# Source Water Protection Plan
# for the Touisset Point Water Trust System

Developed by: Touisset Point Source Water Steering Committee

Prepared by: Atlantic States Rural Water and Wastewater Association

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# for the

# Touisset Point Water Trust System

# PWS # RI1615626

August 2010

Developed by:

Touisset Point Source Water Steering Committee


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# Introduction

The purpose of the Touisset Point Water Trust (TPWT) Source Water Protection Plan is to reduce or eliminate potential and existing risks to the quality of water being supplied by the TPWT wells. The management plan included here outlines specific actions available to the community to protect the wellhead protection area (WHPA).

The plan was prepared by the Atlantic States Rural Water and Wastewater Association, in cooperation with the National Rural Water Association. Program funding was provided by the Source Water Protection Program of the Environmental Protection Agency (EPA). The purpose of the program is to provide technical assistance to rural and small communities for the development and implementation of Source Water Protection Plans.

Source Water Protection Plans written as part of this program build on the Source Water Assessment Program of the Rhode Island Department of Health (RI HEALTH), which was completed approximately ten years ago. This program determined the susceptibility of the public water systems in Rhode Island to potential contaminant sources.

In the case of TPWT, *source water* refers to the groundwater in and around its two wells. Groundwater can be threatened in a variety of manners, as shown in Figure 1. Potential contaminants include nitrates, pathogens, fuels, solvents, herbicides, pesticides, and metals.

Proactively addressing the issue of source water protection helps to protect public health, decrease treatment costs, reduce the chances of water quality violations, and ensure the continued viability of the aquifer for drinking water purposes.

*The TPWT system was chosen for participation in this program not only because of identified risks, but also because of the willingness of the TPWT Board Members and of Touisset Point residents to put time and effort towards source water protection.*

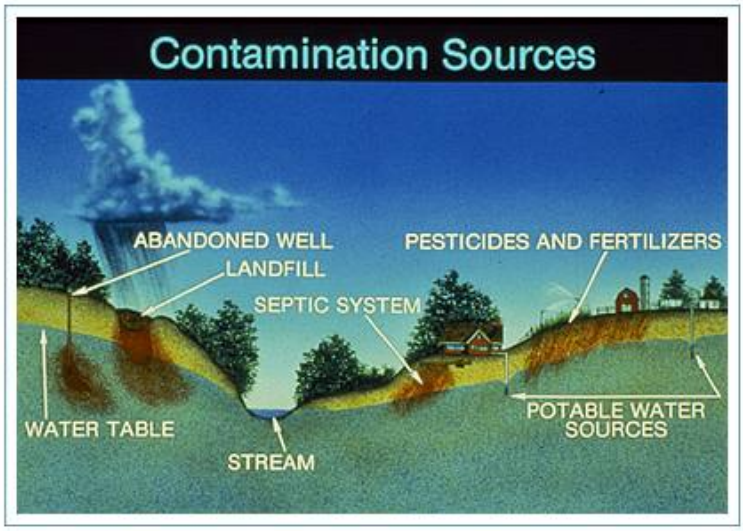



**Figure 1. Examples of potential contamination sources.**
**Source:** [http://www.epa.gov/ne/eco/drinkwater/pc_sourcewater_assessment.html](http://www.epa.gov/ne/eco/drinkwater/pc_sourcewater_assessment.html)

# Local Source Water Protection Steering Committee

The following people comprise the TPWT Source Water Protection Steering Committee. They have helped to gather and review the information contained in this plan for the community. This committee, which may change to include additional or different members, will meet once a year to review and update the plan and to assess its progress.

**Steering Committee**

Ed McAloon – TPWT Board Member
Peter Gresch – TPWT Board Member
Frederick Massie – Touisset Point Resident and Town of Warren Planning Board Member
Dede Berg – Touisset Point Resident
Linda Maaia – Touisset Point Resident
Raymond Renaud – Touisset Point Resident
Caroline Wells – Town of Warren – Town Planner
Elizabeth Myre – Atlantic States Rural Water and Wastewater Association

# Touisset Point, Warren, Rhode Island

## *Background*

The Touisset Point neighborhood started to be developed in the early 1900's as summer vacation homes and cottages. Since then, many of the homes have been renovated, enlarged, and converted to year-round housing.

Approximately 75 out of the 100 homes in the neighborhood are connected to the TPWT public water system. The remaining homes have private wells. Because the capacity of the community wells is unknown, there is currently a moratorium on accepting new connections to the TWPT. New connections are only approved in emergency situations.

## *Source Water Inventory and WHPA*

The TPWT system is supplied by two wells, both of which are located on the edge of the recreational field near the Touisset Point Community Club. The Coggeshall Well was drilled in 1945 by Doughtwright Well Drillers from Somerset Massachusetts. It is 40 ft deep, and does not have the 400 ft protective radius that would be required if it were drilled today. According to the Pesticide Waiver Review, a document prepared by RI HEALTH, the nearest underground disposal of sewage is a cesspool located 125 ft from the well.

The George St. Well was drilled in 1952, also by Doughtwright Well Drillers from Somerset Massachusetts. It is 46 ft deep, and it too does not have the 400 ft protective radius that would be required if it were drilled today. According to the Pesticide Waiver Review, the nearest underground disposal of sewage is a cesspool, and is located 130 ft from the well.

Wellhead protection areas (WHPAs) are the land areas from which groundwater will flow to the well under pumping conditions. The Rhode Island Department of Environmental Management (RI DEM) defines a WHPA as "the critical portion of a three-dimensional zone surrounding a public well or wellfield through which water will move toward and reach such well or wellfield." These land areas are the most important ones for source water protection. The WHPA for the TPWT wells has been delineated by RI DEM and is shown in Figure 2. The full Fall River Quadrangle of the Groundwater Classification and Wellhead Protection Area map is attached as Appendix A.

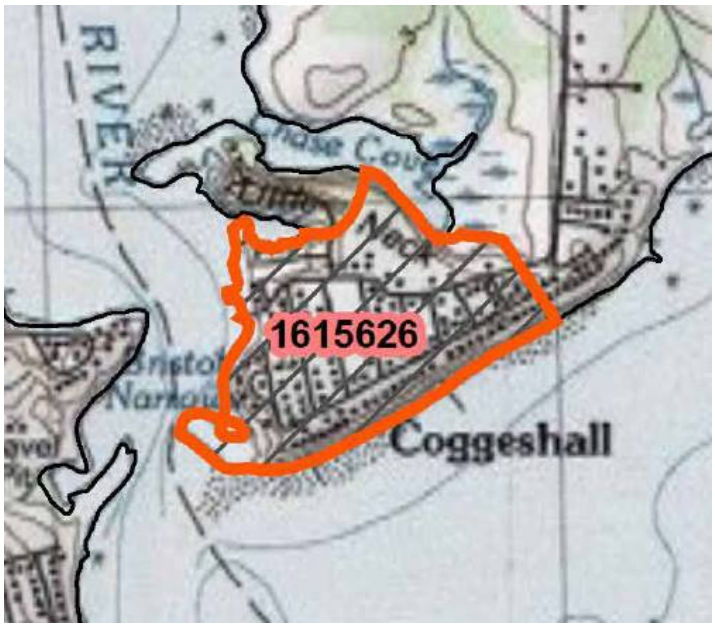



**Figure 2. Wellhead Protection Area for the Touisset Point Water Trust.**

## *Treatment System, Operation, and Maintenance*

A Lowry aeration system was installed approximately 13 years ago to reduce corrosion. Aside from this, the water has not required further treatment processes.

Three years ago, Northeast Water Solutions, Inc. (NWSI) was hired by TPWT to handle the operation and maintenance of the system. NWSI is now the operator of record with RI HEALTH. They provide monthly onsite inspection and maintenance of the system, interface with RI HEALTH for required water quality testing, respond to automatic dial out alerts for low water conditions, maintain a record of automated sensor output of well levels and total dissolved solids (TDS) readings, and advise on potential system upgrades.

## *TPWT Board*

The TPWT Board consists of five members. Their activities include:

- Scheduling board meetings as required to evaluate system maintenance and upgrades.
- Setting and collecting yearly maintenance fees from system subscribers.
- Hiring the system operator and contractors as required for maintenance and emergencies.

- Issuing recommendations to subscribers for conservation measures.
- Reviewing requests for new connections to the system.
- Maintaining memberships with professional organizations (*i.e.* NWSI, ASRWWA).
- Scheduling an annual subscriber meeting.
- Providing information to users through mailings, email, and the TPWT website.

## *A Note on Private Wells*

This Source Water Protection Plan has been written with a focus on the public water system located in Touisset Point. It should be noted, however, that all of the risks to groundwater quality affecting the public system also affect the private wells in the neighborhood. Residents with private wells have equally strong reasons to educate themselves on water quality issues and to work to reduce contamination risks.

## *Existing Source Water Protection Measures and Advantages*

Several factors work in favor of preserving source water quality in Touisset Point.

- Due to their relatively isolated location, Touisset Point residents are able to influence more of the factors affecting source water quality than if they were surrounded by industrial, commercial, and/or agricultural activities.

- The recreational field by the wells is no longer being treated by any chemical lawn services, and residents are also encouraged to discontinue topical use of lawn fertilizers. This has the potential to reduce the nutrients and chemicals reaching the groundwater which is drawn into the wells.

- According to the Pesticide Waiver Review:

  *"There were no CERCLIS sites, dumps, landfills, State-funded cleanup projects, hazardous waste dumping sites, registered USTs, UICs, RIPDES permittees, hazardous materials spills, commercial development, industry, industrial surface impoundments, agriculture or salt storage piles found within the WHPA."*

- The TPWT has an extremely dedicated volunteer board. In addition to the activities mentioned above, it monitors data from the water system daily in order to quickly identify leaks and other problems in the system.

