



RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
235 Promenade Street, Providence, RI 02908-5767
Office of Water Resources

**Design Guidance for OWTS Repairs – Island Park and Portsmouth Park Neighborhoods,
Portsmouth**

January 9, 2015

Program Regulation: Rules Establishing Minimum Standards relating to Location, Design, Construction and Maintenance of Onsite Wastewater Treatment Systems (OWTS July 9, 2012)

Initial Effective Date: July 11, 2013
Past Revisions: August 22, 2013
April 18, 2014

Approved By: Brian M. Moore, P.E. Chief, Groundwater & Wetland Protection

Purpose: This guidance document provides information for OWTS repairs in certain neighborhoods in Portsmouth where DEM has reason to believe that the minimum design requirements stated in regulation may not be met. Water quality violations in certain waters of the state, namely the “The Cove” and the Sakonnet River have led to the development of this guide. The Department believes sewers are necessary to adequately and reliably manage wastewater from these neighborhoods due to the housing density and difficult site conditions. However, until sewers become available, this guidance is intended to ensure that all repairs to OWTS in these areas will not, to the extent reasonably possible, pose a threat to the integrity of these state waters.

Applicability: This guidance applies to parcels within the borders of specific geographic areas, as follows:

- **Island Park:** bordered by The Sakonnet River to the south and east, Boyd’s Lane to the west and The Cove to the north up to the bridge over the channel connecting the The Cove with the Sakonnet River.

- **Portsmouth Park:** bordered by Morningside Lane to the south, East Main Road and Chase Road to the west, Boyd's Lane to the north, and the Sakonnet River to the east.

Background: DEM performed sanitary shoreline surveys along the shores of Portsmouth Park and Island Park between 2003 through 2010. These surveys revealed the presence of fecal bacteria in drainage pipes both during dry weather and wet weather. Evidence of sewage in drainage pipes and groundwater seeps along the shoreline in both areas resulted in the issuance of an advisory by the Rhode Island Department of Health not to swim within two hundred feet of drainage pipes and in the vicinity of the areas where water seeps from the ground. A report entitled "Draft Wastewater Facility Plan Update - Island Park, Portsmouth Park, and the Hummuck, Town of Portsmouth, Rhode Island" date October 2002 prepared by The Louis Berger Group, Inc. included the following findings and conclusions:

- Island Park is a high-density residential neighborhood in a flat, seaside area; specifically, it has: ... (v) highly permeable soils (with percolation rates ranging from two to fifteen minutes per inch, with a majority of rates being five minutes per inch or less). The rate of less than five minutes per inch would indicate that the soils within the septic systems or cesspools would have a lesser degree of treatment following subsurface disposal and the residence time may not be adequate to allow pathogen decay prior to groundwater flow to either The Cove or the Sakonnet River
- Portsmouth Park is a medium to medium/high density residential neighborhood on a hillside; specifically, it has: ... (v) soils with percolation rates ranging from fifteen to thirty minutes per inch along sloped areas that can lead to surface breakout and create a perched saturated zone flowing at the interface of the subsoil and substratum soil layers; and (vi) the presence of dry weather flows in the Portsmouth pipes throughout a majority of the year indicating a water table close to the ground surface or the presence of a perched zone of saturation along the interface of the subsoil and substratum soil layers. The elevated ground water table or perched zone of saturation can serve as a conduit for untreated or undertreated sewage to flow downhill into the Portsmouth pipes.

The above factors indicate that many OWTS may not be performing effectively so as to adequately reduce pathogen threats to recreational waters and the public. In addition, special measures appear necessary for the design of repairs and replacement systems to ensure that all newly constructed systems perform optimally.

DEM has entered into a Memorandum of Agreement with the Town as of November 3, 2014. As a result, the past guidelines in effect as of April 18, 2014, have been hereby revised.

Regulatory Authority:

The DEM “Rules Establishing Minimum Standards relating to Location, Design, Constuction, and Maintenance of Onsite Wastewater treatment Systems” (OWTS Rules- http://www.dem.ri.gov/pubs/regs/regs/water/owts_14.pdf) provide the Department with discretion in approving applications for repair (Rule 17.7.2) on lots with limiting conditions. As such, each application is reviewed on a case-by-case basis with the objective that the design meets the requirements of the regulations to the greatest extent possible with priority given to the protection of public health and the environment.

- Rule 8.7 of the OWTS Rules provides that no person shall discharge or allow the entrance of wastewater, treated or untreated, into any watercourse, nor shall they discharge or permit entrance of such wastewater into any open or covered drain tributary to such watercourse without the approval of the Director.
- Rule 9.1 provides that Class 1 designers are authorized to design repairs to OWTS for most single family homes using conventional technology. [However, for most parcels of land in the subject neighborhoods, the conditions are such that the OWTS standards cannot be met and advanced treatment technology may be required in many cases to mitigate impacts. Designs for advanced technology, or alternative technology, cannot be submitted by Class I designers.]
- As stated in Rule 17.7.1, the department may specify that a soil testing be performed for repair applications.
- Rule 18.1 allows that “nothing in these Rules shall prevent the Director from requiring any additional information deemed necessary to carry out the obligations in enforcing these Rules”.
- Rule 18.4 stipulates the minimum requirements for plan submittal for a repair application. The requirements are listed on the Department’s “OWTS repair Submission Requirements” document. The rule states that the Director reserves the right to require other information deemed necessary by the Department to fulfill its

obligations in accordance with the applicable regulations on a case-by-case basis. [Due to the difficult siting conditions on lots in these two neighborhoods, additional engineering investigation and data gathering are needed which can only be performed by a Class III designer.]

