



# Assistance Project for Wakulla County OSTDS and Decentralized Wastewater Systems Management Program

## Phase III Final Draft Report\*

---

By

**The Center for Economic Forecasting and Analysis  
The Florida State University  
3200 Commonwealth Blvd. Suite 153  
Tallahassee, FL. 32303-2770**

---

**Contract Agreement No: G0293**

**June, 2011**

---

\*The technical content of this report is final. The final report is pending until the final EPA funding amount and total project cost have been determined. This project and the preparation of this report was funded in part by a Section 319 Nonpoint Source Management Program Implementation grant from the U.S. Environmental Protection Agency through a grant agreement.

## Authors

### ***Julie Harrington, Ph.D.***

Director, Center for Economic Forecasting and Analysis, Florida State University, Florida State University, Research Complex, 3200 Commonwealth Blvd. Tallahassee, Fl. 32303. Tel. (850) 644-7357. Email: [jharrington@cefa.fsu.edu](mailto:jharrington@cefa.fsu.edu)

### ***Tom Taylor, Ph.D.***

Adjunct Professor, Florida State University. Tel. (850) 933-9444  
Email: [ttaylor@fsu.edu](mailto:ttaylor@fsu.edu)

### ***Shawn Lewers, Ph.D.***

College of Social Sciences, Urban and Regional Planning, Florida State University, 315 Bellamy Bldg., Tallahassee, FL. 32306-2280 Tel. (850) 644-8373  
Email: [sjlewers@fsu.edu](mailto:sjlewers@fsu.edu)

### ***Heejae Lee***

Researcher, Center for Economic Forecasting and Analysis, Florida State University, Florida State University, Research Complex, 3200 Commonwealth Blvd. Tallahassee, Fl. 32303.  
Email: [hjlee@cefa.fsu.edu](mailto:hjlee@cefa.fsu.edu)

### ***Yujing Liu***

Researcher, Center for Economic Forecasting and Analysis, Florida State University, Florida State University, Research Complex, 3200 Commonwealth Blvd. Tallahassee, Fl. 32303.  
Email: [yliu@cefa.fsu.edu](mailto:yliu@cefa.fsu.edu)

### ***Darin Duch***

Researcher, Center for Economic Forecasting and Analysis, Florida State University, Florida State University, Research Complex, 3200 Commonwealth Blvd. Tallahassee, Fl. 32303.  
Email: [dduch@cefa.fsu.edu](mailto:dduch@cefa.fsu.edu)

### ***Zafar R. Siddiqui***

Researcher, Center for Economic Forecasting and Analysis, Florida State University, Florida State University, Research Complex, 3200 Commonwealth Blvd. Tallahassee, Fl. 32303.  
Email: [zsiddiqui@cefa.fsu.edu](mailto:zsiddiqui@cefa.fsu.edu)

### ***Rebecca Markell***

Assistant Researcher, Center for Economic Forecasting and Analysis, Florida State University, FSU Research Complex, 3200 Commonwealth Blvd. Tallahassee, Fl. 32303  
Email: [rmarkell@cefa.fsu.edu](mailto:rmarkell@cefa.fsu.edu)

# Contents

Authors.....	2
Contents.....	3
List of Tables.....	5
Introduction.....	7
Background.....	12
Chapter 1: Task 1- Wakulla County OSTDS Inventory and Mapping Project.....	18
Methodology.....	21
Future Considerations.....	21
Chapter 2: Task 2- OSTDS Surveys.....	22
Survey Methodology.....	22
Survey Results.....	22
Part 2. Demographic Information of Residents in Wakulla County.....	23
Part 3. Importance Rating of the Objectives for OSTDS.....	27
Part 4. The Survey Respondents Acceptability Levels of the Management Options of OSTDS.....	36
Part 5. The Survey Respondents Acceptability Levels of the Size of the Utility District ...	40
Chapter 3: Task 3-Detailed Cost Effectiveness Analyses of Management Options.....	44
Situation – General Information Related to OSTDS.....	44
What Do We Want to Achieve?.....	45
Basic Septic System Management Options.....	46
Other Options for Septic System Inspection Management.....	48
Calculations for Other Scenarios.....	49
Several Financial Cost Options.....	52
Chapter 4: Task 4- Updated OSTDS Vulnerability or Sensitivity Modeling and GIS Map.....	54
The Vulnerability or Sensitivity Model.....	54
Chapter 5: Task 5- OSTDS Consensus Workshops.....	71
Task 5-A - OSTDS Consensus Workshop 1, Summary Report.....	71
Task 5-B – Workshop 1 Results and Preparation for Workshop 2.....	72
Task 5-C - OSTDS Consensus Workshop 2 – Summary Report.....	72
Task 5-D – Report to County Commissioners.....	73
Chapter 6: Task 6- Comprehensive Plan Amendments / Ordinances Development.....	74
The 2006 Wakulla County Water Quality Ordinance and 2011 Wakulla County Comprehensive Plan- Conservation Element.....	74

Proposed Changes on 2011 Wakulla County Comprehensive Plan.....	85
Conclusions and Recommendations.....	89
Conclusions.....	89
Recommendations .....	91
References and Source Information .....	94
Appendices .....	97
Appendix A: Survey Questionnaire .....	97
Appendix B: Survey Comments and Reponses .....	108
Appendix C: Wakulla County Infrastructure Committee Workshop on Septic System Inspection Policy Report (June 02, 2011).....	112
Appendix D: Wakulla County Infrastructure Committee Workshop Report (June 14, 2011).....	128
Appendix E: Septic System Inspection Management Options - Report to Wakulla County Board of County Commissioners.....	130
Appendix F: Draft Materials for the Infrastructure Committee Report.....	145

## List of Tables

Table 1 Demographic and Housing Market Data for Wakulla County, Florida.....	14
Table 2 Wakulla County Poverty & Unemployment Rate .....	16
Table 3 Wakulla County Income .....	16
Table 4 Wakulla Residents Income by Race .....	17
Table 5 Q1 Statistics Related to Information about OSTDS Survey Respondents .....	23
Table 6 Q2-1: What Does Your OSTDS Serve? .....	24
Table 7 Q2-2: Do You Own or Rent Your Home? .....	25
Table 8 Q2-4: Are You a Full Time or Seasonal Resident? .....	25
Table 9 Q2-5: Your Total Household Income in 2010 .....	26
Table 10 Q3 Statistics of Importance Rating of Objectives for OSTDS.....	27
Table 11 Q3-1: Costs Rating.....	28
Table 12 Q3-2: Property Values Rating.....	29
Table 13 Q3-3: Health Rating.....	30
Table 14 Q3-4: Local Economy Rating.....	31
Table 15 Q3-5: Natural Environment Rating .....	32
Table 16 Q3-6: Regulation Rating.....	33
Table 17 Q3-8: Do You Support an OSTDS Inspection If It Can Achieve the Most Important Benefits to You? .....	34
Table 18 Q3-9: The Average Monthly Cost You Would be Willing to Pay.....	35
Table 19 Q4 Statistics of Acceptability Rating of Management Options.....	36
Table 20 Q4-1: The Acceptability Rating - You Own and Manage your OSTDS .....	37
Table 21 Q4-2: The Acceptability Rating - You Own the OSTDS and a Wastewater Utility Manages It.....	38
Table 22 Q4-3: The Acceptability Rating - A Wastewater Utility Owns and Manages the OSTDS on Your Property.....	39
Table 23 Q5 Statistics of Acceptability Rating of the Size of the Utility District.....	40
Table 24 Q5-1: Rating Smaller Special Districts Within the County .....	41
Table 25 Q5-2: Rating County .....	42
Table 26 Q5-3: Rating Regional.....	43
Table 27 Comparison of Basic Inspection Management Options.....	48
Table 28 Other Options for Septic System Inspection Management .....	51
Table 29. Karst Features .....	79
Table 30 Septic System Management Option Comparison Table.....	120
Table 31 Comparison of Basic Inspection Management Options.....	135
Table 32 Other Options for Septic System Inspection Management .....	138

## List of Figures

Figure 1 Wakulla County and Florida Household Income Distribution 2007 .....	15
Figure 2 Maps of Sewer Customers of Talquin Electric and Sopchoppy .....	18
Figure 3 Maps of Sewer Customers in St. Marks.....	19
Figure 4 Maps of Sewer Customers in Panacea.....	20
Figure 5 Q2-1: What Does Your OSTDS Serve?.....	24
Figure 6 Q2-2: Do You Own or Rent Your Home?.....	25
Figure 7 Q2-5: Your Total Household Income in 2010.....	26
Figure 8 Q3-1: Costs Rating.....	28
Figure 9 Q3-2: Property Values Rating.....	29
Figure 10 Q3-3: Health Rating .....	30
Figure 11 Q3-4: Local Economy Rating .....	31
Figure 12 Q3-5: Natural Environment Rating.....	32
Figure 13 Q3-6: Regulation Rating.....	33
Figure 14 Q3-8: Do You Support an OSTDS Inspection If it Can Achieve the Most Important Benefits to You? .....	34
Figure 15 Q3-9: The Average Monthly Cost You Would be Willing to Pay.....	35
Figure 16 Q4-1: The Acceptability Rating - You Own and Manage your OSTDS .....	37
Figure 17 Q4-2: The Acceptability Rating - You Own the OSTDS and a Wastewater Utility Manages It.....	38
Figure 18 Q4-3: The Acceptability Rating - A Wastewater Utility Owns and Manages the OSTDS on Your Property.....	39
Figure 19 Q5-1: Rating Smaller Special Districts Within the County.....	41
Figure 20 Q5-2: Rating County .....	42
Figure 21 Q5-3: Rating Regional .....	43
Figure 22 Future Land Use Map of Wakulla .....	56
Figure 23 Wakulla County Sewer Locations.....	57
Figure 24 Wakulla County Map of OSTDS for Year 2011 .....	58
Figure 25 Map of Wakulla County OSTDS Dates of Installation.....	59
Figure 26 Wakulla Springshed and Recharge Area .....	60
Figure 27 Wakulla County Spring Creek Springs Recharge Area.....	61
Figure 28. Wakulla County Sinkhole Locations.....	62
Figure 29 Wakulla County Hydro Geological Map and Springs Recharge Area Line.....	63
Figure 30 Wakulla County Soils Area Map .....	64
Figure 31 OSTDS and Household Income Levels in Wakulla County .....	65
Figure 32 Layer 1+2: Sewer and OSTDS Areas in Wakulla County .....	66
Figure 33 Layer 3+4: Sinkhole + Waterline and Springshed Area.....	67
Figure 34 Layer 1 through Layer 5 and Priority Areas .....	68
Figure 35 The Final Vulnerability and Priority Areas Map for Wakulla County .....	69
Figure 36: Location of Septic Systems in Wakulla County.....	132
Figure 37 Household income Distribution-2009.....	144

## Introduction

Florida has been a leader in the field of onsite wastewater treatment and disposal practices.<sup>1</sup> In Florida, most septic systems are baseline systems.<sup>2</sup> Onsite sewage treatment and disposal systems (OSTDS) include a septic tank and drain field to treat wastewater prior to discharge into the groundwater. There are about 10,200 septic systems<sup>3</sup> in Wakulla County. There have recently been a greater number of OSTDS that have contributed to increased nutrient loads in Wakulla County. Risks associated with these OSTDS include nitrate and phosphorus, bacteria and virus loadings to water. All contribute Nitrogen, Phosphorus and other nutrients and pollutants to the water that citizens drink, swim in, fish from and that supports local ecosystems. The approximately 8,000 properly functioning systems prevent the discharge of fecal and other Coliform bacteria. About 20%, or 2,000 systems, are probably failing and discharging Coliform, nutrients, pharmaceuticals and other pollutants that can cause human health problems, even deaths, and environmental damage that impact the economy and quality of life in Wakulla County. This results in continuing deterioration of water quality, which results in health risks, algal blooms, and a surplus of aquatic vegetation.

Pollution reduction can be accomplished through a variety of means including reducing pollutant load in the effluent, improved biologic and chemical processing in the drainfield, and improved installation, operation and maintenance of the entire OSTDS. A variety of OSTDS management and technologies exist that can, with proper installation, operation and maintenance, reduce effluent load and drainfield. Regardless of the technology used, improved installation, operation and maintenance of all OSTDS will reduce their contribution to aquifer pollution. Management of existing OSTDS would be an effective way to reduce their impact on water quality. However, some of the failing septic tanks in Wakulla County were found to have been built out of loose concrete blocks with no bottoms, had holes punched in them, or have deteriorated and leak. Owners and officials often don't know tanks are leaking into the groundwater without having them pumped out and visually inspected. Older drainfield pipes may be clogged or broken and/or may not have the required separation from the seasonal high water table. The inspection of septic systems and the replacement of those that are failing can be a cost effective way to reduce the pollution of the ground and surface water in Wakulla County.

---

<sup>1</sup> Viamonte Ros, A. (2008) "Report on Range of Costs to Implement a Mandatory Statewide 5-Year Septic Tank Inspection Program", Florida Department of Health, p.2

<sup>2</sup> Florida Storm Water Education(2010) "Septic Systems In The Sunshine State" Vol.11(1)

<sup>3</sup> OSTDS inventory performed by FSU CEFA totaled 10,167 in September 2010.

Recently, for handling this management problem of existing OSTDS, Florida Senate Bill 550<sup>4</sup> (hereafter, SB550) provides for a five year evaluation cycle beginning January 1, 2011 ensuring statewide implementation by January 1, 2016. The evaluation must include an assessment of the tank and drainfield and written documentation of the condition of the system. Requiring septic inspections may save owners money in the long run. Like an oil change in a car, the pump-outs help systems function better and longer. When a septic system becomes clogged and fails prematurely, replacement may cost between \$4,000 and \$12,000. This is a financial hardship for any owner and may result in more foreclosures. Maintaining existing systems can put millions of dollars into the local economy that would otherwise go into holes in the ground. With this passing of SB550, a countywide existing OSTDS inspection program seems not to be needed at this time. However, the project team recommends distributing the septic inspection form that another county septic advisory committee had developed, to the Wakulla County Department of Health to assist their planning process. Prioritization of vulnerable areas where OSTDS are located in the county would be much helpful. Having to close wells, springs, rivers, sinkholes and beaches to swimming and fishing and the degradation of the environment can adversely impact Wakulla County's economy, quality of life and property values.

Furthermore, considering other states programs such as Jackson City/County Minnesota's experience, a survey of citizen's revealed that having enough financial assistance in order to make improvements to the septic system was very important to OSTDS owners. While city and county officials in Minnesota touted the proactiveness of a groundbreaking septic system compliance agreement, homeowners in Jackson City and County questioned the necessity of the deal in the first place and even the intentions of those involved in its crafting.<sup>5</sup> According to Jackson Mayor Mitch Jasper, affected landowners filling out a survey and coordinating a time for an inspection should be the first step in the planning process. This FSU project also collected citizen survey responses as the first step in gauging an effective OSTDS inspection program in Wakulla County. The survey results point to the need for financial support in the implementation effort. If owners contract with licensed Septic System Contractors for permits, inspections and pump-outs the cost will be about \$425. If inspections are done through a utility, it is preferable to use a public or private utility management services company that can contract with a number of private, licensed septic system contractors. It is estimated that the cost per inspection could be reduced to about \$300 due to volumetric pricing of contracts and coordination with contractors and the Department of Health. A utility could also provide financing for replacements and assistance for those families with low incomes. This is not possible if owners are responsible for their own inspections. Although some citizens think that government

---

<sup>4</sup> Full text is available on this web address, <http://www.flsenate.gov/Session/Bill/2011/550>

<sup>5</sup> Lessman, J. (2009) "Septic System Talk Raises Stink", Jackson County Pilot MN, April 16, 2009



should not require inspections and repair of failing systems, especially in these difficult economic times, others think that government should protect their family's health, jobs, businesses, and quality of life, including Wakulla's pristine and natural environment.

The project research area was selected as a result of recent ordinances adopted by Wakulla County. The objective of the project research is to contribute to providing additional data in order to facilitate greater informed decision making processes regarding OSTDS use and maintenance for the Wakulla County citizens and the Board of County Commissioners. This research project intends to build on previous research by developing a series of policy options for ongoing OSTDS program operations in Wakulla County in order to minimize negative impact on the county's water and minimize financial burdens on the county's citizens in compliance with the OSTDS regulations. The goal of this project is to help facilitate discussion concerning the further development of an OSTDS management program in Wakulla County.

This research project will be executed through seven different tasks using a multi-disciplinary team of university personnel. However, the project itself involves coordination and collaboration with other government agencies, citizen groups, and other representatives of private industry and the public. Task 1 involved coordination with the Wakulla County Health Department in order to facilitate further fine tuning of a comprehensive baseline OSTDS inventory for Wakulla County. The original inventory database was developed based on actual septic permit data (9,698 OSTDS records) ranging from years 1979-2006 (collected during phases 1 and 2 of this project research) and manually entered by project staff at FSU CEFA. In 2008/2009, EarthSteps and Global Mind, contractors of the Florida Department of Health, provided an estimate of statewide inventory of OSTDS in Florida. Their methodology involved assigning a method of wastewater treatment (based on OSTDS permits and wastewater records) to each parcel of property. In 2010-2011, Scott Carmody was hired by the Wakulla County Department of Health and the Florida Department of Environmental Protection to provide OSTDS permit and inspection records training and database development to Wakulla County OSTDS installers, inspectors and other user groups.

The OSTDS inventory generated in the course of this project research is a synthesis of the former existing OSTDS databases for Wakulla County and enhanced by the FSU project team, based on implementation of GIS methodologies. Shawn Lewers, from the FSU Geography Department managed the OSTDS inventory/data collection component of the project.

Task 2 involved distribution of a survey to all Wakulla County residents who currently have an OSTDS. The survey respondents contact information was based on the OSTDS inventory

database (developed in Task 1). The survey was designed, extensively reviewed prior to mail out, and successfully distributed and analyzed by FSU project staff. An option was provided that facilitated further discussion via telephone if the Wakulla County citizens so desired. The objective of the survey was to gather data regarding the Wakulla County survey respondents related to demographics, and perceptions regarding OSTDS issues and policy options.

Task 3 involved development of detailed cost effectiveness analyses of at least three OSTDS program and management policy options. The Wakulla County Infrastructure Committee provides the Commission with an evaluation of these septic system inspection management options: 1) no inspection requirement, 2) owner responsibility and 3) utility responsibility. This project's OSTDS options were selected based on the results of the survey in Task 2, and included input from stakeholders at workshop (see Task 5). It also considers variations in the frequency of inspections, who(m) pays for replacements and the amount of assistance provided. The study provides an assessment of options from different perspectives gathered from public workshops and a survey of septic system owners too.

Task 4 involved the development of an OSTDS Vulnerability Model. The vulnerability model was constructed or developed using an ARC GIS platform and involved generation of several OSTDS "vulnerability" map layers based on hydro geologic and other indicators. The goal was to provide a tool for making a determination of the more vulnerable, or sensitive, areas in Wakulla County with regard to OSTDS. The objective in defining the vulnerable areas was to target or prioritize the OSTDS that perhaps should be viewed with special consideration given their vulnerability assessment. The information can be useful in prioritizing the transitioning of OSTDS to sewers or performance-based treatment systems in different locations.

Task 5 concerned the development and implementation of several consensus workshops for the Wakulla County community. The Wakulla County Citizens Advisory Committee on Infrastructure Development publicly noticed and hosted these series of workshops. The first consensus workshop was presented midway through the project's timeline, and covered material on results of the initial OSTDS stakeholder workshop and survey, and the detailed cost analysis of the management options to refine the options and rate the acceptability of each. The results of each of the workshops were reported to the Wakulla County commission. The second consensus workshop further assessed the results of the OSTDS survey and management options (and associated costs) and gained insight and feedback from the public in providing assistance to revisions to the draft ordinance and plan amendment.

Task 6 involved being available to provide assistance to the Wakulla County Infrastructure Committee in the development of language for either: revision of existing ordinance, drafting a new ordinance and/or plan amendment regarding an OSTDS management program in Wakulla County. The language would serve to enhance the existing or new ordinance to more effectively implement the OSTDS management program.

Lastly, the following report provides a compilation and discussion of all the aforementioned tasks, including conclusions and recommendations.

## Background

Based on the 2010 United States Census, approximately 30% of Florida's population was served by onsite sewage treatment and disposal systems (OSTDS). According to Florida Department of Health, there are 2.67 million systems in operation in Florida, serving over one-third of the population on October 2010<sup>6</sup>. There are currently approximately 2.5 million OSTDS in Florida and 10,793 OSTDS in Wakulla County<sup>7</sup>. OSTDS include standard septic tank-subsurface disposal systems, aerobic treatment units, and other site-specific engineered or performance-based wastewater treatment systems. Decentralized wastewater systems are groupings of two or more homes or businesses, but not entire communities, served by a single treatment and/or disposal means.

Due to the prevalence of disease, regulation of septic tank systems began in the 1920's. Regulations have been revised extensively since then based on scientific research and technological advances. Many septic tank systems have been grandfathered in along the state regulatory revision processes; permitting many systems to remain that do not or cannot meet current day standards. Many of Florida's county governments have ordinances related to specific regulation of OSTDS. Some of these local ordinances are primarily references to the minimum state standards promulgated by the Florida Department of Health (DOH), while many now go beyond the minimum standards.

Although some individuals may claim that central sewers connected to central treatment are the most effective treatment systems, this is not always the case. These types of systems are not affordable in some communities from a capital investment standpoint and from a long-term operation and maintenance standpoint. Centralized sewer projects are often cost prohibitive in rural areas, such as portions of Wakulla County, due to the distance between individual properties and the size of the properties. It is important for communities to evaluate all of the OSTDS, decentralized, and central swearing options available to them in order to end up with alternatives that best provide the most effective means of achieving environmental and public health goals at reasonable costs to the citizens. Communities, too, should evaluate long-term maintenance management strategies for all wastewater systems within their jurisdictions. No system should be considered as "out of sight, out of mind" in the 21<sup>st</sup> century.

Increased numbers of OSTDS have contributed to increased nutrient loads. Risks associated with the growing number of standard onsite systems used in the karst environment of Wakulla County include increasing nitrate and phosphorus loadings, as

---

<sup>6</sup> Retrieved from : [http://www.fgdl.org/metadata/fgdc\\_html/septic\\_oct10.fgdc.htm](http://www.fgdl.org/metadata/fgdc_html/septic_oct10.fgdc.htm)

<sup>7</sup> Onsite Sewage Treatment and Disposal Systems Statistical Data, Florida Department of Health, 2009-2010. <http://www.doh.state.fl.us/Environment/ostds/statistics/newInstallations.pdf>

well as of bacteria and virus loadings, to ground and surface waters. These loadings can result in deterioration of water quality. Health risks can increase as well as unwanted algal blooms and nuisance aquatic vegetation in area surface waters. Coastal and riverine fisheries may be negatively impacted and, hence, the quality of life for homeowners in Wakulla County.

From an ecotourism vantage point, significant economic benefits accrue from eco-tourist wildlife viewing, hunting and fishing. More people travel to Florida each year to view wildlife than to any other state, according to research by the Florida Fish and Wildlife Conservation Commission (FWC). That spells big business for Florida, with wildlife viewing alone generating more than \$3 billion and supporting 19,000 retail jobs in Florida annually. In addition, one in every six Florida residents participates in some form of wildlife-viewing activity, whether at home, in parks or preserves, or along the state's scenic waterways. "Florida enjoys a \$65 billion annual tourism industry that is inextricably linked to the utilization and enjoyment of our state's natural resources. Florida Forever and its predecessor Preservation 2000 are largely responsible for these protected natural resources that Floridians and visitors enjoy," says a 2009 study by the Nature Conservancy on the economic benefits of land conservation.<sup>8</sup>

It is critical to define the current and future OSTDS and decentralized systems use requirements for Wakulla County in order to address these concerns. It is important to address these matters before the county's growth exacerbates the potential problems. Determining sound wastewater practices for Wakulla County for the next several years can help guide-planning decisions made by county government and developers. In order to better understand the significance of the septic systems within Wakulla County, the project researchers began with an examination of the socio-economic and demographics characteristics of the county:

Census figures from December 2010 pegged Florida's population at 18.8 million residents. *"With a gain of more than 2.8 million people this past decade, it is clear that, even in these tough economic times, Florida is a thriving state rich with opportunity"*, said Governor Rick Scott. During the same time period, Wakulla County's growth rate was about 35%, around double the state's level<sup>9</sup>.

---

<sup>8</sup> Ecotourism for Florida

<sup>9</sup> Source:

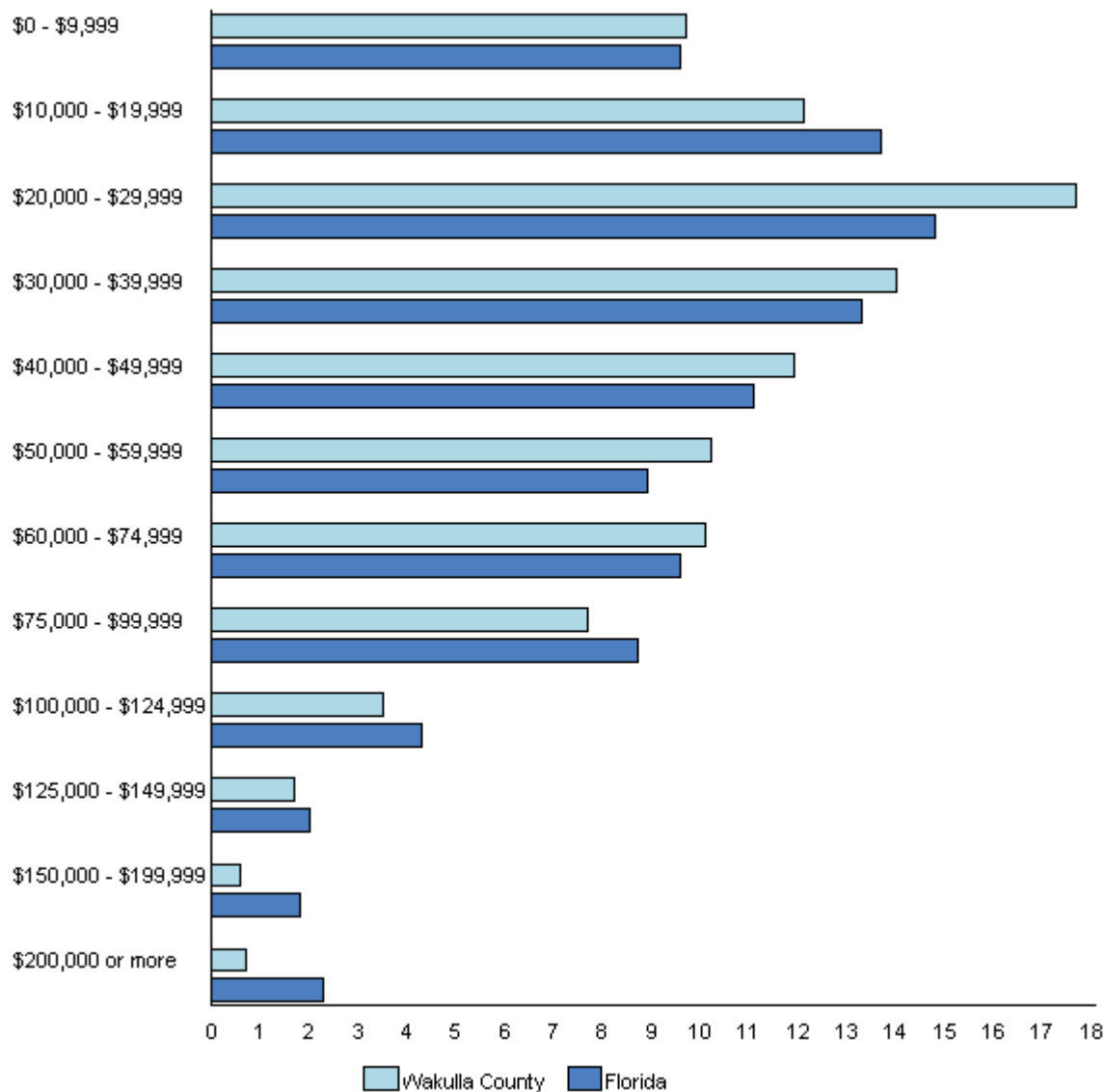
<http://www.google.com/publicdata?ds=uspopulation&met=population&idim=state:12000&dl=en&hl=en&q=florida+population#met=population&idim=county:12129&idim=state:12000>

**Table 1 Demographic and Housing Market Data for Wakulla County, Florida<sup>10</sup>**

<b>Population Statistics</b>	<b>Wakulla</b>	<b>Florida</b>
Population, 2010 Census	30,776	18,801,310
Population, 2005 estimate	28,212	17,789,864
Population, 2000	22,863	15,982,378
Persons under 5 years old, 2010	1,740	1,073,506
Persons under 19 years old, 2010	7,596	4,512,990
Persons 65 years old and over, 2010	3,339	3,259,602
Female persons, 2010	13,784	9,611,955
Living in same house in 1995 and 2000, pct 5 yrs old & over	55.80%	48.90%
Persons under 5 years old, 2004	1,496	1,091,292
Persons under 18 years old, 2004	6,175	4,003,290
Persons 65 years old and over, 2004	3,196	2,927,583
Female persons, 2004	12,951	8,872,763
Living in same house in 1995 and 2000, pct 5 yrs old & over	55.80%	48.90%
<b>Education Statistics</b>	<b>Wakulla</b>	<b>Florida</b>
High school graduates, percent of persons age 25+, 2000	78.40%	79.90%
Bachelor's degree or higher, pct of persons age 25+, 2000	15.70%	22.30%
Persons with a disability, age 5+, 2000	4,047	3,274,566
<b>Household Statistics</b>	<b>Wakulla</b>	<b>Florida</b>
Housing units, 2007	13,154	8,718,385
Housing units, net change, 4/1 2000 to 7/1 2007	3,334	1,415,277
Housing units, percent change, 4/1 2000 to 7/1 2007	34%	19.4%
Homeownership rate, 2000	84.20%	70.10%
Median value of owner-occupied housing units, 2000	\$96,200	\$105,500
Households, 2000	8,450	6,337,929
Persons per household, 2000	2.57	2.46
Median household income, 2007	\$46,997	\$47,804
Persons below poverty, percent, 2007	11.3%	12.1%
<b>Business Statistics</b>	<b>Wakulla</b>	<b>Florida</b>
Personal income, 2006 (\$ million)	726	663,077
Personal income per capita, 2006	\$25,154	\$36,720
Civilian Labor force, 2007	15,595	9,147,797
Average earnings per job, 2006	\$28,630	\$41,436
Total number of firms, 2002	1,959	1,539,207
<b>Geography Statistics</b>	<b>Wakulla</b>	<b>Florida</b>
Land area, 2000 (square miles)	607	53,927
Persons per square mile, 2000	37.7	296.4

<sup>10</sup> Source: Office of Economic & Demographic Research, The Florida Legislature, retrieved from <http://edr.state.fl.us/Content/population-demographics/2010-census/data/index.cfm>, Bureau of Economic Analysis, Bureau of Labor Statistics, National Agricultural Statistics Service, National Center for Health Statistics, U.S. Census Bureau (<http://www.fedstats.gov/qf/states/12/12129.html>)

**Figure 1 Wakulla County and Florida Household Income Distribution 2007<sup>11</sup>**



As depicted in Table and Figure 1, Wakulla County had a relatively high median family income of \$46,997 in 2007. Florida overall, was slightly higher with a median family income of \$47,804. Wakulla County had relatively low population density, of 30,776 in 2010, however, as mentioned previously, the growth rate of the Wakulla County population is increasing rapidly: by 35% in 2010 (when compared with year 2000), while compared with the growth rate overall in Florida; 17.6% during the same time period.

<sup>11</sup> Source: Mineful (mineful.net) Demographics provides marketing professionals and researchers with a complete and visual demographic profile of the U.S. population and Puerto Rico.

The poverty rates in 2008 and 2009 were 12.1% and 13.1%, respectively, increasing 8.26% in terms of a percentage change from 2008 to 2009.

**Table 2 Wakulla County Poverty & Unemployment Rate<sup>12</sup>**

Poverty & Unemployment Rate			
	1990	2000	2008
Poverty Rate (Persons)	13.5	12.0	12.1
Child Poverty Rate	18.8	17.0	18.2
Civilian Labor Force	7,856	11,697	15,896
Unemployed	309	375	709
Unemployment Rate	3.9	3.2	4.5

Updated August, 2010

Created by the Southern Rural Development Center

According to Table 2, from 1990 to 2000, the poverty rate (persons) decreased from 13.5% to 12%. From 2000 to 2008, the poverty rate held about constant. Child poverty decreased from 1990 to 2000 from 18.8% to 17%; and from 2000 to 2008, it increased from 17% to 18.2%. The unemployment rate decreased from 3.9% to 3.2% from 1990 to 2000, and from 2000 to 2008, it increased from 3.2% to 4.5%.

**Table 3 Wakulla County Income<sup>13</sup>**

Income			
	1990	2000	2008
Median Household Income (\$)	\$22,011	\$37,761	\$48,012
Per Capita Market Income* (\$)	\$12,301	\$20,145	\$22,052
Avg. Self-Employed Income (\$)	\$12,294	\$17,188	\$10,807
Avg. Wage & Salary Income (\$)	\$17,639	\$28,108	\$33,788
Bank Deposits (\$M)	\$53	\$124	\$264
* Personal income minus transfer payments			

<sup>12</sup> Source: Southern Rural Development Center:  
[http://srdc.msstate.edu/data/center/states/fl/wakulla\\_fl.pdf](http://srdc.msstate.edu/data/center/states/fl/wakulla_fl.pdf)

<sup>13</sup> Source: Southern Rural Development Center:  
[http://srdc.msstate.edu/data/center/states/fl/wakulla\\_fl.pdf](http://srdc.msstate.edu/data/center/states/fl/wakulla_fl.pdf)



According to Table 3, the median household income increased by 71.6% from 1990 to 2000, and by 27.1% from 2000 to 2008. Per capita market income increased by 63.76% from 1990 to 2000, and by 9.46% from 2000 to 2008. Average self-employed income increased by 40% from 1990 to 2000, and then decreased by 37% from 2000 to 2008. The average wage and salary incomes increased by 59.4% from 1990 to 2000 and by 20.2% from 2000 to 2008. Bank deposits increased by 134% from 1990 to 2000, and by 113%, from 2000 to 2008.