- A website was recently created for the TPWT to make news relating to the system available and to provide educational materials.

# RI HEALTH Source Water Assessment

Approximately ten years ago, RI HEALTH completed a state-wide survey of public drinking water supplies under the Source Water Assessment Program. This program was mandated with the 1996 reauthorization of the Safe Drinking Water Act. The purpose of the program was to evaluate the

susceptibility to contamination of each public drinking water source in Rhode Island and communicate the results to the public.

TWPT was rated as a system with "high risk" of potential contamination. As the Source Water Assessment pointed out, *"A ranking of HIGH does NOT mean that the water is unsafe to drink. It DOES mean that we must be especially aggressive in protecting the water supply."* The complete Source Water Assessment for TPWT is included as Appendix B.

Pollution risks listed in the Source Water Assessment are:

- *"High-intensity land uses, including recreational and residential, are densely clustered near the wells.*
- *Several roads are located near the wells, increasing the risk of hazardous material spills and road salt contamination.*
- *Heating oil is stored in most residences, posing the risk of groundwater contamination."*

The Source Water Assessment also indicated:

- *"Nitrate levels in groundwater are higher than half the US EPA standard for nitrate. This indicates significant contribution from human activity. A program to reduce nitrate may be helpful.*
- *No violations of the standards for other regulated contaminants have been identified. However, there have been detections below levels considered acceptable by US EPA. This indicates the need for continued monitoring."* (To rephrase this, although the detected levels of certain contaminants are considered safe, the fact that they are present at all means that it is important to continue monitoring.)

The Pesticide Waiver Review expands on the concerns stated in the Source Water Assessment, mentioning the soils in the area as they relate to risk of contamination:

> *"The wells are shallow and the neighborhood is situated on stratified drift, which typically has a relatively high percolation rate and can further increase the possibility of contamination from wastewater disposal or hazardous spills."*

# Confirmed Contaminant Detects of Concern in Source Water

## *Nitrates*

After a multi-phase, two-year process, Fuss & O'Neill completed the Onsite Wastewater Management Plan for the Town of Warren in 2009. The following excerpts from the Onsite Wastewater Management Plan relate to nitrates:

*"[N]itrates [in the wells are] in the general range of 5 to 7 mg/l. Elevated nitrates could mean that discharge from adjacent ISDSs[1] infiltrates the wellhead area. Since most ISDSs in the area lack nitrogen treatment capability and since nitrogen tends to be persistent in groundwater this could result in elevation of nitrate levels."*

*"Although Rhode Island is not one of them, a number of states have established preventative action limits for nitrates to address potential for septic systems to create nitrate contamination in groundwater. Wisconsin has established a level of 2.0 mg/L for nitrate. Levels of nitrate greater than 10 mg/L are known to cause Blue Baby Syndrome."*

*"Nitrate is known to cause water quality degradation in saltwater systems. A number of recent studies (e.g., Buttermilk Bay on Cape Cod) have established ambient nitrate limits of less than 0.5 mg/L to protect estuarine ecology."*

Based on water quality data from 2001 to 2006, the Onsite Wastewater Management Plan also states:

*"Generally, the levels of nitrate in the TWPT well water could be characterized as fairly strong bellwethers of an impending condition of impairment to groundwater and estuarine resources, which has improper treatment of wastewater as a likely root cause."*

As part of the Source Water Protection Plan preparation, water quality results for the past twenty years were obtained from RI HEALTH in order to detect trends that might not be apparent from the five years of data presented in the Onsite Wastewater Management Plan. Indeed, as shown in Figure 3, an interesting picture emerges when more years of data are available. The Maximum Contaminant Level (MCL) for nitrates is 10 mg/L, and is indicated by the solid horizontal line in the graph.

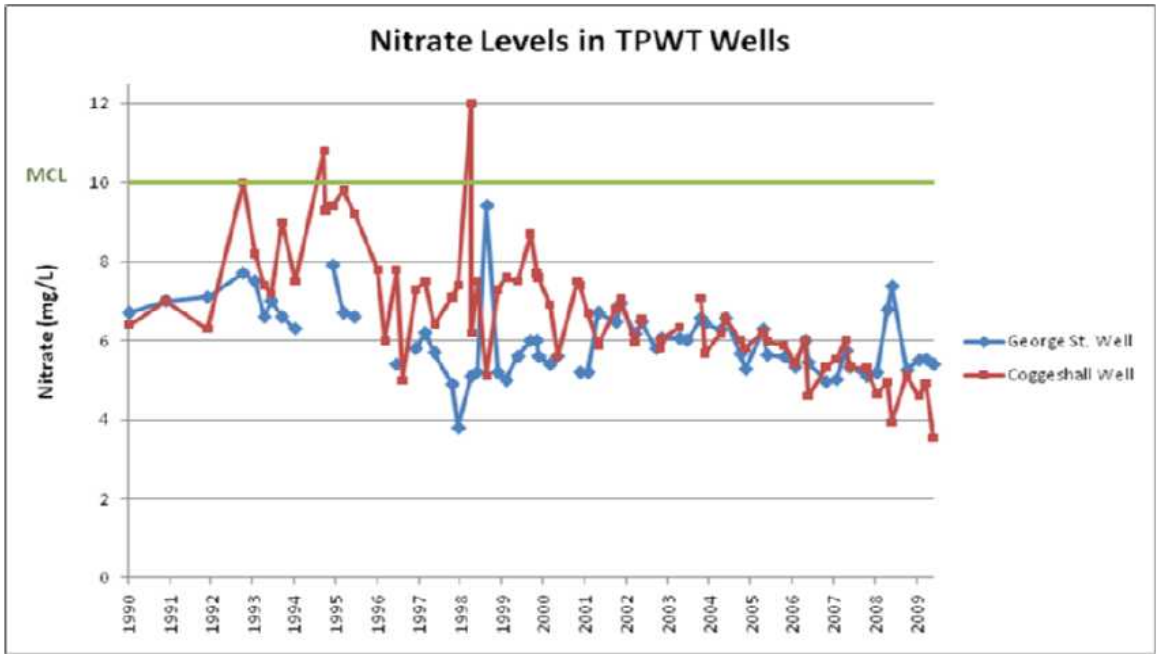



**Figure 3. Nitrate levels in TPWT wells since 1990.**

[1] Individual Sewage Disposal Systems, now called Onsite Wastewater Treatment Systems.

Nitrate levels were very erratic in both wells during the 1990's, but around 2001, they began to level out and started a slight downward trend. While the graph shows that nitrate levels in the George Street well are no longer dropping, there is still a downward trend in the Coggeshall Well.

With additional data dating back to 1990, it is no longer completely accurate to consider the nitrate levels as bellwethers of an impending impairment. In fact, there is cause for cautious optimism, coupled with further investigation into what might have occurred in 2001, and additional actions aimed at further reducing nitrate levels.

The cause of the beginning of the downward trend in 2001 is not immediately clear. Fertilizer stopped being applied to the recreational field in 2005. Increased rainfall can also effectively dilute the water in the aquifer, causing nitrate levels to fall. (A graph of rainfall amounts in Providence, RI can be found in the following section on sodium.)

The data was also analyzed based on season of the year, but there is no noticeable difference in nitrate levels between seasons.

## *Sodium*

The EPA has not set an MCL for sodium. As a general guideline[2], levels above 20 mg/L are considered to be above background levels in the environment. If levels reach 20 mg/L, residents on sodium-restricted diets should be made aware of the sodium levels in the wells, and should consider speaking with their doctor about whether the amount of sodium ingested in their diet needs to be further reduced. At sodium levels above 100 mg/L, actions (such as creating a reduced salt application zone or educating residents on the importance of conservation) should be taken to reduce these levels.

Figure 4 shows sodium levels in the wells for the past twenty years. The majority of the samples were taken in either March or April, so comparisons could not be made for summer vs. winter levels. Results are consistently above 20 mg/L, and have often risen above 100 mg/L.

[2] This paragraph is based on a conversation with Richard Amirault, RI HEALTH Department of Drinking Water Quality, 6/12/2010.

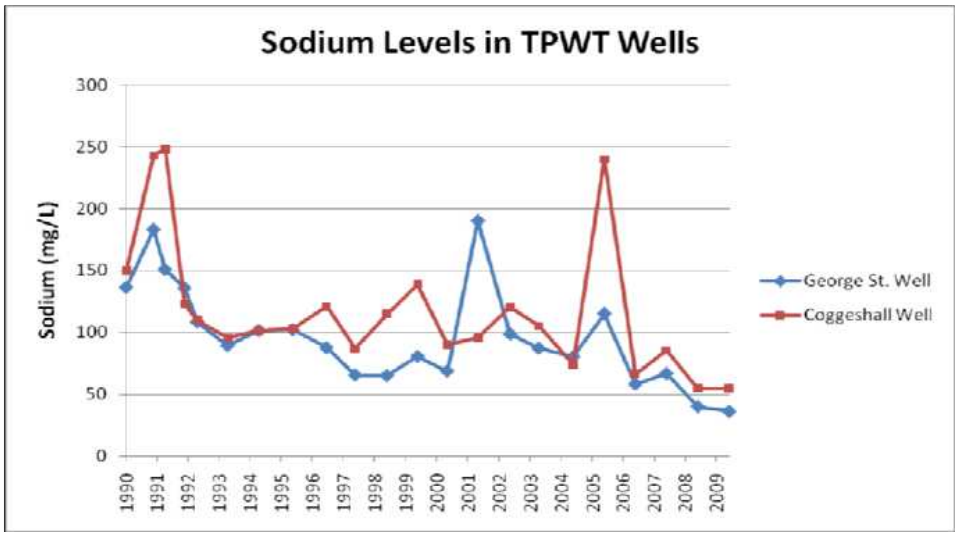



**Figure 4. Sodium levels in TPWT wells since 1990.**

Recently-installed monitoring equipment has shown that conductivity in the wells increases as water levels decrease. Conductivity is an indirect measure of total dissolved solids (TDS), which include ions such as sodium. The instrumentation has not been installed long enough to monitor a dry summer.

