to geographically designated environmentally sensitive areas and the property owner notification process is handled by the real estate industry. CHD inspector, Registered Septic Tank Contractors and Private Environmental Health Professionals are permitted to perform the mandatory inspections. For the year starting July 1, 2007, ending June 30, 2008, the Santa Rosa County program conducted 944 mandated septic tank inspections. In general, Santa Rosa County's program was favorably received. The CHD reported that while new taxes or program fees were not popular, property buyers do appreciate the information they receive on the condition of the onsite system. Santa Rosa County's mandatory inspection program is costing approximately $215.00 per inspection and program costs are partially recovered with a $150.00 per inspection fee. Santa Rosa County suggested that a statewide mandatory septic tank inspection program should at least require pumping of the tanks and appropriate fees to cover the complete cost of the program.

A number of counties, including Franklin and Monroe, already have a significant number of systems under operating permits and maintenance agreements. Wakulla County has recently adopted a local ordinance requiring performance based treatment systems which are under active management. A number of other counties are actively considering such programs.

3.0 MANDATORY SEPTIC TANK INSPECTION PROGRAM COSTS

Following is the range of costs analysis for the implementation of a 5-year statewide management and maintenance mandatory septic tank inspection program. Cost ranges are given for department and the private sector, both in terms of administrative and onsite system construction costs. Phasing in this program during real estate transactions would provide opportunity for the owner to fund any needed repairs or upgrades.

3.1 DOH ESTIMATED EXPENDITURES

The annual DOH administrative expenditures include the costs of one full time equivalency in central office and the costs for the county health department staff to conduct the mandatory inspection program. The county health department costs has been calculated based on the estimated number of annual inspections and the cost of implementing similar programs in Charlotte, Escambia, and Santa Rosa counties (Table 1).

The estimated revenue is obtained by dividing the approximate 2.3 million active OSTDS into 10 years to obtain the 230,000 systems that would need to be inspected. However, on a yearly basis, an average number of onsite systems will already be inspected by the department during the normal course of business and these would not need to be included. These are onsite systems that are currently inspected under a county ordained mandatory inspection program (4,940), modifications to existing systems (5,302), system repairs (19527), abandoned systems (5065), and the 16,701 systems that are currently managed under DOH operating permits. These inspections would comply with the proposed statewide mandatory septic tank inspection based on the existing voluntary inspection procedure. The 230,000 systems to be inspected can be reduced by a total of 51,535 systems, for a total of 178,465 systems per year that would be subject to the mandatory septic tank inspection program.

Table 1. Estimated Expenditures	**Annual**
CENTRAL OFFICE 1 FTE Environmental Health Program Consultant Oversees statewide mandatory inspection program. FTE computed at 10% over minimum w/35% fringe and 25% lapse. Includes max travel, operating capital outlay, and human resource.	**$82,712**
COUNTY HEALTH DEPARTMENT County Health Department Staff. Initial costs based on 178,465 mandatory septic tank inspections with a 9.5% failure rate (repair required). 178,465 inspections * $112 (CHD Inspection Permit Fee) = $21,772,730 178,465 * 0.095 (county mandated inspection program estimated failure rate) = 16,954 failures. 16,954 (estimated failures) * $195 (CHD repair permit fee) = $3,306,030 TOTAL CHD COST $21,772,730 + $3,306,030 = $	**$25,078,760**
TOTAL ESTIMATED EXPENDITURES	**$25,161,472**

The current Florida Demographic Forecast predicts a slower population growth for the next 10 years. The forecast indicates that between April 1, 2010 and April 1, 2018; population growth is expected to average 301,795 net new residents per year. Based on the demographic forecast of 301,795 new residents per year, by year 2018 Florida could add as many as 2,414,360 new residents. U.S. Census data for the year 2000 indicates there were 2.46 persons per Florida household. By 2018, Florida could expect to add approximately 981,447 new households. DOH 2002 Census data shows that approximately 31% of Florida's population is served by onsite systems. Based on the demographic forecasting data and assuming that 31% of the population will continue to be served by onsite systems, by the year 2018 Florida could expect to add as many as 304,249 new onsite systems or an average of 30,249 systems per year.

It is anticipated that department expenditures would be offset by application and permit fees. Fees currently charged by the counties with mandatory inspections average $149.64 (range from $83.93 to $215.00).

3.2 PRIVATE SECTOR COSTS

The estimates for private sector costs were obtained based on the following assumptions.