**Table 4 Wakulla Residents Income by Race**

<b>Race and Income</b>	<b>Wakulla County</b>	<b>Florida</b>
<b>Black</b>	\$28,561	\$36,723
<b>Asian</b>	\$53,055	\$58,662
<b>Hispanic</b>	\$29,475	\$44,976
<b>White (not Hispanic)</b>	\$51,027	\$54,441

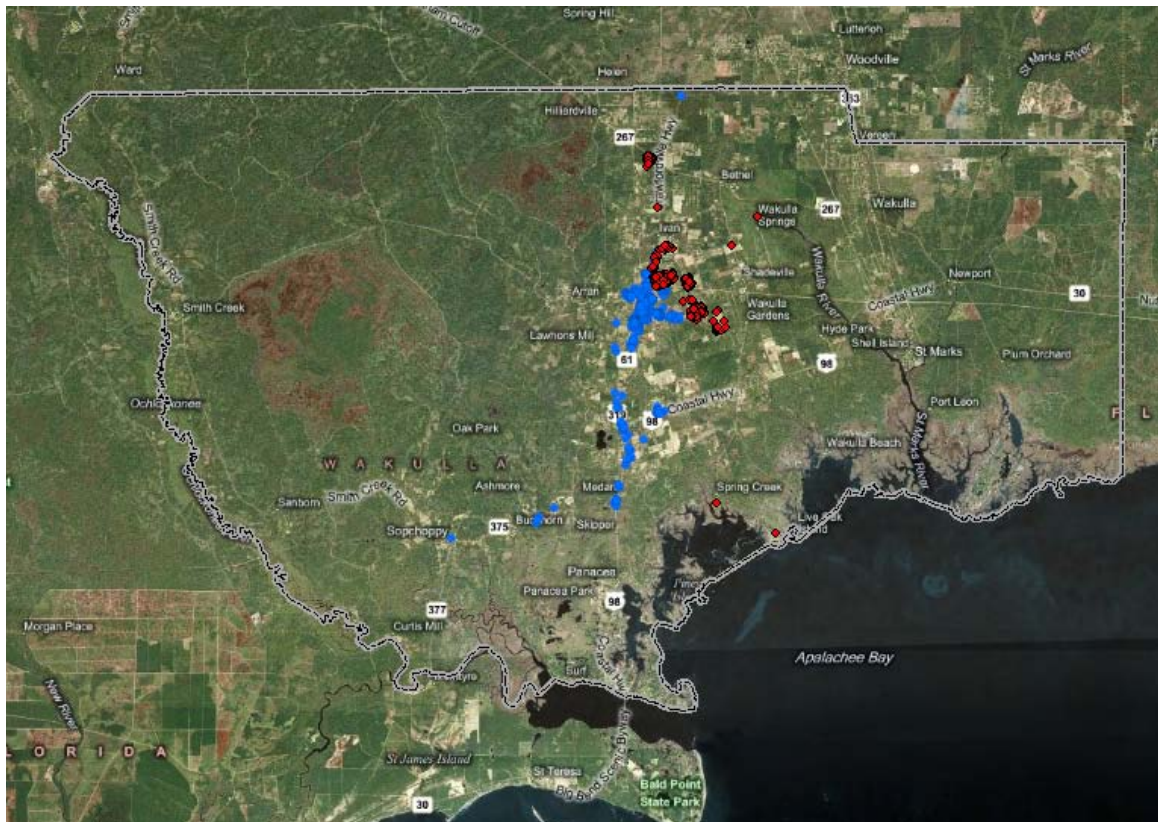
Racial distribution of median household income in Wakulla County roughly corresponds to overall distribution in Florida.

# Chapter 1: Task 1- Wakulla County OSTDS Inventory and Mapping Project

The purpose of this task was to assist the Wakulla County Health Department (WCHD) staff complete the OSTDS inventory database and mapping of septic systems in Wakulla County. This information would allow the county health department staff to more accurately locate and inspect OSTDS, to send notifications to all of the county systems for county mandated pump outs and inspections, and to track OSTDS maintenance compliance more accurately countywide.

All of the sewer systems in Wakulla County were mapped using ArcGIS. They were mapped in sections by region and sewer (utility providers). The different sections comprised Talquin, Sopchoppy, Panacea, St. Marks, and Winco utility or utility billing services.

**Figure 2 Maps of Sewer Customers of Talquin Electric and Sopchoppy**



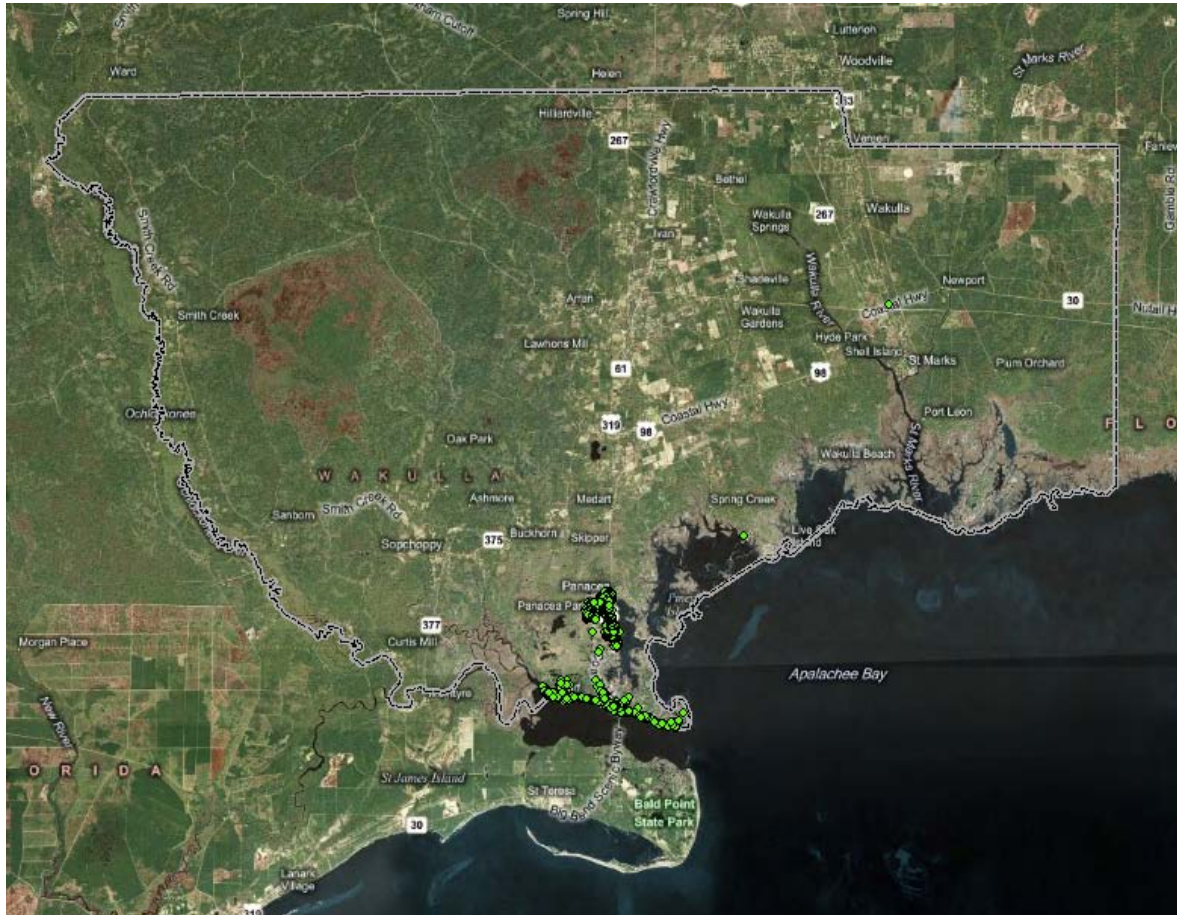
Legend	●	Talquin
	●	Sopchoppy


**Figure 3 Maps of Sewer Customers in St. Marks**



Legend	 	St. Marks Sewer Locations
--------	---	---------------------------

**Figure 4 Maps of Sewer Customers in Panacea**



Legend		Panacea
--------	---	---------

## Methodology

This phase of the project involved mapping all of Wakulla County using GIS. First, the address databases for each city and area within Wakulla County were geocoded. Many points were not automatically matched by the computer and ArcGIS for a variety of reasons: faulty data, incorrect addresses, etc. These points were matched manually to their correct address and then inputted into the GIS map. Finally, every point with an OSTDS (onsite sewage treatment and disposal system) was individually matched to its correct address on the map. The map was then created with all of the OSTDS in Wakulla County.

1. FSU CEFA collected sewer and water customer data from the various service providers in Wakulla County.
2. FSU CEFA and Shawn Lewers geocoded this data. This step involved matching every address collected to a specific point on a map of Wakulla County. Staff also matched the data to the DOH septic database (from the previous study) and the latest statewide inventory for Wakulla County for validation purposes.
3. The team then finalized the data cleaning process.
4. Built assumptions for Wakulla County septic database: The team then derived those homeowners and commercial operations that are on septic through a method of elimination; those connected to a sewer system were then assumed to be without a septic tank. Those assumed to have a septic tank were matched with the property parcel data to determine which parcels were viable for a septic tank (e.g., undeveloped parcels were assumed to not have a septic system).

## Future Considerations

There may be some other sewer provided by private homeowners associations that were not captured. Subdivisions such as Oyster Bay, Shell Point, Live Oak Island, and Spring Creek are all alleged to have private sewerage that is operated by contractors such as Talquin Electric Cooperative. However, the project research team was not provided with addresses for customers in these areas. The exception was for year 2010, and specific to River Plantation. If that data becomes available, the research team would either geo-code the addresses or assist the county with the task. Furthermore, research team would assist the county with the initial setup of software and data for the purposes of maintaining the data sets viability. This data needed to be updated regularly. If that did not happen, the data will become obsolete and less valuable.

## Chapter 2: Task 2- OSTDS Surveys

For this task, the project team surveyed citizens of Wakulla County about issues related to the implementation of a Wakulla County OSTDS inspection and management program.

### Survey Methodology

To assist the Wakulla County Citizens Advisory Committee in decision making regarding implementation of potential state requirements for inspection of traditional septic systems, FSU CEFA staff developed a short, voluntary and anonymous septic system inspection and management survey questionnaire. The survey included 21 questions relative to the demographics, attitudes or perceptions with respect to OSTDS, management options and utility district acceptability or preferences. These survey responses can also help collecting public opinion about protecting the health and safety of the waters for drinking and fishing, reducing pollution of ground and surface water, as well as the springs, rivers, beaches that could impact property values, business sales, eco-tourism and Wakulla's overall economy.

The survey used a combination of mail and on-line web survey methods to all citizens with OSTDS. From February 3, 2011, 10,167 survey cards were distributed to the citizens of Wakulla County. By March 20, 308 surveys returned via both mailing and online survey system. Survey data were analyzed using the Statistical Package for Social Sciences (SPSS, V.19) software by both descriptive and frequency statistics.

### Survey Results

As mentioned previously, FSU CEFA staff developed 21 survey questions in four primary category areas; including questions related to: demographics, attitudes or perceptions related to OSTDS, management options and utility district acceptability or preferences. The survey cards included an assigned (and randomized user id number) and directed Wakulla County OSTDS users to a web address link (<http://www.surveymonkey.com/s/septic>) to the OSTDS questionnaire. The initial mail out card had a phone number in order to request a survey hard copy. There were approximately 20 hard copies mailed (with stamped/self-addressed return envelopes) to Wakulla County OSTDS users. Of the 10,167 survey cards initially distributed on February 3, 2011, 308 were returned via the U.S Postal Service due to insufficient addresses. Over the next few weeks (and as of March 20) there were 248 surveys completed online and an additional 12 surveys completed and returned via hard copy. Therefore, the following survey results were based on the March 20 survey group of 260 respondents. Survey data were analyzed using the Statistical Package for Social Sciences (SPSS, V.19) software, and the survey results included both descriptive statistics and frequency statistics.

## Part 2. Demographic Information of Residents in Wakulla County

The valid responses in this section ranged from 89-95% (Table 5). The response with the most missing values pertained to the OSTDS respondent's total household income in 2010. The survey respondent results showed that the majority of OSTDS users in Wakulla County are single family household (84.1%) and the rest 14.6% are modular/ mobile home residents (Table 6). There were no duplex/apartment/condominiums residents that responded to the survey. Interestingly, all, or almost 100% of the respondents indicated that they are full-time residents in Wakulla County and all of them own their home with the exception of only one rental (Table 7 and 8). The respondents' income ranged primarily from \$25,001-\$45,000 and \$45,001 to \$65,000, with 16.0% and 18.6%, respectively (Table 9).

### Q2 Demographic Information

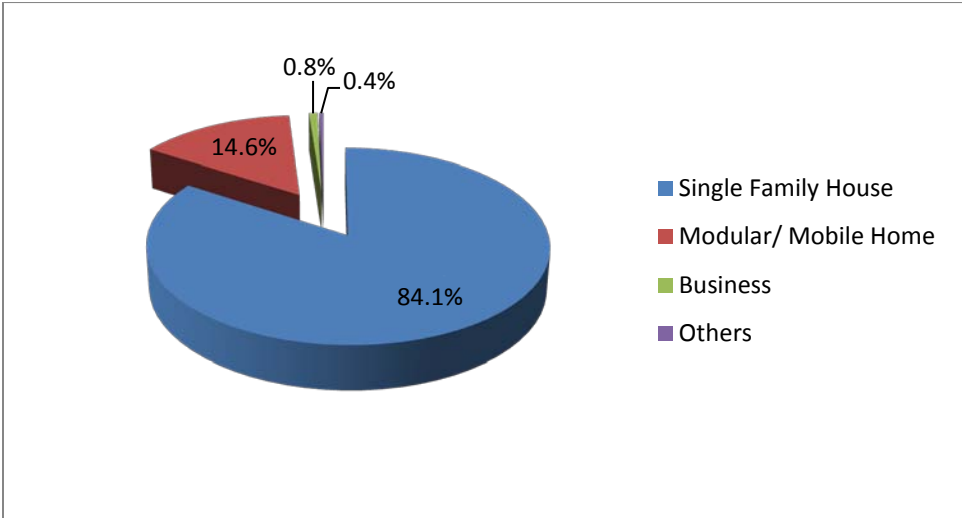
**Table 5 Q1 Statistics Related to Information about OSTDS Survey Respondents**

Questions	Q2-1: What does your OSTDS serve?	Q2-2: Do you own or rent your home?	Q2-4: Are you a full time or seasonal resident?	Q2-5: Total household income in 2010
Valid	239	233	234	231
Missing	15	21	20	29
Percent	5.9	8.3	7.9	11.2

**Table 6 Q2-1: What Does Your OSTDS Serve?**

		Frequency	Valid Percent
Valid	Single Family House	201	84.1
	Modular/ Mobile Home	35	14.6
	Business	2	.8
	Others	1	.4
	Total	239	100.0

**Figure 5 Q2-1: What Does Your OSTDS Serve?**

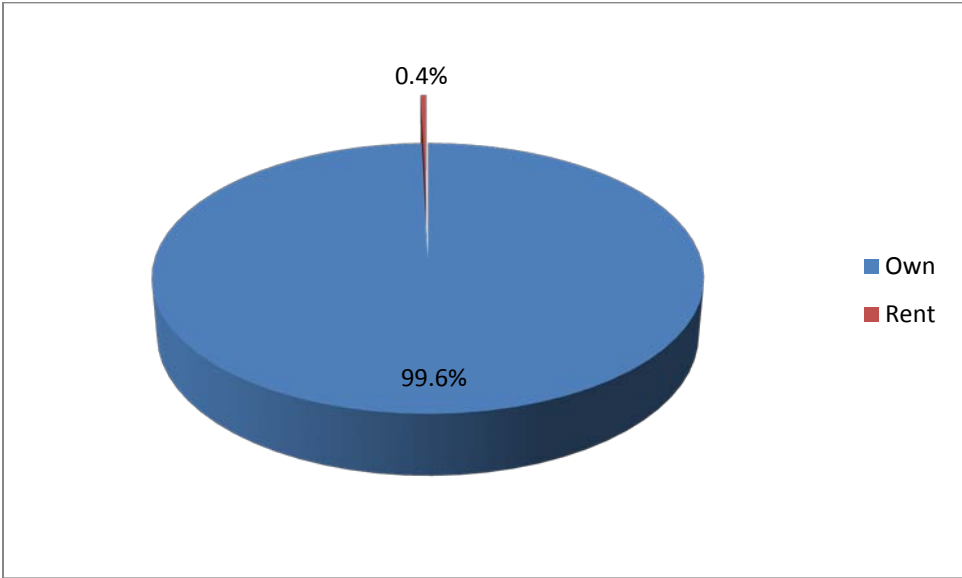




**Table 7 Q2-2: Do You Own or Rent Your Home?**

		Frequency	Valid Percent
Valid	Own	232	99.6
	Rent	1	.4
	Total	233	100.0

**Figure 6 Q2-2: Do You Own or Rent Your Home?**



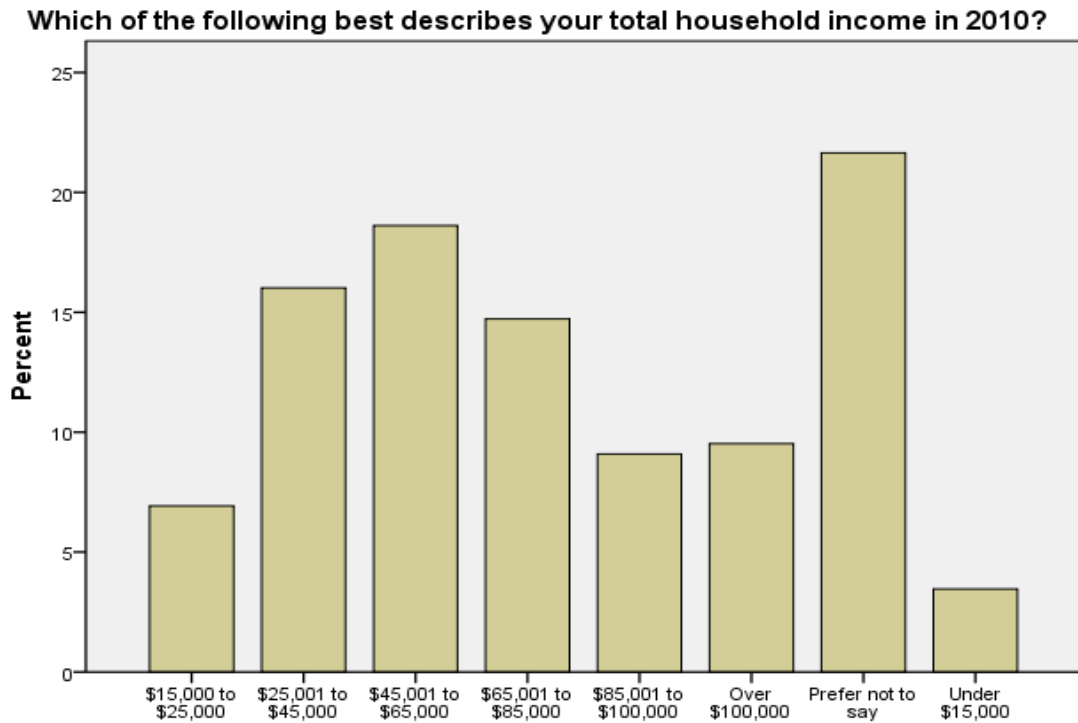
**Table 8 Q2-4: Are You a Full Time or Seasonal Resident?**

		Frequency	Valid Percent
Valid	Full Time	234	100.0

**Table 9 Q2-5: Your Total Household Income in 2010**

		Mean	Frequency	Valid Percent
Valid	\$15,000 to \$25,000	\$ 20,000	16	6.9
	\$25,001 to \$45,000	\$ 35,000	37	16.0
	\$45,001 to \$65,000	\$ 55,000	43	18.6
	\$65,001 to \$85,000	\$ 75,000	34	14.7
	\$85,001 to \$100,000	\$ 92,500	21	9.1
	Over \$100,000	\$ 150,000	22	9.5
	Prefer not to say	\$ 57,500	50	21.6
	Under \$15,000	\$ 7,500	8	3.5
	<b>Total</b>		<b>231</b>	<b>100.0</b>

**Figure 7 Q2-5: Your Total Household Income in 2010**



The figure provides a distribution across different income groups. Highest percentage of respondents belong to the (45,001 to 65,000) category followed by other groups.

### Part 3. Importance Rating of the Objectives for OSTDS

The valid survey responses ranged from 90-93% as shown in Table below. The more responses with greatest frequency related to OSTDS cost and associated public health which were rated as “very important”, with more than half of the survey respondents rated these two areas as of greatest importance to them. The least frequent responses related to the local economy and regulation; with about one tenth of the survey population responding with assigning the “lowest importance” to those areas. 64.1% of the survey residents support an OSTDS inspection if it can achieve the most important benefits to them (Table 17). The average monthly amount survey respondents would be willing to pay regarding their OSTDS would be \$0 (54.4%), followed by \$10 per month, as their next frequent response, with 34% (Table 18).

#### Q3 How should Wakulla County Septic Systems Be Managed?

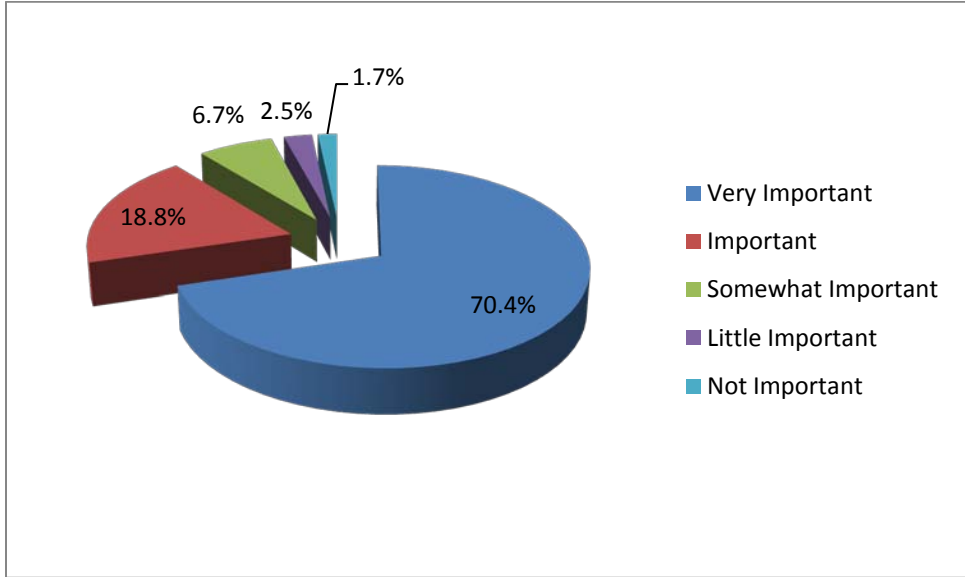
**Table 10 Q3 Statistics of Importance Rating of Objectives for OSTDS**

	Costs	Property	Health	Local Economy	Nature	Regulation
Valid	240	238	239	236	238	234
Missing	20	22	21	24	22	26
Percent	7.7	8.5	8.1	9.2	8.5	10.0

**Table 11 Q3-1: Costs Rating**

		Frequency	Valid Percent
Valid	Very Important	169	70.4
	Important	45	18.8
	Somewhat Important	16	6.7
	Little Important	6	2.5
	Not Important	4	1.7
	Total	240	100.0

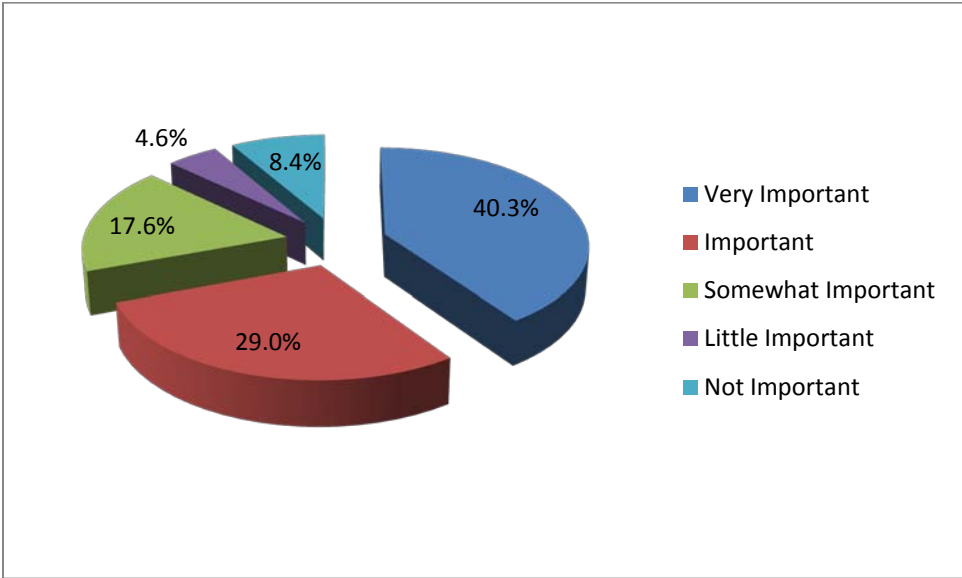
**Figure 8 Q3-1: Costs Rating**



**Table 12 Q3-2: Property Values Rating**

		Frequency	Valid Percent
Valid	Very Important	96	40.3
	Important	69	29.0
	Somewhat Important	42	17.6
	Little Important	11	4.6
	Not Important	20	8.4
	Total	238	100.0

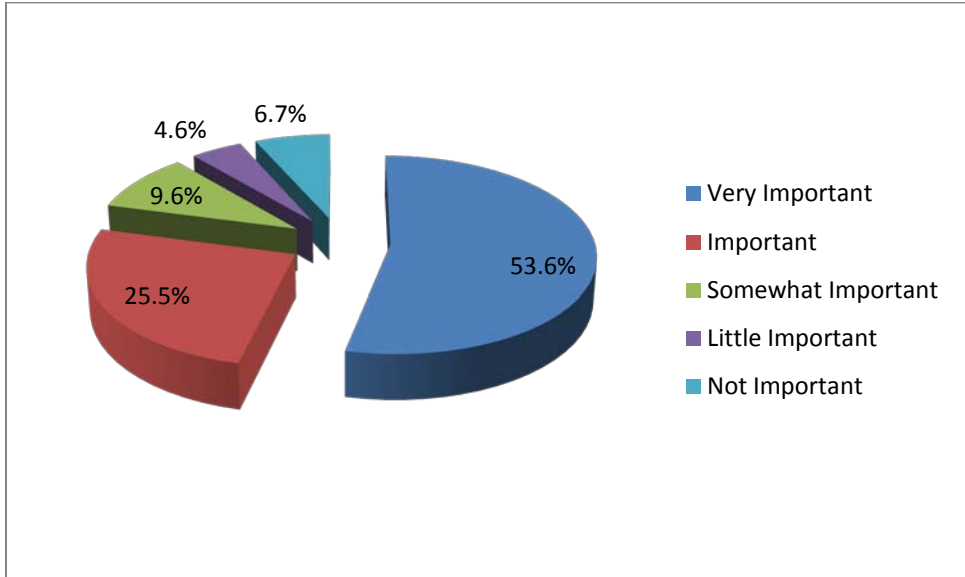
**Figure 9 Q3-2: Property Values Rating**



**Table 13 Q3-3: Health Rating**

		Frequency	Valid Percent
Valid	Very Important	128	53.6
	Important	61	25.5
	Somewhat Important	23	9.6
	Little Important	11	4.6
	Not Important	16	6.7
	Total	239	100.0

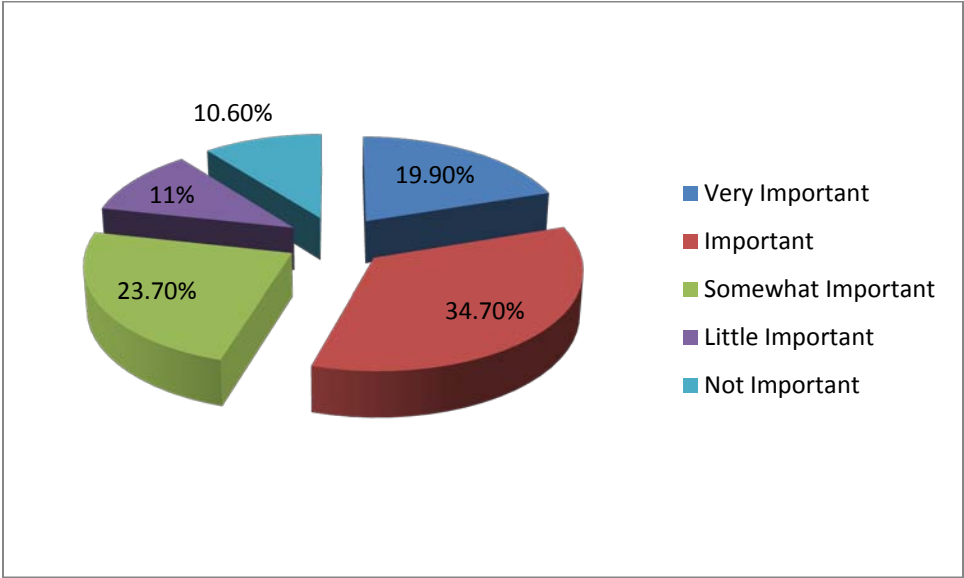
**Figure 10 Q3-3: Health Rating**



**Table 14 Q3-4: Local Economy Rating**

		Frequency	Valid Percent
Valid	Very Important	47	19.9
	Important	82	34.7
	Somewhat Important	56	23.7
	Little Important	26	11.0
	Not Important	25	10.6
	Total	236	100.0

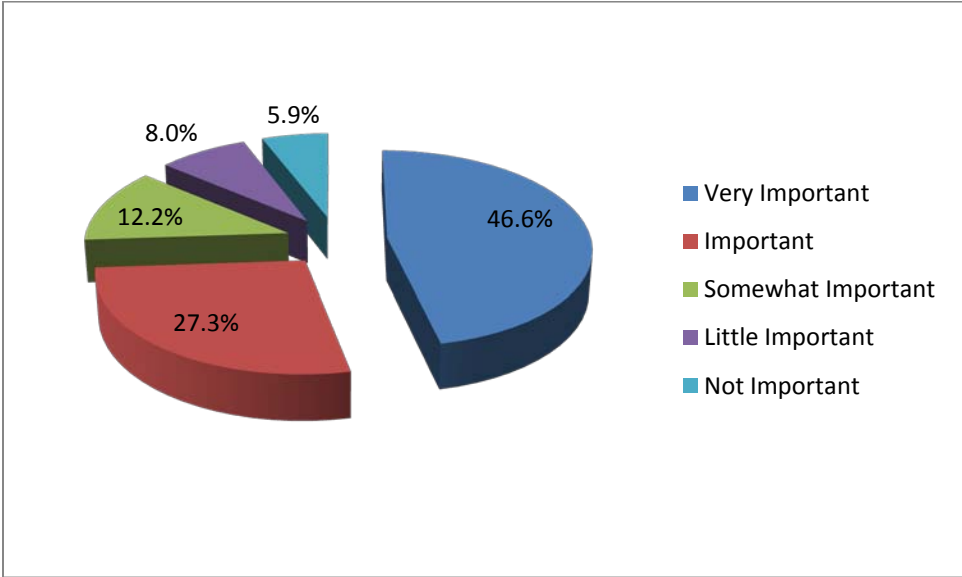
**Figure 11 Q3-4: Local Economy Rating**



**Table 15 Q3-5: Natural Environment Rating**

		Frequency	Valid Percent
Valid	Very Important	111	46.6
	Important	65	27.3
	Somewhat Important	29	12.2
	Little Important	19	8.0
	Not Important	14	5.9
	Total	238	100.0

**Figure 12 Q3-5: Natural Environment Rating**

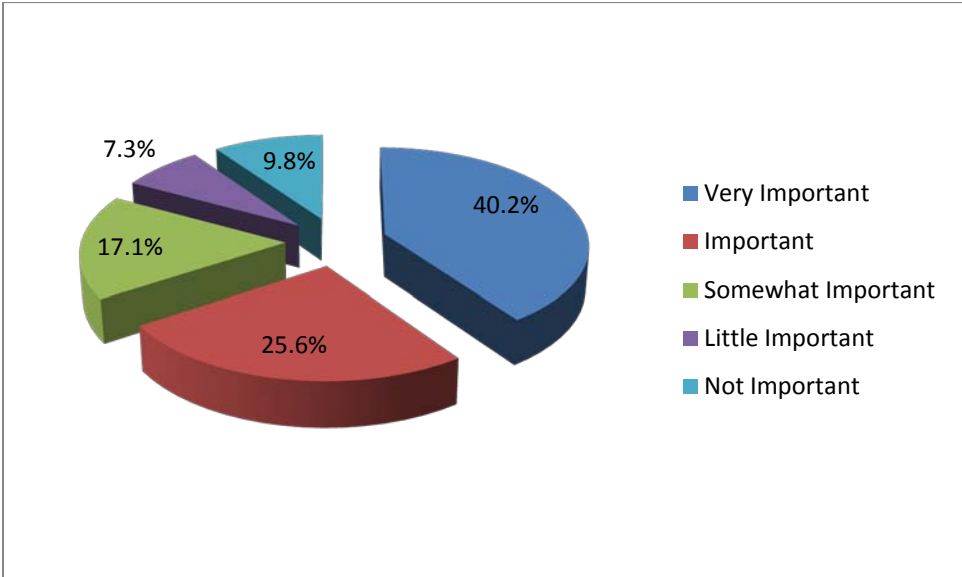




**Table 16 Q3-6: Regulation Rating**

		Frequency	Valid Percent
Valid	Very Important	94	40.2
	Important	60	25.6
	Somewhat Important	40	17.1
	Little Important	17	7.3
	Not Important	23	9.8
	<b>Total</b>	<b>234</b>	<b>100.0</b>

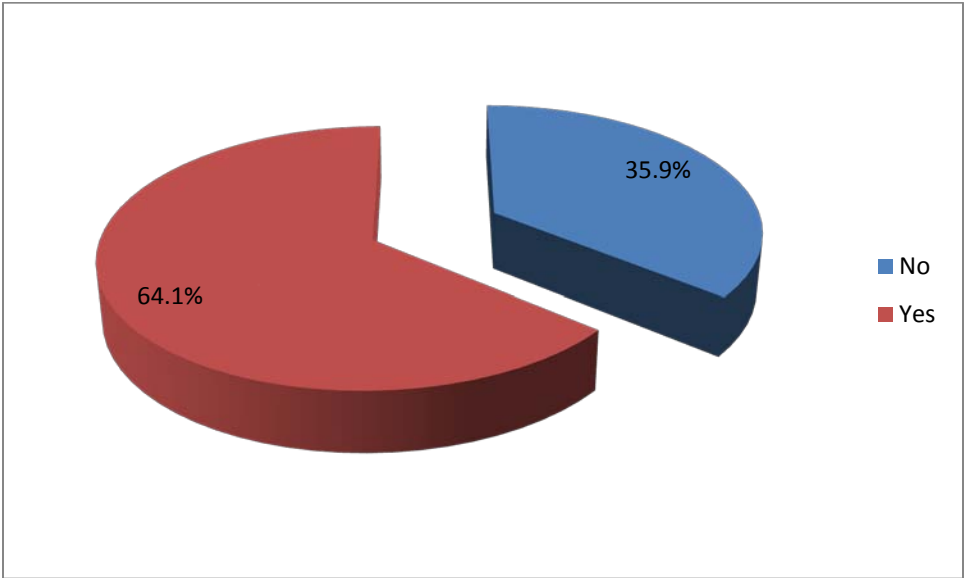
**Figure 13 Q3-6: Regulation Rating**



**Table 17 Q3-8: Do You Support an OSTDS Inspection If It Can Achieve the Most Important Benefits to You?**

		Frequency	Valid Percent
Valid	No	80	35.9
	Yes	143	64.1
	Total	223	100.0

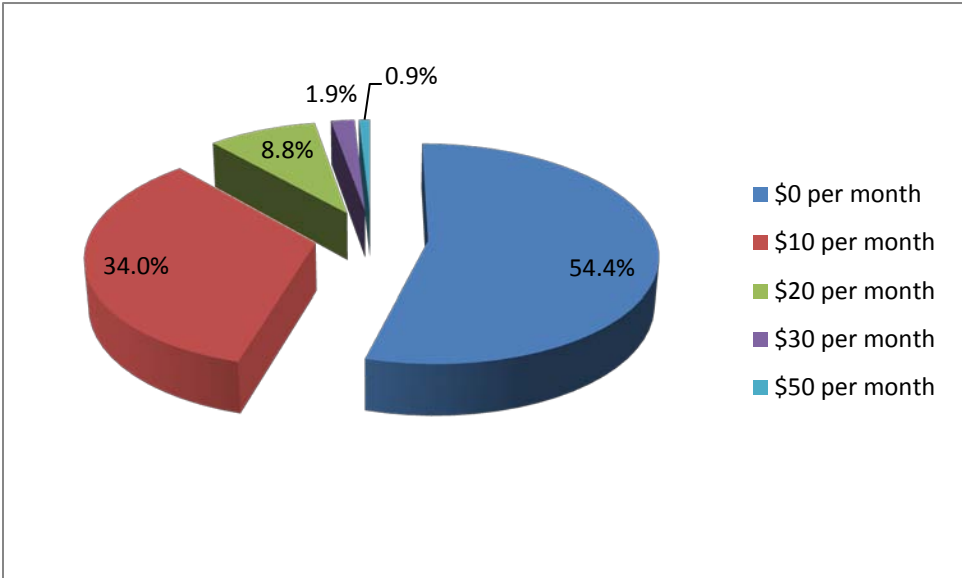
**Figure 14 Q3-8: Do You Support an OSTDS Inspection If it Can Achieve the Most Important Benefits to You?**



**Table 18 Q3-9: The Average Monthly Cost You Would be Willing to Pay**

		Frequency	Valid Percent
Valid	\$0 per month	117	54.4
	\$10 per month	73	34.0
	\$20 per month	19	8.8
	\$30 per month	4	1.9
	\$50 per month	2	.9
	Total	215	100.0

**Figure 15 Q3-9: The Average Monthly Cost You Would be Willing to Pay**



## Part 4. The Survey Respondents Acceptability Levels of the Management Options of OSTDS

The valid survey responses depended on the various management options available to the residents of Wakulla County. The option “You own and manage your OSTDS”, had about 45.2% of the respondents rating either “good” and “fair”, however, it should be noted that about 37.4% of the survey respondents found it unacceptable (Table 16). The option – “You Own and a Wastewater Utility manages your OSTDS” was selected by 35.8% of the respondents as “good” or “fair” option(s), and about 39.5% responded “not acceptable”. 40.1% of those surveyed, responded either “good” or “fair” to the option – “The Wastewater Utility Owns and Manages your OSTDS” with about 42.4% respondents selecting “not acceptable”.

