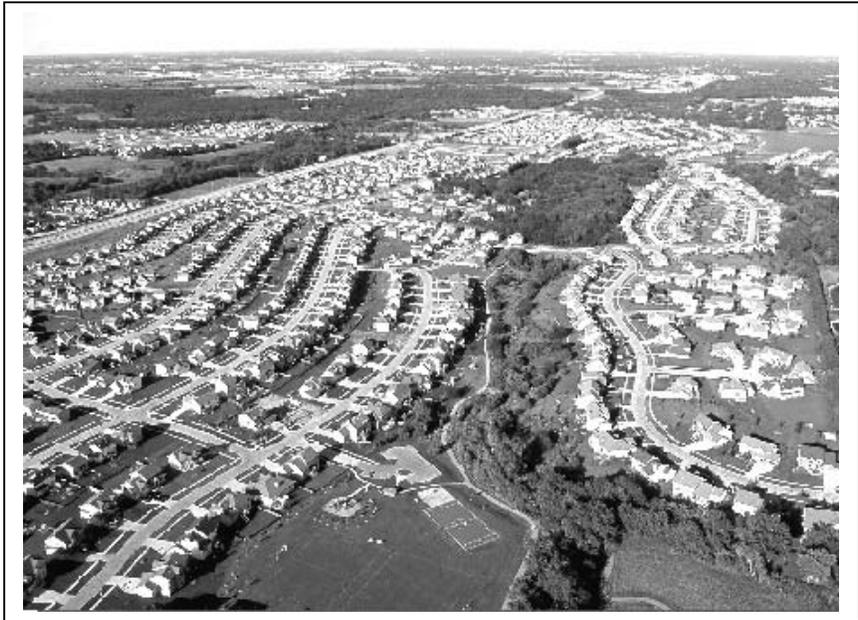




Onsite Wastewater Treatment System Management

Assessment Worksheet



Community Environmental Management

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Community Environmental Management



Community Environmental Management

Onsite Wastewater Treatment System Management

- Assessment Worksheet -

Introduction

Septic systems and other onsite wastewater treatment systems (OWTS) serve residences, commercial businesses, and institutions in areas not yet reached, or physically or economically unreachable by sewers. Untreated sewage from over-used systems, poorly sited or under-designed systems, or clusters of marginally operating systems can degrade surface waters or groundwater. Discharging wastewater from septic systems and other onsite wastewater treatment systems directly to surface water is highly discouraged in New York and is only allowed with a State Pollution Discharge Elimination System (SPDES) permit.

The great majority of residential sewage and wastewater discharged to onsite systems is discharged to a septic tank followed by a distribution box and leachfield. Treatment of wastewater depends on soil characteristics, land slope, depth of soil above the average high seasonal groundwater elevation, depth of soil above bedrock, and the amount and concentration of wastewater being discharged into the soil. The septic tank / leach field system provides the same level of treatment that a wastewater treatment plant with only primary (gravity settling) treatment facilities provides. Filtration and biological metabolism provides further treatment of residential wastewater only for the time and distance the wastewater travels through the soil surrounding the system prior to reaching groundwater or surface water. Non-soil-based treatment systems (the larger ones are also called package plants) can provide filtration, aeration and biological treatment of residential and commercial (non-industrial) wastewater where soil suitability for onsite systems is limited. These systems are "Engineered Systems" in *Appendix 75-A.10 of the Wastewater Treatment Standards - Individual Household Systems*. They require a Specific Waiver by the health unit having jurisdiction, and the last component of most designs will still be a soil absorption system of proper dimensions.

Either through ignorance of soils limitations, poor planning or just plain indifference to wastewater treatment needs, humans through construction and developmental activities, have created a number of problems for themselves and the waters of the state. The first and perhaps most obvious problem is related to the over-development of coastal shorelands and lake fronts (without sewers) resulting in bathing beach closures, shellfish bed closures, other recreational water quality degradation, drinking water contamination, and decline in property values. A second problem is the degradation of individual private or community public water supply wells resulting in abandonment of the source, or the need for treatment or additional treatment of the water supply. Finally, many of society's contaminants can be transported in groundwater, which ultimately can enter and degrade the quality of streams, rivers, lakes, wetlands and estuaries. Even properly operated and maintained septic systems and the soils surrounding them remove little of the nitrates discharged to them. This can also result in surface water degradation and drinking water contamination.