- The number of inspections expected to identify failing systems, was based on the average failure rate obtained from the Charlotte and Santa Rosa county mandated septic tank inspection programs. The Charlotte county failure rate is 8%. Santa Rosa CHD reported a failure rate of 11%. Their average failure rate was 9.5% per year. This average failure rate was applied to the 178,465 expected yearly inspections.

- Estimated private sector OSTDS contracting construction costs were based on pricing information collected by DOH in two previous onsite sewage treatment and disposal system projects. In 2006, the Department provided a summary comparison for conventional versus performance based onsite sewage treatment and disposal systems to the Department of Community Affairs (DCA). The cost comparison was provided in response to a request from DCA for price quotes for the installation of nitrogen reducing technology relative to conventional system technology in Wakulla County, Florida. In 2007 the department conducted a second cost survey to obtain system pricing for the Wekiva Study Area north of Orlando.

Wakulla County Pricing Information

The estimates provided in the Wakulla County project were based on the cost to install a system for an average new 3-bedroom house in the Crawfordville area of Wakulla County, with a nitrogen treatment standard of 10 mg/L TN, a 300 gallon daily flow, assuming to meet all regulatory requirements (e.g., setbacks, authorized sewage flows, etc). The estimated costs accounted for varying soil and water table conditions, which are factors that directly influence drainfield sizes. The systems reported to have a drainfield bottom relative to ground surface of 3 and 24 inches, are mounded drainfields that require additional fill and would be more costly to construct. The Wakulla County price information provides cost information for low-pressure dosed, drip and gravity systems for a range of treatment levels.

Table 2. Wakulla County OSTDS Average Cost Table				
	Drainfield Bottom Elevation Relative to Ground Surface	Conventional drainfield area (ft^2)	PBTS-Cost (Advanced secondary TN=10 mg/L)	**Conventional System Cost**
Dosed System (low-pressure or drip irrigation)	24" above	300	$11,275 (drip) $11,350 (low-pressure)	$8,150 (drip) $7,850 (low-pressure)
Dosed System (low pressure or drip irrigation)	3" above	462	$10,875 (drip) $8,800 (low-pressure)	$6,000 (drip) $5,300 (low-pressure)
Dosed System (low pressure or drip irrigation)	18" below	334	$10,575 (drip) $7,060 (low-pressure)	$3,800 (drip) $3,560 (low-pressure)
Gravity System	18" below	334	$7,253 $5,375	**$2,100** **$1,875**

Wekiva Study Area Pricing Information

The Wekiva Study Area costs estimates were based on the cost for repair to systems receiving an average of 300 gallons per day (gpd) or a typical residential 3-bedroom house with no more than 2,250 square feet of building area. For installation of new systems, the costs were estimated for a system receiving 400 gpd or a typical residential 4-bedroom house with no more than 3,300 square feet of building area. The Wekiva estimates also accounted for differences in repair and new installations costs by soils. One scenario looked at wet soils where a mounded drainfield would be required. The second scenario looked at a dryer soil where a subsurface drainfield would be required. The Wekiva Study Area cost survey estimate the cost of a voluntary tank pump out and existing system evaluation at $500.00 each.

Table 3. Wekiva Study Area OSTDS Average Cost Table						
	Standard Gravity System (septic tank and drainfield)	ATU and Gravity Drainfield	PBTS 10 – 20 mg/l TN and Gravity Drainfield	Standard Mound (septic tank and mounded drainfield)	ATU and Mounded Drainfield	PBTS 10 – 20 mg/l TN and Mounded Drainfield
Repair (Drainfield only)	**$3,750**	$4,500	$4,500	$5,496	NO DATA	NO DATA
Repair (Tank/Drainfield)	**$4,425**	$11,666	$11,666	$6,312	$13,633	$13,633
New Systems	$3,886	$10,565	12,000	$5,602	$13,262	$13,900
Pump out and Evaluation	**$500.00**					

The estimated system repair cost is obtained by averaging the system cost information collected by DOH for the Wekiva Study Area and Wakulla County Projects. The combined average range is $1,988 to $4,088, resulting in a combined system costs average of $3,038 per system. Finally, the costs of a septic tank pump out and existing system evaluation, obtained from the cost survey information collected during the Wekiva Study Area Project, is estimated to be $500.00.