### Q4 Acceptability Rating of Management Options

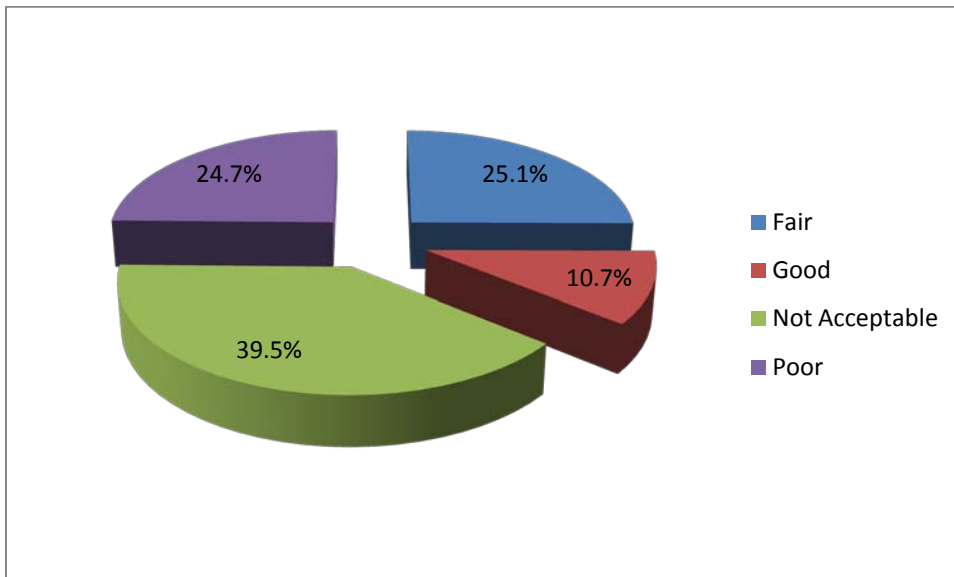
**Table 19 Q4 Statistics of Acceptability Rating of Management Options**

		<b>The acceptability Rating - You own and manage your OSTDS</b>	<b>The acceptability Rating - You own the OSTDS and a wastewater utility manages it</b>	<b>The acceptability Rating - A wastewater utility owns and manages the OSTDS on your property</b>
<b>N</b>	<b>Valid</b>	<b>219</b>	<b>217</b>	<b>217</b>
	<b>Missing</b>	<b>35</b>	<b>37</b>	<b>37</b>
	<b>Percent</b>	<b>13.8</b>	<b>15.4</b>	<b>14.6</b>

**Table 20 Q4-1: The Acceptability Rating - You Own and Manage your OSTDS**

		Frequency	Valid Percent
Valid	Fair	70	32.0
	Good	29	13.2
	Not Acceptable	82	37.4
	Poor	38	17.4
	Total	219	100.0

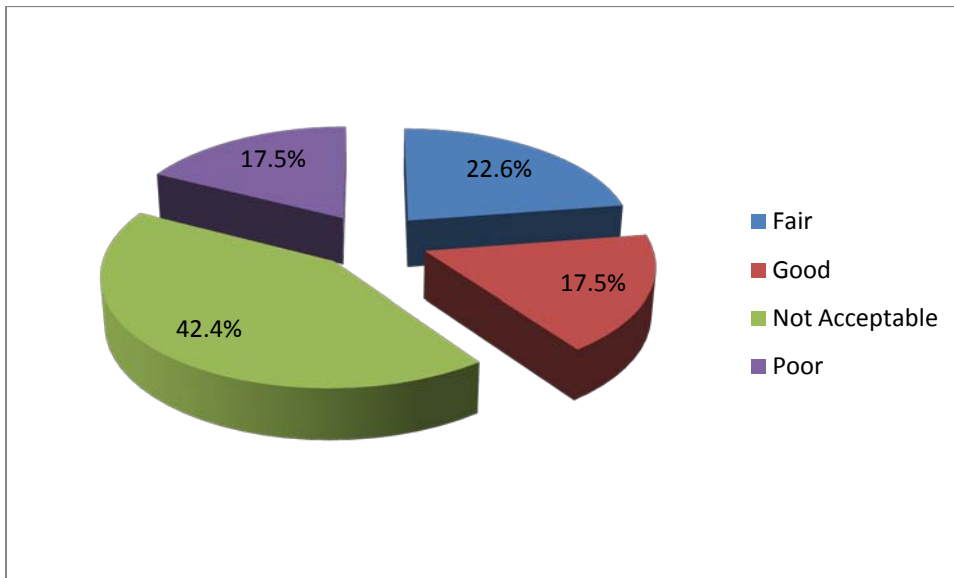
**Figure 16 Q4-1: The Acceptability Rating - You Own and Manage your OSTDS**



**Table 21 Q4-2: The Acceptability Rating - You Own the OSTDS and a Wastewater Utility Manages It**

		Frequency	Valid Percent
Valid	Fair	54	25.1
	Good	23	10.7
	Not Acceptable	85	39.5
	Poor	53	24.7
	Total	215	100.0

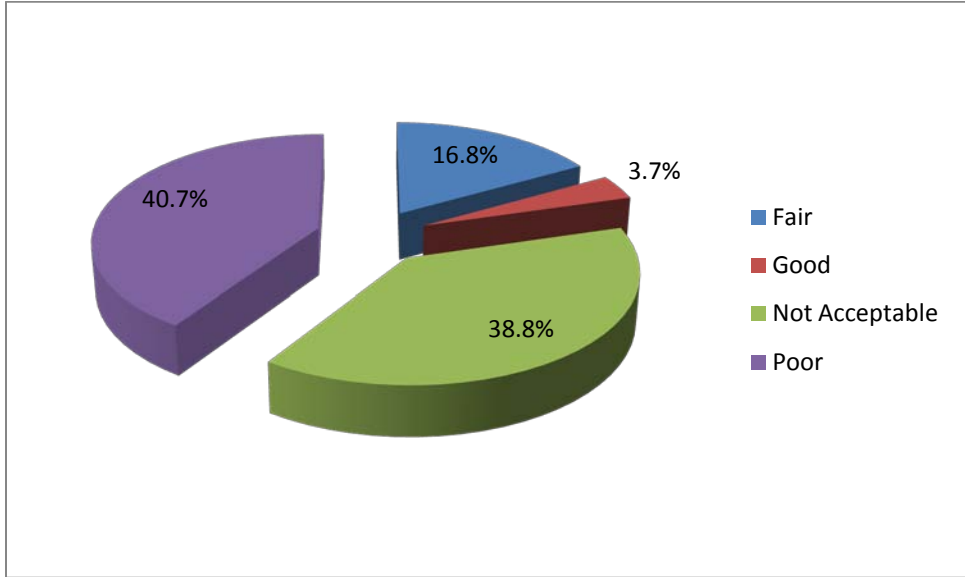
**Figure 17 Q4-2: The Acceptability Rating - You Own the OSTDS and a Wastewater Utility Manages It**



**Table 22 Q4-3: The Acceptability Rating - A Wastewater Utility Owns and Manages the OSTDS on Your Property**

		Frequency	Valid Percent
Valid	Fair	49	22.6
	Good	38	17.5
	Not Acceptable	92	42.4
	Poor	38	17.5
	Total	217	100.0

**Figure 18 Q4-3: The Acceptability Rating - A Wastewater Utility Owns and Manages the OSTDS on Your Property**



## Part 5. The Survey Respondents Acceptability Levels of the Size of the Utility District

Regarding the OSTDS utility size, the Wakulla County-specific utility was found to be the most acceptable to OSTDS survey respondents, with about 51.4% responding either “good” or “fair”, and about 31.7% responding “not acceptable”. A regional utility option was next in terms of survey respondents’ preferences, with 45.2% selecting either “good” or “fair”, and 36.2% responding with “not acceptable”. The option least preferred among the survey respondents was for the smaller special districts within the county, with about 79.5% responding either “poor” or “not acceptable”. (Table 20).

### Q5: Acceptability Rating of the Size of the Utility District

**Table 23 Q5 Statistics of Acceptability Rating of the Size of the Utility District**

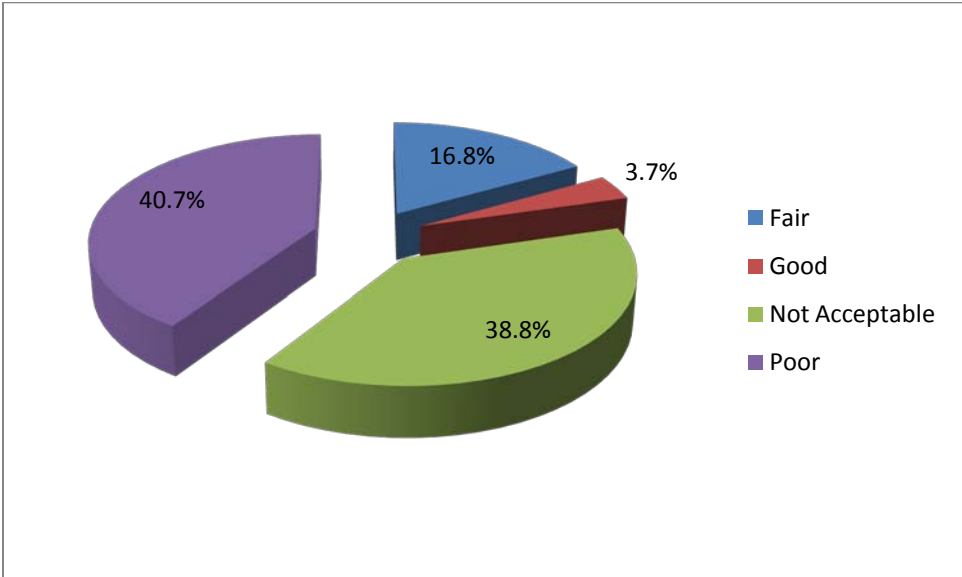
		Rating smaller special districts within the county	Rating county-side	Rating regional
N	Valid	214	218	221
	Missing	46	42	39
	Percent	21.4	19.2	17.6



**Table 24 Q5-1: Rating Smaller Special Districts Within the County**

		Frequency	Valid Percent
Valid	Fair	36	16.8
	Good	8	3.7
	Not Acceptable	83	38.8
	Poor	87	40.7
	Total	214	100.0

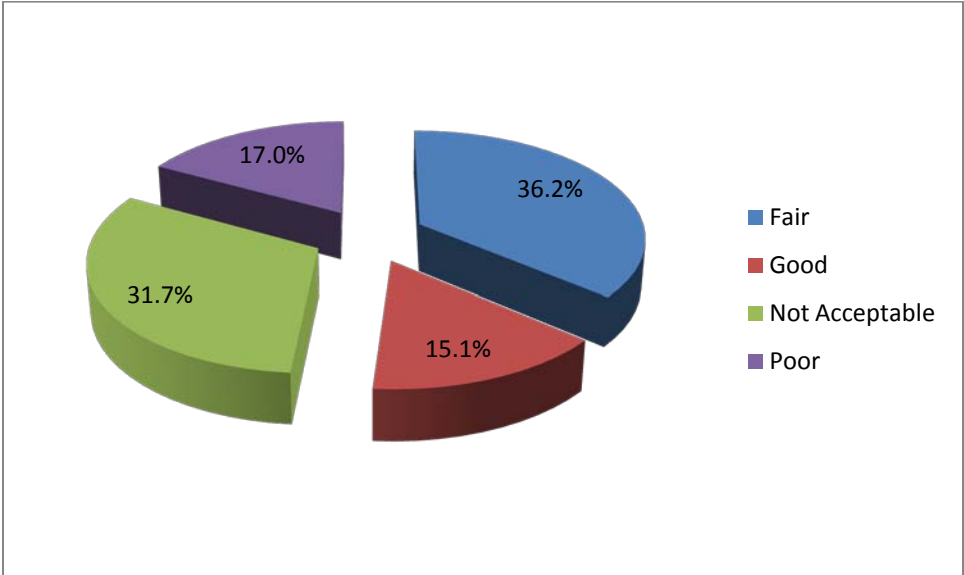
**Figure 19 Q5-1: Rating Smaller Special Districts Within the County**



**Table 25 Q5-2: Rating County**

		Frequency	Valid Percent
Valid	Fair	79	36.2
	Good	33	15.1
	Not Acceptable	69	31.7
	Poor	37	17.0
	Total	218	100.0

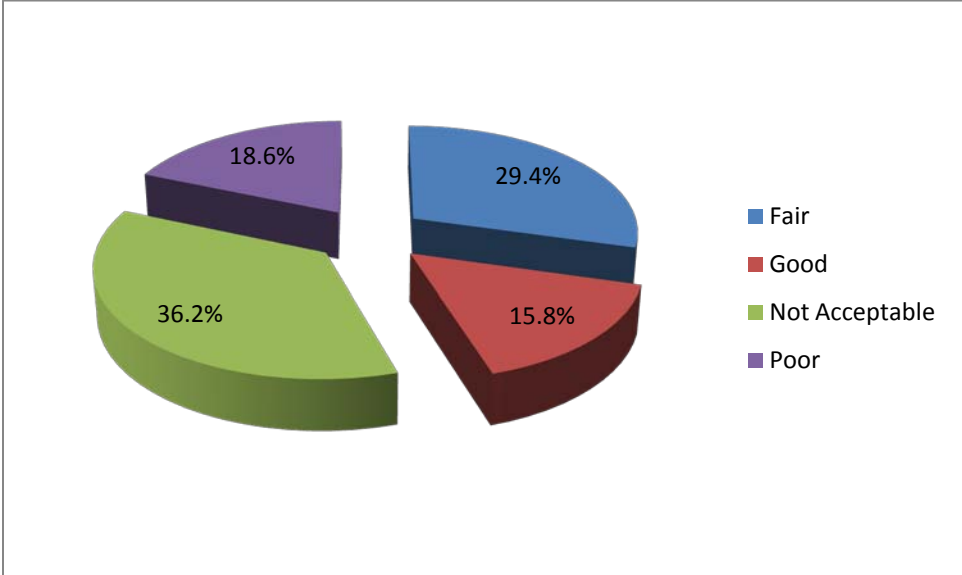
**Figure 20 Q5-2: Rating County**



**Table 26 Q5-3: Rating Regional**

		Frequency	Valid Percent
Valid	Fair	65	29.4
	Good	35	15.8
	Not Acceptable	80	36.2
	Poor	41	18.6
	Total	221	100.0

**Figure 21 Q5-3: Rating Regional**



## Chapter 3: Task 3-Detailed Cost Effectiveness Analyses of Management Options

The objectives and options for septic system inspection management were developed with input from a series of public workshops and meetings with the Wakulla County Infrastructure committee. This chapter describes the analysis of the cost effectiveness of three basic options and six additional options including alternatives if the inspection program is implemented over 5, 7 or 10 years. The assumptions used in this analysis are based on previous Florida Department of Health studies, discussions with septic system contractors and input from the public workshops. The values included in the analysis reflect policy level comparisons. The actual costs of any option will vary depending on a number of administrative details and the market costs at the time of implementation.

### Situation – General Information Related to OSTDS

1. There are about 10,000 septic systems in Wakulla County. All contribute Nitrogen, Phosphorus and other nutrients and pollutants to the water system that supports local ecosystems and that citizens drink, swim in, fish from and.
2. Approximately 8,000 properly functioning systems prevent the discharge of fecal and other Coliform bacteria. About 20% or 2000 systems are probably failing and discharging Coliform, nutrients, pharmaceuticals and other pollutants that can cause human health problems (even deaths) and environmental damage that impact the economy and quality of life in Wakulla County.
3. Some of the failing septic tanks were built out of loose concrete blocks with no bottoms, have had holes punched in them or have deteriorated and leak. Owners and officials often don't know tanks are leaking into the ground water without having them pumped out and visually inspected. Older drain field pipes may be clogged or broken and/or may not have the required separation from the seasonal high water table.
4. When a septic system becomes clogged and fails prematurely, replacement may cost between \$4-12,000. This is a financial hardship for any owner and may result in more foreclosures.
5. The inspection of septic systems and the replacement of those that are failing can be a cost effective way to reduce the pollution of the ground and surface water in Wakulla County.
6. Requiring inspections may save owners money in the long run. Like an oil change in a car, the pump-outs help systems function better and longer.
7. Maintaining existing systems can put millions of dollars into the local economy that would otherwise go into holes in the ground.

8. Having to close wells, springs, rivers, sinkholes and beaches to swimming and fishing and the degradation of the environment can adversely impact Wakulla County's economy, quality of life and property values.
9. If owners contract with licensed Septic System Contractors for permits, inspections and pump-outs the cost will be about \$425.
10. 85% of OSTDS are in high, medium vulnerability areas based on layers.
11. 11.3% of the population are below the poverty level and probably cannot afford to replace their failing septic systems.
12. 2,747 location of systems issued before 1983 (depth and design standards) and 6,284 location of systems issued before 1997 (sealed)

## What Do We Want to Achieve?

These objectives were developed with input from public workshops and the survey of septic system users in Wakulla County.

- 1. Costs: To minimize the cost for individuals and the County.**
  - a Initial cost of new septic systems
  - b Replacement cost of existing septic systems
  - c Operating cost of septic systems (electricity, maintenance, repair and replacement)
  - d Assistance programs for septic systems installations, replacements or upgrades
- 2. Property values: To protect values that could decline if there are spring and beach closures, environmental damage and polluted drinking water wells.**
- 3. Health: To reduce pollution of ground and surface waters that can impact public health and safety.**
  - a Fecal and other Coliform levels- Enteric Water born Diseases
  - b Nitrate levels (High nitrates can cause the "blue baby syndrome" if ingested)
  - c Pharmaceuticals and other hazardous chemicals
- 4. Local economy: To protect retail and services businesses that benefit from more residents and tourists, especially those related to nature-based recreation and residential communities.**
- 5. To protect natural resources, including springs, sinkholes, wetlands and species habitats, that are important to the County economy and quality of life.**
  - a Nutrient levels in the water

- b Habitat quality
- c Species numbers and health
- d Science supported system testing and policy decisions

**6. To improve regulation related to septic systems.**

- a Requirements for performance-based treatment systems
- b Permit fees
- c Time required to obtain a permit
- d Engineering requirements/standards and enforcement (avoid duplication of effort)
- e Periodic inspection and maintenance requirements and enforcement
- f Contractor licensing requirements
- g Protect against invasion of property rights; strangers coming on one's property
- h Enforcement on non-permitted owner installed upgrades

**7. To allocate costs fairly.**

- a Those who benefit from direct services pay their fair share of the costs
- b Those who benefit from a better environment and economy pay their fair share
- c Those who cause negative impacts are responsible for the costs to others
- d Avoid having to pay twice

**8. To educate people about septic tanks**

- a Specify how to use septic systems to improve effectiveness and extend their life
- b Educate about proper maintenance of systems
- c Clearly define the public health, environmental, administrative and financial problems
- d Provide the scientific and expert analysis for decision making

## Basic Septic System Management Options

Core Question – Will Wakulla County allow about 2,000 septic system owners to, often unknowingly, and in the form of pollutants, discharge raw sewage into the water that citizens drink, swim in and fish from and that impacts the natural environment; or will the County provide a systematic, cost effective way to inspect and replace failing systems?

All calculations are estimates for policy comparison purposes and will require more detailed analysis for final decision-making. The assumptions are based on input from septic system contractors, utility management companies, workshop participants and other experts.

## **1 – No Septic System Inspections Are Required**

This is the current situation in Wakulla County. There is no cost to those homeowners who don't do inspections but failure is more likely without regular inspections and pump-outs. If 50% or 5,000 fail and need early replacement in the next 25 years it could cost individuals \$3K-\$12K or \$15M-\$60M countywide (5,000 x \$3-12,000 each). The increased number of failing systems will also have a negative impact on public health, recreation, the environment and the economy in Wakulla County.

## **2 – Owners Are Required to Contract with Licensed Contractors for Inspections**

Owners hire licensed contractors every 5 years at a cost of about \$425.

Inspections \$150

Pump-out \$250 (This may vary depending on the size of the tank and contractor)

Permit \$25

Total \$425/every 5 years or an average of about \$7.00/month.

## **3 – Utility Contracts with Licensed Contractors for Inspections**

It is probably preferable to use a utility management services company that can contract with a number of private, licensed septic system contractors. It is estimated that the cost may be about \$300 because of volume contracts and coordination with contractors and the Department of Health. Septic system owners could pay through their property tax assessment on an annual or quarterly basis or monthly through their mortgage escrow account. A utility can arrange 5-10 year installment payments for replacing failing systems when needed. A utility may also use grants or voluntary donations to pay for replacements in hardship cases. The cost per month will vary depending on these variables:

### Boundary area of the utility

A. Countywide

B. Regional (Wakulla, Leon, Tallahassee and possibly others jurisdictions)

### Cycle in years for completing all inspections and re-inspections

5 years

7 years

**Table 27 Comparison of Basic Inspection Management Options**

Options	Yr. Cycle	Inspect Per Yr.(#)	Cost Per Yr.	Adm. Fee	Total	Assmt Per Yr	Assmt. Per Mo
1 Owner no inspection						0	0
2 Owner/Contractor \$425/5yr	5	2,000	\$850,000		\$850,000	\$85	\$7.08
3A Countywide Utility 10% Adm.	5	2,000	\$600,000	\$66,667	\$666,667	\$67	\$5.56
	7	1,429	\$428,571	\$47,619	\$476,190	\$48	\$3.97
3B Regional Utility 7% Adm.	5	9,000	\$2,700,000	\$290,323	\$2,990,323	\$66	\$5.54
	7	6,429	\$1,928,571	\$207,373	\$2,135,945	\$47	\$3.96

**Assumptions**

1. Basic Formula: Annual cost of inspections + Administration Cost = Total Program Cost /number of Users/12 months = Monthly Cost/User
2. There are approximately 10,000 septic systems in Wakulla and 45,000 in Wakulla, Leon and Tallahassee combined.
3. Inspections and pump-outs for individuals cost about \$425 and for a utility about \$300 (This may be less because of volume contracts and inspection coordination)
4. It is assumed that the management fee will be 10% for a countywide and 7% for a regional management utility.

**Other Options for Septic System Inspection Management**

The study considered other options that examined costs if a utility collected pay for replacement of failing systems for those who qualify for hardship assistance or pay for failing system replacement for all septic system owners. The County attorney has indicated that under current law it is not possible to collect property tax assessments from owners that could be used to benefit other owners (the hardship cases). There would also be a problem collecting funds for replacement of newer systems that may not be needed for 30-40 years. Benefits must be provided in a reasonable time and that is typically, five years or at the most, seven years. Similarly, the scenarios with 10-year inspection cycles would exceed the typical reasonable benefit period. These options are included because it may be possible to request legislative authorization or to find alternative administrative structures that may make them possible. These scenarios would help address the hardship cases, reduce the impact of paying for costly replacements and lower the monthly cost to citizens.



All calculations are estimates for policy comparison purposes and will require more detailed analysis for final decision-making processes. The assumptions are based on input from septic system contractors, utility management companies, workshop participants and other experts.

### Calculations for Other Scenarios<sup>14</sup>

#### **4 – A Countywide Utility That Pays for Replacement in Hardship Cases (5 year Cycle)**

Utility revenue: 10,000 septic systems owners pay \$9.00/mo. x 12 mo. = \$1,022,222/yr.

Inspections, pump-outs and permits, 2000 inspections/yr. x \$300 = \$600,000/yr.

Standard system replacement for 20% of inspections that find failing systems and 20% of those are eligible for hardship assistance  $.2 \times .2 \times 2000$  systems x \$4,000/system = \$320,000/yr.

Administration 10% = \$102,222

#### **5 – A Countywide Utility Pays to Replace All Failures with Standard Systems (5 year Cycle)**

Utility revenue: 10,000 septic systems owners paying \$20.37/mo. x 12 mo. = \$2,444,444/yr.

Inspections, pump-outs and permits, 2000 x \$300 = \$600,000.

Replace of 20% of 2,000 inspections that fail at \$4,000/ standard system = \$1,600,000/year.

Administration 10% = \$244,444.

#### **6 – A Countywide Utility that Pays to Replace All Failures with PBTS (5 year Cycle)**

Utility revenue: 10,000 septic systems owners paying \$35.19/mo. x 12 mo. = \$4,222,222/yr.

Inspections, pump-outs and permits, 2000 x \$300 = \$600,000

Replace of 20% of 2,000 inspections that fail at \$8,000/ PBTS system = \$3,200,000/year.

Administration 10% = \$422,222.

#### **7 – A Regional Utility that Pays for Replacement in Hardship Cases (5 year Cycle)**

Utility revenue: 45,000 septic systems owners pay \$8.26/mo. x 12 mo. = \$4,462,000/yr.

Inspections, pump-outs and permits, 9000 inspections/yr. x \$300 = \$2,700,000/yr.

Standard system replacement for 20% of inspections that find failing systems and 20% of those are eligible for hardship assistance  $.2 \times .2 \times 9000$  systems x \$4,000/system = \$1,440,000/yr.

---

<sup>14</sup> The results are shown for a 5-year cycle of inspections. The table also shows the results for 7 and 10-year cycles.

Administration 7% = \$322,000.

**8 - A Regional Utility Pays to Replace All Failures with Standard Systems (5 year Cycle)**

Utility revenue: 45,000 septic systems owners paying \$19.36/mo. x 12 mo. = \$10,670,000/yr.

Inspections, pump-outs and permits, 9000 x \$300 = \$2,700,000/yr.

Replace of 20% of 9,000 inspections that fail at \$4,000/ standard system = \$7,200,000/year.

Administration 7% = \$770,000

**9 - A Regional Utility that Pays to Replace All Failures with PBTS (5 year Cycle)**

Utility revenue: 45,000 septic systems owners paying \$34.13/mo. x 12 mo. = \$18,430,000/yr.

Inspections, pump-outs and permits, 9000 x \$300 = \$2,700,000/yr.

Replace 20% of 9,000 inspections that fail at \$8,000/ PBTS system = \$14,400,000/year.

Administration 7% = \$422,222.

Note: After the first 5, 7 or 10-year cycle of inspections and replacements there would be very few replacements and the monthly costs can be greatly reduced.

**Table 28 Other Options for Septic System Inspection Management**

Options	Yr Cycle	Insp. Per yr. (#)	Cost/yr.	# Hardship	Cost/yr. (\$)	# Rpl.	\$/yr. Rpl.	10/7% Adm	Total (\$)	Per Yr. (\$)	Per Mo (\$)
4. CW Utility w/Hardship Asst.	5	2,000	600,000	80	320,000		0	102,222	1,022,222	102	8.52
	7	1,429	428,571	57	228,571		0	73,016	730,159	73	6.08
	10	1,000	300,000	40	160,000		0	51,111	511,111	51	4.26
5. CW Utility w/Standard Repl.	5	2,000	600,000	0	0	400	1,600,000	244,444	2,444,444	244	20.37
	7	1,429	428,571	0	0	286	1,142,857	174,603	1,746,032	175	14.55
	10	1,000	300,000	0	0	200	800,000	122,222	1,222,222	122	10.19
6. CW Utility w/PBTS Repl.	5	2,000	600,000	0	0	400	3,200,000	422,222	4,222,222	422	35.19
	7	1,429	428,571	0	0	286	2,285,714	301,587	3,015,873	302	25.19
	10	1,000	300,000	0	0	200	1,600,000	211,111	2,111,111	211	17.59
7. Reg. Utility w/Hardship Asst.	5	9,000	2,700,000	360	1,440,000		0	322,000	4,462,000	99	8.52
	7	6,429	1,928,571	257	1,028,571		0	230,000	3,187,143	71	6.08
	10	4,500	1,350,000	180	720,000		0	161,000	2,231,000	50	4.26
8. Reg. Utility w/Replacement	5	9,000	2,700,000	0	0	1,800	7,200,000	770,000	10,670,000	237	19.76
	7	6,429	1,928,571	0	0	1,286	5,142,857	550,000	7,621,429	169	14.11
	10	4,500	1,350,000	0	0	900	3,600,000	385,000	5,335,000	119	9.88
9. Reg. Utility w/PBTS Repl.	5	9,000	2,700,000	0	0	1,800	14,400,000	1,330,000	18,430,000	410	34.13
	7	6,429	1,928,571	0	0	1,286	10,285,714	950,000	13,164,286	293	24.38
	10	4,500	1,350,000	0	0	900	7,200,000	665,000	9,215,000	205	17.06

**Assumptions**

Basic Formula: Annual cost of inspections + Assistance + Administration Cost = Total Program Cost / number of Users/12 months = Monthly Cost/User.  
 There are 10,000 septic systems in Wakulla and 45,000 Wakulla, Leon and Tallahassee. About 20% are failing, 2,000 in Wakulla and 9,000 in the region; there will be more failures without inspections and pump-outs About 20% of those failing will qualify for a hardship waiver. If assistance is provided, there can be a lien placed on the property to increase repayments. Inspections and pump-outs for individuals cost about \$425 and for a utility \$300 (This may be less because of volume contracts and coordination). Replacement of failing systems with standard systems for \$4,000 and PBTS for \$8,000. It is assumed that the management fee will be 10% for a countywide and 7% for a regional management utility. After the first 5, 7 or 10-year cycle of inspections and replacements there would be very few replacements and the monthly costs can be greatly reduced.

## Several Financial Cost Options

The project research team researched the various financing mechanisms available and provide the following four suggestions of options with regard to possible financing strategies : a Restoration Fund, a Loan Program, an Assistance Program, and a Surcharge.

### a. Wakulla County Priority Area (hereafter, WCPA) Restoration Fund

Make County and/or other (Federal) grant funding available to: cover partial or entire cost of repair or replacement of failing septic systems. If the household applicant lives within the WCPA, the household would get a priority for receiving this WCPA Restoration Fund. The priority area(s) could be based on the vulnerability assessment results in Chapter 4.

### b. Loan Program

Provides discounts to the loan interest rate to install a PBTS or nitrogen-reducing system or to repair or replace a failed septic system. This type of loan program is already in place under American Recovery and Reinvestment Act (hereafter ARRA). Wakulla County will need to publicize and promote these programs (based on the decision reached by the Wakulla County BOCC).

The procedure in obtaining ARRA water/wastewater grant and loan(s) related to option a. and b. are outlined below:

According to ARRA Registering and Reporting Guide for Water/Wastewater Systems with Loans/Grants from the U.S. Department of Agriculture-Rural Utilities Service, when a citizen received a ARRA water/wastewater grant and/or loan, he or she have the responsibility of filing reports explaining how your ARRA funds were used. For reporting, ARRA beneficiaries must register with FederalReporting.gov. E-mail address, Data Universal Numbering System (hereafter, DUNS) number, and Central Contractor Registration (hereafter, CCR) are required for registering with FederalReporting.gov. A DUNS number is a unique, nine-digit sequence assigned to organizations and business entities. The DUNS number is used to determine who is receiving federal funds, their business relationships, for tracking purposes, and for validation of addresses and points of contact information. There are two ways to register for a DUNS number. The first option is registering by phone. The second option is registering using the Dun & Bradstreet website<sup>15</sup>. The CCR is a federal government database that gathers, stores, validates, and shares information to

---

<sup>15</sup> <http://fedgov.dnb.com/webform>

support federal grants and contracts. Registrants are required to complete a one-time registration to provide basic information relevant to financial transactions.<sup>16</sup> FederalReporting.gov creates the user ID (POC's e-mail address) for the Points of Contact (hereafter, POC) when a recipient user for the organization registers, then e-mails the POC his/her temporary password to log on to FederalReporting.gov and the FederalReporting.gov PIN (hereafter, FRPIN) for the organization. The FRPIN is a unique, nine-digit number assigned to each DUNS number. The FRPIN is required to be entered into a data field when submitting quarterly reports with FederalReporting.gov. Quarterly reports consist of three Excel spreadsheets; Prime Recipient sheet, Sub-Recipient sheet, and Vendor sheet.

c. Income-Based Assistance Program

This program is based on low income-qualified individuals in Wakulla County, in order to provide financial support to repair or replace failing septic systems. If the household applicant lives within the WCPA, the household should be given a priority for using this program.

d. Surcharge or Wakulla Springs Restoration Fee (or Other) Fund

There could be a small monthly amount assessed to all homeowners (including sewer and septic systems) in Wakulla County. The funds generated would be used for (among other areas): 1) upgrading wastewater treatment plants; and 2) upgrading septic systems and implementing cover crop activities to reduce nitrogen loading to the springs. A similar program has been implemented in Chesapeake Bay Maryland<sup>17</sup>, and since 2004, has generated over \$431 million to date for these important upgrades. The Chesapeake Bay's residents are assessed a monthly surcharge of \$ 2.50 per household surcharge on sewer bills and \$ 2.50 per month per "equivalent dwelling unit" (EDU) based on wastewater flow for commercial and industrial users. On an annual basis, the total generated for restoration activities totals \$ 72.6 million per year. The fund has financed sewage treatment plant users, about \$60 million per year was used to upgrade Maryland's wastewater treatment plants to achieve enhanced nutrient removal (ENR). The fund has financed OSTDS users to the tune of approximately \$12.6 million per year to upgrade septic systems and implement cover crop activities to reduce nitrogen loading to the Bay.<sup>18</sup> From a broader perspective, clean water and sustaining good water quality yield benefits to all Wakulla County residents, regardless of OSTDS ownership type.

---

<sup>16</sup> <https://www.bpn.gov/ccrauth/profile/ManageRegistrations.aspx>

<sup>17</sup> See: <http://conference.ifas.ufl.edu/emecs9/Presentations/Monday/Salon%203-4/pm/Session%204/1415%20B%20Summers.pdf>

<sup>18</sup> Summers, R. (2009), "Maryland's Bay Restoration Fund", Maryland Department of the Environment from EMECS9 presentation material.

## **Chapter 4: Task 4- Updated OSTDS Vulnerability or Sensitivity Modeling and GIS Map**

The goal of this task was to compile available data in order to develop an overall detailed aquifer vulnerability, or sensitivity map for Wakulla County. A small group/subcommittee of the Wakulla County Citizens Infrastructure Advisory Committee served as the technical advisory members for this task. The Geographic Information System (GIS) mapping software used for the vulnerability analysis was Arc GIS version 9.1. This map can be used as a base for further documentation of the economic, geologic and hydrologic conditions currently existing in the county. Data included such elements (map layers) as existing OSTDS and sewer, population density, income, soil type and hydrology, among others. Appropriate and pertinent maps and models (e.g., WAVA, transport model and GIS maps from the Phase I OSTDS study, etc.) were integrated into the vulnerability, or sensitivity mapping process. The vulnerability analysis findings in this section could be used as a starting point for prioritizing or ranking areas of the county for OSTDS management decision making actions designated as areas of critical concern. Management actions could include activities such as sewerage or for accelerating the installation of performance-based onsite systems among others. In broad terms, this task covered the following two objectives:

- a) Vulnerability or Sensitivity modeling and map update(s), and;
- b) Analysis of areas of critical concern and prioritizing of OSTDS for management decision making actions.