It could be hypothesized that sodium levels would increase in the wells as precipitation decreases, but Figure 5, from a weather monitoring station in Providence, does not seem to confirm this.

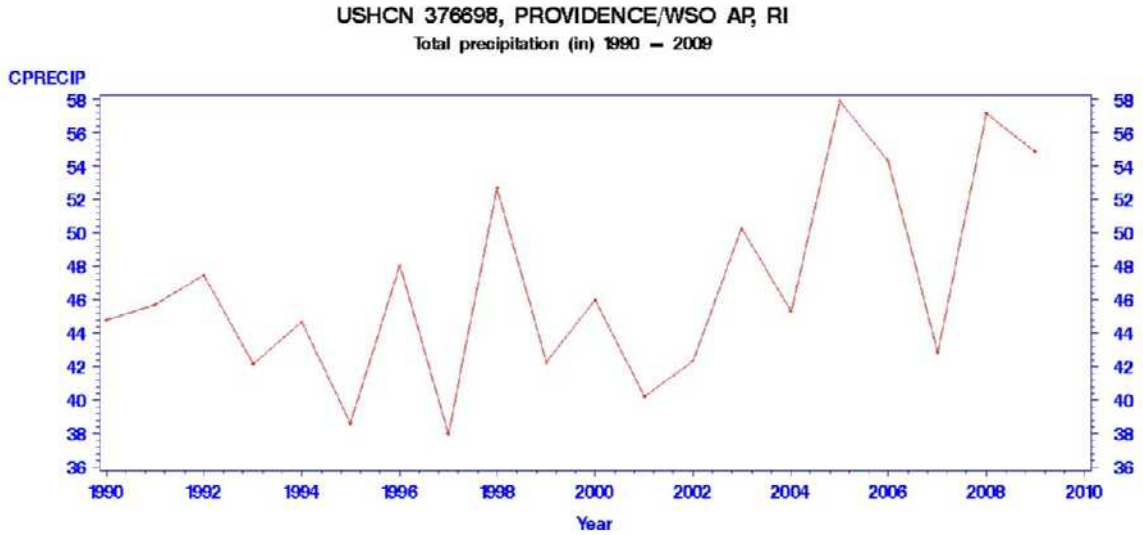



**Figure 5. Precipitation in Providence, RI since 1990.**
**Source: MJ Menne, CN Williams Jr., RS Vose, NOAA, National Climatic Data Center, Asheville, NC. United States Historical Climatology Network, http://cdiac.ornl.gov/epubs/ndp/ushcn/access.html**

## *Bacteria*

In 2005, the TPWT system received notice that it had a non-acute Maximum Contaminant Level violation for coliform. A disinfection procedure was followed, and it has not had a coliform violation since then. It is suspected that inadequate disinfection after pump maintenance was the cause of the bacteria.

## *Lead and Copper*

The aeration process removes certain dissolved gases which can cause corrosivity in the water. When water is less corrosive, less lead and copper is transferred to the water from household plumbing.

The Pesticide Waiver Review states:

> *"After installing an aeration treatment system, the corrosivity of the treated water was reduced, and the lead and copper levels normalized."*

Levels of lead found in the distribution system since 1990 are shown in Figure 6. Multiple results on the same date mean that several locations were tested. The MCL for lead is 15 ppb (0.015 mg/L).

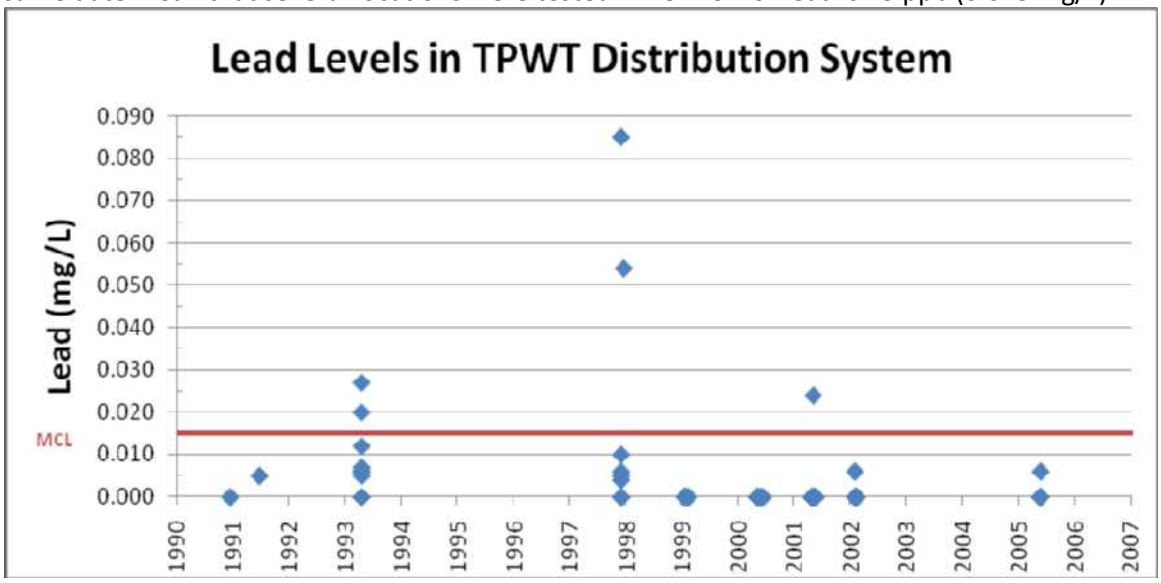



**Figure 6. Lead levels in the TPWT distribution system since 1990.**

Figure 7 is a similar graph for copper, which has an MCL of 1.3 mg/L.

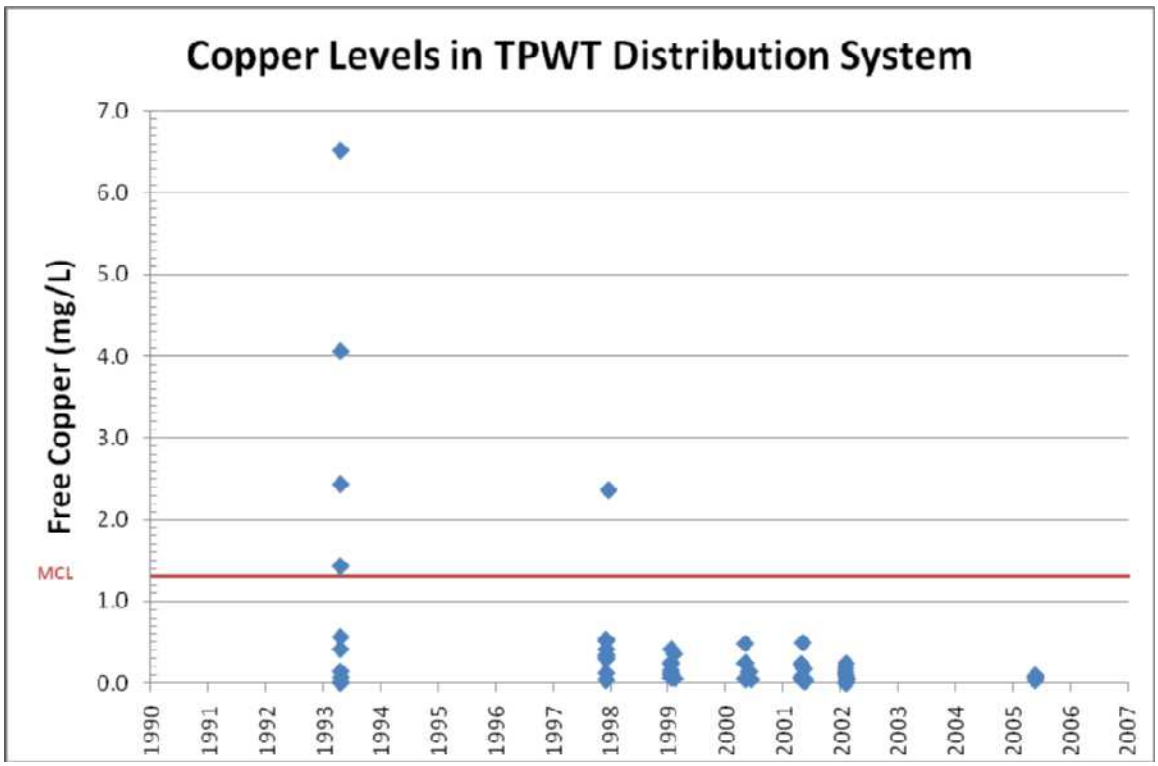



**Figure 7. Copper levels in the TPWT distribution system since 1990.**

# Assessment of Threats

## *Roadways*

Roadways are a potential source of contamination due to the risk of petroleum leaks from vehicles, and the possibility of an accident involving a truck involved in bulk shipments of materials such as home heating oil. The application of road salts can cause elevated levels of sodium and chlorides. The Town of Warren currently uses a mixture of salt and sand on the roads in Touisset Point during the winter.