Submission Guidelines: In addition to the minimum requirements stated explicitly in the OWTS Rules and referenced documents, the following additional testing, design and submittal requirements will apply to all residential and commercial repair applications for construction approval for OWTS on lots located within the neighborhood areas described above:

- All OWTS applications for construction approval shall be prepared by a Class III designer.
- A soil evaluation shall be required and be witnessed by the Department unless specifically waived by the Department.
- The designer is required to inspect basements and research available records for evidence of illegal connections to non-sanitary drains, the presence of subdrains, foundation drains, or sump pumps, and all points of discharges of wastewater. Foundations on other properties within 25 feet of a leachfield shall be assumed to have a French drain or subdrain unless information is provided showing otherwise.
- The designer is required to locate all drain and subdrain pipes, and other drainage structures or conveyances within 50 feet of the any proposed leachfield or drainfield. This shall require inspection of plans available at the Town of Portsmouth.
- The locations of coastal features as defined by CRMC, wetlands and watercourses within 200 feet of the leachfield and any components of the OWTS shall be depicted on the plans. The Director reserves the right to require the applicant to obtain a CRMC Preliminary Determination to verify the location of the inland edge of the coastal shoreline feature.
- The locations of water lines within 50 feet of the leachfield and any components of the OWTS shall be depicted on the plans.
- Deviations from any standard contained in the OWTS Rules shall be identified in writing, along with documentation supporting why the standard cannot be met and the actual or potential impacts from not meeting the standard.

Design Guidelines: The following are guidelines for all repairs in Island Park and Portsmouth Park:

Setback Distance from Leachfield	OWTS Design Requirement
To Inland Edge of Coastal Shoreline Feature	
Less than 25 feet	Zero Discharge System
Between 25 and 50 feet	Zero Discharge System or an approved Alternative/Experimental (A/E) system with ultraviolet (UV) disinfection.
Beyond 50 feet	Any system that fully complies with all applicable regulations (DEM, CRMC, zoning, etc.), or A/E System.
To Any Drain*	
Downgradient Drain Less Than 25 Feet	Zero Discharge System required.
Downgradient Drain between 25 and 50 feet	A/E System with UV disinfection and membrane protection of the drain
Side Gradient Drain less than 15 feet	Zero Discharge System required
Side Gradient Drain between 15 and 50 feet	A/E System with UV disinfection and membrane protection of the drain
Upgradient Drain less than 10 feet	Zero Discharge System required
Upgradient Drain between 10 and 25 feet	A/E System with UV disinfection and membrane protection of the drain
Other Design Considerations	
Foundations less than 25 feet from any leachfield component	Membrane protection of the foundation
Property Line	Any encroachment on an adjacent lot requires abutter approval
Seasonal High Groundwater Table less than 24 inches from original grade	A/E System with UV disinfection

* **Drain** includes storm drains, foundation drains, and subsurface drains as defined in the OWTS Rules.

The location of the coastal feature as defined by CRMC must be shown on the site plans. The Director reserves the right to require the applicant to obtain a CRMC Preliminary Determination to verify the location of the inland edge of the coastal shoreline feature.

A Zero Discharge System may be required by the Director on a case-by-case basis.

Please note that no expansion of use or increase in wastewater flow is allowed under a repair application. On some properties there may not be enough land available to place the Zero Discharge System on the property in question. Applicants will need to coordinate with the Town and/or adjacent properties to site the system. Recorded easements will be required.

Zero Discharge System:

Zero Discharge Systems include, but are not limited to:

- Holding tanks for all wastewater; or
- Compost toilet or incinerator toilet for blackwater and a holding tank for graywater.

A/E Technology:

A listing of Department approved A/E technology may be found at:

<http://www.dem.ri.gov/programs/benviron/water/permits/isds/pdfs/ialist.pdf>

Holding Tank Requirements:

Holding tanks must comply with Rule 28 of the OWTS Rules and the OWTS Holding Tank Policy#OWR-OWTS-01-2010 excluding conditions #2 and #5. The application must include a copy of the executed contract with a permitted septage transporter. Holding tanks shall be placed as close to the street as practicable.

Ultraviolet Disinfection:

Ultraviolet disinfection units shall be Salcor Model 3G or equivalent and shall be equipped with an alarm that will activate if there is any malfunction of the UV unit. Operation and maintenance agreements must include annual service of UV disinfection unit and bulb replacement per manufacturer's specifications.

Priority with respect to other standards:

Any proposed reduction in separation distances to water lines or water services must be approved by the local water utility and meet all construction requirements including sleeving or relocation.

Please note that local building or zoning codes may apply and affect the location of OWTS components. Local requirements should be taken into consideration during design.

Easements:

Applicants may propose obtaining rights or easements to nearby properties for OWTS components, including leachfields, where such option will achieve greater compliance with this guidance or standards in the OWTS rules. Fully executed agreements, easements and local approvals for street crossings, in proper legal form, must be submitted with the application.

DEM Contact Information

Brian M. Moore, P.E. Chief
Groundwater & Wetlands Protection
OWTS Program
235 Promenade Street
Providence, RI 02908
brian.moore@dem.ri.gov
401-222-4700 ext.7700

Andrew DeRiso
Senior Environmental Scientist
OWTS Program
235 Promenade Street
Providence, RI 02908
andrew.deriso@dem.ri.gov
401-222-4700 ext.7704