### **The Vulnerability or Sensitivity Model**

The data for this task was compiled from a multitude of sources, ranging from local public officials and agencies, to online sources. The data (presented as GIS maps) in the following sections are representative of the existing conditions in Wakulla County. In this chapter, the project team included ten maps and six GIS layers in the development of the vulnerability model.

The future land-use map (Figure 22) was included to show the basic land use planning framework regarding future development in Wakulla County. The sewer map locations (Figure 23) and OSTDS map (Figure 24) represent the current status of the Wakulla County wastewater treatment system. The OSTDS installation map (Figure 25) portrayed that OSTDS are differentiated between those that were installed before 1991 and those that were installed after 1991. The year 1991 (or 20 year old system) was selected as it represented a typical life cycle of an average

OSTDS. These installed OSTDS were identified with red and green points for pre- and post- 1991 OSTDS, respectively. Subsequent maps included: a springshed and recharge map (Figure 26 and Figure 27), a sinkholes map (Figure 28), a hydro geological map (Figure 29), and a county soils map. (Figure 30) Finally, the income level map depicts areas in the county that would need some assistance (in the form of low interest loans, or grant funding, etc.) if further upgrades are needed in order to maintain or improve existing water quality in the county. (Figure 31)

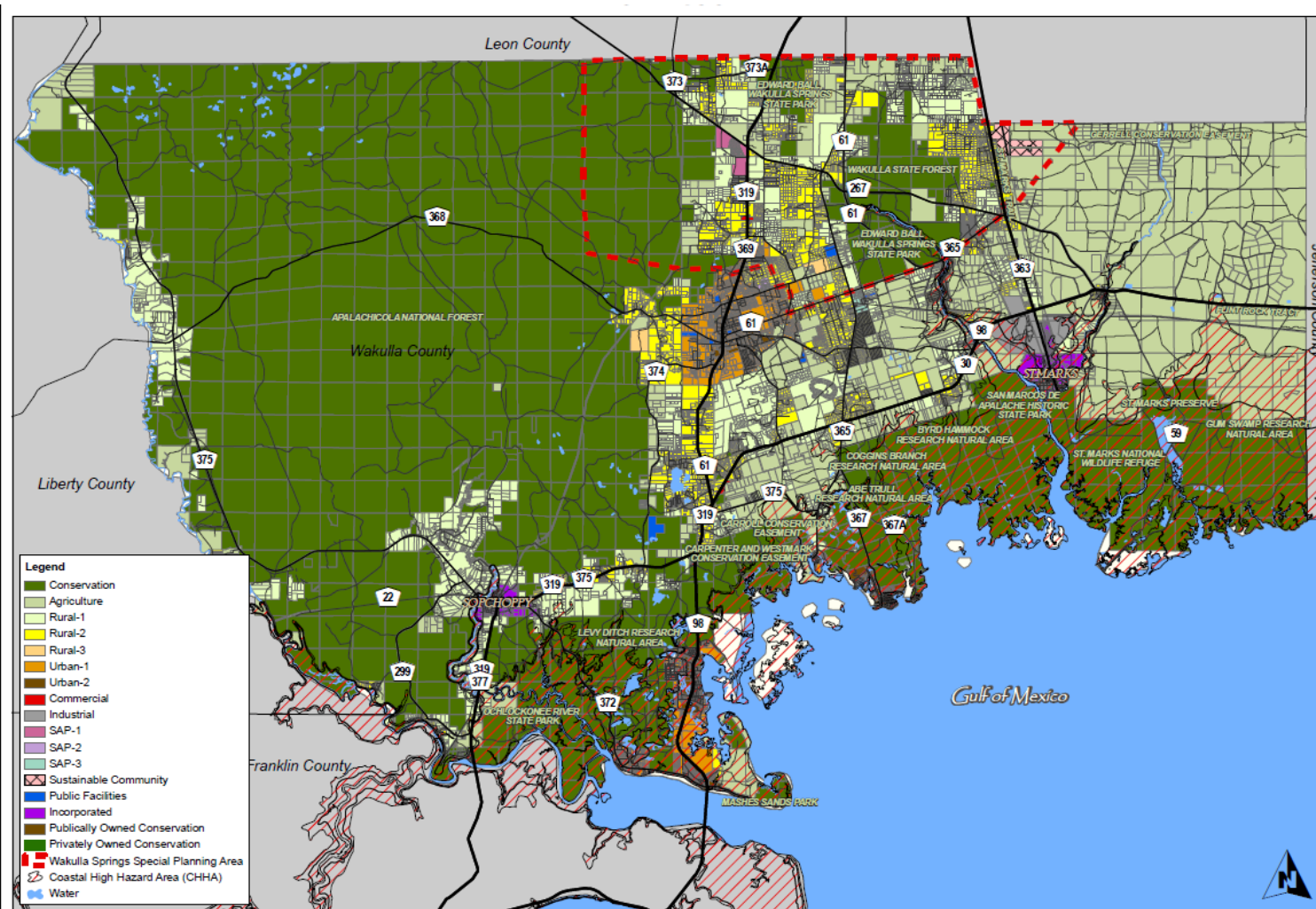
Based on these ten maps, the six layers that followed included, the sewer locations (Layer 1), the OSTDS locations (Layer 2), a sinkholes location (Layer 3), a hydro geological vulnerable area (Layer 4), a soil area (Layer 5), and income level map (Layer 6). All the map layers were further delineated to target areas of vulnerability in the county based on overlapping areas of biological and economic sensitivity criteria.

The following Figure 22 depicts the future land use for Wakulla County. In particular, the map highlights the Wakulla Springs special planning area (in red dashed line) and other zones of development. Wakulla County has designed the Wakulla Springs Special Planning Area to ensure additional water quality protection to ground water affecting Wakulla Springs. A major component of the special planning area is the protection of mapped underground flow corridors which feed Wakulla Springs. The County's Comprehensive Plan requires "that the land development regulations be amended to protect water quality at Wakulla Springs; educate the public on water quality issues; regulate land uses which may adversely impact water resources; identify toxic and hazardous materials, and prohibit the discharge of pollutants."<sup>19</sup> It is noteworthy that the special planning area is within a high vulnerability area. CEFA included this area as a part of layer 5 for the following vulnerability assessment.

---

<sup>19</sup> The Florida Departments of Community Affairs and Environmental Protection (2002) "Protecting Florida's Springs: Land Use Planning Strategies and Best Management Practices" p.24

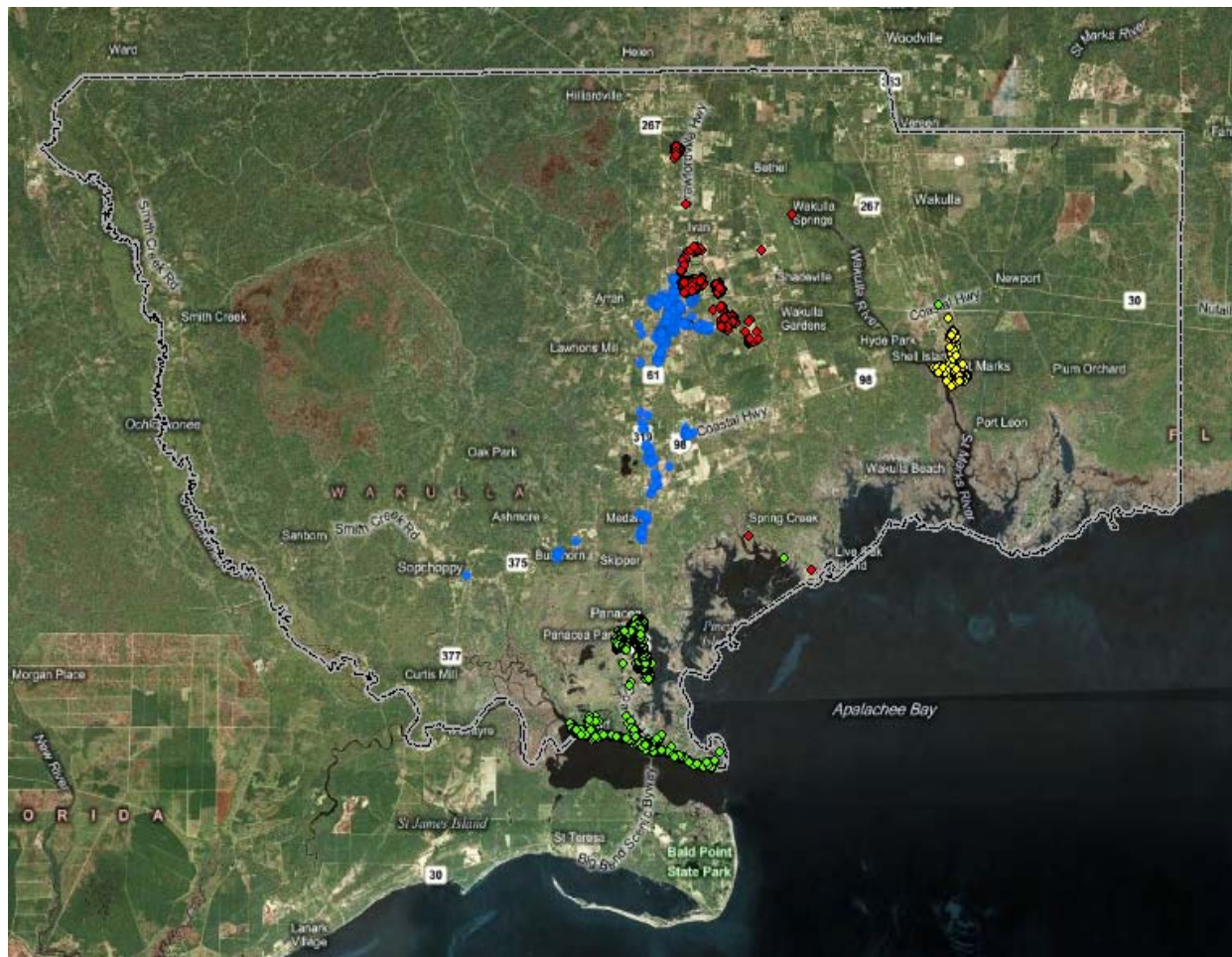
Figure 22 Future Land Use Map of Wakulla



Source: <http://www.mywakulla.com/docs/EAR/April2010/MapSeries.pdf>



**Figure 23 Wakulla County Sewer Locations**

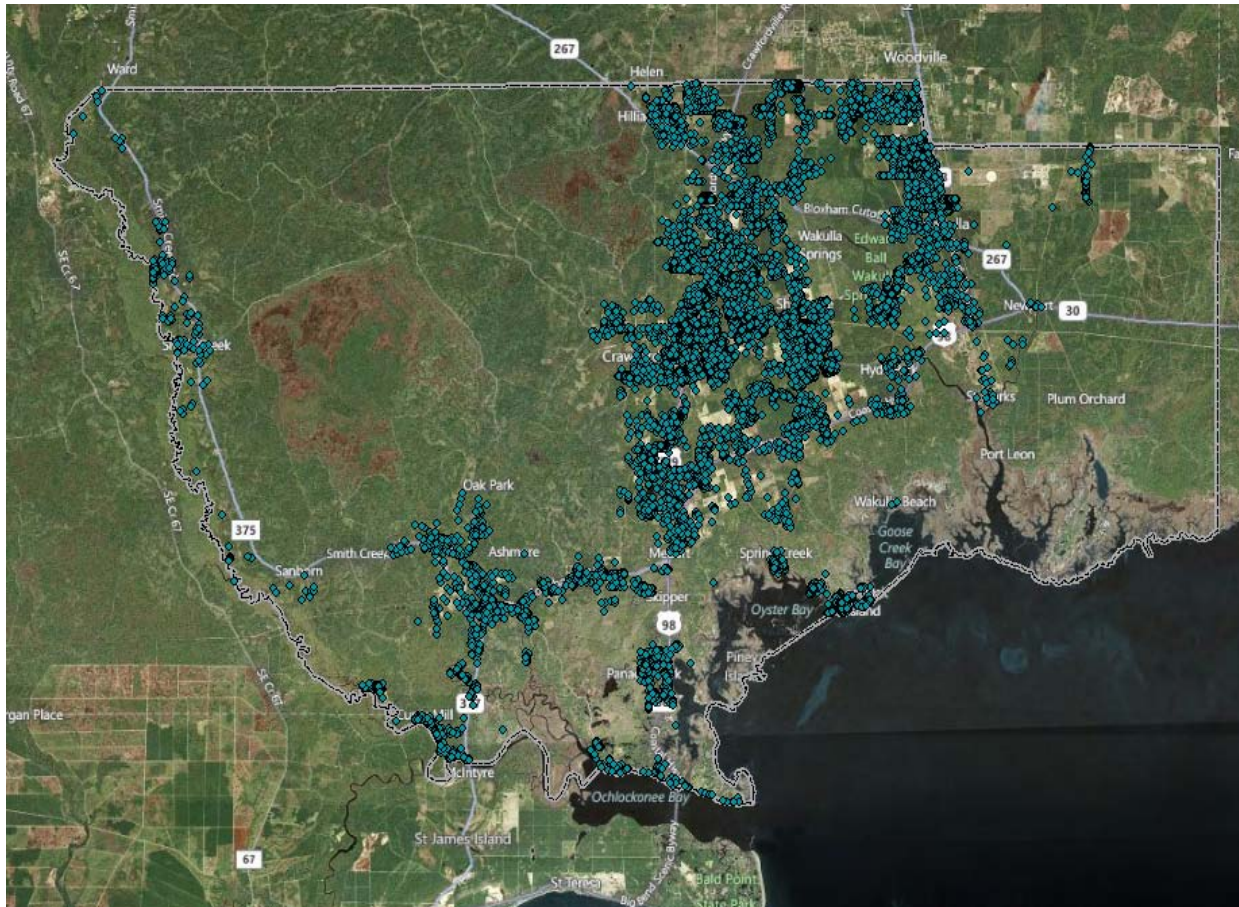


<b>Legend</b>	<span style="color: red;">●</span>	<b>Talquin</b>
	<span style="color: blue;">●</span>	<b>Sopchoppy</b>
	<span style="color: yellow;">●</span>	<b>Saint Marks</b>
	<span style="color: green;">●</span>	<b>Panacea</b>

*Source: Shawn Lewers Project Research Team, FSU CEFA (2010)*

Figure 23 described the location of sewer systems throughout Wakulla County. The sewer customer data was provided primarily through ESG Inc. ([www.esginc.net](http://www.esginc.net)), a contractor who has handled a substantial amount of wastewater utility management in Wakulla County. ESG had managed the County’s public works and utility departments since 2007. ESG Inc. provided the project team with their customer database among other data that included physical address information for sewer service recipients. The data included customers located in the unincorporated county, the cities of Panacea, Sopchoppy, and St. Marks. This data totaled 2,255 sewer customers throughout the county.

**Figure 24 Wakulla County Map of OSTDS for Year 2011**

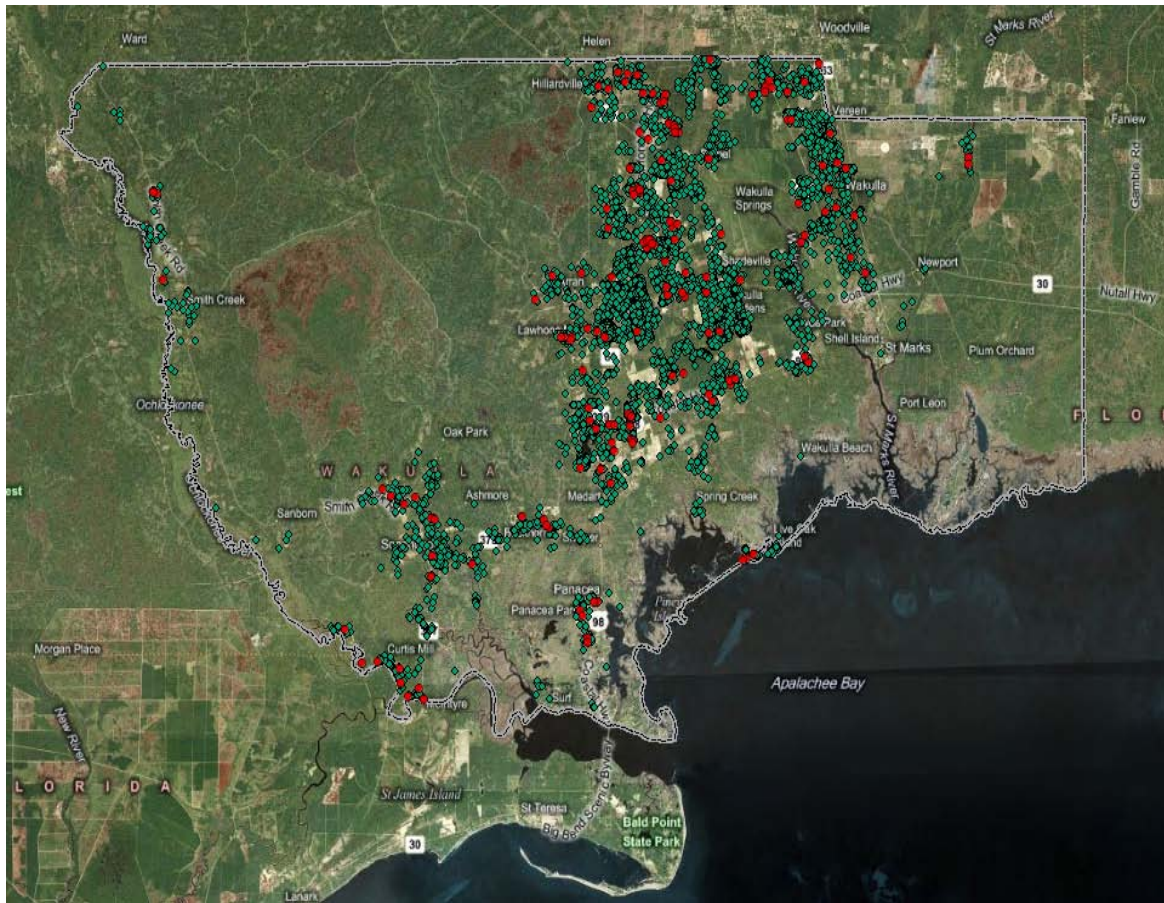


Legend	●	Wakulla County OSTDS
--------	---	----------------------

**Source: Shawn Lewers Project Research Team, FSU CEFA, Inventory Analysis for 2010**

Figure 24 showed the location of the OSTDS owners throughout Wakulla County. The reference data consisted of Florida Department of Revenue (FDOR) 2010 property parcels, Navteq address point data (2010.2), and Navteq street center-line data (2010.2). There were a total of 10,167 OSTDS in Wakulla County. The map represents the OSTDS spatial distribution throughout the county, from year 2010 to present. These OSTDS population was used as the initial database of all OSTDS homeowners sent surveys (see Chapter Two). In addition, the research team examined the data provided by the Wakulla County Health Department (DOH) for OSTDS permit and installation dates.

**Figure 25 Map of Wakulla County OSTDS Dates of Installation**



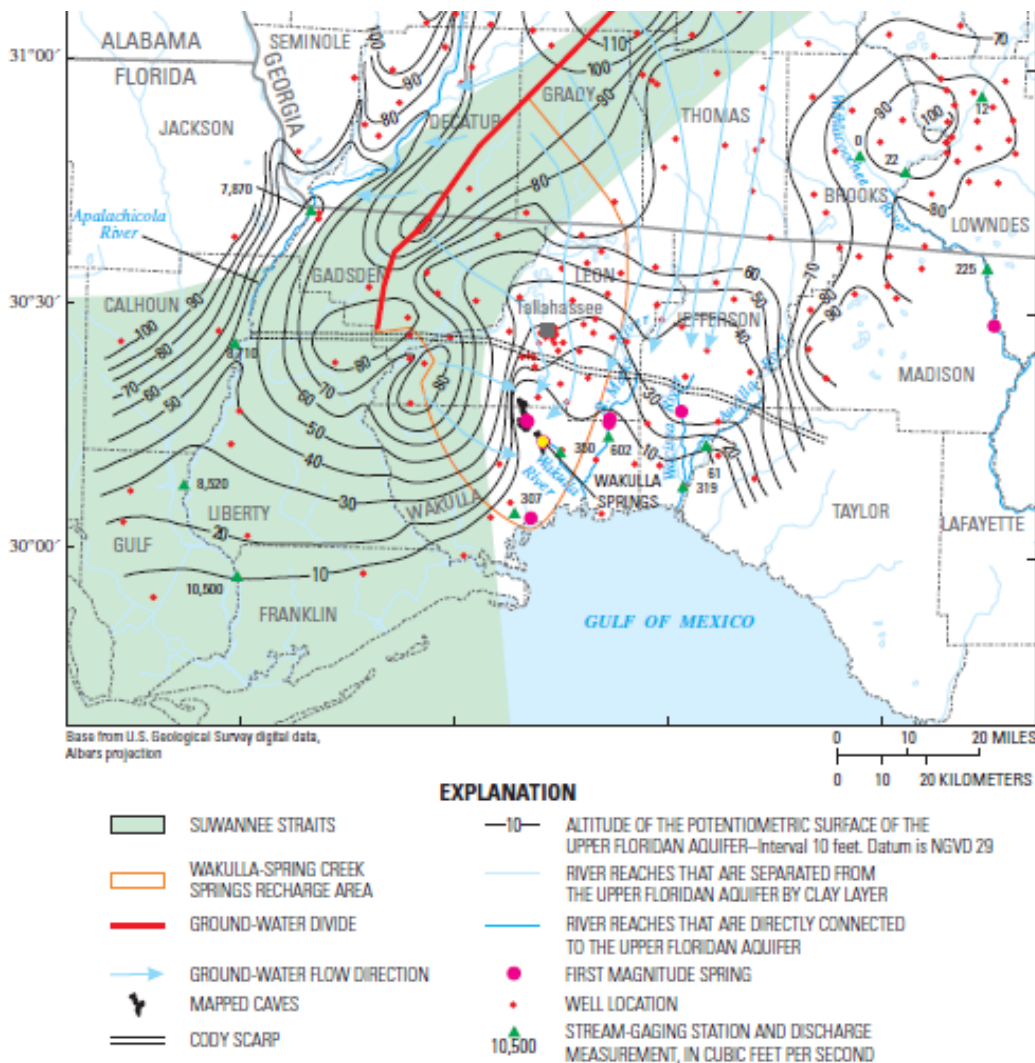
Legend	Total number of available data points	After 1991 (Green points)	Before 1991 (Red points)
Septic System	5,987	5,815	172

Source: Retrieved the data from septic search website ([www.septicsearch.com](http://www.septicsearch.com)) developed by Scott Carmody, with GIS map created by FSU CEFA 2011

In the phase 1 and 2 reports by FSU CEFA in 2007, the OSTDS data set which contained septic system location, permit date, issue date etc. was entered manually based on the county health department’s hardcopy septic permit records (and associated dates) of residents. Based on the 2007 data’s septic location address, FSU CEFA analyzed the data in order to determine whether there was a spatial pattern with regard to installation dates. FSU CEFA gathered 5,987 data points based on individual searches performed using the web-tool: septic search. Based on an estimated average lifetime of septic system of 20

years<sup>20</sup>, FSU CEFA divided data into the following two categories: pre- and post- 1991, representing time period of approximately 20 years. There were 172 septic systems installed (or with installation permit records) before 1991, and 5,815 septic systems installed after 1991. The project team theorized that the older OSTDS would be concentrated in certain areas such as residential developments, however, as can be observed, the older systems (in red) are evenly distributed throughout the county. In the following GIS maps, the water and soil characteristics of Wakulla County are presented.

**Figure 26 Wakulla Springshed and Recharge Area**

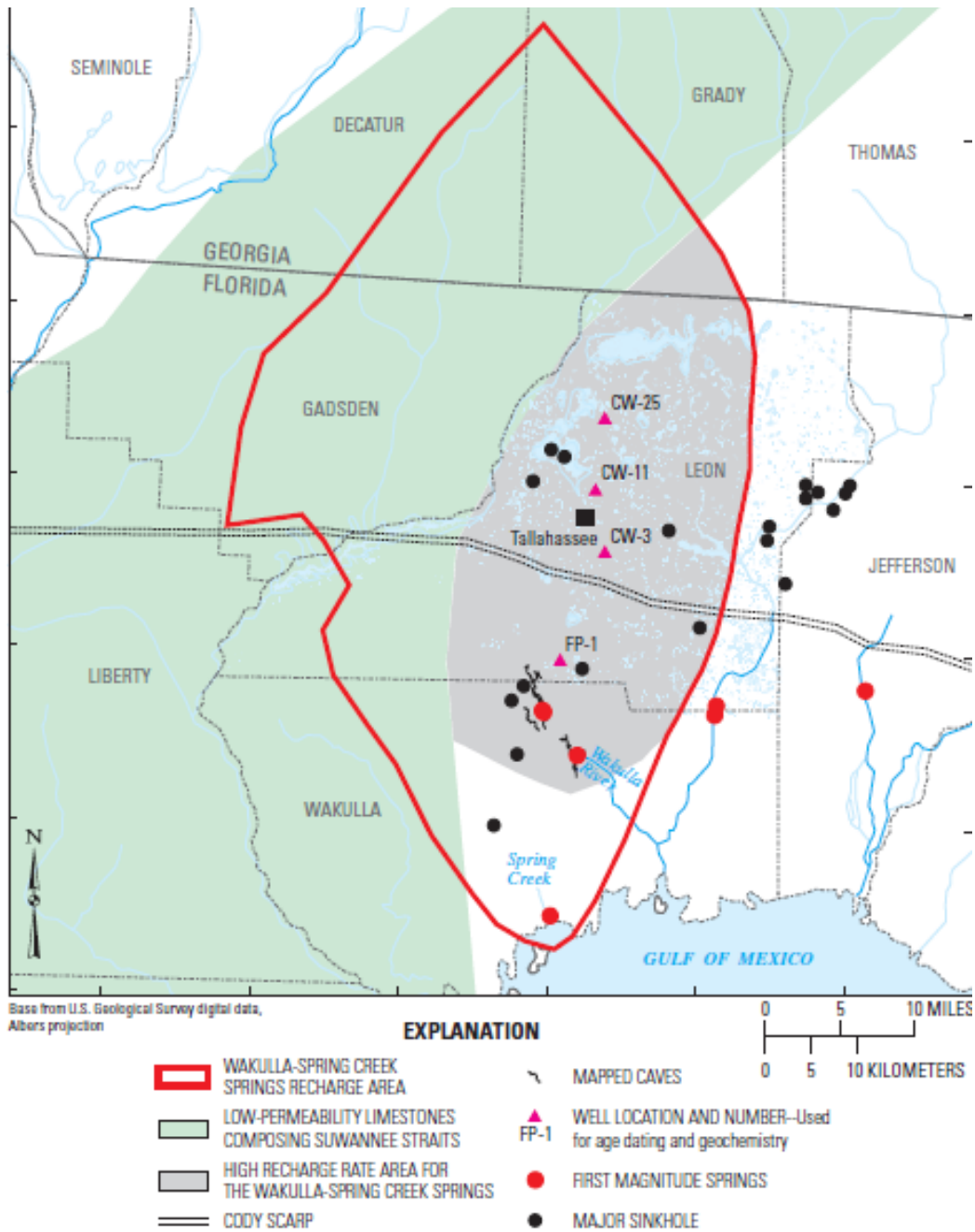


**Source: Davis H. and Katz, B. (2007)**

<sup>20</sup> Hammond, C, Tyson, T. (1991). Septic Tank Maintenance and Care. Athens, GA: University of Georgia, Cooperative Extension Service.

A potentiometric surface map of the Upper Floridan aquifer was constructed using groundwater level data collected from 274 wells during the period from October 21st to November 8th, 1991, when water levels generally were lower than average. A groundwater divide extends diagonally from southwest to northeast across the map area. South of the divide, ground water moves south toward several large springs. The springshed for Wakulla and Spring Creek Springs is delineated by the orange box in Figure 26.

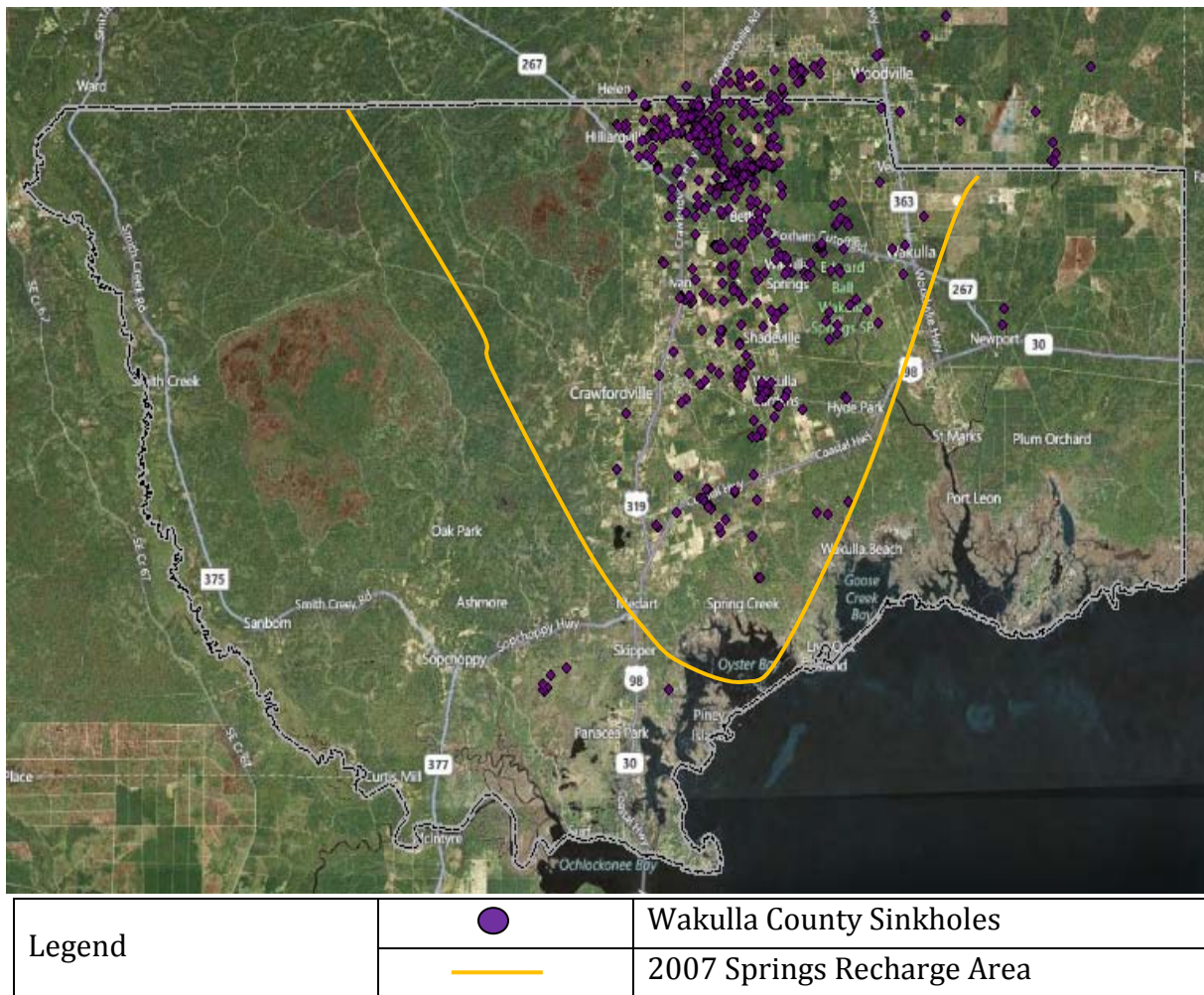
**Figure 27 Wakulla County Spring Creek Springs Recharge Area**



Source: Davis H. and Katz B. (2007) and Recreated by FSU CEFA, 2011

Figure 27 depicts the recharge basin for Wakulla Springs. FSU CEFA used this Wakulla Spring Creek Springs recharge area as one layer of vulnerability framework. The following two GIS maps illustrate the sinkholes, springs and hydrogeology of Wakulla County.

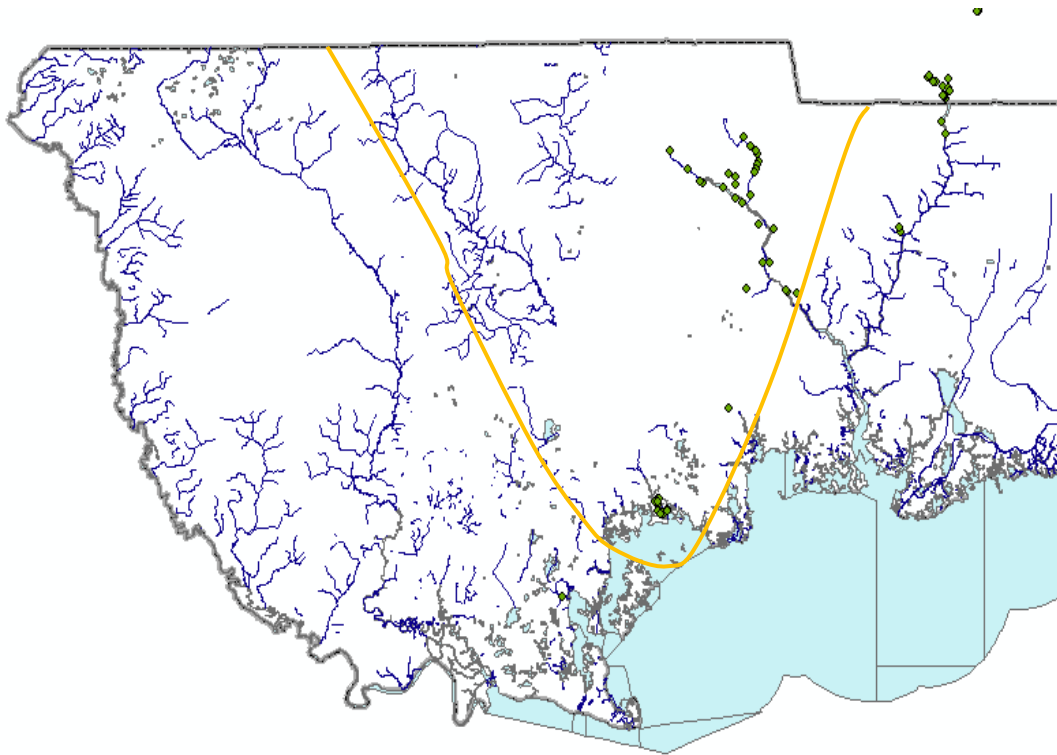
**Figure 28. Wakulla County Sinkhole Locations**







**Source: FDEP GeoData; Sinkhole Data (524 Sinkholes) Collected by Cal Jamison (2011), Springs Recharge Area by Hal Davis and Brian G. Katz (2007)**

A sinkhole is a hole or depression in the ground surface, especially in limestone, where a surface stream disappears underground. This geologic data was developed by the Florida Department of Environmental Protection (FDEP) to carry out agency responsibility related to management, protection, and development of Florida's natural resources, and is presented in Figure 28.