## *Salt-Water Intrusion*

Figure 8 shows the way in which fresh groundwater and the saltwater of the ocean interact near any coast. The closer one is to the coast, the shallower the level at which salt water is reached.

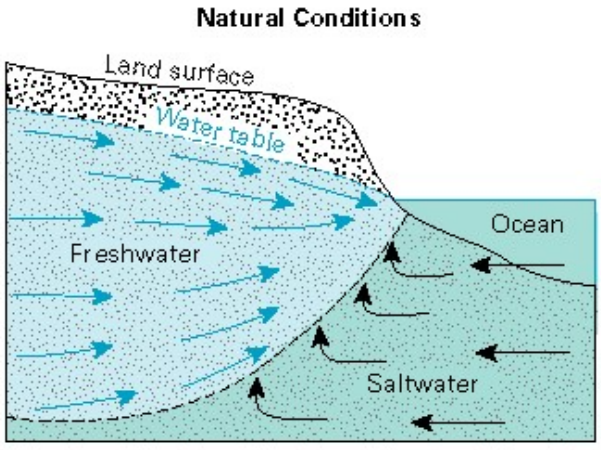



**Figure 8. Freshwater/Salt Water interface in coastal area, natural conditions.**
**Source: http://pubs.usgs.gov/gip/gw/quality.html**

Any groundwater pumping near a coastal area will affect this pattern, drawing salt water up towards the well (Figure 9). The higher the pumping rate, the more likely it is that the groundwater aquifer is at risk of salt-water contamination.

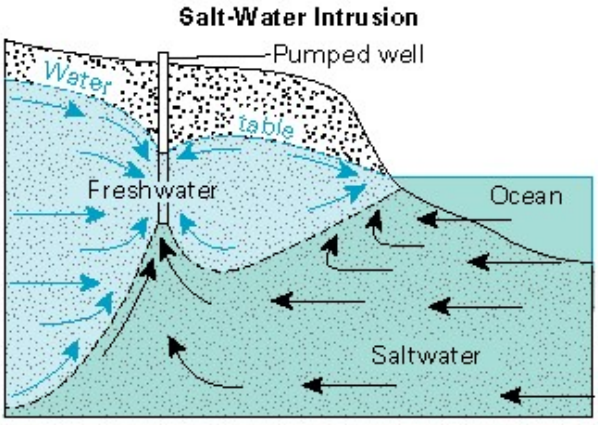



**Figure 9. Freshwater/Salt Water interface in coastal area, pumping conditions.**
**Source: http://pubs.usgs.gov/gip/gw/quality.html**

The danger of salt-water intrusion in the area has been recognized for quite some time, as shown in the following quote from the Rhode Island Water Resources Coordinating Board, 1960:

> *"Heavy (well) pumping near the tidal Kickamuit (sic), Cole, Lee, Taunton, and Sakonnet Rivers may cause inland movement of salty water and contamination of the groundwater supply."*

The Pesticide Waiver Review states:

> *"The proximity of this water system to the ocean leads one to suspect the primary source of sodium and chloride could be saltwater intrusion below the freshwater aquifer."*

Because of this, conservation is a critical component in fighting salt-water intrusion. However, challenges to conservation include leaks; unattended, non-winterized homes where a leak would not be immediately noticed if a pipe burst; the water required to re-plant grass or re-sod yards, particularly after installing new septic systems; and excessive outdoor water use.

## *Heating Oil*

Leaking heating oil tanks can pose a risk to groundwater quality. Over time, water from condensation and sludge from impurities in the oil can cause corrosion, leading to leaks. The legs of above-ground tanks can also break, causing tanks to topple and spill.

According to the Pesticide Waiver Review, a Leaking Underground Storage Tank (LUST) was found at one residence in the 1980's. It required soil removal only. Remaining Underground Storage Tanks (USTs) were removed or filled with sand between 1989 and 1990. Currently, heating oil and propane tanks are in basements or outside above-ground. However, they are not designed with secondary containment, berming, impervious bases, leak detection, etc. to retain leaks or spills.

Appendix C is a brochure prepared by the Massachusetts Department of Environmental Protection about precautions that should be taken with home heating oil tanks.

## *Lawn Care*

Residential landscape care and maintenance often involve the use of fertilizers, herbicides, and pesticides. Most of these products are highly soluble in water and can be transported through groundwater to wells.

The recreational field near the wells stopped receiving treatments in 2005. Residents of Touisset Point are encouraged not to chemically treat their lawns, with the goal of preserving the water source. One method of disseminating this type of information is through the use of the TPWT's website.

## *On-Site Wastewater Treatment Systems (OWTSs)*

### Overview

As Touisset Point is not a sewered area, 100% of homes in the neighborhood have OWTSs. At the time that the Onsite Wastewater Management Plan was written, an estimated 40 – 45% of the systems in Touisset Point and Touisset Highlands (combined) were cesspools. The Onsite Wastewater Management Plan also states:

> *"Given the small size of the lots (often 3,000 square feet or less), many properties are nonconforming and lack the space needed for ISDSs to meet setbacks from wells, property lines and other lot features. Add to this the fact that most of the ISDSs are relatively old—many are*

*cesspools or otherwise outmoded— and significant concerns arise regarding potential for cumulative and chronic pollution problems."*

*"Substandard systems, small lot size, and use of systems beyond their intended capacity predispose ISDSs in the Touisset area to failure. In some cases (e.g., overuse), failures may manifest as surface backups; but in other cases (e.g., inadequate setbacks in fast soils), treatment failures may occur, which manifest as water quality problems such as high nutrient levels in well water."*

Thus, "failure" is not necessarily visible as a backup, but can also be due to inadequately treated wastewater entering a well.

It is not only the public wells that are at risk by septic systems. Many homes in Touisset Point have private wells located very close to OWTSs.

A benefit associated with properly functioning OWTSs is that they allow a significant portion of the water withdrawn from the aquifer to return to it. This amount decreases as outdoor water use (and thus evaporation/transpiration) increases.

## Cesspool Act of 2007

Touisset Point will be affected by the implementation of the Cesspool Act of 2007. The following excerpts are taken from "Frequently Asked Questions: Cesspools and the Rhode Island Cesspool Act of 2007 (October 15, 2009)", written by RI DEM:

*"Do all cesspools in Rhode Island need to be replaced?*
*No, only cesspools located within the 200 foot zones described below need to be replaced under the Cesspool Act of 2007. If you own a cesspool located outside of the 200 foot zones, the Cesspool Act does not apply to you.*

*Do I have to replace my cesspool? If so, when?*
*There are 3 possible scenarios under which you are or will be required to replace your cesspool:*

- *Your cesspool is failed (see definition below). This applies anywhere in the state and is required under current regulations;*
- *You have a cesspool that serves a commercial facility or multifamily dwelling. This applies anywhere in the state and is required under current regulations; or*
- *Your cesspool is located within one of the three areas described below, effective June 1, 2008:*
    - *Within 200 feet of the inland edge of all shoreline features bordering tidal water areas (i.e., Coastal Resources Management Council's jurisdiction);*
    - *Within 200 feet of all public wells; and*
    - *Within 200 feet of a water body with an intake for a drinking water supply.*

*Cesspool Inspection and Replacement Timetable:*

- *All cesspools within the 200 foot zones identified above will have to be inspected upon notice from DEM;*
- *All cesspools within the 200 foot zones identified above that are found to be failed will need to be replaced within 1 year;*

- *All cesspools within the 200 foot zones identified above that are found in already sewered areas will need to be hooked-up to the sewer within one year of the sale of the associated property; and*
- *All other cesspools within the 200 foot zones identified above will need to be replaced by January 1, 2013."*

The entire FAQ is included as Appendix D.

Many of the lots in Touisset Point fall into the areas that will be affected by the Cesspool Act. RI DEM has gone through a multi-step process to determine which lots in Rhode Island are potential candidates for cesspool phaseout. As written in the RI DEM document "How Did You Select *My House* for Cesspool Phaseout?":

> *"DEM used GIS selection analysis tools, high resolution aerial photography and precise building location data developed for the Statewide E911 system to determine which properties might be subject to the new law and regulations."*

At the time of this writing, this list has not yet been made available to the residents of Touisset Point. The owners of homes that are suspected to have cesspools that will be affected by the Cesspool Phaseout Act will be notified by RI DEM when RI DEM's focus for the phaseout reaches the Warren area.

As mentioned previously in the Source Water Inventory section, the nearest underground disposal of sewage to the Coggeshall Well is a cesspool located 125 ft from the well. The nearest underground disposal of sewage to the George Street Well is a cesspool located 130 ft from the well.

## Innovative/Alternative Septic Systems

Innovative/Alternative (I/A) septic systems are also referred to as Alternative/Experimental (A/E) systems. A variety of I/A systems have been approved for use in Rhode Island. Some of these systems could be appropriate for use in Toiusset Point because of their nitrogen removing capabilities and/or the reduced sizes required for their leachfields.

The following is from a memo written by RI DEM in July 2009 (corrected 9/9/09), entitled "Alternative or Experimental Onsite Wastewater Treatment System (OWTS) Technologies".

> *"The primary application for these technologies is at existing home sites on substandard lots having failing or otherwise inadequate OWTSs, and at other sensitive or difficult sites. A/E technologies often require special design and maintenance considerations, and some may involve significant additional design, installation or operational cost.*
>
> *Technologies currently recognized as capable of significantly reducing nitrogen levels in residential wastewater are RUCK, Bio-Microbics FAST, Advantex AX, Amphidrome, Nitrex and the RSF as provided in the Guidance for the Design and use of Sand Filters in Critical Resource Areas."*

Whether a homeowner will be required to replace a failed/substandard system with a conventional septic system or an I/A system will be determined on an individual basis by RI DEM.