In New York State, local governments have the principal responsibility for controlling development activities through their planning and regulatory functions. This role carries with it the responsibility for ensuring that development is undertaken with public health and safety in mind, and in a manner that is compatible with the protection and enhancement of natural resources, especially water. As community development continues to increase, the number of sites with suitable soils, slopes, and sufficient area for septic systems can be expected to decrease. If sewers are not affordable, there will be greater demand for replacement of failed systems and design review for new systems. Federal and State technical standards do not fully consider all the natural resource impacts from developments that rely on septic systems. It is up to communities to take the initiative to manage the wastewater from these developments to protect themselves from decreased property values, possible public health problems, and reduced water quality. This OWTS worksheet can be employed in developing onsite wastewater management strategies for your community or watershed to protect public health, water quality and economic objectives.

Summary of Onsite Wastewater Management Practices

In all, 30 management practices have been evaluated for their effectiveness in controlling nonpoint source pollution (NPS). These practices are listed in Table 2 of the *Onsite Wastewater Treatment Systems Management Practices Catalogue for NPS Pollution Prevention and Water Quality Protection in New York State*. These management practices (MPs) can be broken down into two categories as follows:

Structural Practices

These management practices are either wastewater treatment systems or system components that usually require engineering design. Examples of structural practices include the Septic Tank and Absorption Field, Aerobic System and Soil Absorption Field, and Gravelless Absorption Systems.

Operational Practices

These practices involve changes in management, or improving the design, operation or maintenance of the system. Examples of operational practices include The Proper Use and Disposal of Household Hazardous Substances, Advocating Proper Design and Construction, Conservation Measures - High Efficiency Plumbing Devices, Inspection and Pumping, Administrative Control Mechanisms, and Operation and Maintenance of Standard Septic Tanks and Absorption Systems.

How This Worksheet Can Assist Your Community in Protecting Public Health & Natural Resources

The purpose of this worksheet is to assess the nature of onsite wastewater treatment problems in the community and to evaluate the community's ability to remediate existing septic system problems and to prevent their reoccurrence. This worksheet can be used to help your community to:

- (1) more fully understand onsite wastewater treatment management concepts
- (2) assess where your community stands relative to favoring onsite wastewater treatment systems or a municipal wastewater treatment plant with collection sewers
- (3) identify wastewater treatment system management needs
- (4) begin to map out an OWTS management strategy for the future

For help in filling out this worksheet and technical assistance on onsite wastewater management, it is recommended that the County Health Department or the NYS Department of Health District Office be contacted. For soils information regarding septic system suitability, contact your County Soil & Water Conservation District or USDA-NRCS.

Technical Resources

- LEAPE “*Locally-led Education & Action for Protecting the Environment*,” a program of Cornell Cooperative Extension and Sea Grant, Ithaca, 2002. Educational package for local governments interested in protecting water resources in their communities.
- U. S. Environmental Protection Agency (EPA). “*Onsite Wastewater Treatment Systems Manual*” Spring 2002 (EPA 625/R-00/008) Available on the EPA Website:
<http://www.epa.gov/ORD/NRMRL/Pubs/625R00008/625R00008.pdf>
- *Onsite Wastewater Treatment Systems Management Practices Catalogue for Nonpoint Source Pollution Prevention & Water Quality Protection in NYS*. Updated annually. NYSDEC, Division of Water, 625 N. Broadway, Albany NY 12233-3508. Phone (518) 402-8248.
- 10NYCRR, Appendix 75-A: “*Wastewater Treatment Standards – Individual Household Systems*” and *NYS DOH Design Handbook*. Bureau of Community Sanitation and Food Protection, NYS Department of Health, 547 River Street, Room 515, Troy, NY 12180. Phone (518) 402-7600
- United States Environmental Protection Agency (EPA). “*Guidelines for Management of Onsite/Decentralized Wastewater Systems*” (2003). <http://www.epa.gov/owm/decent/index.htm>
- United States Environmental Protection Agency (EPA). “*Response to Congress on Use of Decentralized Wastewater Treatment Systems*” 1997.
- “*Watershed Behavior*” from the Center for Watershed Protection website: <http://www.cwp.org>
- Clark, Gregory Henton. “*The effect of bacterial additives on septic tank performance*” 1998. North Carolina State University --Thesis --Soil Science. 152 leaves: ill. ; 29 cm. Note: Thesis (M.S.) -- Includes bibliographical references (leaves 60-61). Includes vita. <http://catalog.lib.ncsu.edu>, then search by author. DH Hill Library Call Number: LD3921 Soil Sci. C5835.
- Governing Magazine/August 2001. Feature - *Septic Tanks Focus on Wastewater: The Hazard of Ooze*. By Tom Arrandale. Copyright 2001, Congressional Quarterly, Inc. Abstract: *Seepage From Outmoded Septic Tanks is a Major Threat to Groundwater*. And it's not just a rural phenomenon. Go to <http://www.governing.com>, then “technology” and search using “septic tanks” and “ooze.”
- Balmer, Candace. Northeast Rural Community Assistance Program. “*Wastewater Treatment Alternatives for Small Communities*”
- Cornell Local Government Program. “*The Guide to the Public Management of Private Septic Systems*” http://www.cardi.cornell.edu/clgp/septics_index.cfm
- New York State/Department of Environmental Conservation, Division of Water, Bureau of Water Permits. “*Design Standards For Wastewater Treatment Works Intermediate-sized Sewerage Facilities*”, 1988: <http://www.dec.state.ny.us/website/dow/standards.pdf>
- NYS Department of Environmental Conservation, Division of Water, Bureau of Water Permits. TOGS:1.2.4 *Individual Sewage Treatment System Discharges to Surface Waters*. 1990 http://www.dec.state.ny.us/website/dow/togs/tog_cont.htm
- NYS Department of Environmental Conservation, Division of Water, Bureau of Water Permits. General Permit (GP-95-01) *State Pollutant Discharge Elimination System (SPDES) Permit* <http://www.dec.state.ny.us/website/dcs/permits/olpermits/interface.html>