**Figure 29 Wakulla County Hydro Geological Map and Springs Recharge Area Line**

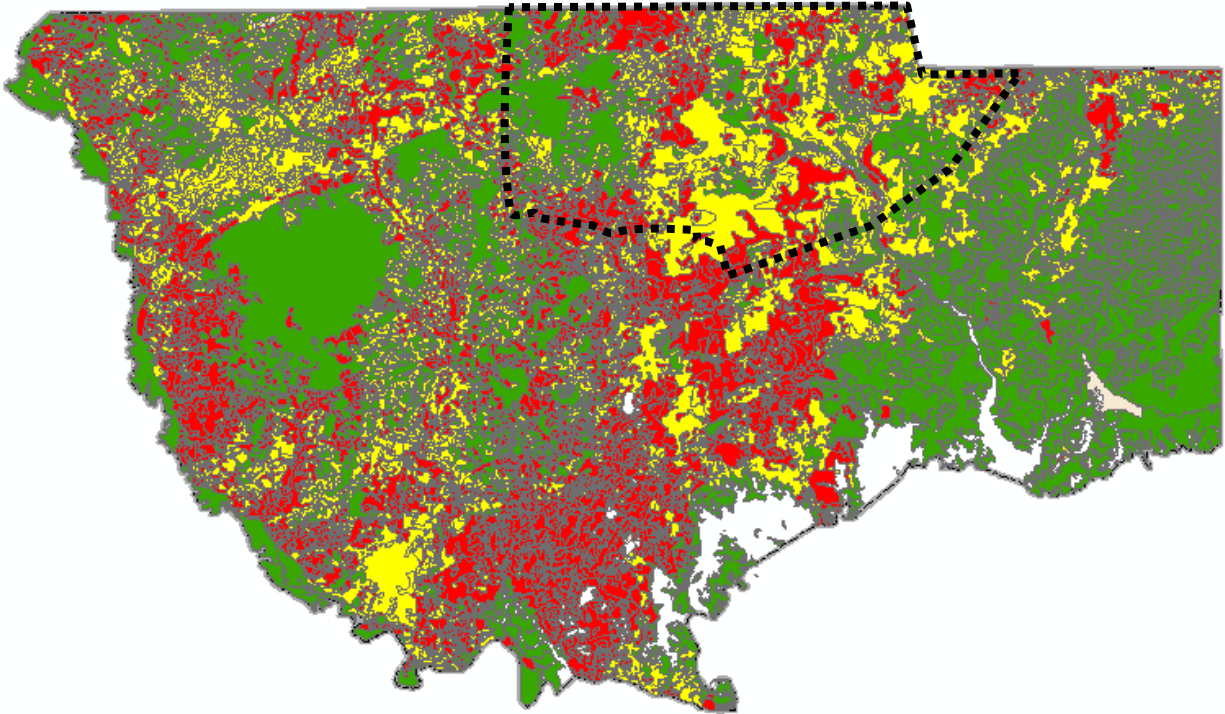





Legend		2010 Wakulla County Water Line
		2010 Wakulla County Water Area
		2011 Wakulla County Springs Area
		2007 Springs Recharge Area

**Source: FDEP GeoData Directory(2011), Hal Davis and Brian G. Katz (2007)**

Figure 29 depicts the Wakulla County Hydro geological map and spring recharge area line. The green points were springs. The linear water Features include single-line drainage water features and artificial path features that run through double-line drainage features such as rivers and streams, and serve as a linear representation of these features. The artificial path features may correspond to those in the USGS National Hydrographic Dataset (NHD). The Area Hydrography contains the geometry and attributes of both perennial and intermittent area hydrography features, including ponds, lakes, oceans, swamps (up to the U.S. nautical three-mile limit), and the area covered by large rivers, streams, and/or canals that are represented as double-line drainage features.

**Figure 30 Wakulla County Soils Area Map**



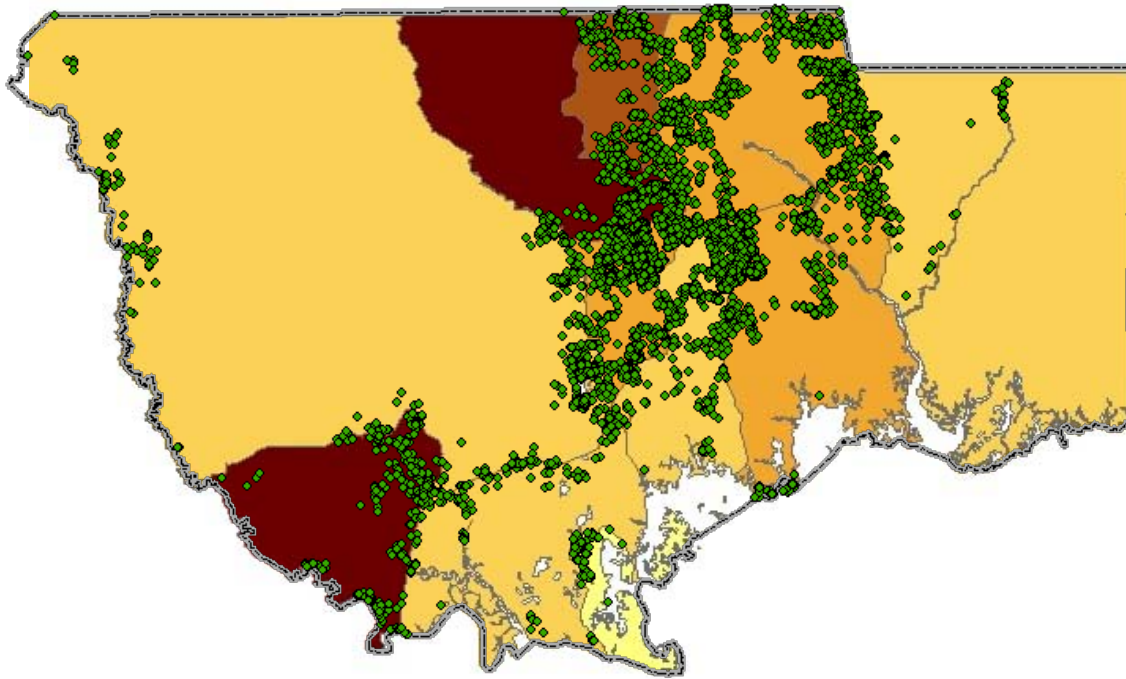
<b>Legend</b>		<b>High Rating Area</b>
		<b>Medium Rating Area</b>
		<b>Low Rating Area</b>
	.....	<b>Wakulla Springs Special Planning Area</b>







*Source: SSURGO Soils (2011) from the NFWMD*

Figure 30 illustrates the Wakulla County Soils GIS map. The figure presented the potential of the soil in terms of nutrient permeability defined according to Florida state law. Soils with a rating of high or medium are considered to pose a potential leaching hazard soil, which means that green area is the area least likely to be highly permeable, whereas the other two areas are viewed as having a greater leaching or permeability rate. Black dashed line is corresponds to the red dashed Wakulla Springs Special Planning Area which was presented at Figure 22. Therefore black dashed line area should be considered as vulnerable area as much as red colored and yellow colored areas.



**Figure 31 OSTDS and Household Income Levels in Wakulla County**



Legend		\$ 28,516 - \$ 33,750
		\$ 33,751 - \$ 40,652
		\$ 40,653 - \$ 44,321
		\$ 44,322 - \$ 49,167
		\$ 49,168 - \$ 53,750
		Wakulla County OSTDS

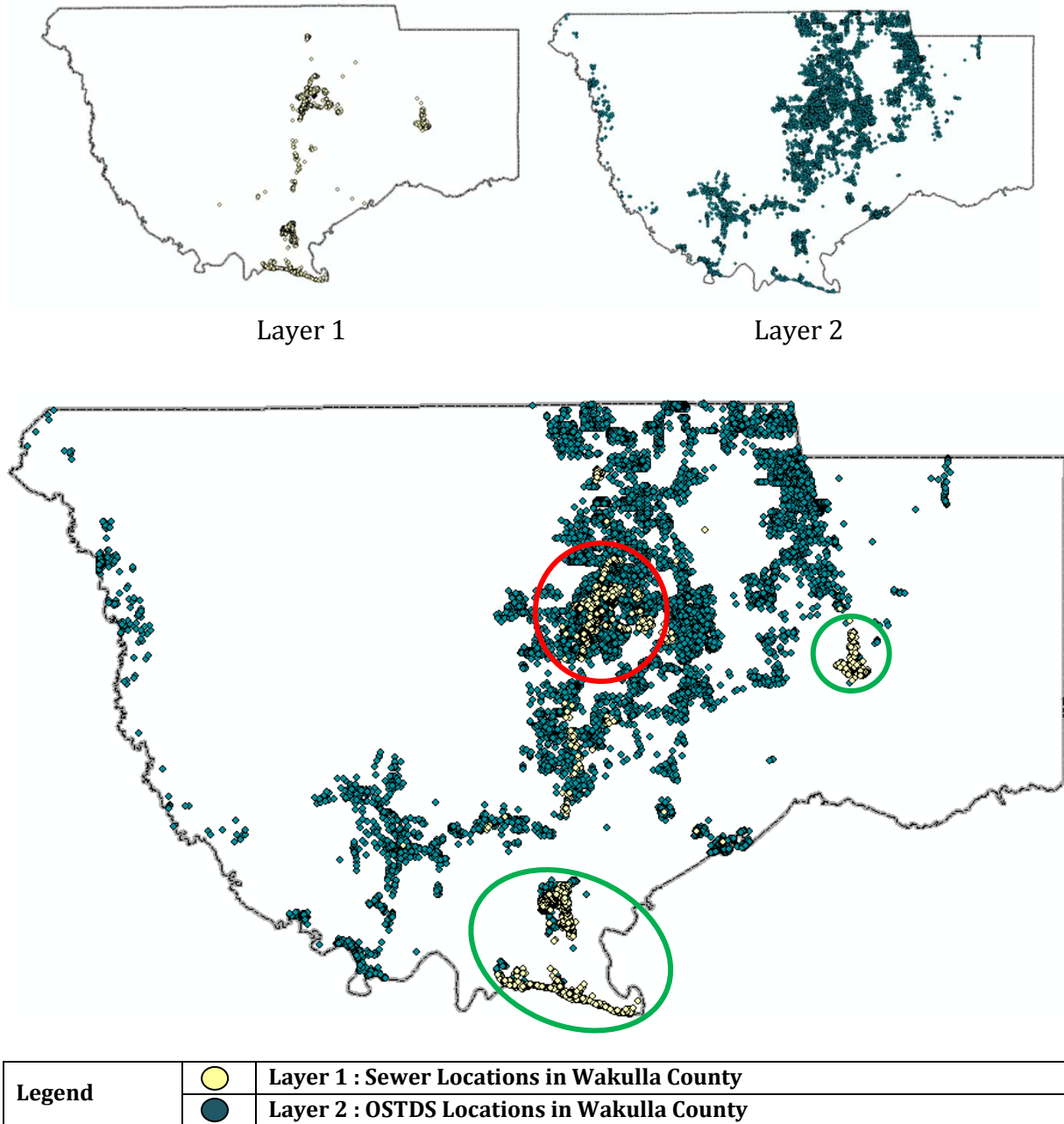
*Source: US 2000 Census Data and OSTDS Data, FSU CEFA 2011*

This map illustrated the range in family income distribution for Wakulla County. For the higher income area, OSTDS would likely not be an issue as these families would likely be more capable to contribute towards OSTDS upgrades or replacement(s). However, those with lower incomes would have greater difficulty and would likely need assistance from low interest loans, grants and other funding sources regarding improvements in future OSTDS management.

Based on previous feedback from the Wakulla County infrastructure advisory committee, FSU CEFA selected six GIS map layers in order to make a determination as to the most vulnerable areas in the county. These following areas are thought by the project team to be

representative of the priority areas for the OSTDS management program planning process. The following figures depict the areas of sewer and OSTDS.

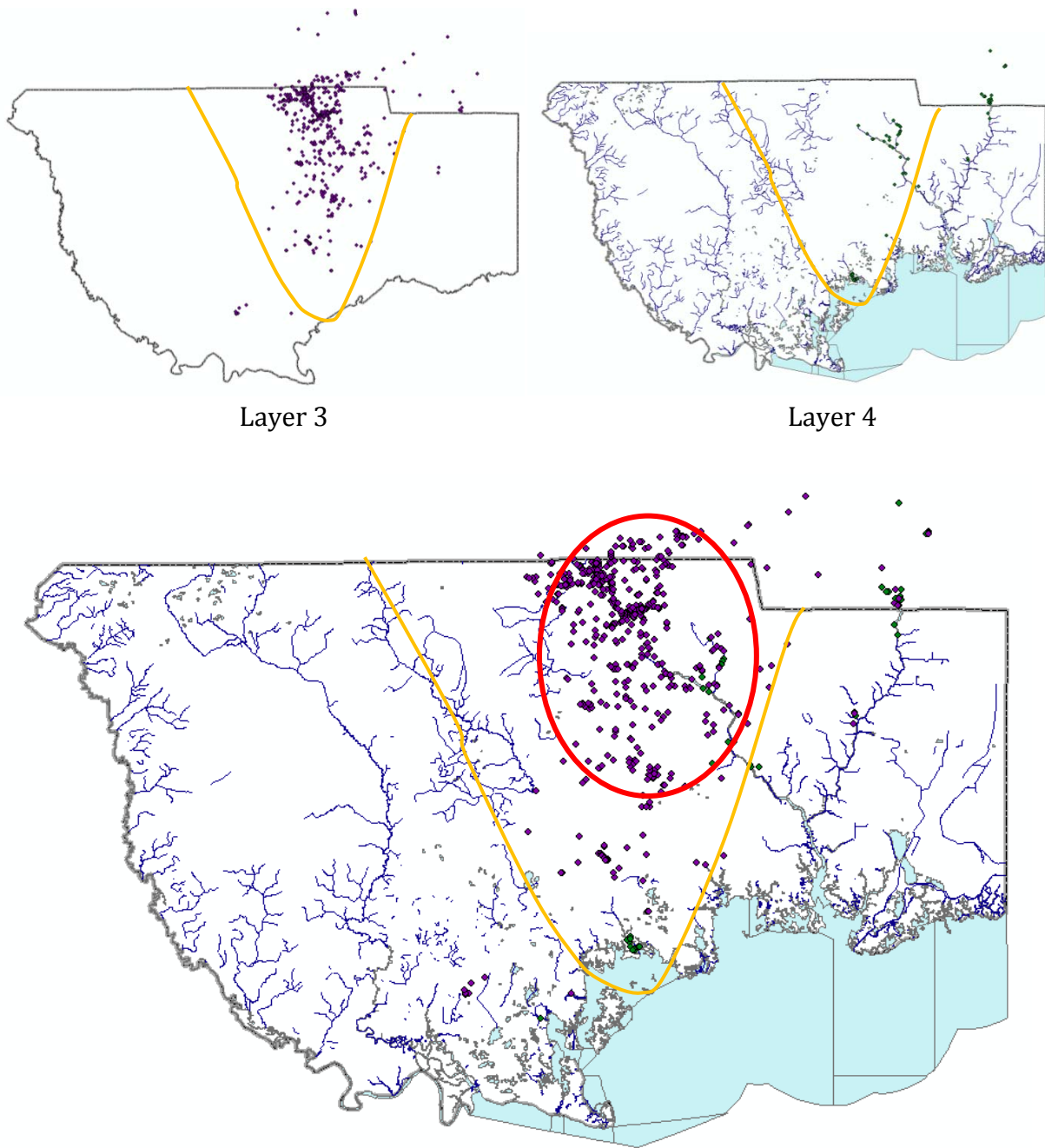
**Figure 32 Layer 1+2: Sewer and OSTDS Areas in Wakulla County**








*Source: Shawn Lewers, FSU CEFA, Sewer and OSTDS Inventory for Wakulla County*

Figure 31 depicts the St. Marks area and Panacea area (in green circle) as having more sewer systems than OSTDS. The Crawfordville area (in red circle) had a mix of sewer systems and OSTDS.

**Figure 33 Layer 3+4: Sinkhole + Waterline and Springshed Area**

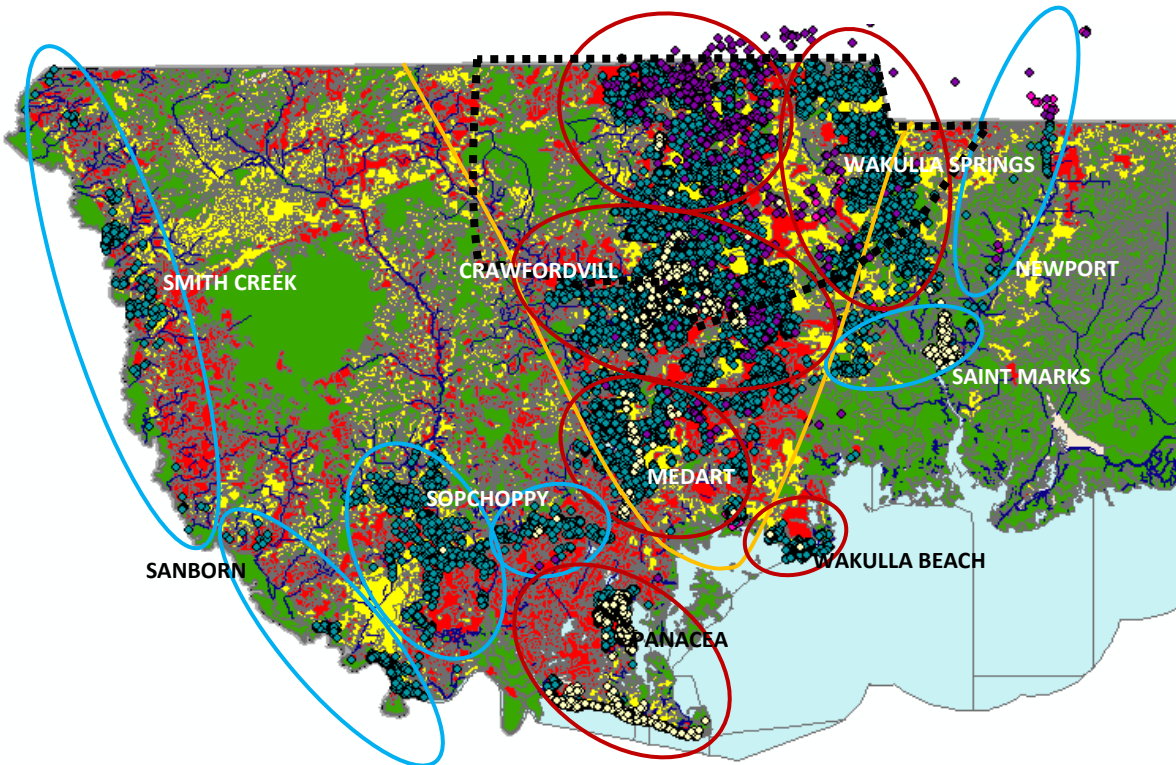


Legend		2010 Wakulla County Water Line
		2010 Wakulla County Water Area
		2011 Wakulla County Springs Area
		2011 Sinkholes in Wakulla County
		2007 Springs Recharge Area

Source: DEP GeoData Directory 2011 data

Figure 33 represents Layer 3 and Layer 4 as map overlays. Unlike Figure 32, the North Wakulla area, which contains many sinkholes and springs (in red circle) can be viewed as a particularly vulnerable area.

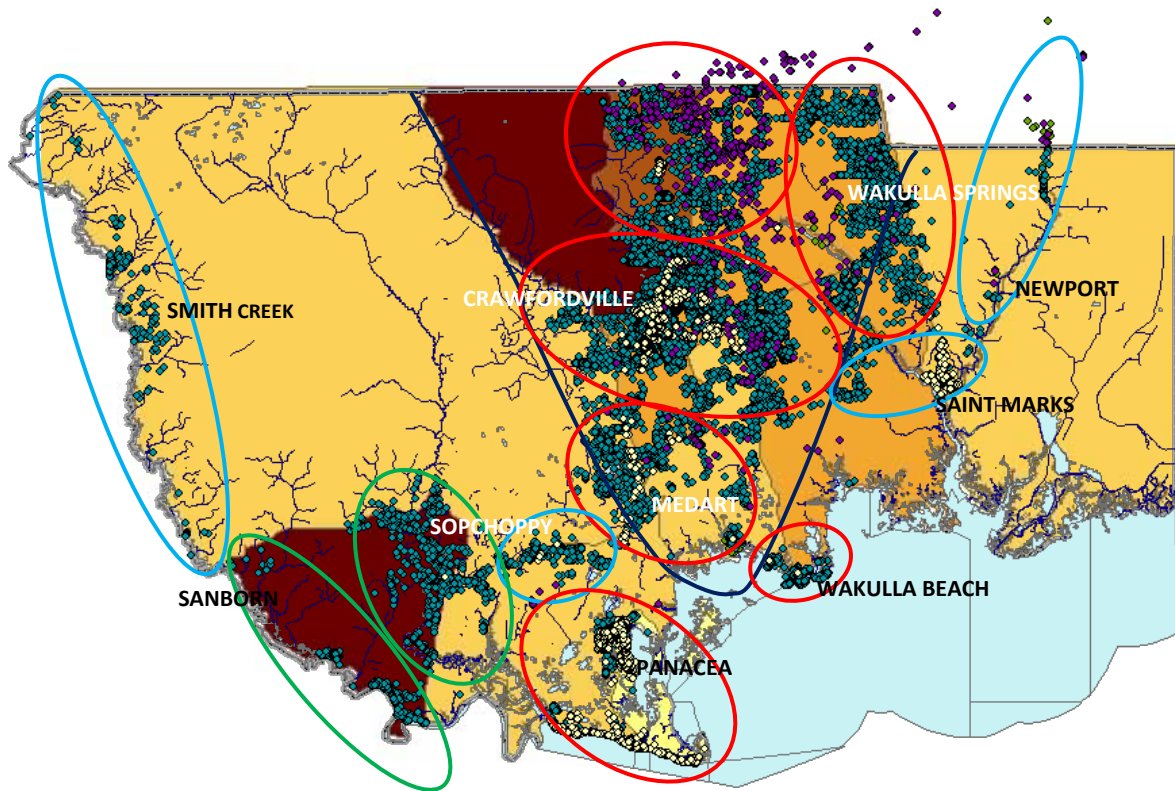
**Figure 34 Layer 1 through Layer 5 and Priority Areas**

















Legend		Sewer Locations(Layer 1)
		OSTDS Locations(Layer 2)
		Sinkhole Locations(Layer 3)
		Spring Locations(Layer 4)
		Water Lines(Layer 4)
		Water Area(Layer 4)
		Springs Recharge Area(Layer 3 and 4)
		High Rating Area(Layer 5)
		Medium Rating Area(Layer 5)
		Low Rating Area(Layer 5)
		Wakulla Springs Special Planning Area
		Highest Priority Area
		Second Highest Priority Area

In Figure 34, FSU CEFA considered five GIS map layers for determining priority areas; Medart, Crawfordville, North Crawfordville, Wakulla Springs, and Panacea area (in red circles) should be the top priority area concerning OSTDS planning decisions. These top priority areas were identified in at least four of the sensitive areas in the vulnerability mapping process. The Wakulla Springs area contained many OSTDS, sinkholes, and springs on highly permeable soils. The Medart and North Crawfordville area(s) had numerous OSTDS, and sinkholes on highly permeable soils. The second priority areas were Newport, St. Marks, Sopchoppy, Sanborn and Smith Creek areas (in blue circles). These areas contained sensitive areas in two or three of the designated vulnerability GIS map layers.

**Figure 35 The Final Vulnerability and Priority Areas Map for Wakulla County**



Legend		\$ 28,516 - \$ 33,750
		\$ 33,751 - \$ 40,652
		\$ 40,653 - \$ 44,321
		\$ 44,322 - \$ 49,167
		\$ 49,168 - \$ 53,750
		Sewer Locations(Layer 1)
		OSTDS Locations(Layer 2)
		Sinkhole Locations(Layer 3)
		Spring Locations(Layer4)

		<b>Water Lines(Layer 4)</b>
		<b>Springs Recharge Area(Layer 3 and 4)</b>
		<b>The Highest Priority Area</b>
		<b>The Second Highest Priority Area</b>
		<b>The Third Highest Priority Area</b>

*Source: See the individual GIS map layers' sources*

In Figure 35, in terms of the OSTDS program planning process, FSU CEFA considered all the vulnerability map layers in order to assess the priority areas. While the Curtis Mill area and west Sopchoppy area (in green circles) contained a number of water bodies (e.g., river, streams, etc.) and a number of OSTDS, it was also in a higher income area, so was determined to be in third highest priority area. North Crawfordville was also in a higher income area, however, the high number of sinkholes moved it up in priority ranking.

## **Chapter 5: Task 5- OSTDS Consensus Workshops**

The FSU Center for Economic Forecasting and Analysis worked with the Wakulla County Citizens Advisory Committee on Infrastructure Development to seek consensus on a report to the Wakulla County Board of County Commissioners (BOCC) on OSTDS management options. The initial workshop was held on June 26, 2008, prior to this contract, and helped develop the objectives and options that were considered in the survey of Wakulla County OSTDS users. FSU facilitated a meeting of the Infrastructure Committee on May 4, 2011 that reviewed the survey results and planned the consensus workshops that were held on June 2 and 9, 2011. These workshops integrated input from the committee, experts and the public into a consensus report to the BOCC that assesses the OSTDS management options. The report did not seek to recommend a preferred option.

This chapter provides summaries of the two workshops. The full reports of the workshops with agendas, lists of participants, meeting materials and participant input are in Appendices C and D. The resulting report to the Wakulla County Board of County Commissioners is in Appendix E.

### **Task 5-A - OSTDS Consensus Workshop 1, Summary Report**

The Wakulla County Infrastructure Committee met on June 2, 2011 at the Wakulla County Public Library, 4330 Crawfordville Highway. This workshop explored how the private and public sector can work together to efficiently achieve our economic, environmental and social objectives related to septic system management. This was not intended to be a discussion of performance-based treatment systems (PBTS) or sewerage policies. The draft policy analysis meeting handouts were developed based on a community workshop June 26, 2008, a survey of Wakulla county septic system users, an Infrastructure Committee meeting May 4, 2011 and the work of the FSU Center for Economic Forecasting and Analysis. The workshop objectives were to:

- To clarify the current state of septic systems and management
- To seek consensus on goals for effective septic system management
- To refine and test the acceptability of on the key management options

The workshop agenda can be found in Appendix A of the report and the list of participants of Wakulla Infrastructure Committee member in Appendix C. The group reviewed the draft materials to be included in the Committee's report to the County Commission. Notes on the discussion are in bulleted italics in Appendix C. The meeting notice in Appendix D of the report.

The input from this and previous meetings will be used to prepare a final draft report that will be considered at the June 14 workshop and again by the Infrastructure Committee before delivery to the County Commission.

### **Task 5-B – Workshop 1 Results and Preparation for Workshop 2**

The report of Workshop 1 can be found in Appendix B. This report was sent to the County Commissioners and was discussed individually with Mike Stewart, the chair, and other commissioners on June 9, 2011. There were also meetings and discussions with the County Attorney, representatives of the Government Services Group (Experts in managing utilities) and other experts on OSTDS management. The Workshop 2 agenda and materials are included in the Workshop 2 report in Appendix C.

### **Task 5-C - OSTDS Consensus Workshop 2 – Summary Report**

(The full report is in Appendix D)

The Wakulla County Infrastructure Committee met on June 14, 2011 at the Wakulla County Public Library, 4330 Crawfordville Highway. This workshop explored how the private and public sector can work together to efficiently achieve our economic, environmental and social objectives related to septic system management. This was not intended to be a discussion of performance-based treatment systems (PBTS) or sewerage policies. These draft policy analysis materials were developed based on a community workshop June 26, 2008, a survey of Wakulla county septic system users, an Infrastructure Committee meeting June 6, 2011 and the work of the FSU Center for Economic Forecasting and Analysis.

Here is a summary of the key points:

- The introduction to the report to the County Commission should talk about the significant impacts of septic tanks on water quality in Wakulla County.
- We are concerned about more than just impacts on Wakulla Springs. This is an issue for everyone and everywhere in the county where there are septic tanks, people drinking well water and for those who like to swim and fish in the County's fresh and coastal waters.
- Like changing the oil in your car, regular inspections and pump-outs are cost effective because they extend the life of the septic system and avoid earlier replacement that may cost \$4-12,000.
- Avoiding replacements can put millions of dollars into the local economy that would otherwise go into holes in the ground.



- Septic tanks pollute the water everyone drinks, swims and fishes in and impacts the environment, the economy and everyone's quality of life.
- Owners contracting with licensed contractors may pay about \$425 for an inspection and pumpout. A monthly fee to a utility could cost less per month, could provide a monthly payment plan when replacement is needed and could get grants to help those who can't afford replacement.
- An inspection program will be a hard sell. Many people are totally opposed to inspections. People don't want to pay \$300-500 for an inspection and pump-out. They are even more opposed to the idea of regulation in general.
- The economy makes it very hard for many owners to pay anything. It is also hard for commercial and residential landlords. Many have lost jobs or are threatened with foreclosure. Many have state jobs that are being lost.
- We need to a way to deal with the people who can't pay for replacement. [If there is not a way to help them they may be forced out of their homes and businesses and the pollution problems will remain.]
- What will be done when people refuse to allow inspectors on their property or refuse to replace failing systems? Are there legal procedures in place? Who will be responsible for enforcement?
- We need to do a public outreach and marketing plan to educate septic system users about inspection requirements (if passed) and why they are important.

The input from this and previous meetings will be used to prepare a final draft report that will be considered again by the Infrastructure Committee before delivery to the County Commission.

### **Task 5-D - Report to County Commissioners**

The draft report to the Wakulla County Board of County Commissioners is in Appendix E. It presents management policy options and analyses with information on acceptability ratings from the citizen survey and consensus workshop one. The Infrastructure Committee will determine the final form of their report to the County Commission. It is anticipated that the Commission will consider this report along proposed changes to the water quality provisions in the Wakulla County Comprehensive Plan, current and future legislation regarding septic system inspections, a joint study by Wakulla County, Leon County and the City of Tallahassee on how to improve Wakulla Springs' water quality, Florida Department of Environmental Protection water quality standards, public opinion and other input. Given the input to be considered on these and related issues, it was determined that it is not appropriate to draft comprehensive plan amendments or ordinances regarding septic system inspections at this time.

## Chapter 6: Task 6- Comprehensive Plan Amendments / Ordinances Development

The current comprehensive plan amendment and ordinance language are undergoing modifications in Wakulla County; to be approved by the Wakulla County Board of County Commissioners. They will likely be modifying and/or developing a new ordinance with regard to wetlands and water quality, and address aspects of OSTDS operation and maintenance.

In September 2006, Wakulla County adopted a “water quality ordinance” that addressed future changes regarding septic systems. In summary, all new developments will be required to install PBTS and new repairs will require replacement with a new PBTS. The policy implementation procedures are still being developed in order to provide for guidance as to how agencies and residents will best manage the PBTS. In 2009, the Comprehensive Plan mirrored the water quality ordinance.

According to the Wakulla Board of County Commissioners (BOCC) webpage, ([http://www.mywakulla.com/departments/planning\\_and\\_community\\_development/planningzoning.asp](http://www.mywakulla.com/departments/planning_and_community_development/planningzoning.asp)), the most recent Wakulla County Comprehensive Plan in 2011, was based on the November 2009 version, and updated July 18, 2011. This task focused on the latest version.

### The 2006 Wakulla County Water Quality Ordinance and 2011 Wakulla County Comprehensive Plan- Conservation Element

**Objective 1.2:** The County will seek to coordinate springs and karst protection policies and programs with Leon County, the City of Tallahassee, the Department of Community Affairs, the Northwest Florida Water Management District, and the Florida Department of Environmental Protection to ensure a consistent approach to springs, springshed, and aquifer protection by implementing Policies 3.1 and 3.2 below.

⇒ This part exists on Objective 3.0 in “Wakulla County Comprehensive Plan- Intergovernmental Coordination Element.”<sup>21</sup>

---

<sup>21</sup> Full version of this Comprehensive Plan is available on Wakulla County BOCC webpage, (<http://www.mywakulla.com/docs/PlanningCommunityDevelopment/ComprehensivePlan2010/ICE.pdf>)

**Policy 1.2.1:** Propose joint strategies for springs and karst protection to be implemented by all local governments within the designated springshed for Wakulla Springs and Springs Creek Springs. Proposed strategies shall be contained in an interlocal agreement that specifies responsibilities for land development regulation, stormwater management, and other matters that impact the springs and springshed.

**Policy 1.2.2:** Propose joint strategies for protection of water resources through water supply planning, specifically addressing identification and use of alternative water sources.

⇒ These parts exist on Policy 3.1-3.2 in “Wakulla County Comprehensive Plan-Intergovernmental Coordination Element.”

**OBJECTIVE 1.3:** To implement mandatory requirements for inspections, operations and maintenance of on-site wastewater treatment systems.

⇒ This part exists on Objective 1.3 in “Wakulla County Comprehensive Plan-Infrastructure Element.”<sup>22</sup>

**Policy 1.3.1:** Use of on-site wastewater treatment systems shall be limited to the following conditions:

- a. Existing septic tank and package treatment plants may remain in service until such time as centralized service is made available, or the systems fail to properly perform;
- b. The County shall amend its land development regulations within one year of the effective date of this plan amendment to provide that existing septic systems shall be replaced with performance-based septic systems when the existing system fails or otherwise requires replacement, as determined by the Department of Health. As part of such land development regulations, the County will provide an exception from the requirement of replacing a system with a performance-based septic system if the system’s owner has demonstrated a financial hardship to the satisfaction of the County that the user cannot afford to upgrade the system without public funding. The County shall define the financial hardship test by resolution. If such a demonstration is made, the system’s owner must replace the system but a performance-based septic system shall not be required until sources of funding are available to assist those owners who cannot afford to pay for the upgrade;

---

<sup>22</sup> Full version of this Comprehensive Plan is available on Wakulla County BOCC webpage, (<http://www.mywakulla.com/docs/PlanningCommunityDevelopment/ComprehensivePlan2010/IE.pdf>)

- c. The County shall diligently seek sources of funding through the SHIP program and other sources, to assist those who cannot afford to upgrade failed systems as required.
- d. Septic systems for new development shall be limited to performance-based septic systems as certified by the Department of Health;
- e. All existing and new septic systems shall be inspected every three years by a licensed septic system contractor for maintenance or upgrade, and
- f. Use of package treatment plants shall be limited to those with business and management plans approved by the County.

⇒ This might be misnumbered. There were two “b.”s on the most recent version. Therefore the FSU CEFA project team recommends modifying it to the blue lettering.

**Policy 1.3.2:** The Public Works Department shall develop and implement inspection, operation and maintenance guidelines for package treatment plants, utilizing private sector sources for implementation whenever possible. The Public Works Department may perform such functions through contractual agreement with facility owners.

.....

**Policy 1.3.5:** All development shall connect to central wastewater treatment facilities within one year from the date that such facilities are available or become available as provided by law. The standards for treatment are:

- a. Advanced Wastewater Treatment (AWT) levels (3mg/L for nitrogen, 5 mg/L CBOD, 1 mg/L total phosphate, 5 mg/L suspended solids, & a high level of disinfectant) for all Type I (design capacity of 500,000 gallons per day to 12.5 million gallons per day) and Type II (100,000 to 500,000 gallons per day) central wastewater treatment facilities using Rapid infiltration Basins.
- b. A treatment standard above secondary treatment of 10 mg/L for nitrogen for Type III (less than 100,000 gallons per day) facilities.

....

⇒ These parts exist on Policy 1.3.2-1.3.6 in “Wakulla County Comprehensive Plan-Infrastructure Element.”

**OBJECTIVE 2.5:** To protect the functions of groundwater recharge areas, springs, and springsheds.

⇒ This part exists on Objective 2.5 in “Wakulla County Comprehensive Plan-Infrastructure Element.”

**Policy 2.5.1:** New development will be required to maintain surface and groundwater flow rates and volumes at pre-development levels so that the natural function of groundwater recharge areas is maintained.

