Aquidneck Island Watershed FAQ

Aquidneck Land Trust

What is a watershed? What is stormwater run-off?

A watershed is an area of land that drains into a specific water body. The land use within a water body's watershed directly impacts its water quality. Stormwater run-off is rain and snowmelt that flows over land or impervious surfaces like streets, rooftops, and parking lots that flows directly into streams, lakes, the ocean, or stormwater sewers. It typically picks up pollutants from these impervious surfaces. Usually watersheds with 10% impervious surface have impacts to water quality, although as little as 4% impervious can impact aquatic life.

Where does Aquidneck Island get its drinking water?

Newport Water controls 9 interconnected reservoirs (7 on the island, 1 in Tiverton, and 1 in Little Compton) which serve nearly 60,000 people (directly via Newport Water or through Portsmouth Water & Fire District). The remaining Island residents are on wells, with approximately 1,000 private wells in Middletown. The drinking supply watershed for the 7 reservoirs on the island encompasses 6,630 acres of land and water, almost all within Middletown and Portsmouth.

What is the quality of our drinking water? How is it impaired?

All of the drinking water reservoirs, and the streams that feed them, are impaired by a number of pollutants due to our land use on the island, and are on the Clean Water Act 303(d) impaired waters list published by RI Dept. of Environmental Management. In addition to issues from human inputs, the soils on the Island are glacial till with low permeability causing water to infiltrate slowly, which exacerbates stormwater problems.

Pollutant	Water Body	Why is it harmful?	What is the local cause?
Total Phosphorous	All Reservoirs, Bailey Brook, Maidford River, Paradise Brook	Impairs aquatic life and water quality by contributing to frequent and excessive algal growth and cyanobacteria blooms	Run-off from development, fertilizers, agricultural run-off, internal cycling, animal waste, streambank erosion from lack of riparian buffers, failing septic systems
Total Organic Carbon	All Reservoirs	Impairs drinking water use by contributing to elevated levels of trihalomethanes in finished water (disinfection byproducts). Elevated trihalomethanes have been linked to a number of health issues.	Result from algal blooms caused by excess phosphorous
Fecal Coliform	Paradise Brook, Maidford River	A pathogen to humans and also indicates high concentration of other harmful pathogens	Animal (geese, dogs, etc.) and human waste
Turbidity	Maidford River, Paradise Brook	Negatively impacts habitat and can harbor bacteria and viruses in the water	Agricultural run-off, lack of riparian buffer, unearthed sediment from construction, erosion
Enterococcus	Bailey Brook	A pathogen to humans and also indicates high concentration of other harmful pathogens	Animal (geese, dogs, etc.) and human waste
Lead	Bailey Brook	Concentration in source water is harmful to aquatic life	Result of the heavily urbanized watershed (past lead paint, gasoline, etc.), industrial use, air pollution

If the source water is impaired, is my water clean out of the tap?

Newport Water treats our drinking reservoirs with an advanced system to remove pollutants. However, controlling pollutants at their source, rather than after the fact with treatment, can reduce potential human health risks, improve local ecosystem health, and reduce treatment costs. Improved source water quality also generally reduces complaints about taste and odor. Waters with high amounts of total organic carbon can also result in harmful concentrations of disinfection byproducts after treatment with chlorine.

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What are concerns for residents with a well?

Existing land use and new development may impact water quality and water quantity of wells. Nitrate is a primary pollutant of concern in wells and can have serious impacts to human health. Increased nitrate levels in groundwater can be the result of septic systems, fertilizers from lawn treatment, or agriculture. Portsmouth and much of eastern Middletown do not have sewers. New development in these areas will thus have new septic systems discharging into groundwater, which can become even worse if systems are not appropriately maintained. RIDOH recommends residents with wells test their water regularly. Well water quantity on the island is highly variable by location, as bedrock fissures containing water are not interconnected.

What is the quality of our coastal waters? How do they become impaired?

Since 2018, Aquidneck Island has had 148 days of beach closures across its beaches. Coastal waters are impaired much the same as our drinking water, by point source outflows and stormwater run-off. Typically, beaches are shut down for bacteria contamination. While this can happen at any time, it most frequently happens in the summer after a rain storm when stormwater empties into our coastal waters carrying pollutants. Rhode Island is dependent on Narragansett Bay for tourism, recreation, aquaculture, and the fishing industry. We are in the bay's watershed and our land use affects its water quality.

How could climate change affect our drinking and coastal waters?

Climate change will affect both our drinking and coastal waters. For example, we will have more intense rain storms and more intense periods of drought. More significant rainstorms can overwhelm our infrastructure, create large wash-outs of debris and polluted run-off, and may not recharge groundwater in the same way as slower rainfall. Severe drought impacts water quantity for both surface and groundwater. Saltwater intrusion of wells may become an issue on coastal properties. Four of our reservoirs are located on the coast, making them vulnerable to sea level rise and large storm surges. RI CRMC uses a sea level rise projection of at least 9 feet by 2100 for planning purposes.

What can we do to improve our waters?

Save Open Spaces: ALT has protected 1440 acres in our drinking supply watershed across 43 properties. However, there is still approximately 880 acres of open space in these drinking watersheds that are not protected with an easement or deed restriction. Open space helps improve water quality by acting like a sponge and filtering nutrients and pollutants. It also provides complementary benefits such as potential for public access, habitat, scenic viewsheds, and contributing to the local economy.

Practice Good Stewardship: Private landowners can reduce their impact by limiting lawn treatment of herb/pesticides and fertilizers, picking up after their dog, creating rain gardens, and using permeable surfaces. Landowners with frontage on streams, coasts, or wetlands can plant and/or maintain a riparian buffer of natural vegetation, which helps treat run-off and provides habitat.

Follow Smart Growth Development Principles: In places where development occurs, smart growth development practices like low impact development (LIDs), cluster zoning, and stormwater controls can help reduce impacts. Municipal ordinances on lawn fertilizer controls can also help reduce inputs.

Encourage Agricultural BMPs: Farms are an important economic driver and key to climate resilient food security. When farms are managed with Best Management Practices like buffering, nutrient management, cover cropping, and livestock fencing, they have far less impact on water quality and can help filter stormwater.

Construct BMPs: Best Management Practices may include small scale projects like rain gardens and permeable pavers, or larger projects like constructed wetlands and detention basins. This green infrastructure is an important way to help reduce the impact of existing and new developments if maintained properly.

Maintain Septic Systems (OWTS): Septic systems that are poorly designed, sited too close to wells, and not adequately maintained can release excess nitrates, pathogens, phosphorous, and nitrogen into the groundwater. Homeowners with septic systems should inspect and maintain their systems regularly.