Community Environmental Management

OWTS Worksheet

Part 1 - Community Risk Assessment Factors

The following is a list of activities communities are undertaking to improve their onsite wastewater treatment system (OWTS) management techniques and minimize pollution and other negative impacts resulting from improper OWTS management, such as beach closures. The more factors that apply to your community, the less likely you are to have adverse water quality impacts.

Please check all that pertain to your community:

- A maintenance, inspection, and enforcement program has been implemented for OWTS.
- Ground and surface water are protected from contamination by OWTS through land use planning, regulations and monitoring
- Areas where failing OWTS are contributing to water quality impairments have been identified
- Sensitive areas have been identified where septic systems are inappropriate
- Educational programs for home and business owners about proper use and maintenance of on-site systems have been provided
- Incentive programs are provided to help home and business owners maintain their systems properly
- Adequate facilities are available to treat and dispose of waste pumped out of on-site systems
- A strategy has been developed and implemented for bringing “legacy systems” into compliance.*
- A method for selecting appropriate alternative systems on sites that cannot support traditional septic systems has been developed and implemented

* Legacy Systems refer to systems built prior to or without compliance with current design standards



Part 2- Community Problem & Needs Assessment

This assessment will help to determine how extensive OWTS problems are in your community, and your community's capacity for addressing OWTS issues.

Problems Associated with Increased Stormwater Runoff	Causes	Impacts	Remedial & Preventative Strategies
<p>Septic effluent is surfacing in yards and roadside ditches, or backing up into homes.</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Problem frequency and duration Explain: _____ _____</p> <p>Locations List: _____ _____</p>	<ol style="list-style-type: none"> 1. Soil not suitable to treat the volume of effluent introduced. 2. Improperly installed systems (ex: soil compaction, improper grade or slope) 3. Failure to maintain OWTS results in failed systems (ex: leach field clogged) 4. Failure to upgrade septic system with an increase in inhabitants 5. Failure of a component on the existing OWTS 	<p>Check all that apply:</p> <p><input type="checkbox"/> Offensive odor</p> <p><input type="checkbox"/> Effluent contaminated with nutrients, pathogens and/or toxics can be carried into water bodies</p> <p><input type="checkbox"/> Public health concerns</p>	<p>Strategy:</p> <p>Ensure proper siting, design, installation and maintenance of OWTSs to protect water quality and public health</p>
<p>Algae blooms or weed growth are a nuisance in the following:</p> <p><input type="checkbox"/> Pond</p> <p><input type="checkbox"/> Lake</p> <p><input type="checkbox"/> Reservoir</p> <p><input type="checkbox"/> Stream or River</p> <p><input type="checkbox"/> Estuary or Coastal Embayment</p> <p>Problem frequency and duration Explain: _____ _____</p> <p>Locations List: _____ _____</p>	<ol style="list-style-type: none"> 1. Soil not suitable to treat the volume of effluent introduced 2. Improperly installed systems (ex: soil shearing and compaction) 3. Failure to maintain OWTS results in failed systems (ex: leach field clogged) 4. Failure to upgrade septic system with an increase in inhabitants 5. Failure of a component on the existing OWTS 6. Direct discharges from OWTS into surface water 7. Seasonal outhouses are placed too close to waterbodies or in flood plain 	<p><input type="checkbox"/> Loss of property values</p> <p><input type="checkbox"/> Loss of recreation and tourism</p> <p><input type="checkbox"/> Loss of fisheries habitat</p> <p><input type="checkbox"/> Public health concerns</p>	<p>Additional strategies for dealing with these two issues are continued on the following pages</p>