# Management Plan

A source water protection workshop was held on April 20, 2010 at the Touisset Point Community Club. It was well attended, and participants included TWPT board members, Touisset Point residents, URI-NEMO, RI HEALTH, and the Warren Town Planner. After being presented with a brief overview of source water protection in general and the specific concerns of Touisset Point, attendees brainstormed possible approaches to reducing risk. This is included as Appendix E.

After further developing and prioritizing these ideas, the following list of source water protection activities was developed.

## *Touisset Point Residents – Look into Increasing Recharge of the Aquifer*

Touisset Point residents can investigate ways to increase recharge of groundwater and better retain fresh water before it flows to the ocean. Figure 10 demonstrates how recharge basins are able to reduce the risk of saltwater intrusion in coastal areas.

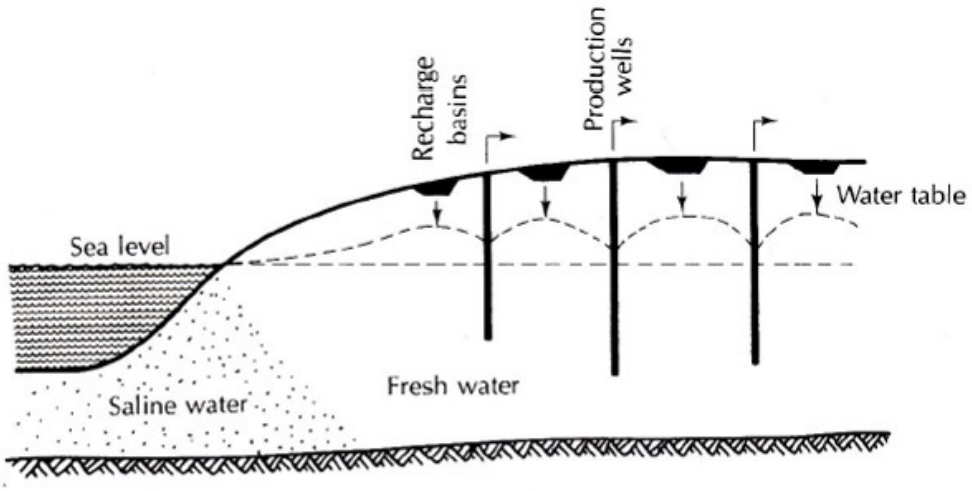



**Figure 10. Artificially recharged water can help to prevent salt-water intrusion. An unconfined coastal aquifer is shown in this figure.**
**Source: Applied Hydrology, Fourth Edition. C. W. Fetter. 2001.**
**Merrill Publishing Company, Upper Saddle River, NJ.**

Rain gardens are one option that is available at the household level. Figure 11 shows how stormwater can be directed into the ground by a rain garden. The URI Master Gardeners' website has additional information about rain gardens, including a plant list suitable to Rhode Island's climate: http://www.urimga.org/rain_gardens.html.

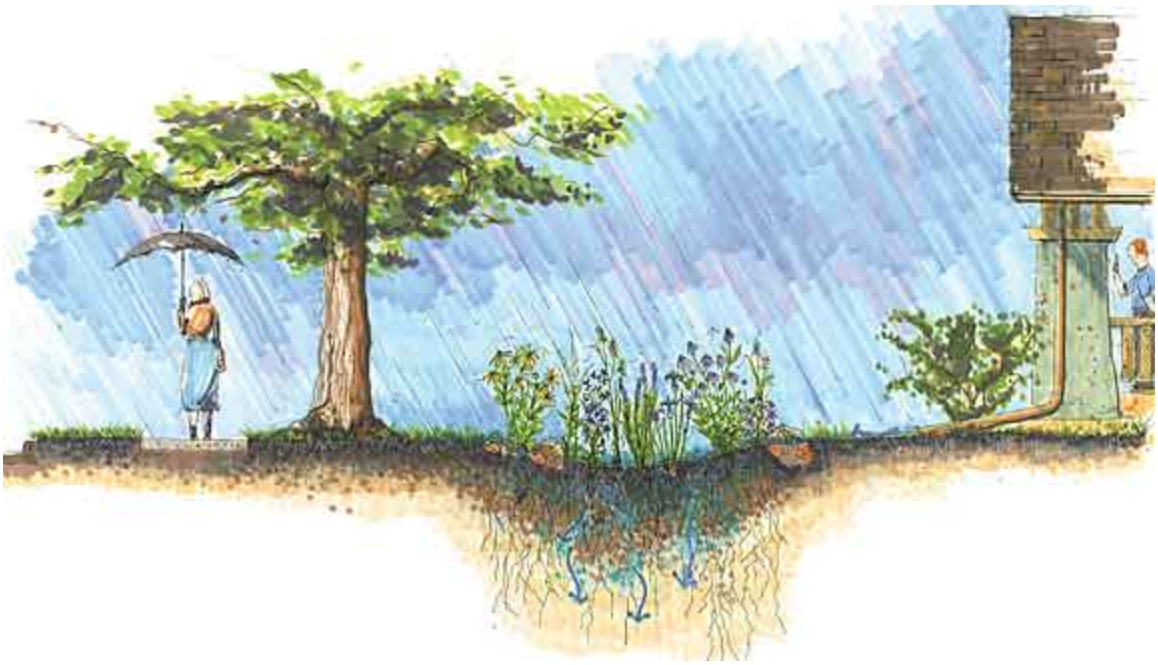


**Figure 11. Increased groundwater infiltration caused by a rain garden.**
**Source: http://www.mt.nrcs.usda.gov/technical/ecs/water/lid/rainill.html,**
**adapted from illustration by Doug Adamson, RDG Planning & Design.**

In siting any type of recharge structure, it is essential to only choose locations that are not affected by nitrates, sodium, or other contaminants of concern. For example, putting a rain garden next to a cesspool would be very problematic, as it would increase the amount of groundwater flowing through a contaminated zone.

## *Touisset Point Residents/TPWT Source Water Steering Committee – Monitor Water Quality in the Aquifer through Testing of Private Wells and Mapping of Results*

The required water quality tests for the TPWT wells detect contaminants in the aquifer only at the locations of the two public wells. However, information from other points in the aquifer could be gathered by collecting the results as homeowners who use private wells get their water tested. This information could then be mapped (using GIS software if available) to spot any trends as they emerge. Perhaps a group rate could be negotiated with a laboratory for neighborhood-wide testing on a regular basis.

## *TPWT Source Water Steering Committee – Conduct an Education Campaign for Touisset Point Residents*

- Continue to build website and update educational materials available
- Private Well Workshop

  - Alyson McCann, URI Cooperative Extension Water Quality Program
- Lawn Care Workshop
  - Lorraine Joubert, Non-Point Education for Municipal Officials, URI Cooperative Extension
- Water Softening Workshop
  - Bob Ferrari – NWSI
- Fact sheets on low-flow technologies and in-home conservation
- Information about winterizing homes
- Regular updates to residents via TPCC EXTRA email listserv and, where necessary, printed mailbox flyers

## *TPWT Board – Conduct a Cost Analysis of Installing Water Meters*

Residents connected to the TPWT system are currently charged a flat fee for water service, rather than paying based on usage. Water meters would provide a mechanism to assist in conservation efforts.

The working hypothesis has been that it would be prohibitively expensive to install meters. A very rough estimate of $300-$800 per connection was mentioned at the workshop. Because of the configuration of the pipes, some homes may also require a small amount of excavation in order to install the meters. Having a more exact estimate, based on an inspection of each connection by a qualified expert, would allow the board to make an informed decision about pursuing meters.

## *TPWT Board – Analyze Existing Data and Conduct Pump Tests to Determine the Safe Yield of TPWT Wells, Considering the Risk of Salt-Water Intrusion*

The Touisset Point Water Trust has commissioned a multi-phase evaluation of the exiting water supply wells and aquifer to evaluate available water capacity. The Trust will revisit an existing moratorium on new water service connections after the assessment has been completed. In the meantime, new connections are only approved in emergency situations.

## *Town of Warren – Reduce Salt Applied during Winter Road Maintenance*

The TPWT Board can meet with the Town of Warren's Director of Public Works to investigate ways to safely reduce winter road salt application in the Touisset Point neighborhood.

## *Town of Warren – Set Up Rhode Island Wastewater Information System (RIWIS) in Warren*

RIWIS, a software available to towns at a reduced cost, would allow the Town of Warren to easily collect information online from service providers as they do inspections and maintenance of systems.

**RIWIS – How can it help Warren?**

- RIWIS offers an online software that allows towns to track the maintenance of septic systems.
- How it works:
    - The town enters all properties not connected to public sewers into the database
        - This can include address, owner, parcel number, and type of septic system if known.
        - RIWIS can usually do this directly from the tax assessor's database.
    - The town sets maintenance schedules for each type of system.
    - Service providers register with the town and get a login.
    - Service providers update RIWIS whenever they visit a system.
    - By logging into the system, town officials can see which systems are overdue for maintenance.
    - The software can be used to generate reports and mail reminders to homeowners that are overdue for service.
    - Towns can use this software to track whether I/A septic systems are being maintained according to state law.
- Advantages to towns
    - Protect drinking water sources and recreational water bodies.
    - All information is online.
    - Time savings – no paper filing, automatic reports, simplified mailings.
    - A forward-looking approach to water quality protection.
- Advantages to homeowners
    - Help protect homeowners' investments in septic systems by ensuring that they are properly maintained.
    - Protect water quality of private wells.
- Advantages to service providers
    - Simplified system for filing reports with the town.
    - Mailings by towns about overdue maintenance generate business for companies.