**Policy 2.5.2:** Substantial redevelopment projects shall comply with the standards for stormwater runoff that apply to new development. Substantial redevelopment shall be based upon the value and amount of cumulative improvements to the site, as provided by the land development regulations *and the NFWFMD*.<sup>23</sup>

**Policy 2.5.3:** Best management practices shall be used in combination as part of a BMP treatment plan to protect water quality and minimize flooding. BMPs shall be used in the design of stormwater management facilities and systems. The following stormwater BMPs shall be instituted to reduce nitrate loading:

- a. All residential subdivisions shall use vegetated swales with swale blocks or raised driveway culverts whenever possible, except when soil, topography, or seasonal high water conditions are inappropriate for infiltration as determined by a professional engineer licensed in the State of Florida.
- b. Vegetated infiltration areas shall be used to provide stormwater treatment and management on all sites except when soil, topography, or seasonal high water conditions are inappropriate for infiltration as determined by a professional engineer licensed in the State of Florida. Design of the stormwater systems for residential and commercial uses shall use bio-retention areas (below grade vegetated areas) to increase stormwater treatment and reduce stormwater volume. Downspouts for both residential and commercial development shall be directed from the roof to vegetated areas for uptake.
- c. Whenever infiltration systems are not feasible, wet detention systems shall be used for stormwater treatment and management.
- d. *Per paragraph 62-346.301(1)(h), F.A.C. developments shall utilize the Northwest Florida Water Management District karst sensitive criteria.*
  - i. Sensitive karst features, including sinkholes with a direct connection to the aquifer and stream-to-sink features, shall not be utilized as stormwater management facilities.
  - ii. All development approval by the County shall require the applicant to submit to the County a copy of the *FDEP or NFWFMD* stormwater permit and the NPDES notice of intent to be covered by the construction generic permit prior to any land clearing.

---

<sup>23</sup> It should be noted that throughout the rest of this chapter, the use of red lettering indicates changes made to the latest 2011 Comprehensive Plan, based on the original 2006 ordinance.

- e. All components of the stormwater treatment and management system shall be in common ownership and shall be maintained by the responsible legal entity identified in the *FDEP or NFWFMD* stormwater permit, typically a homeowner or property owners association.
- f. The studies required in Future Land Use Element Policy 13.8 shall be used to characterize on-site soils and determine locations of geologic features including sinkholes, solution pipes, depressions, and depth of soil to lime rock. Sensitive karst features like sinkholes with a direct connection to the aquifer and stream-to-sink features shall be protected.

**Policy 2.5.4:** A Wastewater Facility Plan shall be developed in order to establish a comprehensive method to ensure adequate levels of wastewater collection, treatment, disposal, and reuse.

⇒ These sections exist in Policy 2.5.1-2.5.4 in “Wakulla County Comprehensive Plan- Infrastructure Element.”

**Policy 6.7:** The County shall prepare and adopt a Water Management Conservation Plan, which will include retention of groundwater to protect the coastal bays and springsheds, and assure emergency water conservation in the case of ground water contamination and a wastewater reuse plan. *Additionally, as grant funded studies indicate, the land development codes shall be revised and expanded to include natural water flows to receiving estuarine bodies and shall include the following measures to regulate the existing and projected allowable water quality and quantity such that no net quantity increase or quality decrease will be allowed through mandated project review criteria in the amended land development codes.*

⇒ These red lettered sections deleted Policy 6.7 in “Wakulla County Comprehensive Plan- Infrastructure Element.”

.....

**Objective 13:** To Protect Wakulla County’s springs and water quality.

**Policy 13.1:** Development shall meet the following design standards:

- 1) Except as otherwise provided, development shall be buffered from the following karst features as shown below.

Table 29. Karst Features

Feature	Minimum buffer (feet)
• 1 <sup>st</sup> & 2 <sup>nd</sup> Magnitude Springs	300
• Spring runs	150
• Smaller springs	100
• Sinkholes, with a direct connection to the aquifer	100
• Other karst features with a direct connection to the aquifer (swallet or stream to sink)	100

- 2) The buffer shall be measured from the rim of the sinkhole or karst feature; ordinary high water line for fresh water springs and spring runs; or mean high water line for tidally controlled springs and spring runs;
- 3) The buffer required in (b) above shall retain natural vegetation within the buffer area, except for minimal removal to allow uses such as docks or boardwalks for which mitigation is required;
- 4) Non-residential development shall use joint or shared access and shared parking to the maximum extent feasible in order to minimize impervious surfaces. Any parking lots with more than 50 spaces shall be designed with a minimum of twenty (20) percent of the parking spaces in pervious area;
- 5) Design of parking lots, sidewalks, buildings, and other impervious surfaces shall minimize connections between impervious surfaces, through techniques such as:
  - (a) Directing flows from roof drains to vegetated areas or rain barrels or cisterns for reuse;
  - (b) Directing flows from paved areas to vegetated areas;
  - (c) Locating impervious surfaces so that they drain to vegetated buffers or natural areas; and*
  - (d) Breaking up flow directions from large paved surfaces.*

⇒ This might be misnumbered. (c) and (d) were added to the section. The project research team suggests retaining the red lettered (c) and (d) sections.

- 6) Porous pavement materials, pervious concrete, and pervious asphalt may be used to minimize the amount of impervious surface within new development and redevelopment.
- 7) Definitions:
  - a) **Spring** - A point where underground water emerges onto the Earth's surface. For this reason the County does not consider a karst window to be a spring.

- b) **1st magnitude spring** – A spring category based on the volume of flow per unit of time greater than 100 cubic feet per second or 64.6 million gallons per day.
- c) **2nd magnitude spring** – A spring category based on the volume of flow per unit of time from 10 to 100 cubic feet per second or 6.46 to 64.6 million gallons per day.
- d) **Smaller spring** - A spring with a volume of flow smaller than 6.46 million gallons per day.
- e) **Spring run** - A body of flowing water that originates from a karst spring whose primary (> 50 %) source of water is from a spring, springs, or spring group.

NOTE: For example, the Wakulla River, where the predominate source of water is from Wakulla Springs, is a spring run. However, farther downstream, where surface water tributaries and drainage contribute 50 % or greater of the flow, the Wakulla River is no longer considered a spring run. A detailed hydrogeologic study may be necessary to identify boundaries of a spring run vs. river or stream.

- f) **Sinkhole** – A landform created by subsidence of soil, sediment or rock as underlying strata are dissolved by ground water.

NOTE: sinkholes may be directly (karst window) or indirectly connected to the aquifer or disconnected by the presence of a confining layer of soil or rock (clay) that no longer allows water to permeate below this layer. The later may be expressed as a relic sinkhole or lake, depression in the land surface, or loose soils in the subsurface.

- g) **Swallet or swallow hole** – A place where water disappears underground in a limestone region. A swallow hole generally implies water loss in a closed depression or sinkhole, whereas a swallet may refer to water loss from a disappearing stream or streambed, even though there is no depression.
- h) **Karst features** - A term describing landforms that have been modified by dissolution of soluble rock (limestone or dolostone). These include springs, spring runs, sink holes, and swallets or swallow holes
- i) **Recharge Area** - The area where water predominantly flows downward through the unsaturated zone to become groundwater.

(Source: Univ. of Nebraska-School of Natural Resources)

**Policy 13.2:** Where a lot of record is too small to accommodate development in compliance with the buffers set forth in Policy 13.1, reasonable use shall be established provided that the building and associated paved areas are located as far away from the karst features identified in Policy 13.1 as possible and further provided that a natural



vegetated swale and berm are located between the development and the karst feature. The vegetated swale and berm shall be designed to direct drainage away from the karst feature. A P.U.D. application must be used for any multi-unit development on a lot of record.

⇒ This part exists on Policy 13.1 in “Wakulla County Comprehensive Plan- Future Land Use Element.”<sup>24</sup>

**Policy 13.3:** The County may provide an alternative buffer to those established in Policies 13.1 and or 13.2 if the size, geological conditions and design of a proposed development (clustering) allow attainment of a level of groundwater protection equivalent to that produced by the design standards of Policy 13.1 or 13.2 respectively, where the following conditions are met:

- a. The proposed development is processed as a Planned Unit Development; and
- b. As part of the P.U.D. process, the applicant agrees to reimburse the county for its costs in employing a licensed Professional Geologist to make necessary measurements, analyze data, define an alternative buffer and provide a written report that includes a professional opinion that the proposed alternative buffer will provide a level of groundwater protection equivalent to that expected from the design standards of policy 13.1 or 13.2 respectively. Except for lots of record, an alternative buffer shall not be less than 50 feet.

⇒ This part exists on Policy 13.2 in “Wakulla County Comprehensive Plan- Future Land Use Element.”

**Policy 13.4:** In order to minimize the contribution of nitrates to groundwater with its resultant effects on increased growth of vegetation in the springs, rivers and coastal waters, and loss of water clarity, and to foster long-term stewardship, special design and best management practices (BMPs) as set forth in policies 13.5 through 13.12 shall be instituted for all proposed development.

⇒ This part exists on Policy 13.3 in “Wakulla County Comprehensive Plan- Future Land Use Element.”

**Policy 13.5:** Proposed amendments to the Future Land Use Map (FLUM) shall meet the following criteria:

---

<sup>24</sup> Full version of this comprehensive plan is available on the Wakulla County BOCC webpage, (<http://www.mywakulla.com/docs/PlanningCommunityDevelopment/ComprehensivePlan2010/FLUE.pdf>)

- a. Demonstrate that the proposed uses will be developed consistent with conservation, best management practices or clustering design techniques; and
- b. Demonstrate that there will be no concentration or storage of hazardous materials without secondary containment.

⇒ This part exists on Policy 13.4 in “Wakulla County Comprehensive Plan- Future Land Use Element.”

**Policy 13.6:** The minimum open space ratio for all development within Rural 1, Rural 2 and Rural 3 land use categories shall be twenty (20) percent. All open space shall be contiguous with existing open space on adjacent parcels to the maximum extent feasible.

⇒ This part exists on Policy 13.5 in “Wakulla County Comprehensive Plan- Future Land Use Element.”

**Policy 13.7:** Drainage for streets and roads shall be provided through roadside swales and berms. Curb and gutter design shall be discouraged unless beneficial for removal and treatment of stormwater.

⇒ This part exists on Policy 13.6 in “Wakulla County Comprehensive Plan- Future Land Use Element.”

**Policy 13.8:** The following information is required prior to any new development in excess of one acre to evaluate the vulnerability of the development sites to leaching of nitrates into groundwater and subsequent transmission to surface waters:

- a. An analysis of the site to determine the location and nature of potential karst features identified in Policy 13.1 on the property that may have direct connections to the aquifer;
- b. If site analysis determines a likelihood of direct connection to the aquifer, a geophysical analyses shall determine the depth of the water table and thickness and extent of protective clay layers over the aquifer; and
- c. If the geophysical analysis confirms a direct connection to the aquifer, a comparative nitrate loading analysis for the proposed development shall be prepared and certified by a licensed professional geologist using professionally acceptable methodology based on the existing land use designation at the time of this amendment versus the proposed land use activity at build-out. The analysis

shall take into account specific on-site best management practices and compensatory reduction off-site through the expansion of central sanitary sewer and/or storm-water facility. The analysis must demonstrate, with all factors taken into account, that there is no significant measurable net increase in nitrate loading to groundwater. The comparative nitrate loading study submitted as data and analysis as part of the comprehensive plan amendment shall be deemed to meet this requirement.

⇒ This section exists on Policy 13.7 in “Wakulla County Comprehensive Plan- Future Land Use Element.”

**Policy 13.9:** All development shall require best management practices as dictated by the principles and practices of the Florida Yards and Neighborhood Program and incorporate these practices into development orders and covenants and restrictions for subdivisions.

⇒ This section exists on Policy 13.8 in “Wakulla County Comprehensive Plan- Future Land Use Element.”

**Policy 13.10:** Landscaping standards shall encourage plant materials to be native or naturalized species in order to avoid or minimize the use of irrigation and fertilizers. Landscaping standards should also encourage retention of existing native species rather than planting new vegetation.

⇒ This section exists on Policy 13.9 in “Wakulla County Comprehensive Plan- Future Land Use Element.”

**Policy 13.11:** Within one year from the effective date of this plan amendment, Wakulla County shall establish guidelines for managing existing and future lawns and landscapes at all public facilities using the educational guidelines contained in the University of Florida Extension’s Florida Yards and Neighborhoods Program, Environmental Landscape Management (ELM) Principles and Best Management Practices. Such guidelines shall include practices that are designed to reduce nitrate infiltration into ground and surface water.

⇒ This part exists on Policy 13.10 in “Wakulla County Comprehensive Plan- Future Land Use Element.”

**Policy 13.12:** Minimize site disturbance by limiting clearing to the minimum area necessary to practically accomplish development allowed under the existing land use

designation. This will minimize the removal of existing trees and native vegetation and minimize soil compaction by delineating the smallest disturbance area feasible

⇒ This section exists on Policy 13.11 in “Wakulla County Comprehensive Plan- Future Land Use Element.”

## Proposed Changes in the 2011 Wakulla County Comprehensive Plan

In 2010, the Wakulla County Commission adopted a new ordinance related to water quality protection. It was named the “Wetlands Protection Ordinance”<sup>25</sup> and was adopted to protect the wetlands that help make this area so unique.<sup>26</sup> The 2010 ordinance created a 75-foot buffer zone around the wetlands of Wakulla County. According to the Florida Department of Environmental Protection<sup>27</sup>, the first 35-foot of the buffer may not be impacted except for minimal activities such a dock or trail and normal and customary hunting and fishing activities; the second 40-foot band allows for additional minimally impacting activities. The ordinance also contains a minimum buildable lot size to ensure future property owners sufficient dry land for their homes and businesses.

However, some residents viewed the ordinance as a violation of their property rights. Panacea residents turned out for the town hall meeting with Wakulla County Commissioners, and voiced their criticism about the controversial wetlands ordinance – and some residents expressed that if the county won’t let them do anything on their land because of the wetlands buffer, then the county should either buy the land or else take it off the tax roll.<sup>28</sup> In June 9<sup>th</sup> 2011, the Wakulla County Commission held a workshop and offered the following suggestions to the Comprehensive Plan:

**Policy 2.3 (3)** The County shall also protect the natural function of all surface waters, active sinkholes (a hollow in a limestone region that communicates with a cavern or passage to the aquifer system), wetlands, beaches, dunes, natural freshwater or saltwater bodies, perennial streams, and each of the four outstanding water ways, except for the springs, sink holes, and karst features designated in Policy 13.1 below, for which different buffers shall apply, through land development regulations which shall provide that proposed site plans and planned unit developments shall be submitted for review by FDEP to determine if there are impacts from the development on

---

<sup>25</sup> Full version of this 2010 ordinance is available on the Wakulla County BOCC webpage, <http://www.mywakulla.com/docs/CitizenAdvisoryCommittee/RevisedWetlandsOrdinanceFinal030810.pdf>

<sup>26</sup> Audubon of Florida News (2010) “Wakulla County Commissioners Vote to Protect Wetlands” posted on November 2, 2010 in Birding, Land Conservation, Wildlife. Retrieved from: <http://audubonoffloridanews.org/?p=5331>

<sup>27</sup> Florida Department of Environmental Protection (2010) “New Wetlands Ordinance Protects Wakulla’s Magnificence,” *The Post News*, Vol.10 (41).

Retrieved from: [http://www.dep.state.fl.us/secretary/Post/2010/1015\\_1.htm](http://www.dep.state.fl.us/secretary/Post/2010/1015_1.htm)

<sup>28</sup> Snowden W. (2009) “Residents Complain about Wetlands Rules- Wakulla County” *The Wakulla News*, Wednesday august 05. 2009 Retrieved from :

<http://www.thewakullanews.com/cgi-bin/c2.cgi?125+article+News+20090805092553125125002>

the natural function of surface waters and the aforementioned natural features. Where adverse impacts are identified, uses and the related disturbed areas on the site shall be arranged to minimize such impacts. ~~In addition, a buffer area of seventy-five feet shall consist of two (2) bands; a thirty-five (35) foot wide band and a forty (40) foot wide band. The seventy-five (75) foot buffer area is generally considered a conservation or preservation area. The 35-foot band is a "no development area" that shall be left in its natural topographic and vegetative state. The second area (40 foot band) shall be restricted to residential development consisting of a dwelling unit where the site is so constrained as to constitute a taking if no development within the 75-foot buffer area is allowed. The Wakulla County Board of County Commissioners may establish a variance procedure that grants reasonable use of residential and non-residential properties in relation to the buffer. However, use of septic tanks shall be limited to areas outside of the 75-foot buffer area. The buffer shall be maintained around all aforementioned natural features except for the springs, sink holes, and karst features identified in Policy 13.1 below, for which different buffers shall apply. Buffer areas shall consist of maintenance of existing grade and native vegetation. Where buffer area development is permitted under other policies, conditions of approval shall be included to limit disturbance of vegetation and grade. Said standards shall be established in the land development codes.~~

⇒ Policy 2.3(3) - Eliminates any setbacks for construction near wetlands. The current buffer is 75 feet. It will drop to 0 feet.

**Policy 4.1:** The County shall require site plan review where a development project is directly contiguous to wetlands or involves disturbance of wetlands so as to ensure that no wetland or required wetland buffer is disturbed except in accordance with the following standards

~~(1) No wetlands and related buffers may be disturbed unless the Board of County Commissioners makes a finding (supported by the site plan application and documentation) that no reasonable alternative (such as clustering development on upland portions of the site) is available to avoid a taking and allow for reasonable use, and that the nature and degree of disturbance is the minimum possible to achieve development that is otherwise compliant with the goals, objectives, and policies of the Plan.~~

(2) All applicable rules for jurisdictional wetlands of FDEP, NFWMD, and the Army Corp of Engineers, as applicable, shall be met.

(3) Predevelopment/predisturbance water flow and quality shall be maintained.

~~(4) Destroyed wetlands (whether destroyed through filling or modification of water flow) shall be replaced or additional wetland areas shall be created at a minimum rate of two (2) times the wetland area destroyed.~~

⇒ Policy 4.1(1) & (4) - Eliminates the requirement for mitigation. There will be no requirement for considering alternatives to development in wetlands and no requirement to replace or create new wetlands to replace those destroyed.

**Policy 12.1:** The County shall adopt in the Land Development Regulations a mapped Primary Spring Protection Zone (PSPZ) for Wakulla Springs based on the Florida Aquifer Vulnerability Assessment (FAVA) and in consideration of the Wakulla Aquifer Vulnerability Assessment and the Leon County Aquifer Vulnerability Assessment. Land development regulations shall be adopted to establish additional requirements and regulations within the PSPZ to minimize the adverse impacts of development on groundwater recharge quality and quantity. At a minimum, Wakulla County shall consider and address the items below:

(1) The preferred method of wastewater treatment in the PSPZ shall be connection to sewer facilities ~~designed to achieve Advanced Wastewater Treatment standards.~~ Land development regulations shall be amended to include enhanced requirements for new development and redevelopment to connect to **Advanced** Wastewater Treatment facilities. The costs of required sewer connections in the PSPZ shall be borne in part or in whole by the developer.

~~(2) When connection to sewer facilities designed to achieve Advanced Wastewater Treatment standards is not available, new development and redevelopment in the PSPZ shall use Performance Based On-Site Treatment Disposal Systems (OSTDS) that are engineered to remove the nutrients affecting the PSPZ. Existing traditional OSTDS shall be upgraded to Performance Based OSTDS when the traditional OSTDS fails, as defined in the Florida Administrative Code. A process providing alternatives to upgrading to a Performance Based OSTDS at the time of traditional OSTDS failure may be developed for low-income households. To ensure that all existing traditional OSTDS and new Performance Based OSTDS function effectively, local government shall work with regional partners to evaluate and otherwise designate a Responsible Management Entity and supporting fee structure.~~

⇒ Policy 12.1(1) and (2) - Eliminates language stating preferred method of wastewater treatment meets advanced Wastewater Treatment Standards and deletes (2) which requires new development and redevelopment to use Performance Based On Site Treatment Disposal Systems.

According to the survey results in chapter 2 in this report, about 75% of Wakulla County citizens support environmental protection measures regarding the objectives for OSTDS. About 69% of the Wakulla County citizens support protection of private property rights. Although the natural environment rating is higher than property values rating, the differences, between the two are minimal. It appears further discussion regarding these preferences of Wakulla County citizens, is warranted. It is important to note that these two citizens rights regarding protections are not mutually exclusive preferences. To date, the current wetlands ordinance (including such safeguards as a 75 foot buffer, among others) has not been repealed.



# Conclusions and Recommendations

## Conclusions

This project was aimed at addressing and developing an onsite sewage treatment and disposal system(s) (OSTDS) management program in Wakulla County. Growing numbers of OSTDS in Wakulla County are becoming a concern to the public and decision makers with respect to the increasing nutrient loads in the area. Improved installation, operation and maintenance of all OSTDS, regardless of technologies used, will reduce their contribution to aquifer pollution. Management of existing OSTDS would be the most effective way to reduce their impact on water quality. To achieve this purpose, the Wakulla County Board of County Commissioners has taken steps by adopting ordinances that include provisions relating to OSTDS use and maintenance. This project report is designed to provide assistance in achieving the objective of OSTDS use and maintenance by the Wakulla County Board of County Commissioners. The project includes working with the county officials, staff and citizens to develop a framework for a potential OSTDS management program in Wakulla County. The overarching goal of this project is to minimize negative impacts on water resources now and in the future and to minimize the financial burdens on the citizens in concerning regulation compliance in Wakulla County.

This project comprised various tasks in meeting the objective. The project team examined six tasks during the project's timeframe including:

Task 1: Wakulla County OSTDS inventory and mapping and to create a methodology based on data availability, using GIS.

Task 2: A survey (mail/online and telephone) of Wakulla citizens on issues relating to the enhancement of OSTDS program in Wakulla County.

Task 3: A detailed cost effectiveness analyses of management options.

Task 4: Vulnerability assessment map of Wakulla County using additional available data. In addition, the project team analyzed areas of critical concern and prioritized OSTDS for management decision making processes.

Task 5: Conducted two OSTDS consensus workshops facilitated by the Wakulla County Citizens Advisory Committee on Infrastructure Development. The aim of the workshops was to (1) To clarify the current state of septic systems and management. (2) To seek consensus on objectives for effective septic system management. (3) To determine the next steps in order to prepare the draft report to the Commission.

Task 6: To provide assistance to the Wakulla County Infrastructure Committee in the development of language for plan amendment regarding an OSTDS management program in Wakulla County.

Through these six tasks the project team concluded that,

- The project research team developed an OSTDS inventory of Wakulla County. The inventory database provided the input data of about 10,000 OSTDS, in order to generate OSTDS maps in Wakulla County.
- Based on the OSTDS inventory, the Wakulla County citizens participated in a survey regarding perception related to an OSTDS program (see Chapter 2). The survey respondent results showed that the majority of OSTDS users in Wakulla County are single family household (84.1%). The respondents' income ranged primarily from \$45,001 to \$65,000 (18.6%). The 2007 median household income in Wakulla county and Florida were \$46,997 and \$47,804, respectively, this survey closely represented Wakulla County citizen's income relative to the state.
- Relating to the importance rating of the objectives for OSTDS, 79% of respondents answered "very important" or "important" associated with "public health." 64% of the survey residents support an OSTDS inspection if it can achieve the most important benefits to them. However, the average monthly amount survey respondents would be willing to pay regarding their OSTDS was between \$0 (54.4%) and \$10 per month (34%).
- The option "You Own and Manage Your OSTDS" resulted in about 45% of the respondents rating either "good" or "fair", whereas about 40% of those surveyed, responded either "good" or "fair" to the option "The Wastewater Utility Owns and Manages Your OSTDS." The option "You Own and a Wastewater Utility manages your OSTDS" was selected by about 36% of the survey respondents.
- Regarding the OSTDS utility size, the Wakulla County-specific utility was found to be the most acceptable to OSTDS survey respondents, with about 51%. A regional utility option was next favored, by 45% of the survey respondents.
- Chapter 3 described the findings of a cost effectiveness analysis of three basic options and six additional alternative options if the inspection program is implemented over 5, 7 or 10 years. The actual costs of any option will vary depending on the amount of overhead and the associated market costs at the time of implementation.
- Based on feedback from the Wakulla County infrastructure advisory committee, FSU CEFA selected six GIS map layers in order to make a determination as to the most

vulnerable areas in Wakulla county. FSU CEFA considered five GIS map layers for determining priority areas; Medart, Crawfordville, North Crawfordville, Wakulla Springs, and Panacea area should be the top priority area concerning OSTDS planning decisions. The second priority areas were Newport, St. Marks, Sopchoppy, Curtis Mill, Sanborn and Smith Creek areas. FSU CEFA considered all the vulnerability map layers in order to assess the priority areas. While the Sanborn area and west Sopchoppy area contained a number of water bodies and a number of OSTDS, it was also in a higher income area, so was determined to be in third highest priority area.

- Relating to a previous (2006) a water quality ordinance for Wakulla County, all new development will be required to install a PBTS, and any new repair will require a new PBTS replacement. Recent changes include a “wetlands ordinance” that establishes a 75 foot buffer (set back), among other modifications. A repeal has been proposed, however has not been formalized as of August, 2011. The policy implementation procedures need to still be written to provide some guidance as to how agencies and residents will best manage the PBTS.
- Avoiding replacement cost of OSTDS can put millions of dollars into the local economy. Septic tanks pollute the water everyone drinks, swims and fishes in and impacts the environment, the economy and everyone’s quality of life. The economy makes it very hard for many owners to afford much. What will be done when people refuse to allow inspectors on their property or refuse to replace failing systems? Are there legal procedures in place? Who will be responsible for enforcement? Wakulla County will likely need to conduct a public outreach and marketing plan to educate septic system users about inspection requirements (if passed), and why they are important.

## Recommendations

The Wakulla County Infrastructure Committee was directed by the Wakulla County Commission to consider septic system inspection management options with the assistance of the FSU Center for Economic Forecasting and Analysis. FSU CEFA has prepared this report to be considered by the Commission in conjunction with these related activities:

1. The Wakulla County Commission has initiated a review of wastewater policies in the Comprehensive Plan and Land Development Regulations. This could potentially include the comprehensive plan policy calling for septic system inspections, which has not been planned out, funded or implemented.

2. Wakulla County, Leon County and the City of Tallahassee are conducting a joint study of OSTDS as a means to improve Wakulla Springs' water quality.
3. The Florida Legislature passed legislation in 2010 requiring septic system inspections. The 2011 legislation requires an economic analysis of legislation to be reviewed by the Legislative Budget Committee. If authorized, the Florida Department of Health must develop a rule to guide implementation of the inspection program. This rule would have to be approved by the Legislature in 2012. The current law does not address the use of a utility for inspections but does not prohibit it either. The law and rule may be rescinded or modified in the next legislative session.
4. The Florida Department of Environmental Protection is in the process of setting a Total Maximum Daily Load (TMDL) standard for Wakulla Springs. Septic system inspection and the replacement of failing systems may be a cost effective way for Wakulla County and other contributors to reduce Nitrogen levels.
5. Considering the comprehensive analysis of this project on OSTDS in Wakulla County, some of these recommendations are provided in order to protect and preserve both the quality of life of the citizens and environment. First, in the area of inspection, we recommend that septic tanks system inspection program must be assigned responsibilities, funded and implemented. The Department of Health should create a strategic framework that will guide the success of such program this may consequently result in cost effectiveness for the county and other contributor to reduce the Nitrogen levels. Secondly, a public outreach and marketing plan with the sole aim of educating the people on septic tanks systems usage, maintenance should be addressed. Furthermore, legal means should be sought to improve the septic tanks system this include but not limited to permit fees, protection against property's right etc. Lastly, there should be fairness and equity in cost sharing.
6. The project research team suggests at least four possibilities for financing mechanisms in order to support an OSTDS management program:
  - a. Wakulla County Priority Area (WCPA) Restoration Fund: Grants provided to cover partial or entire cost of repair or replacement of failing septic systems; priority given to those within WCPA. The WCPA can be determined by the priority mapping methodology used in the vulnerability assessment process.
  - b. Loan Program: Discounts the loan interest rate to install a PBTS or nitrogen-reducing system or to repair or replace a failed septic system.
  - c. Income-Based Assistance Program: based on low income-qualified individuals in Wakulla County, to repair or replace failing septic systems; priority given to those within WCPA.

- d. Surcharge or Wakulla Springs Restoration Fee: places a small monthly or annual surcharge to all Wakulla County households regardless of sewer and septic systems in order to provide septic and sewer infrastructure support for restoration activities.

## References and Source Information

Audubon of Florida News (2010) "Wakulla County Commissioners Vote to Protect Wetlands" posted on November 2, 2010 in Birding, Land Conservation, Wildlife. Retrieved from: <http://audubonoffloridanews.org/?p=5331>

Bureau of Economic Analysis, Bureau of Labor Statistics, National Agricultural Statistics Service, National Center for Health Statistics, and U.S. Census Bureau (2011), Florida Economic Stats. Retrieved from: <http://www.fedstats.gov/qf/states/12/12129.html>

Davis, H. and Katz B. (2007) *Hydrogeologic Investigation, Water Chemistry Analysis, and Model Delineation of Contributing Areas for City of Tallahassee Public-Supply Wells, Tallahassee, Florida*, Scientific Investigations Report 2007-5070.

Ecotourism for Florida, "Ecotourism in Florida: Take Birding, Biking to the Bank," Retrieved January, 2011 from: <http://www.theledger.com/article/20110102/EDIT01/101025034>

EUTAW Utilities, Inc. (2010) "Wakulla County Wastewater Treatment Plant Environmental Report", United States Department of Agriculture Rural Development Office.

Florida Department of Environmental Protection (2010) "New Wetlands Ordinance Protects Wakulla's Magnificence," The Post News, Vol.10 (41). Retrieved from: [http://www.dep.state.fl.us/secretary/Post/2010/1015\\_1.htm](http://www.dep.state.fl.us/secretary/Post/2010/1015_1.htm)

Florida Department of Environmental Protection, Geographic information systems - DEP GeoData Directory (2011). Retrieved from: <http://www.dep.state.fl.us/gis/datadir.htm>

Florida Storm Water Education (2010) "Septic Systems in The Sunshine State" Vol. 11(1). Retrieved from: <http://www.stormwater.ucf.edu>

Goodwin, C. and Jantrania, A. (2011) "Private Sewer Utilities-Filling the Void," NCS Wastewater Solutions.

Hammond, C, Tyson, T. (1991) *Septic Tank Maintenance and Care*. Athens, GA: University of Georgia, Cooperative Extension Service.

Harden, H. and Chanton, J. (2010) "Wakulla County Septic Tank Study -Interim Report on Performance Based Treatment Systems" FDEP Agreement No. WM926.

Kincaid, T. (2011) "Where's the Water Come From? - Toward a Water Budget for Wakulla Spring" Geohydros presentation material. Retrieved from:<http://www.geohydros.com/FGS>

Lessman, J. (2009) "Septic System Talk Raises Stink", Jackson County Pilot MN, April 16, 2009.

Mineful.net (2010) Free Demographics, Retrieved April 2011, from: [www.mineful.net](http://www.mineful.net)

Rural Community Assistance Partnership (2011), *ARRA Registering and Reporting Guide for Water/Wastewater Systems with Loans/Grants from the U.S. Department of Agriculture-Rural Utilities Service*, Retrieved from: [www.rcap.org](http://www.rcap.org)

Office of Economic & Demographic Research, 2010 Census data, Retrieved from: <http://edr.state.fl.us/Content/population-demographics/2010-census/data/index.cfm>

Septic Search Website, Septic Installation date data, Retrieved from: [www.septicsearch.com](http://www.septicsearch.com)

Sheets, R. (2009) "Creating an Effective Septic Tank Management Authority Using Home Rule Solutions," presentation material for Wakulla Springs Restoration Workshop.

Snowden W. (2009) "Residents Complain about Wetlands Rules- Wakulla County" The Wakulla News, Wednesday August 05, 2009 Retrieved from : <http://www.thewakullanews.com/cgi-in/c2.cgi?125+article+News+20090805092553125125002>

Soil Survey Geographic (SSURGO) Database for Florida – February 2010.

Southern Rural Development Center, Wakulla County information, Retrieved from: [http://srdc.msstate.edu/data/center/states/fl/wakulla\\_fl.pdf](http://srdc.msstate.edu/data/center/states/fl/wakulla_fl.pdf)

Summers, R. (2009), "Maryland's Bay Restoration Fund", Maryland Department of the Environment. Retrieved from: [http://www.fgdl.org/metadata/fgdc\\_html/septic\\_oct10.fgdc.htm](http://www.fgdl.org/metadata/fgdc_html/septic_oct10.fgdc.htm)

The Florida Departments of Community Affairs and Environmental Protection (2002) "Protecting Florida's Springs: Land Use Planning Strategies and Best Management Practices".

U S Census Bureau (2011), Wakulla County MapStats, Retrieved from: <http://www.fedstats.gov/qf/states/12/12129.html>

U.S. Census Bureau, 2010 Census TIGER/Line Shapefiles, Retrieved from: <http://www.census.gov/geo/www/tiger/tgrshp2010/tgrshp2010.html>

USDA Natural Resource Conservation Service (2011), Web Soil Survey, Retrieved from: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

Wakulla County Website (2011), Future Land Use for Wakulla County, Retrieved from:  
<http://www.mywakulla.com/docs/EAR/April2010/MapSeries.pdf>

Viamonte Ros, A. (2008) "Report on Range of Costs to Implement a Mandatory Statewide 5-Year Septic Tank Inspection Program", Florida Department of Health.



# Appendices

## Appendix A: Survey Questionnaire

### How Should Wakulla County Septic Systems Be Managed?

#### Request for Input on Maintaining Septic systems in Wakulla County

Please complete this Septic System Inspection and Management Survey

Wakulla, like other counties, needs to decide how to implement potential state requirements for inspection of traditional septic systems. Wakulla County ordinances also require inspections of traditional, aerobic treatment units (ATU) and performance-based treatment systems (PBTS). These inspections can help:

- Protect the health and safety of the water you drink, swim in and fish from in Wakulla County.
- Reduce pollution of ground and surface waters that impact natural environments.
- Prevent closures of springs, rivers, beaches and wells that could impact property values, business sales and Wakulla's overall economy and quality of life.
- Reduce the likelihood of your septic system failing and needing costly replacement.

Your answers to this short, voluntary, survey will be used by the Wakulla County Infrastructure Committee, the Board of County Commissioners and others to shape a cost efficient, effective septic system management program. It does not address which type of septic system (traditional, PBTS or ATU) should be used or what areas should be connected to a cluster system or central sewer.

#### Your input is important and appreciated!

##### Please complete these steps:

1. Enter the Personal ID#, which can be found above your address on the card you received.
2. Provide background information so we can better understand septic system users in Wakulla County.
3. Rate the importance of the six management objectives and the value of having a septic system management program.
4. Rate the acceptability of nine management options.

We encourage you to clarify your answers, offer suggestions or provide additional comments in the boxes provided.

NOTE: OSTDS is an acronym for Onsite Sewerage Treatment and Disposal System.

For more information, click on these links:  
OSTDS Management Public Input Project Description  
Background on Septic System Management  
Definitions OSTDS: Traditional, AT, ATU, PBTS  
Utility Ownership and Management Example

- 1. What is your Personal ID#? It is noted above your address on the post card. Please enter just the number in the box below.**

**This survey is voluntary, and your answers will remain anonymous. The Personal ID# will be used to assure that you won't be mailed a reminder if you have already completed the survey.**

## **2. Background Information**

**How Should Wakulla County Septic Systems Be Managed?**

### **1) Does your OSTDS serve a**

- Single family house
- Duplex/ Apartment/ Condominium
- Business (Skip to question 6)
- Others (Please specify)

### **2) Do you own or rent your home?**

- Own
- Rent

### **3) How many males and/or females occupy your residence?**

Male \_\_

Female \_\_

### **4) Are you a full time or seasonal resident?**

- Full time
- Seasonal
- Other (Part-time or vacation use)

### **5) Which of the following best describes your total household income in 2010?**

- Prefer not to say
- Under \$15,000

- \$15,000 to \$25,000
- \$25,001 to \$45,000
- \$45,001 to \$65,000
- \$65,001 to \$85,000
- \$85,001 to \$100,000
- Over \$100,000

**6) For businesses. About how many people use this OSTDS daily?**

Number of Users\_\_\_\_

### **3. Why is OSTDS (Septic System) Inspection and Management Important to You?**

Please rate the importance to you of each of these objectives for OSTDS (Septic System) Inspection and Management. These objectives can be used as criteria to evaluate the different management options being considered. Your ratings will help decision makers determine the best options.