<p align="center">Management Options</p> <p align="center">Indicate with a "√" if community has implemented or use a "?" if community is interested</p>	<p align="center">Barriers to Implementation</p>	<p align="center">Community Assistance Needs¹</p>
<p>Options:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Require OWTS inspections upon property transfer. <input type="checkbox"/> Require OWTS upgrades whenever an increase in the number of inhabitants or occupants occurs. <input type="checkbox"/> Require developers to perform a site suitability analysis or refer to the community's existing soil suitability survey prior to design. <input type="checkbox"/> Develop upgrading requirements for legacy systems. <input type="checkbox"/> Enforce regulations that keep outhouses at least 100 feet away from waterbodies. <input type="checkbox"/> Review site plans during the planning process to ensure that OWTS are properly sited and designed. <input type="checkbox"/> Perform site inspections during and post-construction to ensure that OWTS are properly constructed or installed <input type="checkbox"/> Perform periodic inspections during the life of the system to ensure that OWTS receive proper maintenance, and that they are in compliance with applicable health codes and environmental regulations <input type="checkbox"/> Perform periodic inspections during the life of the system to ensure OWTS are functioning properly <input type="checkbox"/> Develop and implement a compliance enforcement strategy to ensure proper construction, installation and maintenance 		

¹ List type of assistance needed: information/education; assessment/planning; BMP design/implementation; regulatory options; project funding; etc.

Problems Associated with Increased Stormwater Runoff	Causes	Impacts	Remedial & Preventative Strategies
			<p>Strategy: Ensure that OWTS siting and design considerations are factored into development plans for the community</p> <p>Additional strategy continued on next page</p>

<p align="center">Management Options</p> <p align="center">Indicate with a "√" if community has implemented or use a "?" if community is interested</p>	<p align="center">Barriers to Implementation</p>	<p align="center">Community Assistance Needs²</p>
<p>Options:</p> <ul style="list-style-type: none"> ___ Map soil suitability and site limitations for planners to reference during site plan review (e.g. preventing their installation in hydric soils or wetlands). ___ Require developers to perform a site suitability analysis or refer to the community's existing soil suitability survey prior to design. ___ Review plans to ensure soils and selected OWTS are compatible during the planning process ___ Address OWTS siting requirements as part of the Master Plan ___ Perform community buildout analysis to ensure that current zoning provides for adequate lot size and soil suitability to handle septage loads based on maximum buildout. ___ Identify alternative types of OWTS when there are specific site constraints and soils limitations. ___ Identify sensitive areas where septic systems are inappropriate and use concepts such as overlay zones to protect sensitive or inappropriate areas (e.g. areas with steep slopes or shallow/tight soils) ___ Develop regulations requiring conservation planning and design to achieve clustering of development so that the remaining undeveloped land is available for the economically efficient and environmentally sound treatment of sewage through cluster or shared systems. ___ Ensure that site plan review and subdivision regulations specify siting requirements for OWTS ___ Work with the County Health Department to develop and implement a system for approving alternative systems on sites that cannot support traditional septic systems ___ Investigate opportunities for establishing sewer or management districts to fund the maintenance, rehabilitation or installation of OWTS. ___ Work with other communities in the watershed to develop an inter-municipal waste management plan. ___ Provide information about training in OWTS management to engineers, contractors and community officials responsible for making decisions about OWTS siting, installation and maintenance. ___ Identify and stop any direct discharges of septage to surface water or land surrounding surface water 		

² List type of assistance needed: information/education; assessment/planning; BMP design/implementation; regulatory options; project funding; etc.