The Onsite Wastewater Management Plan supports tracking of septic system operation and maintenance:

> *"[W]e strongly recommend municipal tracking, if not stronger management, of O&M [Operation and Maintenance] to ensure that that [I/A] systems achieve their anticipated value."*

## *Town of Warren – Community Septic System Loan Program (CSSLP)*

The Cesspool Act of 2007, along with the need to repair and replace cesspools and septic systems that are not in the areas affected by the Cesspool Act, mean that many residents of Touisset Point will be facing large costs in the coming years associated with OWTSs. Any assistance in financing these expenses will be helpful.

Although it is not known exactly how many of the new systems built will be required to be I/A instead of conventional, it is likely that at least some homeowners will need to build I/A systems. While conventional septic systems cost between $10,000 and $15,000, I/A systems can cost between $20,000 and $30,000.

Rhode Island's CSSLP program allows towns to provide low-interest loans to homeowners for the repair or replacement of septic systems. The following information about CSSLP was taken from the Rhode Island Clean Water Finance Agency's website, at http://www.ricwfa.com/CommunitySepticSystemLoanProgram.html:

> *"Established in accordance to Title VI of the Federal Clean Water Act and Chapter 46-12.2 of the General Laws of Rhode Island, the Agency, in cooperation with DEM and the Rhode Island Housing & Mortgage Finance Corporation (RIHMFC), successfully launched its CSSLP as part of the CWSRF in the spring of 1999. The Agency has engaged RIHMFC to be the homeowner loan administrator for the CSSLP. The Agency uses federal dollars recycled from previous CWSRF loans to provide the source of funds for the CSSLP. The CSSLP allows communities without wastewater treatment facilities to access low-interest cost SRF funds. Communities are able to access these funds after completing an On-Site Wastewater Management Plan approved by DEM. Once the plan appears on DEM's PPL and the CA is obtained, the community will negotiate a loan with the Agency. The amount requested should be sufficient to repair or replace failing, failed or sub-standard septic systems. Once the loan is negotiated, the community may then allow residents to access the funds. The borrowing cost for the homeowner will be 2%(Note: as part of the Governor's Initiative to clean up Narragansett Bay the Agency lowered its rate to the homeowner from 4% to 2% as of February, 2004) for a term up to ten years. The community may not raise or lower the current homeowner CSSLP rate of 2% but may combine the CSSLP with other sources of money so as to provide a greater dollar amount available for loans or to provide a greater economic incentive for homeowners to repair or replace the failed septic systems. Any additional criteria applied by the local governmental unit cannot negate or otherwise overrule any federal and state laws and regulations which apply to the CSSLP. Recipients (the community) of loans must comply with all applicable state and federal laws and regulations."*

## *Town of Warren – Develop a Wastewater Management District*

The Source Water Steering Committee is aware that the Town has been moving forward on creating a Wastewater Management District and supports these efforts.

From the Onsite Wastewater Management Plan:

> *"Warren is currently considering enhancements to its management program that may include development of an inspection-based operation and maintenance program. This is especially important for management of I&A systems, which often require management beyond the knowledge and technical abilities of the typical homeowner.*
>
> *To ensure the proper function of ISDSs—especially I&A systems—the Town should develop a wastewater management district. Such a program would be intended to foster regular inspection and maintenance of ISDSs in accordance with a given standard such as that describe in Septic System Checkup and as recommended by I&A treatment system vendors."*

## *Town of Warren – Consider Paying for Inspections in Addition to Pumpouts*

The Onsite Wastewater Management Plan states the following about Town subsidies for OWTSs owners:

> *"Warren currently provides a subsidy to ISDS system owners for up to two septic tank pumpouts per year per ISDS. This program has been in existence for a number of years and is intended to offset the contribution of owners of unsewered properties to the cost of operating the Warren Wastewater Treatment Plant (WWTP), which is funded through general taxation. The Town plans to continue the program for the foreseeable future. The subsidy is administered by staff of the WWTP."*

The Source Water Steering Committee recommends that the Town consider including inspections, in addition to pumpouts, in what the Town will pay for. In addition to helping residents, this could create a cost savings for the Town if unnecessary pumpouts are avoided.

The Steering Committee would also like to point out to residents that although the Town currently will pay for up to two pumpouts per year, it may not make sense to use both of these pumpouts. For one thing, it may be masking the symptoms of a system that is actually failed. One of the definitions of a failed system, according to the Cesspool Phaseout Act of 2007, is that it has to be pumped more than two times per year. In addition to this, if a system is functioning properly, pumping too often could actually *harm* it by depleting the population of beneficial microbes. Whether a system should be pumped out is best determined by a qualified inspector.

The Onsite Wastewater Management Plan supports the idea of determining the need for pumpouts by inspection:

> *"In 2000, RIDEM published Septic System Checkup: The Rhode Island Handbook for Inspection (Riordan) (see Appendix J). This handbook provides a state-approved method for inspection of conventional septic systems. For conventional systems, inspections are recommended on a 3 – 5 year basis, depending on system use, and can generally be completed by a service provide[r] in [a] few minutes. Inspections are recommended as the basis for determining pumpout need, which helps avoid the unnecessary expense of overkill maintenance. Inspection-based programs also provide superior protection from system failure as they ensure that the system is functioning properly and that minor repair needs … [are] not exacerbate[d].*
>
> *An inspection-based program is essential for I&A systems, which generally include mechanical and electrical parts that are more likely to experience malfunction. I&A systems should be inspected annually."*

# Contingency Plan

A contingency plan for the TPWT system is being written by the TPWT Board and will be stored with their records.

The focus of this plan has been to protect the source water of the existing public water system at Touisset Point. However, the steering committee also recommends that proactive measures be taken to plan for alternative sources of water in case the current source becomes unusable.

# Appendix A: Groundwater Classification & Well Head Protection Area 2010, Fall River Quadrangle (RI DEM)

# Appendix B: Source Water Assessment

Rhode Island Department of HEALTH

## PROTECT YOUR DRINKING WATER

*Safe and healthy lives in safe and healthy communities*

### Touisset Point Water Trust

*Pollution Risk Assessment Results*

**Touisset Point Water Trust** (PWSID 1615626) is a community water system in Warren that serves approximately 225 residents through 68 service connections. The water system consists of two gravel developed wells and six storage tanks. Water is treated before distribution. The last sanitary survey was June 5, 2001. For further information contact Edward McAloon at 3 Bayview Avenue, Warren, RI 02885.

Treatment:
An aeration system is used for corrosion control.

**The Source Protection Area** was drawn based on RI DEM's estimation of where the water pumped from the well originates. For more information, contact RI DEM's Office of Water Resources. The area is an irregular shape about 1/3 mile north to south and about ⅓ mile east to west (see Figure 2 on back). It is mostly moderate to high density residential development with a developed recreational area. Beaches and small areas of pastureland and woods are located along the periphery (see Table 1 on back).

**Sample Summary** (for the previous five years)

- ▲ Bacteria have not been detected.
- ▲ Nitrate levels in groundwater are higher than half the US EPA standard for nitrate. This indicates significant contribution from human activity. A program to reduce nitrate may be helpful.
- ▲ No violations of the standards for other regulated contaminants have been identified. However, there have been detections below levels considered acceptable by US EPA. This indicates the need for continued monitoring.

**This report** summarizes assessment results for this water system. The assessment identifies both known and potential sources of pollution occurring in the source protection area, and ranks the water source based on the likelihood of future contamination. The goal of this study is to help water suppliers, local officials, residents and consumers to learn more about source water protection. Because water quality is directly related to land use activities, everyone living or working in the source protection area has a role to play in keeping local water supplies safe.


| Susceptibility To Contamination | | |
|---|---|---|
| Low | Moderate | √ High |

**Note:** A ranking of **HIGH** does **NOT** mean that the water is unsafe to drink. It **DOES** mean that we must be especially aggressive in protecting the water supply.

**POLLUTION RISKS:**

- ▲ High-intensity land uses, including recreational and residential, are densely clustered near the wells.
- ▲ Several roads are located near the wells, increasing the risk of hazardous material spills and road salt contamination.
- ▲ Heating oil is stored in most residences, posing the risk of groundwater contamination.

**PROTECTION OPPORTUNITIES:**

- ▲ The town can continue to pump septic systems twice a year.
- ▲ Residents should consider reducing applications of fertilizer and pesticides. More guidelines for reducing the impact of household contaminants can be found on the back.

**Source Water**

The focus of these assessments is on public drinking water supply "source" areas—the *wellhead protection area* that recharges a well or the *watershed* that drains to a surface water reservoir. Source water is untreated water from streams, lakes, reservoirs, or underground aquifers that is used to supply drinking water.

**Source Water Assessments** were conducted by the R.I. Department of Health in collaboration with the University of Rhode Island Cooperative Extension (URI CE) under the Rhode Island Source Water Assessment Program. This is part of a national initiative, established under the 1996 Amendments to the Federal Safe Drinking Water Act (SDWA), to foster more comprehensive protection of drinking water supplies at the local, state, and national levels.