#### **Rating**

- Very important
- Important
- Somewhat important
- Little importance
- Not important

#### **1) COSTS.**

To minimize OSTDS purchase, operating and replacement costs for property owners and renters.

#### **2) PROPERTY VALUES.**

To protect property values that could decline if there are spring and beach closures, environmental damage and polluted drinking water wells.

#### **3) HEALTH.**

To reduce pollution of wells, springs, rivers, coastal waters, sinkholes and rainfall runoff (storm water) that can have negative impacts on the public's health.

#### **4) LOCAL ECONOMY.**

To protect retail and service businesses that benefit from more residents and tourists, especially related to nature-based recreation and residential communities.

#### **5) NATURAL ENVIRONMENT.**

To protect plants, animals, fish and other creatures from negative changes in water quality and to protect their habitat the impacts, such as, algae and exotic plants in Wakulla waterways.

See Economic Benefits of Environmental Improvements for more information.

#### **6) REGULATION.**

To provide more effective septic system regulation, while minimizing the costs and complications for owners, contractors and government.

**7) Explanation of your answers, comments, or questions pertaining to questions 1 through 6 above.**

**8) If an OSTDS inspection and management program can be shown to achieve the benefits that are most important to you, would you support it?**

- Yes
- No

**9) What is the maximum average monthly cost you would be willing to pay for the periodic inspection and maintenance of an OSTDS in order to have effective wastewater treatment that protects your family and community's drinking water, recreation areas and the natural environment?**

- \$0 per month
- \$10 per month
- \$20 per month
- \$30 per month
- \$40 per month
- \$50 per month
- Other amount (please specify), and/or add explanations, comments, or suggestions:

#### **4. Management Options Overview**

Please read the background information and rate the acceptability of these options:

1. You own and manage your OSTDS
2. You own the OSTDS and a wastewater utility manages it
3. A wastewater utility owns and manages the OSTDS on your property

See Report on Range of Costs to Implement a Mandatory Statewide 5-Year Septic Tank Inspection Program for more information.

##### **1) You own and manage your OSTDS - Rate the Acceptability of this option below.**

#### **Background**

**You purchase your own OSTDS and pay a certified contractor for inspections, pump-outs, repairs and replacement when required.**

**The cost of an inspection and pump-out, if required every 5 years, is estimated to be \$612, which amounts to \$10.20/month. If a pump-out has been done in the past 5 years, only an inspection will be required. If the inspection determines that the OSTDS is failing, it must to be replaced with a performance-based treatment system (PBTS), which may cost \$7,000-12,000 depending on the size, soil conditions, etc. The annual maintenance contract for a PBTS is about \$250 per year or \$20.83 per month.**

#### **Possible positive aspects of this option:**

- **You do not pay a monthly wastewater utility fee.**
- **You choose your own OSTDS contractor.**

#### **Possible negative aspects of this option:**

- **You must take the time to select, contract and monitor an OSTDS contractor.**
- **You may pay more for individual services than a utility providing or contracting for a large volume of services.**
- **You are responsible for larger periodic payments for installation, inspections, repairs and replacement, which may be more of a financial challenge than regular monthly fees.**
- **Department of Health monitoring and enforcement of individual management activities may be more difficult and less effective than if there is a utility, resulting in more failing, polluting septic systems.**

#### **Rate the acceptability of this Option**

- Good
- Fair
- Poor
- Not acceptable

## **2) You own the OSTDS and a wastewater utility manages it**

### **Background**

**You have paid for the initial installation, and there will be a monthly fee to a wastewater utility for periodic inspections, pump-outs and maintenance. If you have a performance based system (PBTS) that requires more regular service, the monthly fee may be higher.**

**The fee paid to the utility for an inspection and pump-out (if needed) every 3-5 years may be from \$8-10/month and an additional \$15-20/month for PBTS. These estimates are based on anticipated efficiencies from a coordinated, high volume utility operation.**

**If the system has to be replaced it will be your responsibility as the property owner. This may cost \$7-12,000 depending on the size, soils, etc. It may be possible to finance new installations and replacements through monthly payments.**

#### **Possible positive aspects of this option:**

- **You do not need to select, schedule and pay a contractor for the inspection, pump out and maintenance.**
- **You pay a monthly fee and do not have to worry about higher periodic costs for inspections and pump-outs, repairs or replacement.**
- **The utility can negotiate volume discounts for coordinated services that will be lower than what individual owners may have to pay to individual contractors.**
- **The utility may receive revolving loans and grants that can reduce your monthly fee.**
- **You may be able to get a loan or a deferred payment plan if you have to upgrade to a PBTS.**
- **Regular monitoring and maintenance should reduce the likelihood of system failures and the related environmental and health problems.**

#### **Possible negative aspects of this option:**

- **There will be a monthly or annual fee.**
- **The owner pays for the initial installation and/or replacement PBTS.**
- **There may be less incentive for proper usage and protection of the drain field if the utility pays for repairs.**

### **Rate the acceptability of this Option**

- Good
- Fair
- Poor
- Not acceptable

### **3) A wastewater utility owns and manages the OSTDS on your property**

#### **Background**

**Owners of existing OSTDS will retain ownership of their system and pay a monthly fee.**

**New and replacement OSTDS will be provided, owned and maintained by the utility and the installation cost will be included in the monthly fee. The monthly utility fee may be about \$20/month for inspections and pump-outs. This estimate is based on the replacement of about 100 failing OSTDS per year.**

#### **Possible positive aspects of this option:**

- You will pay a monthly fee and will not have to worry about higher periodic costs for inspections, pump-outs, repairs or replacement.**
- The utility may be eligible for loans and grants that could reduce your monthly fee.**
- Regular monitoring and maintenance should reduce the likelihood of system failures and the related environmental and health problems.**

#### **Possible negative aspects of this option:**

- There may be some objection to a private or public entity owning the OSTDS on private property.**
- Existing septic companies may go out of business if the utility uses its own trucks and workers rather than contracting with them.**
- There is the potential improper use of septic systems, because the users will not have to pay directly for repairs. The repair costs would be spread to all homeowners.**

### **Rate the acceptability of this Option**

- Good
- Fair
- Poor
- Not acceptable



## **5. Alternatives for the Size of the Utility District**

Generally, the greater the number of properties served by a utility, the lower the monthly fee per property will be.

Wakulla County is considering these OSTDS district size options:

1. Smaller special districts within the county
2. Countywide
3. Regional (Multi-County)

### **1) Smaller special districts within Wakulla County**

#### **Background**

**Existing water or wastewater utilities and homeowner associations could become OSTDS management districts, and/or new districts could be created to serve areas within Wakulla County. A utility district could contract with service providers that serve more than one district.**

#### **Possible positive aspects of this option**

- **“Special Districts” for septic system management would mean smaller, well defined management areas, that could be more responsive to customers.**

#### **Possible negative aspects of this option**

- **The costs per property could be higher, because of the smaller number of units managed.**
- **Rates could vary significantly in different districts.**

#### **Rate the acceptability of this Option**

- Good
- Fair
- Poor
- Not acceptable

### **2) Countywide**

#### **Background**

**A countywide utility would serve all septic system owners, and the monthly rates would be consistent across the County.**

#### **Possible positive aspects of this alternative:**

- **Monthly fees would probably be less than with smaller “Special Districts,” because of a greater economy of scale.**
- **Elected officials could have more direct control and be more responsive to the ratepayers than with a regional utility.**

**Possible negative aspects of this alternative:**

- **The costs per property could be higher, because of the smaller number of units, compared to a regional utility.**

**Rate the acceptability of this Option**

- Good
- Fair
- Poor
- Not acceptable

### **3) Regional**

**Background**

**An intergovernmental, watershed-based utility could serve Wakulla, Leon, Jefferson and Gadsden counties, and the City of Tallahassee. Rates and services could be the same for all participating counties or they could be specialized for each.**

**Possible positive aspects of this alternative:**

- **This could produce greater economies-of-scale. This may result in reduced costs per user.**
- **The regional approach will allow more coordination across jurisdictions.**

**Possible negative aspects of this alternative:**

- **Individual users and individual counties would have less control over management decisions and fees.**
- **The counties and city may have trouble agreeing on the structure and operation of a regional utility.**

**Rate the acceptability of this Option**

- Good
- Fair
- Poor
- Not acceptable

## **6. Survey Complete!**

**THANK YOU VERY MUCH** for taking the time to complete this survey. **Please** be sure to **click the "DONE" button** so your responses are relayed to the database.

YOUR INPUT IS IMPORTANT AND APPRECIATED

**1. If you would like to receive a copy of the survey results, please provide your email address:**

## Appendix B: Survey Comments and Responses

### Comments regarding Q5: Alternatives for the Size of the Utility District

- I would rather "manage" my own septic tank. There is too much regulations/government interference already!
- I'm just totally against every one being forced to change to this high cost system, when so many present systems are working fine as are.
- I can't believe I am reading this. You do not need more money to spend, you get enough already.
- Again, Stay out of my wallet. If you want to create jobs...come up with a few GUIDELINES and let the entrepreneurs work it out.
- First of all the larger the area covered the worse the service is plain simple fact. However NONE of this is acceptable plain simple fact.
- It's all bad.
- If the costs are similar to what I'm paying to have the tank pumped every 5 yrs, I am willing to consider the utility options. But I am skeptical that the costs will be similar and I won't support a higher cost program.
- I cannot understand how a county wide system might increase cost because of fewer units. Why would there be fewer units?
- We do not need to be growing government. Special districts for such a purpose are extremely problematic and the Florida Senate is currently evaluating legislation (based on a staff report by the Community Affairs Community) to consolidate and reduce the number of special districts in Florida. Keep up with current policy, please.
- Leon county being the most populated has traditionally taken charge of regional services and not been very responsive to outlying areas particularly when their utilities do not stand to benefit from the service rendered
- Give me sewer
- Keep it private and out of the hands of elected officials such as county commissioners. Leave it to those who are knowledgeable and know what is best for all.
- Again, I replaced my septic tank when it was necessary and I have mine pumped out on a regular basis. I don't want to pay someone to have control over it. We are responsible homeowners.
- NO Liens
- I do not see it as efficient or beneficial to Wakulla County to be a part of a unit as large as mentioned above. Tallahassee electric rates and other fees are extremely

high for these residents. I do not see that our unique issues would get the attention needed if a part of this large group.

- I think individual counties should manage theirs, but waste could be pumped to a central existing site.
- The whole deal is not acceptable
- In our opinion only a central sewage treatment is acceptable to reduce risk to ground water pollution. If we would have the option we would connect to a regional system. People just throw all kinds of pollutants into the system. Septic tank systems are third world options not an option in this modern age.
- We should try hard not to penalize citizens living near the coast, not everyone living near the water's edge is a millionaire!
- Again, this is looking more and more like an ACORN make work project.
- The problem, as i see it, relates to the unique water table and proximity to public waters in Wakulla Co. To be lumped with other, less potentially damaging, unregulated systems seems dangerous.
- Creating any new regulations on the backs of poor working families is unacceptable. I have and will continue to properly maintain my own septic system as my father and fore fathers did. Get out of my pocket.
- I would prefer the county implement a true sewer system and treatment facility for sensitive areas with relatively high density. This program is a boon for the "septic tank industry" and will cost more in the long run. As a homeowner I'd rather put the 6-12K into a permanent county managed solution.
- All of these options were rated unacceptable because, although not explicitly stated, I assumed they each included a PBTS requirement. However, if any of these approaches were to allow science based flexibility in the decision to require a PBTS then it could be supported.
- The costs should be adjusted for natural boundaries (like the Wakulla Springs Basin), not county lines. Having the larger control area should drive costs down.
- The septic problem is all a direct result of Leon County's growth! & all the surrounding counties have to suffer for it. It is just not fair!
- Solar potties like that, which are located in recreational areas, have useful technology that may offer a solution.
- LEAVE THE POOR PEOPLE ALONE!!!!
- Leave our functional systems alone!
- If someone is going to 'manage' my septic service, then repay me for the installation costs. Otherwise, stay off of my land...and out of my pocket (re: \$2500-3000 yearly taxes).
- Rates should be set by OSTDS size, number of users and full-time residency.

- Again, I don't like any of these options. The fact that ANYTHING is required is not acceptable to me. I will maintain my own property as best I see fit. I do NOT need any regulation REQUIRING me to have an inspection. I am smart enough to have it done when needed.
- Do anything you want to new codes. an attempt to make me change existing situations- un ethical.
- See previous statements.
- Again, more information is needed to pick the best option here. They are all decent plans.
- regional is best but concentrate on the 'districts' or areas most sensitive or most likely to have failing systems
- Take your ideas and keep them in your little meeting. My property is my own little district, bought and paid for me. I live on a fixed income I paid for my home and I pay my taxes, I am not going to pay any of your additional fees and no one is coming onto my property to inspect anything.
- How about going away . . .
- If this is inevitable, then I would feel a great deal safer if cost is spread across a greater area and is not in the hands of local environmental pontiffs. County leadership should look to the overall expense and move to see that the expense is directed toward an appropriate system to handle the inevitable growth. Billing existing systems for inspections and replacement, certain to be many if resident owned, will be fought with corruption and ultimately waste. Pollution greater than man poo pollution.
- I think the third is the best of the options. I don't see this being something where responsiveness would be a big issue. It isn't like a trash pickup service or electric company. While we use the septic tank every day, it isn't something people regularly have issues with or that it could be devastating if they had to wait a couple days to get it serviced.
- Better than just Wakulla going it alone
- If we cannot manage our own systems-we need a county/district to manage our systems.
- Our septic system works fine and we need no outside help to manage it
- Given all the squabbling that goes on just between the City of Tallahassee and Leon County, it's hard to believe that there could be any greater cooperation among additional entities. Also, the City/Leon County folks don't seem too concerned about their impact on Wakulla County folks. I doubt this would be improved.
- The more units served reduces the cost per unit, up to a point. The utility must be controlled and upgraded only when the demand is there. In some cases people are added because of who they know, not because of need.

- I like being able to talk to people face to face.
- We live on a fixed income.
- Most small PUDS in Wakulla are not operational and could not manage this type of program.
- Bigger Government means more taxes!
- We need regional control - not county. Wakulla residents need to be on one system.

### **Response**

- Post the results on the county website instead...that way the survey answers can remain anonymous.
- The smell of this deal really stinks. Use the property tax to pay for this. This will do more to hurt the economy that is already on its knee. It also looks a lot like Obama Care. The government already has way too much power over the American citizen as it is. We as American citizens we are forced to eat some more fecal matter. When will it stop. Federal, State, or County, business as usual. Just like any other proposal, the decisions have already been made which makes your SURVEY bogus.
- My neighbor is getting a copy and I can read his. Thanks anyway.
- I don't understand why I live within 0.5 miles of sewer and yet it has not been brought in to my neighborhood. Sewer is the answer.

## Appendix C: Wakulla County Infrastructure Committee Workshop on Septic System Inspection Policy Report (June 02, 2011)

**June 2, 2011 5:00 PM**  
**Wakulla County Public Library**  
**4330 Crawfordville Highway**

### **Workshop Agenda**

#### **5:00 Opening**

Welcome and meeting objectives  
Workshop agenda and guidelines  
Introductions

#### **5:15 What is the Current Conditions of Septic Systems in Wakulla County?**

Present key points on conditions and inspection requirements  
Ask for questions and comments on the situation

#### **5:35 What are Our Objectives Septic System Management?**

Present and refine the draft objectives as needed  
Have everyone rate the importance of each

#### **6:00 How Do Different Management Scenarios Affect the Situation and Citizens?**

Present alternative scenarios  
Ask for questions and comments on the scenarios

#### **6:30 Break**

#### **6:45 How Should Wakulla Septic System Inspections be Managed? For each option:**

Review the survey results,  
Refine the lists of positives and negatives  
Rate the acceptability of the option

#### **7:15 Should Septic Systems be Managed Countywide or Regionally?**

Review the survey results,  
Refine the lists of positives and negatives  
Rate the acceptability of the option

#### **7:30 Should the Inspection Cycle be 3, 5, 7 or 10 years?**

Review the survey results,  
Refine the lists of positives and negatives  
Rate the acceptability of the option

#### **7:40 Next Steps**

Review work plan for involving the public and developing the recommendations

#### **7:50 Closing**

Facilitator summary of workshop activities, products and next steps  
Participant concluding comments



**8:00 Adjourn**

**Wakulla Infrastructure Committee Meeting Participants**

John Schuff, Chair

Padraic Juarez, member

Phil Canter, member

William Snowden, Wakulla News

Catherine Bray, City of Tallahassee

Melissa Corbett, Wakulla County Planning Department

Brian Miller, Citizen and Brian's Septic Service

Sandi Melgarijo, Citizen and Governmental Services Group

Cal Jamison, Citizen and Wakulla Springs Ambassador

Patricia Sansone, FL Department of Environmental Protection

Ron Piasecki, Friends of Wakulla Springs

Julie Harrington, FSU Center for Economic Forecasting and Analysis

Tom Taylor, FSU Center for Economic Forecasting and Analysis

The following are the draft materials reviewed at the workshop with the participant comments shown in bulleted italics.

### **Current Conditions of Septic Systems in Wakulla County**

1. 10,000 septic systems in Wakulla County. All contribute Nitrogen, Phosphorus and other nutrients and pollutants to the water we drink from, swim in, fish from and support our ecosystems.
2. 8-9,000 properly functioning systems prevent the discharge of fecal coliform. 10-20% or 1,000-2000 systems are probably failing and discharging fecal coliform, nutrients, pharmaceuticals and other pollutants into the water we drink, swim in, fish from and that supports our ecosystems.
3. The failing septic tanks were built out of loose concrete blocks, have had holes punched in them or have deteriorated and leak. It is not possible to tell if tanks are leading directly to the aquifer without pumping them out and visually inspecting the tanks.
4. Older drain field pipes may be clogged or broken and/or may be below the water table at least during wet periods.
5. Fecal coliform, nutrients and other pollutants from failing systems can cause human health problems (even deaths) and environmental impacts that impact the economy and quality of life in the County.
6. Owners and their neighbors may not be aware of failed systems because dangerous discharges go directly through the sand and karst limestone into the aquifer.
7. Some think that government should not require inspections and repair of failing systems. Others think that government should protect their families, jobs, businesses, and quality of life.
8. Inspections, pumpouts and permits may cost about \$425. Like an oil change in your car, the pumpouts help systems function better and longer. When a septic system becomes clogged and fails, replacement may cost between \$4-12,000. Systems last much longer with regular pumpouts.
9. Wakulla County has 12,652 households. 819 or 5.1% receive supplemental income and 439 or 2.7% receive public assistance. These households and many others may not have adequate assets or income to pay for septic system replacement without assistance.
10. Performance based treatment systems (PBTS) are required for new septic systems and replacements of failing systems in Wakulla County. There have been about 300 PBTS installed and they reduce the nitrogen discharged by about 50%.

- *The concentration depends on the quantity of water and quantity of Nitrogen going into the system [Water saving efforts often increase the concentrations]. If not removed the Nitrogen moves into the aquifer and into the springs and contributes to algal mats. Designed systems, like the Nitrex System, have an aerobic and anaerobic stage at different points of the system.*
- *There are different definitions of failure. It may be that the drainfield and tank are clogged and sewage is running out on the ground or backing up in the house. Another definition includes tanks that are not sealed completely and drainfields that are too close to the seasonal high water table.*
- *The number of repairs is down and the number of modifications is up. If a system needs repair it has to be replaced with a PBTS. A modification may involve expanding a drainfield or other corrections to improve capacity.*
- *The Tallahassee Wastewater Treatment Plant upgrades are ahead of schedule and should attain a 3 mg/l Nitrogen level by 2014.*
- *Cherokee Sink was closed for fecal coliform from swimmers. There have been studies and some indicate that the circulation is adequate to support 1000 swimmers. It is currently closed until there is funding for bathrooms.*
- *The Department of Health does inspections to determine the height of the drainfield and the seasonal high water table for \$150. Private contractors charge about \$190. Under the new state law that has not gone into effect they can charge \$25 processing fee for inspections done by licensed OSTDS contractors. Inspection costs may be reduced to \$90-100 each if there is a larger quantity.*
- *Separate licenses are required for soil testing and tank inspections. A utility could require that the septic contractors be licensed to do both tests.*
- *We must look at the vulnerable areas based on soils, elevations and distance from water features not just the Springs Protection Zone.*

### **Inspection Related Activities**

11. Wakulla County has a comprehensive plan policy calling for septic system inspections but the inspection program has not had assigned responsibility, been funded or implemented.
  - *There will be a workshop to consider changes in the wastewater policies in the Comp Plan that may modify the requirements for Performance-Based Treatment Systems (PBTS)*
12. The FL Legislature passed legislation in 2010 requiring septic system inspections. 2011 legislation requires that an economic analysis of legislation to be reviewed by the Legislative Budget Committee. If authorized the FL Department of Health must

develop a rule to guide implementation of the inspection program. This rule would have to be approved by the Legislature in 2012.

13. Wakulla County, Leon County and the City of Tallahassee are conducting a joint study of how to improve Wakulla Springs water quality.

- *The study is behind schedule. They have been incorporating the results of a USGS study by Hal Davis. It should be finalized in a couple of months.*

14. The FL Department of Environmental Protection is in the process of setting a Total Maximum Daily Load (TMDL) standard for Wakulla Springs. Septic system inspection and the replacement of failing systems may be the most cost effective way achieve the required TMDL.

### **Possible Septic System Management Objectives and Measures**

(Numbers in ( ) are the percentages of survey respondents rating the objective very important or important.)

- 1. To minimize the cost of septic systems for individuals and the County. (89.2%)**
  - a Initial cost of new septic systems
  - b Replacement cost of existing septic systems
  - c Operating cost of septic systems (electricity, maintenance, repair and replacement)
  - d Assistance programs for septic systems installations, replacements or upgrades
- 2. Property values: To protect values that could decline if there are spring and beach closures, environmental damage and polluted drinking water wells. (69.3%)**
- 3. Health. To reduce pollution of ground and surface waters that can impact public health and safety. (79.1%)**
  - a Fecal coliform levels- Enteric Water born Diseases
  - b Nitrate levels (High nitrates can cause the “blue baby syndrome” if ingested)
  - c Other hazardous chemicals
- 4. Local economy. To protect retail and services businesses that benefit from more residents and tourists, especially those related to nature-based recreation and residential communities. (54.7%)**
- 5. To protect natural resources including springs, sinkholes, wetlands and species habitats that are important to the County economy and quality of life. (73.9%)**
  - a Nutrient levels in the water
  - b Habitat quality
  - c Species numbers and health
  - d Science supported system testing and policy decisions

6. **To improve regulation related to septic systems.** (65.8%)
    - a Requirements for performance-based treatment systems
    - b Permit fees
    - c Time required to obtain a permit
    - d Engineering requirements/standards and enforcement (avoid duplication of effort)
    - e Periodic inspection and maintenance requirements and enforcement
    - f Contractor licensing requirements
    - g Protect against invasion of property rights; strangers coming on one's property
    - h Improve enforcement on non-permitted owner installed upgrades
  7. **To allocate costs fairly.** (Not rated)
    - a Those who benefit from direct services pay their fair share of the costs.
    - b Those who benefit from a better environment and economy pay their fair share.
    - c Those who cause negative impacts are responsible for the costs to others.
    - d Avoid having to pay twice
  8. **To educate people about septic tanks** (Not rated)
    - a Specify how to use septic systems to improve effectiveness and extend their life
    - b Clearly define the problem
    - c Provide scientific basis for decisions
    - d Educate about proper maintenance of systems
- *Water quality is critical to our economic well being, which depends on a clean environment.*
  - *Public Health & safety are important and the environment is next.*

## Possible Septic System Management Scenarios

### 1 – No Inspections Required

There is no cost to those who don't do inspections but failure is more likely without regular inspections and pump-outs. If 50% fail and need early replacement in the next 25 years it could cost individuals \$3-12,000 or \$15-60,000,000 countywide (5,000 x \$3-12,000 each).

### 2 – Owners Contract with Licensed Contractors for Inspections

Owners hire licensed contractors every 5 years - \$425

Inspections \$150

Pump-out \$250 (This may vary depending on the size of the tank and contractor)

Permit \$25

Total \$425/every 5 years or an average of about \$7.00/mo.

### 3 – A countywide utility with owners responsible for replacement when needed

Utility revenue: 10,000 septic systems owners paying \$7.00/mo. x 12 mo. = \$840,000/yr.

Inspections, pumpouts and permits, 1000 x \$300 = \$300,000

(Unit costs would be lower as the result of volume contracts with private contractors)

Administration 10% = \$84,000

System replacement loans/grants, \$456,000/year (114 owners at \$4,000 for standard septic system or 57 owners at \$8,000 for PBTS). It may be possible to supplement this with State and Federal grants and/or bonds repaid from this revenue stream.

### 4 – A countywide utility that pays for new and replacement standard systems

Utility revenue: 10,000 septic systems owners paying \$12.00/mo. x 12 mo. = \$1,444,444/yr.

Inspections, pumpouts and permits, 1000 x \$300 = \$300,000

(Unit costs would be lower as the result of volume contracts with private contractors)

Administration 10% = \$144,444

Standard system replacement of 2,500 over 10 years at \$4,000/system = \$1,000,000/year.

### 5A – A countywide utility that pays for new and replacement PBTS systems (10 yr.)

Utility revenue: 10,000 septic systems owners paying \$21.30/mo. x 12 mo. = \$2,555,555/yr.

Inspections, pumpouts and permits, 1000 x \$300 = \$300,000

(Unit costs would be lower as the result of volume contracts with private contractors)

Administration 10% = \$255,555

Standard system replacement of 2,500 over 10 years at \$8,000/system = \$2,000,000/year.

**5B – A countywide utility that pays for new and replacement PBTS systems (5 yr.)**

Utility revenue: 10,000 septic systems owners paying \$42.59/mo. x 12 mo. = \$5,111,111/yr.

Inspections, pumpouts and permits, 2000 x \$300 = \$600,000

(Unit costs would be lower as the result of volume contracts with private contractors)

Administration 10% = \$511,111

Standard system replacement of 2,500 over 5 years at \$8,000/system = \$4,000,000/year.

**6 – A regional utility with owners responsible for replacement when needed**

Utility revenue: 45,000 septic systems owners paying \$5.00/mo. x 12 mo. = \$2,700,000/yr.

Inspections, pumpouts and permits, 4,500 x 300 = \$1,350,000

Administration 7% = \$189,000

System replacement loans/grants, \$2,165,400 (541 owners at \$4,000 for standard septic system or 271 owners at \$8,000 for PBTS)

**7 – A regional utility that pays for replacement standard systems**

Utility revenue: 45,000 septic systems owners paying \$11.65/mo. x 12 mo. = \$6,290,323/yr.

Inspections, pumpouts and permits, 4,500 x \$300 = \$1,350,000

(Unit costs would be lower as the result of volume contracts with private contractors)

Administration 7% = \$440,323

Standard system replacement of 11,250 over 10 years at \$4,000/system = \$4,500,000/year.

**8 – A regional utility that pays for replacement PBTS systems**

Utility revenue: 45,000 septic systems owners paying \$20.61/mo. x 12 mo. = \$11,129,032/yr.

Inspections, pumpouts and permits, 4,500 x \$300 = \$1,350,000

(Unit costs would be lower as the result of volume contracts with private contractors)

Administration 7% = \$779,032

Standard system replacement of 11,250 over 10 years at \$8,000/system = \$9,000,000/year.

**Table 30 Septic System Management Option Comparison Table**

Management Options	One-Time Cost	Monthly Cost
1. No inspections required	0	0
2. Owners contract for inspections, owners are pay for replacements	\$425/5yr (\$7.00/mo.) \$4-12,000*	0
3. Inspections by County utility, owners are pay for replacements	0 \$4-12,000*	\$7.00
4. County utility w/ standard system replacement	0	\$12.00
5A. County utility w/PBTS replacement (10yr.)	0	\$21.30
5B. County utility w/ PBTS replacement (5yr.)	0	\$42.59
6. Inspections by regional utility, owners are pay for replacements	0 \$4-12,000*	\$5.00
7. Regional utility w/ standard system replacement	0	\$11.65
8. Regional utility w/ PBTS replacement	0	\$20.61

\* They may be eligible for low interest loans or grants.



# Analysis of Approaches to Inspections

## No Inspections Required

**(Survey) Do you support an OSTDS inspection program if it can achieve the most important benefits to you?**

	Percent
No	35.9
Yes	64.1
Total	100.0

### **Possible positive aspects of this option:**

- A. You do not pay a monthly wastewater utility fee.
- B. You choose if and when you have an inspection with your own licensed contractor.

### **Possible negative aspects of this option:**

- A. If you don't have an inspection your septic system will probably fail sooner.
  - B. You will not know if you have a failing system that may have a negative impact on the health of your family, your neighbors and the environment.
  - C. There is no way for public officials to tell where the failing systems are or to take steps to fix them.
- *Degradation of the environment will continue to get worse not get better.*

## Owners Contract with Licensed Contractors for Inspections

**(Survey) The acceptability Rating - You own and manage your OSTDS**

	Percent
Good	13.2
Fair	32.0
Poor	17.4
Not acceptable	37.4
Total	100.0

### **Possible positive aspects of this option:**

- 1. You do not pay a monthly wastewater utility fee.
- 2. You choose your own OSTDS contractor.

**Possible negative aspects of this option:**

1. You must take the time to select, contract and monitor an OSTDS contractor.
2. You may pay more for individual services than a utility providing or contracting for a large volume of services.
3. You are responsible for larger periodic payments for installation, inspections, repairs and replacement, which may be more of a financial challenge than regular monthly fees.
4. Department of Health monitoring and enforcement of individual management activities may be more difficult and less effective than if there is a utility, resulting in more failing, polluting septic systems.

**A Utility with Owners Responsible for Replacement**

(Survey) The acceptability Rating - You own the OSTDS and a wastewater utility manages it

Good	10.7
Fair	25.1
Poor	24.7
Not acceptable	39.5
Total	100.0

**Possible positive aspects of this option:**

5. You do not need to select, schedule and pay a contractor for inspections, and pump-outs.
6. You pay a monthly fee and do not have to worry about higher periodic costs for inspections and pump- outs, repairs or replacement.
7. The utility can negotiate volume discounts for coordinated services that will be lower than what individual owners may have to pay to individual contractors.
8. The utility may receive revolving loans and grants that can reduce your monthly fee.
9. You may be able to get a loan or a deferred payment plan for replacement.
10. Regular maintenance should reduce the likelihood of system failures and the related
11. Environmental and health problems.

**Possible negative aspects of this option:**

12. There will be a monthly or annual fee.
  13. The owner pays for the initial installation and/or replacement PBTS.
  14. There may be less incentive for proper usage and protection of the drainfield if the utility pays for repairs.
- *A utility could use bonds to provide loans for system replacement. The interest rates and terms could be much better than private loans or putting it on a credit card.*

## A Utility Inspects and Pays for Replacement

**(Survey) The acceptability Rating - A wastewater utility owns and manages the OSTDS on your property**

Good	17.5
Fair	22.6
Poor	17.5
Not acceptable	42.4
Total	100.0

### **Possible positive aspects of this option:**

1. You will pay a monthly fee and will not have to worry about higher periodic costs for inspections, pump-outs, repairs or replacement.
2. The utility may be eligible for loans and grants that could reduce your monthly fee.
3. Regular monitoring and maintenance should reduce the likelihood of system failures and the related environmental and health problems.

### **Possible negative aspects of this option:**

4. There may be some objection to a private or public entity owning the OSTDS on private property.
  5. There is the potential improper use of septic systems, because the users will not have to pay directly for repairs. The repair costs would be spread to all homeowners.
- *How many inspections could be performed a year? You can do the 10,000 at 2,000/year for 5 years or 8 per day for the 250 workdays in a year.*
  - *There are 4 contractors in Wakulla County and about 20 others who work in the County.*
  - *Contractors are concerned that a utility will do the inspections themselves and put them out of business.*
  - *The County could contract with a utility management company like Government Services Group that would handle notices, inspections, billing, etc. They could then contract with licensed septic contractors to do the inspections and pump-outs based on qualifications and competitive bids.*
  - *The cost per unit could be lower because of the volume contracts and the ability to do a full day of inspections on one street/road rather than having different numbers of inspections all over the region on different days.*
  - *Who will tell property owners that they have to replace their systems? The Department of Health could send the letter. Will state or county lawyers handle the cases?*
  - *There is a concern that inspectors would claim there are failures so they could get the work to replace the systems.*

- *The utility and the DOH would oversee the inspections and there could be a citizen board to oversee the utility operation.*

## **Should Septic Systems Be Managed by Countywide or Regionally?**

### **(Survey) Rating Countywide**

### **June 2 Meeting**

Good	15.1	
Fair	36.2	
Poor	17.0	
Not acceptable	31.7	
Total	100.0	

### **(Survey) Rating Regional**

Good	15.8	
Fair	29.4	
Poor	18.6	
Not acceptable	36.2	
Total	100.0	

#### **Possible positive aspects of a countywide utility:**

1. Elected officials could have more direct control and be more responsive to the ratepayers than with a regional utility.

#### **Possible negative aspects of a countywide utility:**

1. The costs per property could be higher, because of the smaller number of units, compared to a regional utility.

#### **Possible positive aspects of a regional approach:**

1. This could produce greater economies-of-scale. This may result in reduced costs per user.
  2. The regional approach will allow more coordination across jurisdictions.
- *This would allow more of a watershed approach.*
  - *The start-up costs are about the same for a utility serving 10,000 as for one with 45,000 customers.*

#### **Possible negative aspects of a regional approach:**

1. Individual users and individual counties would have less control over management

decisions and fees.

2. The counties and city may have trouble agreeing on the structure and operation of a regional utility.

- *Tallahassee, Leon and Wakulla have a history of not working well together.*

## **Should the Inspection Cycle be 3, 5, 7 or 10 Years?**

### **Possible positive aspects of a shorter cycle:**

1. More failing systems will be identified and replaced sooner.

### **Possible positive aspects of a longer cycle**

1. If owners are responsible for inspections they will pay less often.
  2. If a utility is responsible everyone will pay a lower monthly fees.
  3. There will be fewer replacements requiring grants per year.
- *The state law allows 7 years to fully implement the program with reinspections every 5 years after the first inspection.*
  - *The new tanks can be expected to last 40 years. The life of the drainfields will depend on how the system is used and whether there are regular pump-outs.*
  - *The state law allows \$1-5 of the processing fee to be used for a grant fund. [At \$5 and 2,000 inspections that would be \$10,000 or enough for just a few replacements]*

## **Should There be Loans and Grants for those Needing to Replace Failing Systems?**

### **Poverty Rate of Wakulla County, Florida**

2009 Poverty Rate: 13.1%; Source: City-Data;

2008 Poverty Rate: 12.1%; Source: Southern Rural Development Center;

**Assistance options** (From fee revenues, selling bonds and/or grants (Not taxpayer funded)).

1. Low interest loans available for anyone
2. Grants to low-income owners secured by a lien
3. Grants to low-income owners with no repayment required.

**Possible positive aspects of assistance:**

1. Owners may not have assets to pay for replacement or it may be a hardship.
2. More failing systems will be identified and replaced sooner.
3. Every one shares the cost and benefits of fewer failing septic systems.

**Possible negative aspects of assistance**

1. An upfront investment is needed to fund replacements, even if there is repayment eventually.
2. There will be some cost for setting up the loan fund, bonding, processing and collection.
3. Grants without repayment requirements can be costly to other ratepayers or others.