Problems Associated with Increased Stormwater Runoff	Causes	Impacts	Remedial & Preventative Strategies
			<p>Strategy: Enhance your community's capacity for OWTS management.</p>

<p style="text-align: center;">Management Options</p> <p style="text-align: center;">Indicate with a "√" if community has implemented or use a "?" if community is interested</p>	<p style="text-align: center;">Barriers to Implementation</p>	<p style="text-align: center;">Community Assistance Needs³</p>
<p>Options:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Implement a community-wide water conservation program to reduce the potential for overloading systems. <input type="checkbox"/> Develop and implement an education and outreach program that informs homeowners, businesses and municipal building managers about what they can do to keep their OWTS problem-free (e.g. separation of grey water, eliminating use of septic system maintenance chemicals, fixing leaks, pumpout scheduling) <input type="checkbox"/> Develop incentive programs to encourage homeowners and business owners to properly maintain their onsite systems (ex: vouchers and discounts for pumpouts). <input type="checkbox"/> Provide a sample schedule for regular pumpouts <input type="checkbox"/> Suggest options for treatment and future prevention when systems back up <input type="checkbox"/> Provide information about training in OWTS management to engineers, contractors and community officials responsible for making decisions about OWTS siting, installation and maintenance. <input type="checkbox"/> Certify contractors responsible for performing work with OWTS to ensure proper installation and maintenance and update it regularly. <input type="checkbox"/> Investigate opportunities for establishing sewer or management districts to fund the maintenance, rehabilitation or installation of OWTS where problems such as these occur. <input type="checkbox"/> Work with other communities in the watershed to develop an inter-municipal waste management plan. <input type="checkbox"/> Ensure that the code enforcement officer or other local official who is responsible for approving the selection, siting and design of an OWTS has received adequate training to perform this task. <input type="checkbox"/> Encourage contractors to obtain training in OWTS design, installation and maintenance, as well as stay informed about current advances in OWTS technology <input type="checkbox"/> Certify contractors responsible for performing work with OWTS to ensure proper installation and maintenance and update it regularly. <input type="checkbox"/> Encourage inter-municipal cooperation in managing OWTS (e.g. sharing of equipment, sharing of enforcement officers, formation of county or inter-municipal districts for watershed-wide management of wastewater) <input type="checkbox"/> Develop and implement a plan for volunteer monitoring of surface water quality and prevent contamination by OWTS of beaches and other recreational areas <input type="checkbox"/> Identify impacted waterbodies where OWTS are suspected sources of NPS contamination and conduct surveillance monitoring to verify sources 		

³ List type of assistance needed: information/education; assessment/planning; BMP design/implementation; regulatory options; project funding; etc.

Problems Associated with Increased Stormwater Runoff	Causes	Impacts	Remedial & Preventative Strategies
<p>Septage transporters have insufficient access to permitted/approved waste treatment and disposal facilities</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<ol style="list-style-type: none"> 1. Lack of capacity at waste treatment and disposal facilities 2. Lack of access to waste treatment and disposal facilities 	<p><input type="checkbox"/> Lack of adequate wastewater treatment and disposal affects commercial development and property values</p> <p><input type="checkbox"/> Transporters of waste are forced to travel great distances to facilities, increasing the cost of waste removal (pumpouts)</p> <p><input type="checkbox"/> Frustrated disposal companies may resort to illegal dumping of septage</p>	<p>Strategy:</p> <p>Enhance your community's capacity for OWTS management.</p>

<p align="center">Management Options</p> <p align="center">Indicate with a "√" if community has implemented or use a "?" if community is interested</p>	<p align="center">Barriers to Implementation</p>	<p align="center">Community Assistance Needs⁴</p>
<p>Options:</p> <ul style="list-style-type: none"> ___ Make homeowners and developers aware of any current or projected capacity issue at waste treatment and disposal facilities, and open a dialogue regarding options ___ Identify and stop direct discharge of waste to land or water ___ Maximize ease of access to waste treatment and disposal facilities by working with their operators to discuss unloading schedules and hours of operation. ___ Determine when existing facilities will run out of capacity, and develop a plan to construct new facilities or explore other options (e.g. joining with other municipalities to pool resources and build a facility together). 		

⁴ List type of assistance needed: information/education; assessment/planning; BMP design/implementation; regulatory options; project funding; etc.