**Table 1.** High-intensity land uses identified within the source water protection area that have the potential to contaminate drinking water.

| Land Use Category | Associated Contaminants[1] | % of Protection Area |
|---|---|---|
| % Residential | Nutrients, Pathogens, VOCs, SOCs | 73.9% |
| % Commercial, Industrial, Institutional | VOCs, SOCs, Solvents, Inorganics | 4.3% |
| % Intensive Agriculture | Nutrients, Pathogens, VOCs, SOCs | 0.0% |

[1]Potential contaminants include nutrients (nitrates and phosphorus from fertilizers and human and animal waste), pathogens (bacteria, viruses, and other microorganisms that can cause disease); volatile organic compounds (VOCs) found in fuels and solvents; synthetic organic compounds (SOCs), such as pesticides and plastics; and inorganics, including metals and other substances that can harm human health in high concentrations.

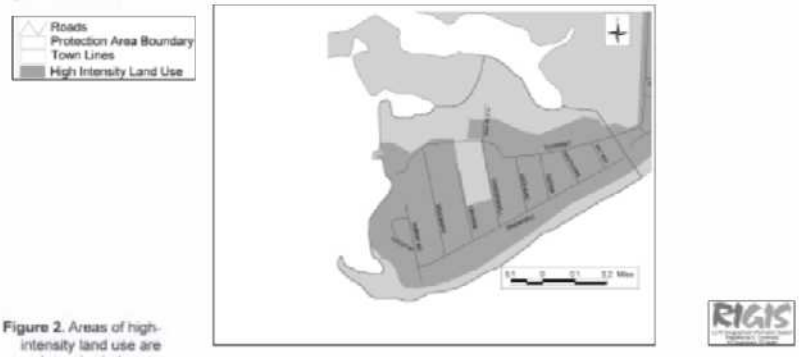



**Figure 2.** Areas of high-intensity land use are shown in dark gray.

## What You Can Do To Protect Water Quality

### Public Water Suppliers:

- Implement all recommendations in the latest Sanitary Survey.
- Protect undeveloped land within the wellhead or watershed protection area. Work with municipal boards and government as needed to implement land use protection measures and education programs.
- Post signs alerting public to Wellhead or Watershed Protection Area.
- Inspect water supply and protection area regularly for potential pollution sources.

### Municipal Boards and Government:

- Develop a groundwater protection plan and ordinance and supporting protective zoning regulations, such as limits of paved surface areas within new developments.
- Incorporate groundwater and source water protection goals into the Comprehensive Plan.
- Implement on-site wastewater management or sewer maintenance plans and ordinances.
- Develop programs for land acquisition, conservation easements, or other critical lands protection.
- Adopt a stormwater management plan and ordinance.
- Establish a community education and outreach program that promotes residential pollution prevention and best management practices for the Public Works Department.

### Residents:

- Inspect septic systems annually and pump as needed.
- Replace/repair cesspools and failing septic systems.
- Reduce fertilizer and pesticide use.
- Reduce stormwater runoff by limiting paved surface areas and maintaining good vegetative cover.
- Pick up after your pets.
- Properly use, store, and dispose of hazardous products.
- Properly maintain motor vehicles and fuel storage tanks. Consider replacing underground storage tanks with properly contained above-ground tanks.
- Check all municipal laws that may apply.

### Farmers and Landowners: *Develop conservation plans on agricultural and forest lands that:*

- Reduce soil erosion, sediment, and stormwater runoff.
- Address proper nutrient, manure, pest, and irrigation water management.
- Address proper fuel storage and equipment maintenance.
- Conserve water, improve soil health, and protect surrounding natural resources.
- Check all federal and state laws that apply.

### Commercial and Industrial Businesses:

*Adhere to all laws, regulations, and recommended practices for:*

- Hazardous waste management
- Above- and underground storage tanks
- Wastewater discharge
- Floor drains
- Proper training for all employees

### For More Information

**R.I. Department of Health, Office of Drinking Water Quality,** (401) 222-6867, www.healthri.org/environment/dwq/Home.htm
**URI CE Home*A*Syst Program** (401) 874-5398, www.uri.edu/ce/wq
**URI CE Nonpoint Education for Municipal Officials** (401) 874-2138, www.uri.edu/ce/wq
**Local Municipal Boards and Government**, contact town/city hall
**R.I. DEM Office of Water Resources** (401) 222-4700, www.state.ri.us/DEM/programs/benviron/water/index.htm
**USDA Natural Resources Conservation Service and Conservation District Offices,** (401) 828-1300, www.ri.nrcs.usda.gov

*Report templates produced by Rhode Island Sea Grant (2003).*

University of Rhode Island

# Appendix C: Home Heating Oil Fact Sheet – MA DEP

Massachusetts Department of ENVIRONMENTAL PROTECTION

fact sheet

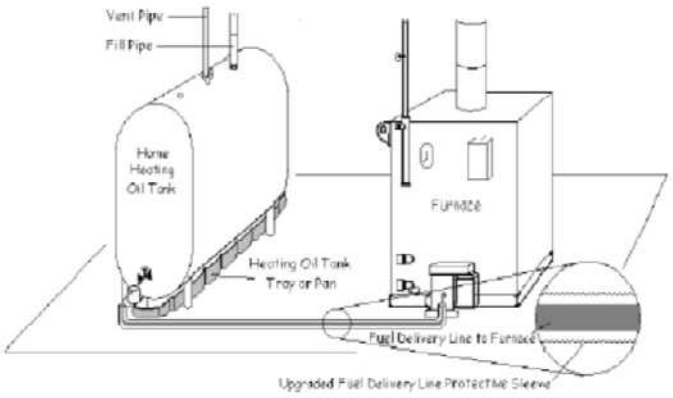
**Tips For Maintaining Your Home Heating System:**
**Prevent Heating Oil Leaks and Spills**

Cleaning up oil leaks from home heating systems can be very expensive. The average cost can range between $20,000 and $50,000, with some cleanups costing significantly more. Here are some ways to save money, help prevent leaks and spills, and protect the environment.

**For all heating oil systems:**

- Annually:
  - Inspect for leaks. Look at the tank, fuel delivery line, valves, piping, and fittings.
  - Have your oil company:
    - Clean the furnace and repair or replace damaged parts. A well-maintained furnace means lower fuel bills and cleaner emissions.
    - Install an oil **safety valve** or replace the fuel delivery line with one encased in a **protective sleeve.** These are inexpensive upgrades. Contact the fire department to determine if a permit is required for this work.
  - Each fall, inspect the vent pipe to ensure that it is free of obstructions and that an audible signal (whistle) is on the vent. Oil company personnel listen for the whistle to help avoid overfills, a common source of spills.
- At least every 10 years, have the oil tank cleaned out. Over time, water (from condensation) and sludge can cause corrosion resulting in leaks.
- When appropriate:
  - Remove abandoned fill and vent pipes immediately.
  - Clearly mark the location of the tank's fill pipe.
  - Consider upgrading to a modern, fuel-efficient furnace.

Typical Above-Ground Home Heating Oil System



- Determine if the underground storage tank is made of steel (common) or fiberglass (rare). Most steel underground storage tanks will last approximately 10 to 20 years. If the tank is older than that or the age is unknown, replace it with an above-ground storage tank. Locate your new tank under a shelter, or inside a basement or garage, to prevent rust, corrosion, or damage.

**For outdoor above-ground tanks:**

- Ask your oil company to inspect the stability of the above-ground tank. A full 275-gallon tank weighs more than 2,000 pounds! They have metal legs and should sit on a concrete pad. If the legs become loose or the pad cracks, the tank can fall over and rupture.
- Replace an outdoor above-ground storage tank that has been uncovered for 10 years or longer. These tanks rust from the inside out, so cleaning or painting the outside does not usually prolong their life.
- Protect the tank from the weather, such as falling snow and ice, and prevent ruptures by tree limbs.

**For indoor above-ground tanks:**

- Inspect indoor above-ground storage tanks for signs of pitting and corrosion, particularly at the bottom of the tank. Tanks primarily rust from the inside out, so if signs of aging are present, replace the tank. Indoor tanks do not last more than about 30 years, and often their lifespan is much shorter.
- Consider placing a plastic heating oil tray or pan under the tank. This makes it easier to keep the tank area clean and help identify and contain small leaks.

If your oil company offers to perform a "tightness test," ask if this could cause a problem. Generally, these tests should NOT be performed on older residential heating oil systems. Because of the pressure used during a tightness test, older equipment can fail, causing a leak or spill. If you have a tank, fuel delivery line, valves, piping, and fittings on which it is inadvisable to perform a tightness test because of age or condition, then it is probably better to replace the equipment that is causing the concern.

Visit our web site: http://mass.gov/dep/cleanup/laws/facts.htm to review related documents, including "Heating Oil Delivery Lines" (http://www.mass.gov/dep/cleanup/deline.pdf).

If you suspect an oil leak or spill, **immediately** contact your oil company and fire department for assistance. Leaks or spills of 10 gallons or more must be reported to DEP within 2 hours. To report a leak or spill, call DEP (within 2 hours) and the fire department.

DEP's 24-hour statewide emergency response number is 888-304-1133.

Massachusetts Department of Environmental Protection
One Winter Street
Boston, MA 02108-4746

Commonwealth of Massachusetts
Mitt Romney, Governor
Kerry Healey, Lt. Governor

Executive Office of Environmental Affairs
Ellen Roy Herzfelder, Secretary

Department of Environmental Protection
Robert W. Golledge, Jr., Commissioner

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This information is available in alternate format by calling our ADA Coordinator at (617) 292-5565.

# Appendix D: FAQ – RI Cesspool Act of 2007

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES

## Frequently Asked Questions
## Cesspools and the Rhode Island Cesspool Act of 2007

October 15, 2009

Do **all** cesspools in Rhode Island need to be replaced? What do I have to comply with?