**Proposed Next Steps**

Tasks/Activity	Timeframe
Septic Systems Stakeholder Workshop to Develop Policy Options	June 2, 2011
Infrastructure Committee Meeting	June 14, 2011
FSU Report to Infrastructure Committee	June 30, 2011
Infrastructure Committee Report to the County Commission	TBD
Wakulla, Leon, Tallahassee Wastewater Study Report	TBD
County Commission Consideration of Reports	TBD
Legislative and Agency Action on Inspection Law and Rule	TBD

**Workshop Summary Assessment Form Results**

At the end of the workshop were asked to rate the importance of the objectives and the acceptability of the options. These are the results from seven respondents.

<b>Management Objectives</b>	3	2	1	0	Avg.
Rate objectives: 3 = Very Important, 2 = Important, 1 = Little Importance, 0 = Not Important					
To minimize the cost of septic systems for owners and the County.	2	4	1	0	2.14
To protect and enhance property values.	1	4	2	0	1.86
To reduce pollution that can impact public health and safety.	5	2	0	0	2.71
To protect retail and services businesses.	1	4	2	0	1.86
To protect natural resources.	6	1	0	0	2.86
To improve regulation related to septic systems.	1	6	0	0	2.14
To allocate costs fairly.	1	4	2	0	1.86
To educate people about septic tanks	3	4	0	0	2.43

Rate these options: 3 = Good, 2 = Fair, 1 = Poor, 0 = Not Acceptable

<b>Management Options</b>	3	2	1	0	Avg.
1 – No Inspections Required	0	1	2	4	.57
2 – Owners Contract with Licensed Contractors for Inspections	2	3	2	0	2.00
3 – A utility with owners responsible for replacement when needed	2	2	3	0	1.86
4 – A utility that pays for replacement	4	0	3	0	2.14

<b>Scale Options</b>	3	2	1	0	Avg.
Countywide	2	4	1	0	2.14
Regional	2	3	1	0	2.14

<b>Inspection Cycle Options</b>	3	2	1	0	Avg.
Every 3 years	0	1	4	2	0.86
Every 5 years	3	2	2	0	2.14
Every 7 years	3	1	3	0	2.00
Every 10 years	0	1	4	2	.86

<b>Loan and Grant Options</b>	3	2	1	0	Avg.
Low interest loans for anyone from fee revenues, selling bonds and/or grants	5	1	1	0	2.57
Grants to low-income owners secured by a lien	3	2	2	0	2.14
Grants to low-income owners with no repayment required.	3	0	4	0	1.86

## Appendix D: Wakulla County Infrastructure Committee Workshop Report (June 14, 2011)

### Meeting Notice

This meeting notice was sent to the Wakulla County Infrastructure Committee, participants in the 2008 workshop, Septic System Survey respondents who provided emails the County's list of interested citizens.

### Wakulla County Septic System Management Workshop

5:00 to 8:00 PM, Thursday, June 2, 2011

Wakulla County Library  
4330 Crawfordville Hwy  
Crawfordville, FL 32327

Wakulla, like other counties, needs to decide how to implement potential state requirements for inspection of traditional septic systems. Wakulla County ordinances also require inspections.

### The objectives of this workshop are to:

- To review possible goals and measures for Wakulla septic system management policy
- To review the results of the survey of those with septic systems in Wakulla County
- To clarify the key policy questions and options to be addressed
- To seek stakeholder input on recommendations to the County Commission

**Note:** This is not a workshop to discuss performance-based treatment systems (PBTS) or sewerage projects

### Periodic septic system inspections can:

- Protect the health and safety of the water you drink, swim in and fish from.
- Reduce pollution of ground and surface waters that impact natural environments.
- Prevent closures of springs, rivers, beaches and wells that could impact property values, business sales and Wakulla's overall economy and quality of life.
- Reduce the likelihood of your septic system failing and needing costly replacement.
- Cost those with septic system owners more than they want or are able to pay.

### These are some of the policy questions that may be addressed?

1. Should Wakulla Septic System Inspections be done by licensed contractors paid for by owners or by a public, non-profit or private utility supported by a monthly fee?
2. If there are Utility Districts, Should They Be Small, Countywide or Regional?



3. If inspections are Required
  - Should it be in the Springs Protection Zone, all vulnerable areas or countywide?
  - Should the most vulnerable areas or oldest systems be first?
  - Should systems less than 3, 5, 7, 10 or 15 years old be exempt?
  - Should properties greater than 5, 10, or 20 acres be exempt?
  - Should there be exemptions or assistance for those with low incomes?
4. Should inspections be required at all?

## **Appendix E: Septic System Inspection Management Options - Report to Wakulla County Board of County Commissioners**

### ***Introduction***

There are about 10,000 septic systems in Wakulla County. All contribute Nitrogen, Phosphorus and other nutrients and pollutants to the water that citizens drink, swim in, fish from and that supports our ecosystems. About 300 Performance-Based Systems (PBTS) reduce Nitrogen levels by about 50%. The approximately 8,000 properly functioning systems prevent the discharge of fecal and other Coliform bacteria. About 20% or 2000 systems are probably failing and discharging Coliform, nutrients, pharmaceuticals and other pollutants that can cause human health problems (even deaths) as well as environmental damage that impact the economy and quality of life in Wakulla County.

Some of the failing septic tanks were built out of loose concrete blocks with no bottoms, have had holes punched in them or have deteriorated and leak. Owners and officials often don't know tanks are leaking into the ground water without having them pumped out and visually inspecting the tanks. Older drain field pipes may be clogged or broken and/or may be below the seasonal high water table.

Requiring inspections saves owners money in the long run. Like an oil change in your car, the pump-outs help systems function better and longer. When a septic system becomes clogged and fails prematurely, replacement may cost between \$4-12,000. This is a financial hardship for any owner and may result in more foreclosures. Maintaining existing systems can put millions of dollars into the local economy that would otherwise go into holes in the ground. Having to close springs, rivers, sinkholes and beaches to swimming and fishing, and degradation of the environment can adversely impact Wakulla County's economy, quality of life and property values.

Inspections involve 1) pumping out the tank and a visual inspection to determine the tank construction and whether it is leaking, 2) measuring the depth of the drainfield and 3) determining the depth of the seasonal high water table (SHWT). Some of this information may be available from previous inspection or permit records. If owners contract with licensed Septic System Contractors, permits, inspections and pumpouts may cost about \$425. If inspections are done through a utility, it is probably preferable to use a utility management services company that can contract with a number of private, licensed septic system contractors. It is estimated that the cost could be reduced to about \$300 per inspection because of volume contracts and coordination with contractors and the Department of Health. A utility can also provide financing for system replacement and assistance for those with low incomes that is not possible if owners are responsible for their own inspections.

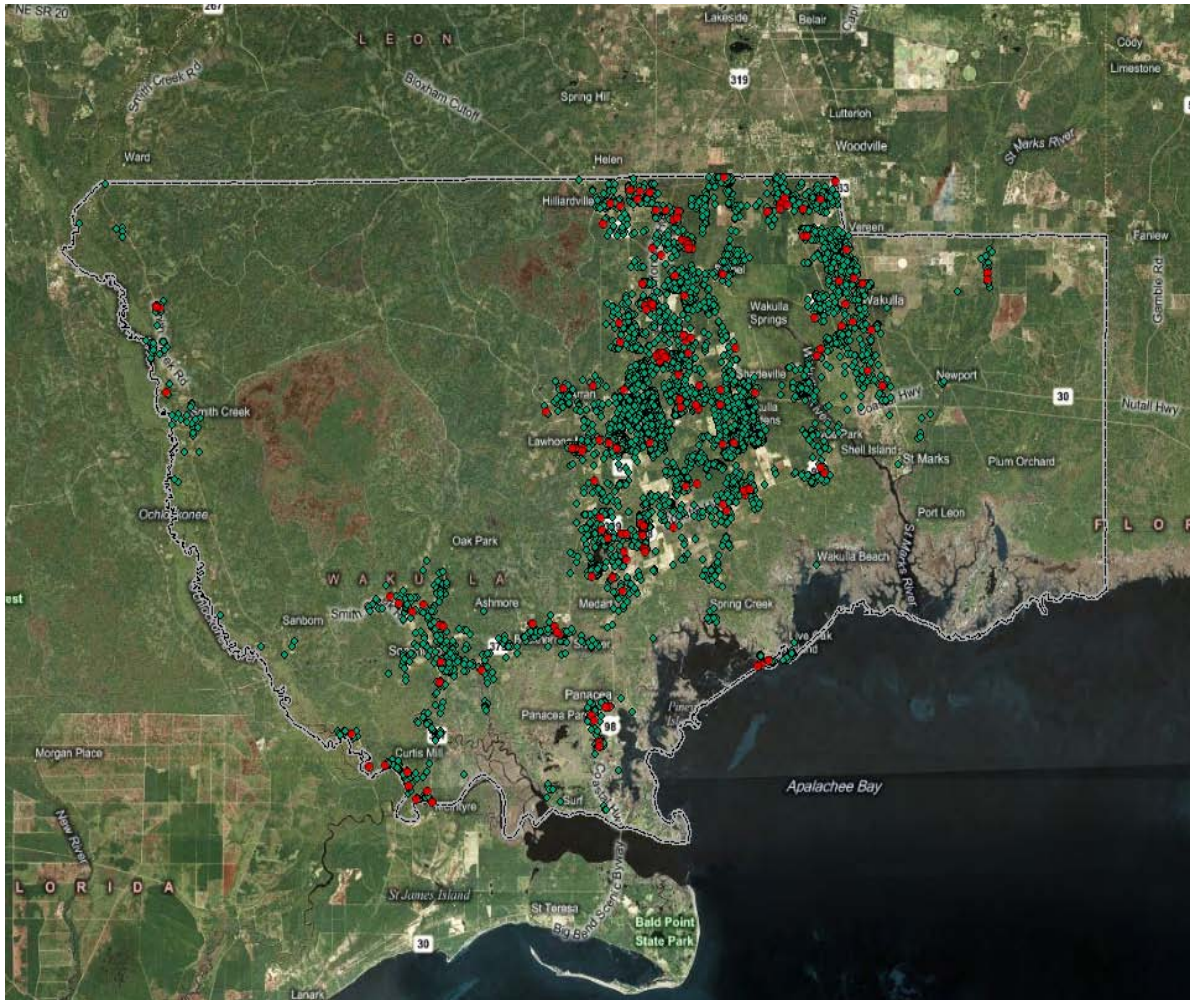
This study shows that some citizens think that government should not require inspections and repair of failing systems, especially in these difficult economic times. Others think that

government should protect their family's health, jobs, businesses, and quality of life, including Wakulla's wonderful natural environment. Below, there is list of inspection management objectives that need to be balanced. This report then evaluates these options: 1) no inspection requirement, 2) owner responsibility and 3) utility responsibility, and considers variations in the frequency of inspections, who pays for replacements and the hardship assistance provided. The study also provides an assessment of options from different perspectives gathered from public workshops and a survey of septic system owners.

### ***Other Inspection Related Policy Activities to Consider***

1. Wakulla County has a comprehensive plan policy calling for septic system inspections but the inspection program has not been assigned responsibility, been funded or implemented. It is anticipated that this policy will be reconsidered as part of a broader review of wastewater policies in the Comprehensive Plan and Land Development Regulations.
2. The FL Legislature passed legislation in 2010 requiring septic system inspections. 2011 legislation requires that an economic analysis of legislation to be reviewed by the Legislative Budget Committee. If authorized, the FL Department of Health must develop a rule to guide implementation of the inspection program. This rule would have to be approved by the Legislature in 2012.
3. Wakulla County, Leon County and the City of Tallahassee are conducting a joint study of how to improve Wakulla Springs' water quality.
4. The FL Department of Environmental Protection is in the process of setting a Total Maximum Daily Load (TMDL) standard for Wakulla Springs. Septic system inspection and the replacement of failing systems may be the most cost effective way to reduce Nitrogen levels.

**Figure 36: Location of Septic Systems in Wakulla County**



Legend	<span style="color: red;">●</span>	Wakulla County Septic system installed over 20 years ago.
	<span style="color: green;">●</span>	Wakulla County Septic system installed within 20 years.

Septic systems installed in the last 20 years are less likely to be failing because of their age and the design standards that applied at the time of construction.

## ***Possible Septic System Management Objectives and Measures***

These objectives were developed using input from public workshops and the survey of septic system users. The first number after each objective in (#, #) is the percentages of survey respondents rating the objective very important or important. The second number is the rating by those at the June 2 workshop.

- 1. Costs: To minimize the cost for individuals and the County. (89.2%, 85.7%)**
  - Initial cost of new septic systems
  - Replacement cost of existing septic systems
  - Operating cost of septic systems (electricity, maintenance, repair and replacement)
  - Assistance programs for septic systems installations, replacements or upgrades
- 2. Property values: To protect values that could decline if there are spring and beach closures, environmental damage and polluted drinking water wells. (69.3%, 71.4%)**
- 3. Health: To reduce pollution of ground and surface waters that can impact public health and safety. (79.1%, 100%)**
  - Fecal and other Coliform levels- Enteric Water born Diseases
  - Nitrate levels (High nitrates can cause the “blue baby syndrome” if ingested)
  - Pharmaceuticals and other hazardous chemicals
- 4. Local economy: To protect retail and services businesses that benefit from more residents and tourists, especially those related to nature-based recreation and residential communities. (54.7%, 71.4%)**
- 5. To protect natural resources, including springs, sinkholes, wetlands and species habitats important to the County economy and quality of life. (73.9%, 100%)**
  - Nutrient levels in the water
  - Habitat quality
  - Species numbers and health
  - Science supported system testing and policy decisions
- 6. To improve regulation related to septic systems. (65.8%, 100%)**
  - Requirements for performance-based treatment systems
  - Permit fees
  - Time required to obtain a permit
  - Engineering requirements/standards and enforcement (avoid duplication of effort)
  - Periodic inspection and maintenance requirements and enforcement
  - Contractor licensing requirements
  - Protect against invasion of property rights; strangers coming on one’s property
  - Enforcement on non-permitted owner installed upgrades
- 7. To allocate costs fairly. (Not rated, 71.4%)**
  - Those who benefit from direct services pay their fair share of the costs

Those who benefit from a better environment and economy pay their fair share  
Those who cause negative impacts are responsible for the costs to others  
Avoid having to pay twice

**8. To educate people about septic tanks** (Not rated, 100%)

Specify how to use septic systems to improve effectiveness and extend their life  
Educate about proper maintenance of systems  
Clearly define the public health, environmental, administrative and financial problems  
Provide the scientific and expert analysis for decision making.

***Basic Septic System Management Options***

Core Question – Will Wakulla County allow about 2,000 septic system owners to, often unknowingly, discharge raw sewage into the water citizens drink, swim in and fish from and that impacts the natural environment; or will the County provide a systematic, cost effective way to inspect and replace failing systems?

All calculations are estimates for policy comparison purposes and will require more detailed analysis for final decision-making. The assumptions are based on input from septic system contractors, the Government Services Group, workshop participants and other experts.

**1 – No septic system inspections are required**

This is the current situation. There is no cost to those who don't do inspections but failure is more likely without regular inspections and pump-outs. If 50% fail and need early replacement in the next 25 years it could cost individuals \$3-12,000 or \$15-60,000,000 countywide (5,000 x \$3-12,000 each). The increased number of failing systems will also have a negative impact on public health, recreation, the environment and the economy in Wakulla County.

**2 – Owners are required to contract with licensed contractors for inspections**

Owners hire licensed contractors every 5 years at a cost of about \$425.

Inspections	\$150
Pump-out	\$250 (This may vary depending on the size of the tank and contractor)
Permit	<u>\$25</u>
Total	\$425/every 5 years or an average of about \$7.00/mo.

**3 – A utility contracts with licensed contractors for inspections**

It is probably preferable to use a utility management services company that can contract with a number of private, licensed septic system contractors. It is estimated that the cost may be about \$300 because of volume contracts and coordination with contractors and the

Department of Health. Septic system owners could pay through their property tax assessment on an annual or quarterly basis or monthly through their mortgage escrow account. A utility can arrange 5-10 year installment payments for replacing failing systems when needed. A utility may also use grants or voluntary donations to pay for replacements in hardship cases. The cost per month will vary depending on these variables:

Boundary of the utility

- A. Countywide
- B. Regional (Wakulla, Leon, Tallahassee and possibly others jurisdictions)

Cycle for completing all inspections and re-inspections

- 5 years
- 7 years

**Table 31 Comparison of Basic Inspection Management Options**

Options	Yr. Cycle	Inspect Per Yr.	Cost Per Yr.	Adm. Fee	Total	Assmt Per Yr	Assmt. Per Mo
<b>1 Owner no inspection</b>						<b>0</b>	<b>0</b>
<b>2 Owner/Contractor \$425/5yr</b>	5	2,000	850,000		850,000	85	7.08
<b>3A Countywide Utility 10% Adm.</b>	5	2,000	600,000	66,667	666,667	67	5.56
	7	1,429	428,571	47,619	476,190	48	3.97
<b>3B Regional Utility 7% Adm.</b>	5	9,000	2,700,000	290,323	2,990,323	66	5.54
	7	6,429	1,928,571	207,373	2,135,945	47	3.96

Assumptions

- 5. Basic Formula: Annual cost of inspections + Administration Cost = Total Program Cost /number of Users/12 months = Monthly Cost/User
- 6. There are approximately 10,000 septic systems in Wakulla and 45,000 in Wakulla, Leon and Tallahassee combined.
- 7. Inspections and pump-outs for individuals cost about \$425 and for a utility about \$300 (This may be less because of volume contracts and inspection coordination)
- 8. It is assumed that the management fee will be 10% for a countywide and 7% for a regional management utility.

## ***Other Options for Septic System Inspection Management***

The study considered other options that illustrate costs if a utility collected enough to pay for replacement of failing systems for those who qualify for hardship assistance or pay for failing system replacement for all septic system owners. The County attorney has indicated that under current law it is not possible to collect property tax assessments from owners that could be used to benefit other owners (the hardship cases). There would also be a problem collecting funds for replacement of newer systems that may not be needed for 30-40 years. Benefits must be provided in a reasonable time and that is typically five years or at the most seven years. Similarly the scenarios with 10-year inspection cycles would exceed the typical reasonable benefit period. These options are included because it may be possible to request legislative authorization or to find alternative administrative structures that may make them possible. These scenarios would help address the hardship cases, reduce the impact of paying for costly replacements and lower the monthly cost to citizens.

All calculations are estimates for policy comparison purposes and will require more detailed analysis for final decision-making. The assumptions are based on input from septic system contractors, the Government Services Group, workshop participants and other experts.

### ***Calculations for Other Scenarios:***

The results are shown for a 5-year cycle of inspections.

The table also shows the results for 7 and 10-year cycles.

#### **4 – A countywide utility that pays for replacement in hardship cases (5 yr. cycle)**

Utility revenue: 10,000 septic systems owners pay \$9.00/mo. x 12 mo. = \$1,022,222/yr.

Inspections, pump-outs and permits, 2000 inspections/yr. x \$300 = \$600,000/yr.

Standard system replacement for 20% of inspections that find failing systems and 20% of those are eligible for hardship assistance .2 x .2 x 2000 systems x \$4,000/system = \$320,000/yr.

Administration 10% = \$102,222

#### **5 – A countywide utility pays to replace all failures with standard systems (5-yr. cycle)**

Utility revenue: 10,000 septic systems owners paying \$20.37/mo. x 12 mo. = \$2,444,444/yr.

Inspections, pump-outs and permits, 2000 x \$300 = \$600,000

Replace of 20% of 2,000 inspections that fail at \$4,000/ standard system = \$1,600,000/year.

Administration 10% = \$244,444



**6 – A countywide utility that pays to replace all failures with PBTS (5-yr. cycle)**

Utility revenue: 10,000 septic systems owners paying \$35.19/mo. x 12 mo. = \$4,222,222/yr.

Inspections, pump-outs and permits, 2000 x \$300 = \$600,000

Replace of 20% of 2,000 inspections that fail at \$8,000/ PBTS system = \$3,200,000/year.

Administration 10% = \$422,222

**7 – A regional utility that pays for replacement in hardship cases (5-yr. cycle)**

Utility revenue: 45,000 septic systems owners pay \$8.26/mo. x 12 mo. = \$4,462,000/yr.

Inspections, pump-outs and permits, 9000 inspections/yr. x \$300 = \$2,700,000/yr.

Standard system replacement for 20% of inspections that find failing systems and 20% of those are eligible for hardship assistance .2 x .2 x 9000 systems x \$4,000/system = \$1,440,000/yr.

Administration 7% = \$322,000

**8 – A regional utility pays to replace all failures with standard systems (5-yr. cycle)**

Utility revenue: 45,000 septic systems owners paying \$19.36/mo. x 12 mo. = \$10,670,000/yr.

Inspections, pump-outs and permits, 9000 x \$300 = \$2,700,000/yr.

Replace of 20% of 9,000 inspections that fail at \$4,000/ standard system = \$7,200,000/year.

Administration 7% = \$770,000

**9 – A regional utility that pays to replace all failures with PBTS (5-yr. cycle)**

Utility revenue: 45,000 septic systems owners paying \$34.13/mo. x 12 mo. = \$18,430,000/yr.

Inspections, pump-outs and permits, 9000 x \$300 = \$2,700,000/yr.

Replace 20% of 9,000 inspections that fail at \$8,000/ PBTS system = \$14,400,000/year.

Administration 7% = \$422,222

Note: After the first 5, 7 or 10-year cycle of inspections and replacements there would be very few replacements and the monthly costs can be greatly reduced.

**Table 32 Other Options for Septic System Inspection Management**

Options	Cycle	Insp. Per yr.	Cost/yr.	# Hardship	Cost/yr.	# Rpl.	\$/yr. Rpl.	10/7% Adm	Total	Per Yr.	Per Mo
4. CW Utility w/Hardship Asst.	5	2,000	600,000	80	320,000		0	102,222	1,022,222	102	8.52
	7	1,429	428,571	57	228,571		0	73,016	730,159	73	6.08
	10	1,000	300,000	40	160,000		0	51,111	511,111	51	4.26
5. CW Utility w/Standard Repl.	5	2,000	600,000	0	0	400	1,600,000	244,444	2,444,444	244	20.37
	7	1,429	428,571	0	0	286	1,142,857	174,603	1,746,032	175	14.55
	10	1,000	300,000	0	0	200	800,000	122,222	1,222,222	122	10.19
6. CW Utility w/PBTS Repl.	5	2,000	600,000	0	0	400	3,200,000	422,222	4,222,222	422	35.19
	7	1,429	428,571	0	0	286	2,285,714	301,587	3,015,873	302	25.19
	10	1,000	300,000	0	0	200	1,600,000	211,111	2,111,111	211	17.59
7. Reg. Utility w/Hardship Asst.	5	9,000	2,700,000	360	1,440,000		0	322,000	4,462,000	99	8.52
	7	6,429	1,928,571	257	1,028,571		0	230,000	3,187,143	71	6.08
	10	4,500	1,350,000	180	720,000		0	161,000	2,231,000	50	4.26
8. Reg. Utility w/Replacement	5	9,000	2,700,000	0	0	1,800	7,200,000	770,000	10,670,000	237	19.76
	7	6,429	1,928,571	0	0	1,286	5,142,857	550,000	7,621,429	169	14.11
	10	4,500	1,350,000	0	0	900	3,600,000	385,000	5,335,000	119	9.88
9. Reg. Utility w/PBTS Repl.	5	9,000	2,700,000	0	0	1,800	14,400,000	1,330,000	18,430,000	410	34.13
	7	6,429	1,928,571	0	0	1,286	10,285,714	950,000	13,164,286	293	24.38
	10	4,500	1,350,000	0	0	900	7,200,000	665,000	9,215,000	205	17.06

**Assumptions**

Basic Formula: Annual cost of inspections + Assistance + Administration Cost = Total Program Cost /number of Users/12 months = Monthly Cost/User.

There are 10,000 septic systems in Wakulla and 45,000 Wakulla, Leon and Tallahassee.

About 20% are failing, 2,000 in Wakulla and 9,000 in the region; there will be more failures without inspections and pump-outs

About 20% of those failing will qualify for a hardship waiver. If assistance is provided, there can be a lien placed on the property to increase repayments.

Inspections and pump-outs for individuals cost about \$425 and for a utility \$300 (This may be less because of volume contracts and coordination).

Replacement of failing systems with standard systems may cost about \$4,000 and for a PBTS about \$8,000.

It is assumed that the management fee will be 10% for a countywide and 7% for a regional management utility.

After the first 5, 7 or 10-year cycle of inspections and replacements there would be very few replacements and the monthly costs can be greatly reduced.

### Analysis of Approaches to Inspections

The June 26, 2008 workshop helped define the key policy options and identified positive and negative aspects of the options. The results of this workshop were used to develop the survey that was sent out to all septic system users in Wakulla County. The ratings from this survey and the June 2, 2011 workshop are provided here and the survey and workshop comments have been incorporated into the positives and negative aspects for each option.

### No Inspections Required

One of the survey questions was, "Do you support an OSTDS inspection program if it can achieve the most important benefits to you?" The second box has the June 2 Participant ratings of the no inspection option

	Survey %
No	35.9
Yes	64.1
Total	100.0

	June 2 Mtg. %
Good	0.0
Fair	14.3
Poor	28.6
Not acceptable	57.1
Total	100.0

#### Possible positive aspects of this option:

1. Owners do not have to pay for an inspection and pump-out every five years or pay a property tax assessment.
2. Owners can choose if and when they have an inspection by a licensed contractor.
3. There is no new government regulation.
4. Owners will not have to replace failing systems, unless someone files a complaint. This will reduce the likelihood of having to pay \$4-12,000 that, in some cases, could contribute to foreclosures.

#### Possible negative aspects of this option:

1. If owners don't have an inspection their septic system will probably fail sooner.
2. Owners will not know if they have a failing system that may have a negative impact on the health of their family, neighbors and the environment.
3. There is no way for public officials to identify failing systems and take steps to fix them. This may be required to meet water quality standards.
4. Failures and replacement that are avoidable with pump-outs could cost \$20-60,000,000 over the next 25 years. This is money that citizens could use to contribute to the County's economy (5,000 failures x \$4-12,000/replacement).

### **Owners Contract with Licensed Contractors for Inspections**

	Survey %	June 2 Mtg. %
Good	13.2	28.6
Fair	32.0	42.9
Poor	17.4	28.6
Not acceptable	37.4	0.0
Total	100.0	100.0

**Possible positive aspects of this option:**

3. Owners do not pay a property tax assessment or a wastewater utility fee.
4. Owners choose any licensed OSTDS contractor.

**Possible negative aspects of this option:**

15. Owners must take the time to select, contract with and monitor an OSTDS contractor.
16. Owners may pay more for individual services than a utility contracting for many inspections.
17. Owners are responsible for larger periodic payments for installation, inspections, repairs and replacement, which may be more of a financial challenge than monthly or quarterly fees.
18. Department of Health monitoring and enforcement of individual management activities may be more difficult and less effective than if there is a utility, resulting in more failing, polluting septic systems.

### **A Utility with Owners Responsible for Replacement**

	Survey %	June 2 Mtg. %
Good	10.7	28.6
Fair	25.1	28.6
Poor	24.7	42.9
Not acceptable	39.5	0.0
Total	100.0	100.0

**Possible positive aspects of this option:**

1. Owners do not need to select, schedule and pay a contractor for inspections, and pump-outs.
2. Owners pay a property tax assessment monthly, quarterly or annually and do not have to worry about higher periodic costs for inspections and pump-outs.

3. The utility can negotiate volume discounts for coordinated services that will be lower than what individual owners may have to pay to individual contractors.
4. A utility can use loans and bonds to provide owners 5-10 year payment plans for system replacement needed.
5. A utility may receive revolving loans and grants to reduce assessments or to provide assistance in hardship cases.
6. Regular pump-outs should reduce the likelihood of system failures and the related financial, environmental and health problems.
7. After the first cycle of inspections and failure replacements, the number of future failures will be lower and the assessment levels can be reduced.

**Possible negative aspects of this option:**

1. There will be an annual or quarterly fee that can be included in monthly mortgage payments.
2. The owner pays for the initial installation and replacement of the septic system.

**A Utility Inspects and Pays for Replacing Failing Systems**

	Survey %	June 2 Mtg. %
Good	17.5	57.1
Fair	22.6	0.0
Poor	17.5	42.9
Not acceptable	42.4	0.0
Total	100.0	100.0

**Possible positive aspects of this option:**

1. Owners will pay a monthly fee and will not have to worry about higher periodic costs for inspections, pump-outs, repairs or replacement (\$4-12,000). It is like insurance.
2. The utility may be eligible for loans and grants that could reduce owners' monthly cost and assist in hardship cases.
3. Regular monitoring and maintenance should reduce the likelihood of system failures and the related environmental and health problems.
4. After the first cycle of inspections and failure replacements, the number of future failures will be lower and the assessment levels can be reduced.

**Possible negative aspects of this option:**

1. All septic system owners would pay higher assessments.
2. Higher assessments may not be acceptable especially for those with limited incomes.
3. There is the potential for irresponsible use of septic systems, because the users will not have to pay directly for repairs.
4. It may not be legal to require owners to pay for replacements that may not be needed for 30-40 years because of “reasonable time expectations for benefits” requirements.

**Should Septic Systems Be Managed Countywide or Regionally?**

**Possible positive aspects of a countywide utility:**

1. County officials could have more direct control and be more responsive to the ratepayers than with a regional utility.
2. The counties and city may have trouble agreeing on the structure and operation of a regional utility.

**Possible negative aspects of a countywide utility:**

1. The costs per property could be higher, because of the better economies of scale for a regional utility.
2. The regional approach will allow for more watershed coordination across jurisdictions.

**Countywide**

	Survey %	June 2 Mtg. %
Good	15.1	28.6
Fair	36.2	57.1
Poor	17.0	14.3
Not acceptable	31.7	0.0
Total	100.0	100.0

**Regional**

	Survey %	June 2 Mtg. %
Good	15.8	33.3
Fair	29.4	50.0
Poor	18.6	16.7
Not acceptable	36.2	0.0
Total	100.0	100.0

## Should the Inspection Cycle be 3, 5, 7 or 10 Years?

### Possible positive aspects of a shorter cycle:

2. More regular pump-outs will improve the effectiveness of septic system and reduce the number of failures.
3. More failing systems will be identified and replaced sooner.

### Possible positive aspects of a longer cycle

4. If owners are responsible for inspections they will pay less often.
5. If a utility is responsible everyone will pay a lower assessments.
6. There will be fewer inspections and fewer replacements requiring assistance per year.

### 3-Year Cycle

	June 2 Mtg. %
Good	0.0
Fair	14.3
Poor	57.1
Not acceptable	28.6
Total	100.0

### 5-Year Cycle

	June 2 Mtg. %
Good	42.9
Fair	28.6
Poor	28.6
Not acceptable	0.0
Total	100.0

### 7-Year Cycle

	June 2 Mtg. %
Good	28.6
Fair	14.3
Poor	42.9
Not acceptable	0.0
Total	100.0

### 10-Year Cycle

	June 2 Mtg. %
Good	0.0
Fair	14.3
Poor	57.1
Not acceptable	28.6
Total	100.0

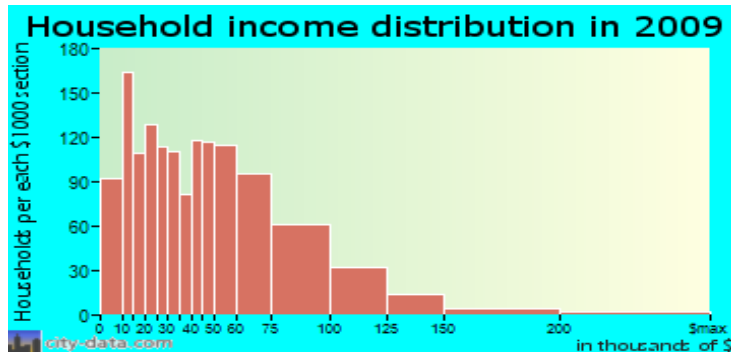
## Should There be Loans and Grants for those Needing to Replace Failing Systems?

### Poverty Rate of Wakulla County, Florida

2009 Poverty Rate: 13.1%; Source: City-Data;

2008 Poverty Rate: 12.1%; Source: Southern Rural Development Center;

**Figure 37 Household income Distribution-2009**



### Possible positive aspects of assistance:

4. Owners may not have assets to pay for replacement or it may be a hardship.
5. More failing systems will be identified and replaced sooner.
6. Every one shares the cost and benefits of fewer failing septic systems.

### Possible negative aspects of assistance

4. An upfront investment is needed to fund replacements, even if there is eventually repayment.
5. There will be some cost for setting up the loan fund, bonding, processing and collection.
6. Grants without repayment requirements can be costly to taxpayers or others.

### Assistance options (From selling bonds and/or grants, Not taxpayer funded).

Make a 5-10 year payment plan available for anyone

Have the utility pay for replacement in hardship cases  
Secure repayment with liens

Grants to low-income owners with no repayment required.

	June 2 Mtg. %
Good	71.4
Fair	28.6
Poor	14.3
Not acceptable	0.0
Total	100.0

	June 2 Mtg. %
Good	28.6
Fair	28.6
Poor	28.6
Not acceptable	0.0
Total	100.0

	June 2 Mtg. %
Good	42.9
Fair	0.0
Poor	57.1
Not acceptable	0.0
Total	100.0



## Appendix F: Draft Materials for the Infrastructure Committee Report

### Draft Materials for the Infrastructure Committee Report

#### Status of Septic Systems in Wakulla County

1. 10,000 septic systems in Wakulla County. All contribute Nitrogen, Phosphorus and other nutrients and pollutants to the water we drink from, swim in, fish from and support our ecosystems. The 300 Performance-Based Systems reduce Nitrogen levels by about 50%.
2. About 8,000 properly functioning systems prevent the discharge of fecal and other coliform bacteria. About 20% or 2000 systems are probably failing and discharging coliform, nutrients, pharmaceuticals and other pollutants into the water we drink, swim in, fish from and that supports our ecosystems. There will be more failures each year without inspections.
3. Some of the failing septic tanks were built out of loose concrete blocks with no bottoms, have had holes punched in them or have deteriorated and leak. Owners and officials often don't know tanks are leaking into the ground water without having them pumped out and visually inspecting the tanks. Older drain field pipes may be clogged or broken and/or may be below the water table at least during wet periods.
4. Fecal coliform, nutrients and other pollutants from failing systems can cause human health problems (even deaths) and environmental damage that impact the economy and quality of life in Wakulla County.
5. Inspections involve 1) pumping out the tank and a visual inspection to determine the tank construction and whether it is leaking and 2) measuring the depth of the drainfield and the depth of the seasonal high water table (SHWT); if this information is not available from previous inspection or permit records.
6. Requiring inspections probably saves owners money in the long run. Like an oil change in your car, the pumpouts help systems function better and longer. When a septic system becomes clogged and fails prematurely, replacement may cost between \$4-12,000.
7. If owners contract with licensed Septic System Contractors for permits, inspections and pumpouts it may cost about \$425.
8. If inspections are done through a utility, it is probably preferable to use a utility management services company. It can issue an RFP and contract with a number of private, licensed septic system contractors. It is estimated that the cost could be reduced to about \$300 because of volume contracts and coordination with contractors and the Department of Health.
9. Wakulla County has 12,652 households. 819 or 5.1% receive supplemental income and 439 or 2.7% receive public assistance. These households and many others may

not have adequate assets or income to pay for septic system replacement without assistance. A utility may provide for installment payments and hardship grants, without which, failing systems may not be replaced.

10. Some think that government should not require inspections and repair of failing systems. Others think that government should protect their family's health, jobs, businesses, and quality of life, including Wakulla's wonderful environment. How can these interests be balanced?

- *The economy makes it very hard for many owners to pay anything. It is also hard for commercial and residential landlords. Many have lost jobs or are threatened with foreclosure. Many have state jobs that are being lost.*
- *Should inspections be done countywide or just focus on the failures?*
- *The requirements for new and replacement septic systems to be Performance-Based Treatment Systems (PBTS) may be removed by the County Commission in the near future*
- *Perhaps we shouldn't allow building in some areas until it is determined what type of septic system or sewerage will be required?*