Table 4. Private Sector OSTDS Costs	Annual
1. **System Not in Failure**	
CHD Fees: Includes Notification, Application and Permit Review.	**$112**
Private Existing System Evaluation	**$500**
Estimated Cost to System Owner	**$612**
Estimated 178,465 inspections * 0.905% = 161,511	
Estimated Private Sector Cost/year = 161,511 * $612 =	**$98,844,732**

Table 4. Private Sector OSTDS Costs	Annual
***2.* System in Failure**	
CHD Fees (Includes CHD Owner Notification and Records Maintenance Fee, CHD Application and Permit or Compliance Determination Fee)	**$112**
CHD Repair Fee (Site Evaluation of $115 + Research/Surcharge of $5 + Construction and Final Inspection Fee of $75 + above listed CHD Fees.)	**$195**
Private Existing System Evaluation	**$500**
Average System Repair Cost	**$3,038**
Estimated Cost to System Owner	**$3,845**
Estimated 178,465 * 0.095% = 16,954 failures	
Estimated Private Sector Cost/year = 16,954 * ($112 + $195 + $500 + $3,038) = 16,954 * 3,845 =	**$65,188,130**
Overall Private Sector Costs	**$164,032,862**

With the system not in failure the $612 cost over five years prorates to $10.20 per month. This figure is significantly less than monthly sewer fees. With the system in failure the $3,845 cost over five years prorates to $64.08 per month. Again this figure is significantly less than the connection charge to central sewer.

3.3 MANDATORY 5-YEAR SEPTIC TANK INSPECTION PROCEDURE

This management program is intended to provide mandatory maintenance for onsite sewage treatment and disposal systems on a recurring five-year cycle to be phased in over a 10-year period. The procedures used to inspect the system as well as the required report will be based on the voluntary inspection protocol currently in use. Additional requirements shall be written that will allow systems that have been inspected under other departmental criteria to receive credit for having the system maintained. During the initial 8 years of implementation, the statewide mandatory septic tank inspection program will first include all onsite systems inspected under other departmental criteria (i.e., county ordained mandatory inspection programs, systems that apply for modifications or repairs and for systems that are subject to real estate transactions). In the final two-years of implementation, subject to the completion of the statewide inventory of onsite treatment and disposal systems, as required by House Bill 5001, all remaining onsite systems will be inspected and phased in a 5-year cycle. A separate benefit from performing this program will be the identification of onsite sewage treatment and disposal systems that are not functioning in a sanitary manner. Systems that are found to not be functioning in a sanitary manner will be required to be repaired in compliance with department standards.

4. CONCLUSION

As required in Section 5 of the Conference Report On House Bill 5001, General Appropriations Act for Fiscal Year 2008-2009, this report identifies the range of costs to implement a mandatory statewide 5-year septic tank inspection program to be phased in over 10 years pursuant to the Department of Health's procedure for voluntary inspection, including use of fees to offset costs. The costs range is provided for department and the private sector, both in terms of administrative and onsite system construction costs. Department costs are identified in terms of expenditures. Private sector costs are identified in terms of individual system owner costs and overall private sector costs.

The estimated costs ranges are:

The estimated cost to system owner when the private sector (Certified Environmental Health Professional or Registered Septic Tank Contractor) performs the mandatory septic tank inspection and the system is found in good operating conditions is $612. With the system not in failure the $612 cost over five years prorates to $10.20 per month. This figure is significantly less than monthly sewer fees.

The estimated cost to the system owner when the private sector (Certified Environmental Health Professional or Registered Septic Tank Contractor) performs the mandatory septic tank inspection and the system is found to be in failure (add system repair cost) is $3,845. With the system in failure the $3,845 cost over five years prorates to $64.08 per month. Again this figure is significantly less than the connection charge to central sewer.

Total annual estimated cost to department is $25.2 million to be recovered by user fees, and the overall private sector costs are $164 million.

In order to implement the mandatory septic inspection program, the department will need to be given statutory authority and rule promulgation authority. This should occur in section 381.0065, Florida Statutes, the location of all other statutory authority for the regulation of onsite sewage treatment and disposal systems by the Department of Health. Without specific program authority the department will not be able to perform this function. Consideration could also be given to providing authority to a grant or loan program for low income families funded by a portion of the user fees.

The Environmental Protection Agency states that onsite systems are a "cost-effective and long-term option for meeting public health and water quality goals". It is the responsibility of the State of Florida to implement an onsite system management and maintenance program (i.e., mandatory septic tank inspection program), to ensure proper evaluation, maintenance and upgrades to Florida's onsite system infrastructure. A properly implemented management program will benefit Florida's onsite system owners and will improve environmental and public health protection.