Problems Associated with Increased Stormwater Runoff	Causes	Impacts	Remedial & Preventative Strategies
<p>Municipality Concerns Check all that apply:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Preventing groundwater supplies from being contaminated with pollutants associated with OWTS <input type="checkbox"/> Preventing surface water from being contaminated with pollutants associated with OWTS 	<ol style="list-style-type: none"> 1. Improperly designed, installed, and/or maintained OWTS 2. High density of development over aquifer recharge areas 3. Use of septic system maintenance chemicals 	<p>Check all that apply:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Bacterial contamination of drinking water <input type="checkbox"/> Nitrates in drinking water <input type="checkbox"/> Toxics in drinking water from septic system maintenance chemicals <input type="checkbox"/> There have been beach closures due to bacterial contamination. <input type="checkbox"/> Fishing and/or shellfishing beds have been closed due to bacterial contamination 	<p>Strategy:</p> <p>Enhance your community's capacity for OWTS management.</p>

<p align="center">Management Options</p> <p align="center">Indicate with a "✓" if community has implemented or use a "?" if community is interested</p>	<p align="center">Barriers to Implementation</p>	<p align="center">Community Assistance Needs⁵</p>
<p>Options:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Require special protections against septic effluent entering sole source aquifers. <input type="checkbox"/> Develop monitoring protocol and management plans for public water supplies. <input type="checkbox"/> Develop monitoring protocol and management plans for private water supplies, including those distributed by private water purveyors. <input type="checkbox"/> Help homeowners monitor their water supplies in areas where septage management is an issue <input type="checkbox"/> Regular testing of public wells for contamination <input type="checkbox"/> Increase setbacks for OWTS from water supply wells <input type="checkbox"/> Conduct a buildout analysis to determine potential housing densities in relation to protecting ground water drinking supplies <input type="checkbox"/> Implement a community-wide water conservation program to reduce the potential for overloading systems. <input type="checkbox"/> Identify areas where septic systems are inappropriate and use concepts such as overlay zones to protect environmentally sensitive or inappropriate areas (e.g. areas with steep slopes or shallow/tight soils) <input type="checkbox"/> Identify and stop direct discharge of waste to land or water <input type="checkbox"/> Encourage inter-municipal cooperation in managing OWTS (e.g. sharing of equipment, sharing of enforcement officers, formation of county or inter-municipal districts for watershed-wide management of wastewater) 		

⁵ List type of assistance needed: information/education; assessment/planning; BMP design/implementation; regulatory options; project funding; etc.

**Community Environmental Management
Tier III
Strategies for Onsite Wastewater Treatment Systems (OWTS)**

- Strategy: Ensure that OWTS siting and design considerations are factored into development plans for the community.**
- Map soil suitability and site limitations for onsite wastewater treatment.
 - Identify alternative types of OWTS when there are specific site constraints and soils limitations.
 - Promote and promulgate regulations requiring conservation planning and design to achieve clustering of development so that the remaining undeveloped land is available for the economically efficient and environmentally sound treatment of sewage through cluster or shared systems.
 - OWTS siting requirements considered as part of the Master Plan
 - Ensure that site plan review and subdivision regulations specify siting requirements for OWTS
- Strategy: Enhance your community's capacity for OWTS management.**
- Ensure that the code enforcement officer or other local official who is responsible for approving the selection, siting and design of an OWTS has received adequate training to perform this task.
 - Encourage contractors to obtain training in OWTS design, installation and maintenance, as well as stay informed about current advances in OWTS technology
 - Investigate opportunities for establishing sewer or management districts to fund the maintenance, rehabilitation or installation of OWTS.
 - Encourage inter-municipal cooperation in managing OWTS (e.g. sharing of equipment, sharing of enforcement officers, formation of county or inter-municipal districts for watershed-wide management of wastewater)
 - Develop and implement an education and outreach program that informs homeowners, businesses and municipal building managers about what they can do to keep their OWTS problem-free (e.g. separation of grey water, eliminating use of septic system maintenance chemicals, fixing leaks, pumpout scheduling)
 - Provide incentives to encourage home and business owners to routinely maintain their OWTS
 - Develop and implement a plan to monitor surface and ground water quality and prevent contamination by OWTS
 - Implement a routine monitoring program to protect public health at beaches from failing OWTS
 - Adopt a management strategy for proper treatment and disposal of septage.
- Strategy: Ensure proper siting, design, installation and maintenance of OWTSs to protect water quality and public health.**
- Ensure that OWTS are properly sited and designed.
 - Ensure that OWTS are properly constructed or installed
 - Ensure that OWTS receive proper maintenance.
 - Periodically inspect OWTS to ensure they are functioning properly.
 - Ensure OWTS are in compliance with applicable health codes and environmental regulations
 - Develop upgrading requirements for legacy systems.

**If you have any questions or comments on this
draft worksheet, please contact:**

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