**No, only cesspools located within the 200 foot zones described below need to be replaced under the Cesspool Act of 2007.** If you own a cesspool located outside of the 200 foot zones, the Cesspool Act does not apply to you.

Rules to implement the requirements of the law will go into effect in early 2010. However, the mandatory replacement dates are specified in the law as outlined below. Cesspool replacements triggered by the Cesspool Act of 2007 must be done in accordance with DEM's septic system Rules. Note that outside of the 200 foot zones described below, the septic system Rules allow the continued use of cesspools unless they are failed.

Some municipalities already have requirements affecting cesspools. If your municipality has established a wastewater management program with comparable or more stringent cesspool replacement requirements, you are exempt from the requirements of the state law, but you must comply with the local ordinance. At least 3 municipalities (Charlestown, South Kingstown, and Block Island) have requirements to replace all cesspools in the community, not just those identified under the state law.

How do I know if I have a cesspool?

A cesspool is any buried chamber (could be a metal tank, a perforated concrete vault, or a covered hollow or excavation) that receives sewage from a building for disposal into the ground. If you know you are not connected to the public sewer system, but don't know whether you have a cesspool or a septic tank with a leachfield, you will have to hire someone to determine if you have a cesspool. Licensed septic system designers, licensed home inspector, registered septic system inspectors, professional engineer, professional land surveyor, or other knowledgeable person can make this determination. Note that this initial determination is not necessarily the same as the formal cesspool inspection required by the Cesspool Act. See below for additional information on inspections.

Do I have to replace my cesspool? If so, when?

There are 3 possible scenarios under which you are or will be required to replace your cesspool:

1) Your cesspool is failed (see definition below). This applies anywhere in the state and is required under current regulations;
2) You have a cesspool that serves a commercial facility or multifamily dwelling. This applies anywhere in the state and is required under current regulations; or
3) Your cesspool is located within one of the three areas described below, effective June 1, 2008:

- Within 200 feet of the inland edge of all shoreline features bordering tidal water areas (i.e., Coastal Resources Management Council's jurisdiction);
- Within 200 feet of all public wells; and
- Within 200 feet of a water body with an intake for a drinking water supply.

**Cesspool Inspection and Replacement Timetable:**

- All cesspools within the 200 foot zones identified above will have to be inspected upon notice from DEM;
- All cesspools within the 200 foot zones identified above that are found to be failed will need to be replaced within 1 year;
- All cesspools within the 200 foot zones identified above that are found in already sewered areas will need to be hooked-up to the sewer within one year of the sale of the associated property; and
- All other cesspools within the 200 foot zones identified above will need to be replaced by January 1, 2013.

How do I know if my cesspool is in one of these 200 foot zones?

The public wells, water bodies for drinking water supply and the coastline features can be determined from the information below. Once you have determined that you are in close proximity to one of these features, you will have to make a determination (or hire a professional) as to whether or not you are within 200 feet.

- The water bodies from which water is withdrawn for drinking water supply are: Bristol County Water Authority – Kickemuit Reservoir; Cumberland (town of) – Sneech Pond; Eleanor Slater Hospital/Zambarano Unit – Wallum Lake; Jamestown (town of) – Jamestown Reservoir; New Shoreham (town of) – Fresh Pond and Sands Pond; Newport (city of) – Easton Pond, Green End Pond, Lawton Valley Reservoir, Nelson Pond, Nonquit Pond, St. Mary's Pond, Sisson Pond, Watson Reservoir; Pawtucket Water Supply Board – Happy Hollow Pond; Providence Water Supply Board – Scituate Reservoir; Stone Bridge Fire District – Stafford Pond; Woonsocket (city of) – Reservoir No. 1; Yawgoog Scout Reservation – Yawgoog Pond.
- To learn if a facility has a public well, refer to the RI Department of Health Public Health Directory website at: https://healthri.mylicense.com/Verification/Search.aspx?facility=Y Search under "Profession: Public Water System" and enter the name of the facility or business you are interested in. Note that public wells include large municipal wells and also wells serving schools, factories, mobile home parks, nursing homes, restaurants, hotels, etc.
- For an overview of the CRMC jurisdictional area, refer to the RI Coastal Resources Management Council "Coastal Shoreline Feature" guide at: http://www.crmc.ri.gov/guidesreports/CRMC_Coastal%20Shoreline_Features.pdf.

Who will inspect my cesspool and at what cost?

Property owners will hire private sector professionals that have been approved by DEM, including Class I, II, or III licensed designers and Registered System Inspectors trained by the New England Onsite Wastewater Training Center. Average inspection costs are likely to range from $75-$250, plus an additional $175 to $200 if the cesspool needs to be pumped. A list of registered septic system inspectors is available online at: http://www.dem.ri.gov/programs/benviron/water/permits/isds/index.htm.

How do I know if I have a "failed cesspool"?

A failed cesspool is one that meets **any** of the criteria below. Note that a cesspool can appear to function in a manner that disposes of the waste and still be considered a "failed cesspool" under any of the five criteria below. In other words, a backup of sewage or leakage onto the ground surface are not the only criteria for failure.

- Cesspool fails to accept sewage, as evidenced by sewage backing up onto the ground surface or into the building it serves;
- The liquid level in the cesspool is less than 6 inches from the bottom of the pipe that drains into it;

- The cesspool has to be pumped more than 2 times per year;
- The cesspool has been shown to have contaminated a drinking water well, stream or wetland; or
- The bottom of the cesspool is below the groundwater table at any time of year, resulting in direct connection between the waste in the cesspool and the groundwater.

How much does it cost to replace a cesspool with a proper septic system?

The average cost to replace a cesspool with a conventional septic system is approximately $10,000-$15,000. However, replacements on very small lots, lots in close proximity to wells and water bodies, or lots subject to other constraints might not be feasible with conventional septic systems. In such cases, the use of more advanced systems with alternative technologies may be required. Under the State's septic system rules, cesspools within the CRMC Special Area Management Plans for the Salt Ponds and Narrow River that have to be replaced under the Cesspool Act or because of failure will have to be replaced with an advanced septic system that reduces nitrogen. These alternative systems are more expensive than conventional systems. See financing options below.

How much does it cost to tie-in to a sewer system?

The cost for a sewer tie-in depends on the distance from the home to the sewer stub, the presence of obstacles above ground (e.g., a pool), or below ground (e.g., ledge), and any required re-plumbing in the home. The typical cost can range from $1,000 to $2,000.

My neighborhood is planned to be sewered. Do I need to replace my cesspool?

No, provided you meet **all** of the following:

- Cesspool is not failed;
- Your property is proposed to be sewered no later than January 1, 2018;
- You do not propose to increase flow of wastewater to the cesspool (for residential structures, you are not proposing to add a bedroom) within this 5 years;
- Your city or town holds bonding authorization for expansion of sewers to the area of the building served by the cesspool; and
- You certify in writing that the building will be connected to the sewer system within 6 months of receipt of notification to connect to the sewer system.

Is there any financial assistance available for replacing my cesspool?

Financial assistance in the form of low-interest loans is available through the Clean Water Finance Agency for residents replacing their cesspool (or conventional system that has failed) in municipalities that have enacted wastewater management programs and are participating in the Community Septic System Loan Program.

If I want to sell my house, do I have to replace my cesspool?

If you are in an area with a public sewer system and in one of the three 200 foot zones identified above effective June 1, 2008, the property will have to be hooked-up to the sewer system within one year of the sale. Otherwise, there are no time-of-sale requirements under the new law.

The new law will allow – via a voluntary inspection opportunity – for the identification and assessment of cesspools on all properties throughout the State that are subject to sale. Also, any purchaser of real estate must be given a standard notice by the seller of the inadequacy of cesspools and the applicability of the replacement requirement to all cesspools located within the three 200 foot zones identified above.

If I want to install a pool/shed/deck in my yard, do I have to replace my cesspool?

Building an accessory structure such as a swimming pool or storage shed in your yard will not, by itself, trigger the requirement to replace your cesspool under the Cesspool Act. However, accessory structures take up space that may be needed to install a code-compliant septic system in the future. Homeowners should carefully consider the location of such structures in light of the potential need to replace a cesspool at a later date, whether under the Cesspool Act, due to system failure, or pursuant to the state septic system Rules. Careful siting of accessory structures can avoid the need to relocate these structures or incur additional costs for the installation of a new septic system.

How many cesspools are likely to be affected by this law?

DEM estimates that there are up to 50,000 cesspools in RI. DEM has also estimated that the Cesspool Act of 2007 will result in the removal of approximately 3,000 cesspools.

Why are cesspools considered to be bad for the environment compared to a conventional septic system?

All cesspools in Rhode Island pre-date 1968, the first year regulations for septic systems took effect. Cesspools are considered substandard systems. They don't treat wastewater, they merely dispose of it. Cesspools concentrate the wastewater in one location, often deep within the ground and in direct contact with groundwater, causing groundwater contamination. This groundwater flows into drinking water wells and surface waters contributing to adverse public health and environmental impacts. In contrast, conventional septic systems place the wastewater well above the level of soils saturated by groundwater and they disperse this effluent over a large area, which results in substantial removal of pathogens and other pollutants.

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- If you have questions about cesspools, local wastewater management, or RI DEM's Septic System Program, see http://www.dem.ri.gov/programs/benviron/water/permits/isds/index.htm.
- For other questions on the topics listed here, please contact Jon Zwarg in the DEM Office of Water Resources at 401-222-4700 ext.7205 or at jonathan.zwarg@dem.ri.gov.

# Appendix E: Source Water Workshop – Brainstorming Session